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ECONOMIC DEVELOPMENT

India's Fertiliser Shortage 2025: Causes, Supply Issues and Policy Lessons

- India experienced an exceptionally favourable southwest monsoon in 2025, with rainfall during June to August averaging 6.1% above historical norms and displaying a well-distributed pattern across the country. Rainfall surpassed average levels consistently, recording an 8.9% surplus in June, 4.8% in July, and 5.5% in August. Even May recorded a significant 106.4% above-normal rainfall. Out of the 36 meteorological subdivisions, 33 received normal rainfall, with only Bihar, Assam, Meghalaya, and Arunachal Pradesh experiencing deficiencies.
- This timely and evenly distributed monsoon stimulated a robust kharif sowing season. Rice cultivation rose by 7.6% to 420.4 lakh hectares, while maize planting surged 11.7% to 93.3 lakh hectares. The expansion in crop acreage subsequently led to heightened demand for fertilisers, with farmers turning to key inputs to support their larger sowing efforts.

Fertiliser Sales Surge in Response to Increased Sowing

The impact of this agricultural growth was evident in fertiliser sales between April and July 2025, which saw double-digit increases across most categories — including urea, single super phosphate (SSP), muriate of potash (MOP), and various complex blends — compared to the same period in 2024.

Dip in DAP Sales and Rise of Alternatives

However, diammonium phosphate (DAP) stood out as the only major fertiliser with a sales decline, dropping by 12.8%. This continued a trend observed in recent years, largely driven by ongoing supply constraints. In response, farmers increasingly turned to alternative phosphorus-rich options, such as SSP and the complex fertiliser 20:20:0:13, to meet their nutrient needs.

20:20:0:13 Emerges as a Major Player

Among these alternatives, 20:20:0:13 — a fertiliser composition representing 20% nitrogen, 20% phosphorus pentoxide (P_2O_5), 0% potassium, and 13% sulphur — has rapidly gained popularity. Known as Ammonium Phosphate Sulphate (APS), it offers a balanced

nutrient profile that falls between DAP's 46% phosphorus and SSP's 16%. In the 2024–25 season, APS sales reached a record 69.7 lakh tonnes, making it India's third-highest selling fertiliser after urea (387.7 lt) and DAP (92.8 lt).

Demand-Supply Imbalance Widens

Despite strong demand, fertiliser supply has failed to keep pace. Domestic production of urea fell from 102.1 lakh tonnes in April–July 2024 to 93.6 lakh tonnes in the same period in 2025. DAP production remained stagnant at 13.7 lakh tonnes. While there were modest increases in the production of NPKS complexes (from 35 lt to 37.4 lt) and SSP (from 17.1 lt to 19.1 lt), these gains were insufficient to offset the broader shortfall. Additionally, imports of both urea and DAP declined, exacerbating the supply-demand gap.

Sharp Decline in Fertiliser Stocks

This mismatch led to sharp depletions in fertiliser stocks. As of August 1, 2025, government data revealed a steep decline in urea inventories — down to 37.2 lakh tonnes from 86.4 lakh tonnes a year prior. Similar reductions were seen in DAP (13.9 lt vs 15.8 lt), complex fertilisers (35 lt vs 47 lt), and MOP (6.3 lt vs 8 lt). Only SSP witnessed a marginal stock increase to 20.7 lakh tonnes.

Shortages During Peak Consumption Season

The shortage became most acute during the peak fertiliser consumption period of July and August, which is critical for kharif crops. Phosphatic fertilisers such as DAP are essential during the sowing stage for root development, while urea is typically applied in multiple doses throughout the growing cycle. Reports emerged of farmers waiting in long queues for urea, highlighting the severity of the crisis. Industry experts pointed out that panic-induced pre-stocking further intensified the perceived shortage during this key period.

Policy Miscalculations and Lessons Learned

The situation reveals important policy lessons for fertiliser management. The government appears to have underestimated demand, particularly for nitrogen-intensive crops such as rice and maize, which saw increased acreage this season. Meanwhile, crops with lower nitrogen needs — such as soyabean and pulses — saw a decline in sowing.

Preparing for the Rabi Season: Way Forward

- Looking ahead, with kharif fertiliser consumption peaking, attention now shifts to preparing for the upcoming rabi season. The strong water availability in reservoirs and aquifers provides a solid foundation, but ensuring adequate fertiliser supply will be essential. The declining imports of urea and DAP since 2023–24 — mainly due to export restrictions from China — may ease as diplomatic relations between India and China improve.
- Experts have recommended strategies for more sustainable fertiliser use. These include moderating urea application by partially substituting it with ammonium sulphate, restricting DAP use to crops like rice and wheat, and promoting the use of complex fertilisers for other crops. Such measures could help balance future demand, prevent shortages, and ensure a more resilient agricultural input system.

Bordeaux Mixture

- In the wake of earlier crop losses triggered by unseasonal rainfall, farmers in Karnataka's Chikkamagaluru and Hassan districts are preparing to apply Bordeaux mixture for the third or even fourth time this year. This repeated use underscores the importance of the compound in protecting crops during unpredictable weather conditions.
- Bordeaux mixture is a time-tested bactericide and fungicide created by blending copper sulfate with lime (calcium hydroxide) in water. Originating in the late 19th century in the Bordeaux region of France, from which it derives its name, this mixture has remained relevant over the decades due to its effectiveness in disease control. It is particularly valued in organic farming, where synthetic chemicals are restricted.
- The formulation is known for its effectiveness in preventing and managing a wide range of fungal and bacterial diseases. It is commonly used on fruit-bearing plants, vegetables, and various plantation crops. A notable characteristic of Bordeaux mixture is its low solubility in water and its non-volatile nature, making it highly persistent even under rainy conditions. This attribute enables it to provide extended protection, especially when applied at the right time—typically after harvest and before the onset of wet weather.

Another advantage of Bordeaux mixture lies in its copper content, which gives it a multi-site mode

of action. This makes it a useful tool in strategies aimed at managing pesticide resistance, as pathogens find it more difficult to develop resistance to compounds that act on multiple biological targets. Despite its many benefits, caution is advised during application. Spraying Bordeaux mixture on newly growing leaves can lead to phytotoxicity, causing damage to tender plant tissues. Hence, its use must be timed carefully to avoid harming young foliage.

Prime Minister's Emphasis on 'Vocal for Local' as a Pathway to a Developed India

- The Prime Minister has urged citizens nationwide to celebrate the upcoming festive season by embracing **Swadeshi goods** and adopting the path of an **Aatmanirbhar Bharat**—a self-reliant India—to fulfill the vision of a **Viksit Bharat** (developed nation). The **'Vocal for Local'** campaign encourages the country to prioritize the production, supply, and consumption of indigenous commodities.
- The rationale behind this emphasis is multifaceted. Economically, self-reliance strengthens the country's resilience against global disruptions, such as ongoing geopolitical conflicts and trade tensions exemplified by recent disproportionate tariffs imposed by the United States. Demographically, boosting domestic manufacturing, micro, small, and medium enterprises (MSMEs), and agriculture is essential for creating employment opportunities for India's young population.
- From a national security perspective, enhancing indigenous technological capabilities ensures data security and protection against cyber threats. Sustainable development goals also align with this vision, as local production promotes resource efficiency, recycling, and reduced carbon footprints, supporting India's climate commitments. Diplomatically, self-reliance is not isolationism; instead, it equips India to compete globally and become a dependable supplier in sectors like pharmaceuticals, IT, green energy, and digital solutions.
- In conclusion, a self-reliant India aims to build robust domestic capabilities that drive economic strength, social inclusion, technological progress, and strategic autonomy, while remaining integrated with the global economy.
- Significant measures taken toward achieving **Aatmanirbhar Bharat** and promoting **'Vocal for Local'** include policy and structural reforms such as the **Aatmanirbhar Bharat Abhiyan** (a stimulus package equivalent to around 10% of GDP in 2020), **Production Linked Incentive (PLI) schemes** for various sectors, and ease of doing business reforms including simplification of labor laws.
- Infrastructure development initiatives include the **PM Gati Shakti Master Plan** and the **National Infrastructure Pipeline**. Digital self-reliance efforts encompass building Digital Public Infrastructure and initiatives like **Semicon India** and the **India Semiconductor Mission**. To further promote local products, the Prime Minister advocates the mantra of **'Khadi for Fashion, Khadi for Nation,'** enforces mandatory procurement of local goods through government e-marketplaces, and supports schemes such as the **One District One Product (ODOP)** and **GI-tagged products**, alongside the **'Vocal for Local'** initiative spearheaded by NITI Aayog.

Bond Market in India – Rising Yields Despite RBI Rate Cuts

In recent months, India's bond market has shown signs of tension, with the 10-year benchmark government bond yield increasing by approximately 26 basis points, despite the Reserve Bank of India (RBI) reducing the repo rate by a cumulative 100 basis points over a seven-month period. This apparent contradiction reflects deeper concerns among investors regarding inflationary pressures, fiscal risks, and the government's expanding borrowing requirements.

Understanding the Bond Market in India

- The bond market in India serves as a structured platform through which the government, corporations, and public sector entities raise capital by issuing debt instruments. Beyond merely offering investment opportunities, the bond market is integral to the country's economic health and financial infrastructure.
- It plays a critical role in funding national development. For instance, when the

government requires capital for building roads, hospitals, schools, or investing in clean energy projects, it issues bonds to raise funds. Similarly, the corporate bond market allows private businesses to mobilize resources for expansion, project execution, or restructuring existing debt, thereby supporting industrial and economic growth.

- Moreover, the bond market influences the broader interest rate environment. Bond yields—the returns expected by investors—act as a benchmark for interest rates across the economy, helping shape monetary conditions.

Structure of the Indian Bond Market

India's bond market is divided into primary and secondary segments. The **primary bond market** is where issuers—whether governmental or corporate—offer bonds for the first time, receiving direct capital from investors. The **secondary bond market** allows trading of these previously issued bonds among investors. Prices in this market are influenced by changes in interest rates, issuer credibility, and macroeconomic factors, presenting both risks and opportunities.

There are several categories of bonds available for investment in India:

- The **government bond market** includes:
  - **Treasury Bills** (T-Bills): Short-term instruments with maturities up to one year, preferred for their safety and liquidity.
  - **Government Securities (G-Secs)**: Long-term bonds maturing between 2 and 30 years, often used to fund infrastructure.
  - **State Development Loans (SDLs)**: Issued by state governments to fund regional development.
- The **municipal bond market** enables state and urban local bodies to finance infrastructure such as water supply or transport networks.
- The **corporate bond market**, while riskier than government bonds, offers higher coupon rates, attracting investors seeking better returns.

In terms of regulation, **government bonds** fall under the purview of the RBI, while **corporate bonds** are overseen by the Securities and Exchange Board of India (SEBI).

Recent Developments and Market Dynamics

Despite policy rate cuts by the RBI, the 10-year bond yield has climbed from 6.34% to 6.60%. Traditionally, rate cuts are associated with falling bond yields, as borrowing becomes cheaper and bond prices rise. However, the current increase signals market anxiety over inflation, fiscal slippage, and increasing government borrowing. Rising yields also imply falling bond prices, indicative of sustained selling pressure.

The RBI, despite cutting rates earlier, has maintained a hawkish stance on inflation. The Monetary Policy Committee (MPC) has chosen to keep key policy rates unchanged:

- **Repo Rate:** 5.50%
- **Standing Deposit Facility (SDF):** 5.25%
- **Marginal Standing Facility (MSF):** 5.75%

In terms of projections, GDP growth for 2025–26 is estimated at 6.5%, while inflation for the same year is revised downward to 3.1%. However, inflation is expected to climb again to 4.9% in the first quarter of 2026–27, indicating persistent price pressures in the medium term.

Yield Curve and Investor Sentiment

The yield curve in India has steepened, with long-term bond yields rising more sharply than short-term ones. This reflects investor expectations of higher future borrowing costs and concerns that inflation may not be as subdued as hoped. Mutual fund managers interpret this as a sign that the RBI is prioritising inflation containment over short-term economic growth.

GST Reform and Fiscal Worries

A major fiscal development adding to investor unease is the proposal to streamline the GST structure. The plan is to reduce the existing four tax slabs (5%, 12%, 18%, and 28%) to two (5% and 18%), while retaining a 40% rate for sin goods. Although intended to simplify taxation, the reform could potentially result in a revenue shortfall of ₹50,000–60,000 crore.

This possible fiscal slippage may compel the government to increase borrowing, leading to a rise in bond supply and, consequently, upward pressure on yields.

Potential Corrective Measures

To address these challenges, the government could revise its borrowing strategy, shifting towards short- or medium-term debt instruments

to ease pressure on long-term yields. The RBI, on its part, has several tools at its disposal:

- **Open Market Operations (OMOs):** The RBI can purchase long-term bonds from the market to reduce excess supply and lower yields.
- **Operation Twist:** This involves simultaneously buying long-term bonds and selling short-term ones to flatten the yield curve and manage interest rate expectations.

Forward Outlook

Given the inflation outlook, immediate rate cuts are unlikely. However, if inflation continues to moderate in the coming quarters, the RBI may consider adopting a more accommodative policy stance to support economic growth. In such a scenario, long-duration bonds may experience a revival, and yields could soften over the medium term.

Conclusion

The future trajectory of India's bond market will largely depend on how effectively the RBI can balance inflation management with the government's fiscal discipline. Strategic borrowing by the government and timely policy interventions—such as OMOs and Operation Twist—can help stabilize bond yields. This would, in turn, pave the way for growth-oriented monetary policy once inflationary risks are brought under control.

Digital Yen – DCJPY

- In a landmark development, **Japan Post Bank** has announced plans to launch the **Digital Yen (DCJPY)** by **fiscal year 2026**, making it one of the most significant blockchain-based financial initiatives with direct government involvement. The digital currency is being developed in collaboration with **DeCurret DCP**, a subsidiary of **Internet Initiative Japan**, and is fully **backed 1:1 by the Japanese yen**.
- Unlike conventional **stablecoins**, DCJPY is issued through the **regulated banking system**, which gives it additional credibility, security, and trustworthiness. Its design aligns closely with the principles of **mainstream financial integration**, offering depositors a **blockchain-powered currency** that combines the benefits of decentralisation with the reliability of traditional fiat systems.
- Once operational, users will be able to **convert their yen deposits into DCJPY tokens**. These tokens can be used for **real-time digital transactions**, particularly in the realms of **digital securities**, **tokenized assets**, and **blockchain-based settlements**. Every transaction will be logged on a **secure blockchain ledger**, ensuring full traceability, transparency, and efficiency.
- DCJPY's primary features include **instant settlement capability**, **no volatility risk**, and **user accessibility through Japan Post Bank's retail infrastructure**. It is uniquely positioned as a **tokenised deposit currency**, clearly distinguished from private stablecoins that are often issued by unregulated entities and may be subject to price fluctuation.

The DCJPY initiative is a strategic move to **expand the use of blockchain technologies in everyday finance**, aiming not only to improve transactional speed and transparency but also to serve as a blueprint for **future state-backed digital currencies** worldwide.

The World Liberty Financial Tokens ($WLFI)

- The **World Liberty Financial tokens ($WLFI)**, tied to the **Trump family's entry into the cryptocurrency market**, have recently started trading on major exchanges such as **Binance**, **OKX**, and **Bybit**. Launched in 2024, the token is a central part of the **World Liberty Financial DeFi platform** and operates alongside a stablecoin issued by the same entity. Reports suggest that **Donald Trump himself has earned over $500 million** from this venture, underscoring the scale and financial significance of the project.
- Initially offered as **non-tradable governance tokens**, early holders of $WLFI were granted **voting rights** on key decisions such as protocol upgrades or code amendments. Now made **tradable**, the token is available on several top-tier exchanges where it supports both **spot trading**—which allows direct ownership and withdrawal—and **perpetual futures**, a more complex form of trading that involves leverage and greater financial risk.
- The token had a **launch price of approximately $0.31**, according to CoinGecko data. Its trading activity, especially across exchanges like KuCoin, MEXC, and Gate.io, has introduced **high volatility** and

new streams of **liquidity** and **fees** for the platforms involved. Governance remains integral to the token, with **future allocations and key decisions** determined by community voting.

- The launch of $WLFI has attracted considerable attention for its **intersection of politics and decentralized finance (DeFi)**. As a former U.S. President is involved, the initiative has raised potential **conflict-of-interest concerns** in relation to crypto regulation. However, it continues to draw widespread investor interest, not just for its utility or innovation, but due to the powerful **brand association with Trump**, thereby merging political identity with speculative digital finance in an unprecedented manner.

High Performance Biomanufacturing Platforms

- The **Department of Biotechnology (DBT)** and the **Biotechnology Industry Research Assistance Council (BIRAC)** recently launched the High-Performance Biomanufacturing Platforms in New Delhi under the broader framework of the **BioE3 Policy**. This initiative represents a national network comprising advanced bio-foundries and biomanufacturing hubs, designed to provide state-of-the-art tools, cutting-edge technologies, and world-class infrastructure. The objective is to facilitate the seamless transition of bio-based innovations from research laboratories to large-scale production environments.
- The launch was officiated by **Union Minister of State for Science & Technology, Jitendra Singh**. The primary goal of the platform is to fast-track the growth of biomanufacturing in India, thereby reducing dependency on imports, promoting environmentally sustainable green growth, and establishing a multi-trillion-dollar bioeconomy by the year 2047. This platform is intended to support a wide array of stakeholders, including start-ups, small and medium enterprises (SMEs), academic institutions, and the biotech industry, by enabling innovation and commercialization in biotechnology.
- The High-Performance Biomanufacturing Platforms are part of the 21 bio-enablers under the BioE3 policy and encompass diverse areas such as microbial strains and smart proteins, probiotics and bio-based chemicals, cell therapies and mRNA-based medicines, marine bio-innovations, and sustainable biofuels. The platform aligns closely with India's climate commitments and the vision of **Atmanirbhar Bharat (self-reliant India)**. Besides fostering industrial growth, it is poised to generate employment opportunities and enhance capacity building within the biotechnology sector.
- The significance of this initiative is multi-faceted. Economically, it positions India as a future global leader in the bioeconomy, accounting for nearly one-fifth of the global biomanufacturing capacity. Strategically, it aims to bolster self-reliance by reducing import dependence in biotechnology products and processes. On the social front, it seeks to create jobs, nurture youth-led innovation, and contribute towards building a developed nation—referred to as **Viksit Bharat by 2047**.

Supreme Court Orders Timely Clearance of Regulatory Assets by DISCOMs

In a significant judgment aimed at restoring financial discipline in the power sector, the Supreme Court has directed State Electricity Regulatory Commissions (SERCs) and electricity distribution companies (DISCOMs) to clear all accumulated regulatory assets within four years. Any regulatory assets created after the issuance of this order must be liquidated within a maximum of three years. The Court has further recommended a cap, limiting the creation of regulatory assets to 3% of a DISCOM's Annual Revenue Requirement (ARR). This move is a decisive step toward introducing transparency and reinforcing fiscal accountability across India's electricity sector.

The ruling addresses a systemic problem that has long plagued India's power distribution ecosystem—accumulated regulatory assets that represent unrecovered costs. These costs, if left unchecked, contribute to financial stress within DISCOMs, lead to tariff distortions, and ultimately impact consumers adversely. The Supreme Court's intervention marks a turning point in how these deferred costs will be handled moving forward.

What Are Regulatory Assets?

Regulatory assets arise when there is a mismatch between a DISCOM's Average Cost of Supply (ACS) and its Annual Revenue Requirement (ARR).

- **Average Cost of Supply (ACS)** refers to the actual cost incurred by a DISCOM to supply a unit of electricity.
- **Annual Revenue Requirement (ARR)** represents the income a DISCOM earns through consumer tariffs and subsidies provided by the state government.

When the ACS exceeds the ARR, the DISCOM suffers a per-unit loss. To avoid imposing sudden tariff hikes on consumers, regulators allow these unrecovered costs to be deferred and recorded as regulatory assets. These are typically recoverable at a later date, often with added interest.

For example, if the ACS is Rs. 7.20 per unit while the ARR is Rs. 7.00, there is a gap of Rs. 0.20 per unit. If the DISCOM supplies 10 billion units, the resulting revenue shortfall would be Rs. 2,000 crore. Rather than burdening consumers with an immediate hike, this shortfall is treated as a regulatory asset to be recovered gradually.

Why the ACS-ARR Gap Persists

The consistent creation of regulatory assets reflects deeper, structural flaws within the power sector:

- **Tariffs are often not cost-reflective**, influenced by political pressure to keep consumer prices low.
- **Subsidy payments from state governments are frequently delayed**, leaving DISCOMs to bear the cost of supplying power to agricultural and low-income consumers.
- **Fuel price fluctuations**, particularly in coal and gas, can abruptly raise the cost of power procurement, widening the ACS-ARR gap.
- **Operational inefficiencies**, such as high transmission and distribution losses, add to the financial strain.

These problems have become systemic. In FY 2021–22 alone, Tamil Nadu reported regulatory assets worth Rs. 89,375 crore, while Delhi's DISCOMs collectively held over Rs. 66,000 crore. The widespread nature of these unrecovered costs demonstrates that the issue is neither localised nor incidental, but rather a sector-wide crisis.

Consequences for Consumers and DISCOMs

Consumer Impact

In the short term, regulatory assets offer consumers relief from abrupt tariff increases. However, the deferred nature of recovery results in steeper tariff hikes later, compounded by interest on the unrecovered amounts. In Delhi, for instance, DISCOMs would need to recover Rs. 16,580 crore annually over four years. This could raise electricity costs by approximately Rs. 5.5 per unit for consumers — a substantial burden.

Impact on DISCOMs

For DISCOMs, the accumulation of regulatory assets creates persistent cash flow problems. With large sums locked in deferred recoveries, DISCOMs struggle to make timely payments to power generators. To bridge the financial gap, they often resort to borrowing, which increases their debt load and adds interest costs.

This financial stress limits DISCOMs' capacity to invest in modernizing grid infrastructure, integrating renewable energy sources, or improving consumer services. The result is a self-perpetuating cycle of inefficiency, inadequate service delivery, and mounting debt.

Bridging the Gap: Structural Reforms Needed

To reduce the sector's reliance on regulatory assets and improve overall financial health, a combination of policy and operational reforms is required:

- **Adoption of cost-reflective tariffs**, with safeguards to protect low-income consumers through targeted subsidies.
- **Ensuring timely release of subsidies** by state governments to prevent revenue shortfalls.
- **Introduction of automatic fuel cost adjustment mechanisms**, such as the Fuel and Power Purchase Cost Adjustment (FPPCA), allowing tariffs to respond promptly to fuel price changes.
- **Annual "true-up" exercises** to reconcile projected and actual expenditures, minimizing the accumulation of deferred costs.
- **Regulatory enforcement of financial discipline**, including transparent accounting practices, setting caps on regulatory asset accumulation, and mandating strict timelines for recovery.

Learning from Global Models

Several international frameworks offer insights into more sustainable models of electricity regulation and asset recovery:

- The **Regulated Asset Base (RAB) model** permits utilities to recover infrastructure investments through consumer tariffs, ensuring predictable long-term revenue and attracting investment.
- The **RIIO model (Revenue = Incentives + Innovation + Outputs)** used in the UK links tariff income to performance metrics such as reliability, customer service, and carbon reduction, encouraging operational efficiency.
- **Deployment of digital infrastructure**, including smart grids and tools from the India Energy Stack, can greatly enhance transparency, asset tracking, and efficiency-based recovery mechanisms.

These global approaches suggest that regulatory assets should be treated as exceptional, time-bound mechanisms for managing financial imbalances — not as recurring tools that allow structural inefficiencies to persist unchecked.

Conclusion

The Supreme Court's directive to clear existing regulatory assets within fixed timeframes and cap future accumulation marks a pivotal shift in India's power sector governance. By enforcing financial discipline and mandating transparency, the ruling aims to correct long-standing imbalances that have burdened both DISCOMs and consumers. However, the success of this initiative will depend on the proactive implementation of structural reforms, timely state interventions, and robust regulatory oversight.

India's Green Energy Paradox: Capacity Without Utilisation

Context

India is currently grappling with a "green energy paradox"—a situation where significant renewable energy (RE) capacity exists but remains underutilised. As of now, 44 GW of RE capacity is ready for deployment but lies idle due to lack of demand-side readiness and absence of Power Purchase Agreements (PPAs). This contradiction reflects deeper structural, financial, and policy-related challenges within India's energy ecosystem, where capacity creation is outpacing the systems needed to absorb and utilise it effectively.

Understanding the Green Energy Paradox

The paradox refers to a disconnect between India's expanding renewable supply and its ability to integrate that energy into the grid or consumer markets. While India continues to invest in renewable generation, this supply remains stranded due to systemic limitations such as discom reluctance, lack of grid readiness, storage challenges, and sluggish demand electrification. Thus, the paradox is rooted not in a shortage of green energy but in the absence of a conducive environment for its uptake.

Current Status of India's Energy Mix and Renewable Challenges

- Despite India's climate commitments and growing RE capacity, the domestic energy mix continues to be dominated by fossil fuels. In FY2022–23, coal and lignite accounted for nearly 79% of India's energy production. In contrast, excluding large hydropower, renewables contributed just 3.8% of the domestic energy supply. Simultaneously, India remains heavily dependent on imports for oil (over 85%) and gas (more than 50%), making the energy system vulnerable to global price shocks.
- While 44 GW of RE projects are technically ready for deployment, they remain stalled without PPAs. Moreover, the reliability of India's power supply remains problematic—average annual power outages (SAIDI) in India amount to approximately 600 minutes, a figure far exceeding regional peers such as Thailand (35 minutes) and Malaysia (46 minutes), indicating systemic inefficiencies that affect the credibility of RE integration.

Dimensions of the Green Energy Paradox

The paradox has both supply-side and demand-side dimensions that are interlinked yet require distinct solutions.

1. Supply-Side Readiness

- India has made significant progress in building large-scale solar and wind power infrastructure. However, in the absence of firm PPAs, much of this capacity remains unutilised. Globally, the costs of solar and wind energy have been falling, but in India, tariffs remain comparatively high due to policy bottlenecks, import duties, and financial risks associated with project execution.
- The government has introduced incentives such as the Production-Linked Incentive (PLI)

scheme and Viability Gap Funding (VGF) to support renewable investments and reduce overall costs. However, even with these supports, renewable energy that is backed by storage solutions—such as batteries or pumped hydro—remains expensive. Tariffs in such cases range from ₹6.6 to ₹9 per unit, making it less competitive than coal-based electricity.

2. Demand-Side Weaknesses

- On the demand side, power distribution companies (discoms) remain hesitant to enter long-term PPAs for RE. Coal-based PPAs are perceived as more financially stable and predictable. Integrating variable RE into the grid also imposes additional costs for balancing and transmission upgrades, further disincentivising discoms from procuring green power.
- The lack of a flexible and intelligent grid is a critical obstacle. India has not yet implemented smart meters or demand-response systems at scale, which limits the grid's ability to dynamically adjust to varying loads. Additionally, slow adoption of electric vehicles (EVs), electric cooking appliances, and industrial electrification further suppresses the potential demand for RE, contributing to the paradox of stranded capacity.

Barriers to Renewable Energy Integration

- The challenges obstructing effective integration of RE into India's energy mix can be classified into structural, environmental, and economic barriers.
- **Structurally**, discoms suffer from chronic financial distress, driven by cross-subsidisation, delayed subsidy payments, and mounting debt. These conditions make them reluctant to procure costlier renewable power. Moreover, the lack of a nationwide smart grid infrastructure prevents efficient RE dispatch and consumption.
- **Environmentally**, India's long-term coal PPAs have created a "carbon lock-in," committing states to emission-intensive energy sources for decades. At the same time, the underutilisation of available RE capacity results in delayed emissions reductions and wasted infrastructure.
- **Economically**, high capital costs driven by import duties, GST on RE components, and elevated borrowing rates make India's renewable tariffs significantly higher than global averages. Storage solutions, which are critical for stabilising renewable power, remain financially unviable without substantial subsidies or government support.

Initiatives Undertaken

- To address some of these issues, the Indian government has launched a range of policies and programmes. The National Solar Mission has expanded solar capacity, while the Hybrid Policy has promoted blending of wind and solar to mitigate intermittency. The India Semiconductor Mission (ISM) supports the electronics and storage ecosystem indirectly, contributing to renewable energy integration.
- The PLI scheme for advanced chemistry batteries seeks to incentivise domestic storage manufacturing, aiming to reduce reliance on imports and lower costs. Renewable Purchase Obligations (RPOs) legally require states to procure a fixed share of electricity from renewable sources. Additionally, the Green Open Access Rules of 2022 empower industrial users to purchase renewable power directly, bypassing discoms. The National Green Hydrogen Mission is also laying the groundwork for hydrogen to serve as a long-term storage solution and a clean alternative fuel.

The Way Forward: Targeted Reforms

- To resolve the green energy paradox, India must shift from capacity creation to capacity utilisation by pursuing targeted reforms across multiple fronts.
- Enhancing the storage ecosystem is critical. Scaling up Viability Gap Funding for battery storage and incentivising pumped hydro projects and indigenous battery manufacturing under the PLI scheme will make storage-backed RE more affordable and reliable.
- Accelerating demand electrification will also be vital. This includes widespread promotion of electric vehicles, establishment of charging infrastructure, and encouraging electric cooking and industrial heating—all of which would expand the consumer base for renewables.
- Smart grid reforms are essential. Deploying smart meters nationwide would enable real-time load balancing, while transitioning from

rigid "must-run" mandates to a market-based dispatch model for RE would make integration more efficient and economically viable.
- Discom reform is non-negotiable. Financial restructuring tied to performance accountability, adoption of cost-reflective tariffs, and reduction of political interference would strengthen discoms' capacity to support the green transition.
- A differentiated approach to RPOs, tailored to the resource availability and grid readiness of each state, would allow for more realistic and effective implementation of renewable mandates across the country.

Conclusion

India's green energy paradox underscores that the success of the energy transition lies not just in expanding renewable generation capacity but in ensuring systemic absorption and demand-side transformation. Without improvements in grid flexibility, storage affordability, and the financial health of discoms, renewable energy will remain stranded and underutilised. To fulfil its climate goals and ensure a secure, affordable, and reliable energy future, India must shift the policy lens from simply adding capacity to optimising its utilisation, aligning green ambitions with operational realities.

Equity Derivatives – New SEBI Framework

In a move to curtail risk arising from high-exposure trading, SEBI has introduced a fresh framework to monitor intraday positions in equity index derivatives, enhancing overall market safety and transparency.

Understanding Derivatives:

Derivatives are financial contracts whose value is tied to the performance of an underlying asset. They allow investors to speculate on price movements, hedge against potential losses, or optimize returns without owning the actual asset.

Equity Derivatives Explained:

These are financial instruments linked to the value of a stock or stock index. Commonly used for risk management, speculative trading, or portfolio diversification, equity derivatives come in several forms:

- **Futures Contracts:** Binding agreements where buyers and sellers commit to transact an equity asset at a fixed future price and date. Popular examples include equity index futures like the BSE S&P and Nifty IT.
- **Options:** These give investors the right, but not the obligation, to buy (call) or sell (put) an underlying stock/index at a set price before or on a specific date.
- **Swaps:** Involve the exchange of cash flows based on equity asset returns, used for hedging or speculative purposes.
- **Forwards:** Similar to futures but non-standardized and traded over-the-counter, with greater customization but less liquidity.

Benefits of Equity Derivatives:

These instruments offer multiple advantages such as:

- Leverage through smaller capital requirements.
- Protection against market volatility.
- Cost-effective access to premium assets.
- Portfolio diversification and flexibility.
- Opportunities for arbitrage and income generation.
- High liquidity and better risk management strategies.

This evolving regulatory oversight seeks to balance market freedom with systemic stability.

BHARATI Initiative

- The Agricultural and Processed Food Products Export Development Authority (APEDA) has recently launched a transformative initiative named **BHARATI**, which stands for **Bharat's Hub for Agritech, Resilience, Advancement and Incubation for Export Enablement**. The primary objective of this initiative is to empower 100 startups operating in the agri-food and agri-tech sectors, by fast-tracking their development, fostering innovation, and unlocking new export avenues for young entrepreneurs.
- Envisioned as a key component of APEDA's broader strategy to achieve **$50 billion in agri-food exports for its Scheduled Products by 2030**, BHARATI is designed to augment existing incubation efforts led by the industry and government. It is intended to bolster the agricultural and food processing landscape, especially in high-value segments like **GI-tagged products, organic produce, superfoods, novel processed agri-foods,**

livestock products, and AYUSH-based items.

- The initiative also aims to attract technologically advanced startups developing solutions based on **AI-powered quality control, blockchain for traceability, IoT-enabled cold chain systems**, and **agri-fintech** platforms. In addition, it focuses on addressing key bottlenecks in exports such as **product development, value addition, quality assurance, perishability, wastage, and logistical constraints**.
- BHARATI proposes to build a robust collaborative ecosystem that brings together agri-food innovators, technology solution providers, and startups focusing on SPS (Sanitary and Phytosanitary) and TBT (Technical Barriers to Trade) compliance. The goal is to develop **scalable, cost-effective solutions** that improve India's global export competitiveness.
- To raise awareness and ensure inclusivity, a **nationwide campaign** will be launched, inviting startups to apply via the APEDA website. Following a selection process, 100 startups will be shortlisted to participate in a **three-month acceleration programme**. This programme will focus on refining product development, enhancing export preparedness, ensuring regulatory compliance, improving market access, and creating collaborative responses to export challenges.
- To sustain and strengthen the ecosystem, APEDA will collaborate with **state agricultural boards, agricultural universities, institutions like IITs and NITs, industry associations, and existing startup accelerators**. The inaugural cohort will serve as a pilot model, laying the groundwork for a **scalable, annual incubation programme** designed to foster continuous innovation and support long-term growth in agri-exports.
- Overall, BHARATI represents a major step toward strengthening India's agricultural and processed food export ecosystem, combining startup innovation with strategic export enablement.

GST 2.0 Reforms: Two-Slab Structure Introduced Alongside Major Rate Cuts

At its 56th meeting, the Goods and Services Tax (GST) Council approved a sweeping overhaul of the indirect tax framework, marking the next phase of GST reforms. A simplified two-slab rate structure—5% and 18%—was introduced, replacing the earlier multi-tiered system. Additionally, a 40% "demerit rate" will apply exclusively to sin and luxury goods, streamlining what has been an evolving indirect taxation regime over the past eight years.

Purpose and Vision of GST 2.0

The restructured GST framework is aimed at easing the burden on ordinary citizens while enhancing economic efficiency. The reforms are designed to:

- Lower the tax burden on essential items and services used by the common people.
- Reduce the number of tax slabs for greater simplicity and clarity.
- Address working capital constraints for businesses.
- Improve operational efficiency by enabling automated registrations and refunds.

The GST Council's decision reflects a broader effort to make the tax regime more people-centric, business-friendly, and predictable.

Implementation Timeline and Governance

All revised GST rates—except those related to tobacco—will come into effect starting September 22, coinciding with the first day of Navratri. Despite initial concerns raised by some states over potential revenue losses, the council meeting, chaired by Finance Minister Nirmala Sitharaman and attended by representatives from 31 states and Union Territories, reached a consensus in a single day.

Structural Changes: Two-Slab and Demerit System

The previous slab structure of 5%, 12%, 18%, and 28% has now been rationalised. The new system consists of:

- A lower slab of **5%** for essential goods and services.
- A standard slab of **18%** for most other taxable items.
- A **40% demerit slab** designated exclusively for sin and super-luxury goods.

This streamlining aims to eliminate complexities like the inverted duty structure and reduce litigation and compliance-related disputes.

Focus on Household and Daily-Use Goods

Several key consumer goods and household items have seen significant tax reductions under the 5% slab, offering direct benefits to middle-class families and daily wage earners:

- Essential packaged foods such as butter, cheese, juices, coconut water, pasta, and nuts now attract 5% GST.
- Household products including soaps, shampoos, hair oil, bicycles, and kitchenware have also been moved to the 5% category.
- Widely consumed food products such as ultra-high temperature milk, paneer, chapatis, khakra, and pizza bread are now GST-exempt.

Healthcare and Essential Services: Major Relief

The reforms provide critical tax relief in the healthcare sector:

- GST on medical essentials like gauze, bandages, diagnostic kits, and oxygen equipment has been reduced from 12% to 5%.
- A set of 33 life-saving drugs has been exempted entirely from GST.
- Spectacles for vision correction will now attract only 5%, down from 28%.
- Health and life insurance products—including term, ULIP, endowment, and family floater policies—are now fully GST-exempt.

White Goods and Automobile Sector Benefits

Substantial rate cuts in the white goods and automobile sectors aim to boost consumer spending and demand:

- Air conditioners, televisions, and dishwashers have moved from 28% to 18%.
- Small cars (petrol up to 1200cc/diesel up to 1500cc), motorcycles under 350cc, and all auto parts are now taxed at 18%.
- Commercial vehicles including buses, trucks, and ambulances will also see the benefit of the 18% slab.
- Electric vehicles remain taxed at a concessional 5%.
- Luxury vehicles, private-use helicopters, yachts, and high-end motorcycles (above 350cc) will fall under the new 40% demerit rate.

Insurance and Personal Services Reformed

The Council has extended tax relief to several personal and lifestyle services:

- Life and health insurance products are now GST-exempt.
- Services such as gym memberships, salons, barbershops, and yoga classes will now attract only 5% GST, down from 18%.

Key Sector-Specific Reforms

The reforms also deliver targeted relief for key industrial and agricultural sectors:

- **Textiles:** GST on manmade fibre has been reduced from 18% to 5%, and yarn from 12% to 5%, supporting employment-intensive segments.
- **Fertilisers:** Key inputs like sulphuric acid, nitric acid, and ammonia have seen their tax rate cut from 18% to 5%, lowering the cost of fertiliser production.

Financial Implications and State-Level Concerns

While some states expressed concerns about potential revenue losses estimated between ₹80,000 crore and ₹1.5 lakh crore, the Centre has projected a net fiscal impact of ₹48,000 crore based on 2023–24 consumption levels. Despite differing views, the states and the Centre reached consensus, prioritising broader economic and social goals.

Reception and Industry Response

The reforms have been met with widespread approval from industry stakeholders. Bodies like the Confederation of Indian Industry (CII) have termed the reforms "pathbreaking," expecting:

- Greater consumer demand through lower end prices.
- Reduced litigation and tax-related disputes.
- Improved compliance due to simpler rate structures.
- Boosts in job creation and supply chain efficiency.

Prime Minister Narendra Modi described the reforms as a “pro-people” move that will benefit farmers, MSMEs, the youth, and middle-class families, especially women-led households.

GST 2.0 and the Road Ahead

Looking forward, the new two-slab GST model seeks to align the tax system with India’s long-term growth goals while keeping it responsive to public needs. The 40% slab for sin and luxury goods ensures continued revenue from non-essential items, even as essential goods and

services become more affordable for the average Indian. Over time, this structure is expected to provide greater stability, transparency, and inclusivity in India's tax system.

Mounting Pressures on India's Export Landscape

India's merchandise exports are currently facing significant headwinds, most notably a major tariff escalation by the United States, which has imposed a 50% levy on a substantial share of Indian goods. This is particularly concerning given that the US constitutes nearly one-fifth of India's export market. The tariff move, which undermines global trade norms under the World Trade Organization (WTO), arrives at a time when India's overall share in global exports has remained largely stagnant, despite some earlier advances.

Tracing India's Export Journey: Gains, Stagnation, and Missed Potential

- India's export trajectory has seen phases of rapid expansion followed by prolonged stagnation. From the early 1990s through to 2010, India witnessed robust growth in its export-to-GDP ratio, which climbed from 7.1% in 1990 to 20.4% in 2010. This growth was fuelled by globalisation, domestic reforms, and a simultaneous surge in both merchandise and services exports.
- However, this momentum did not continue into the next decade. Between 2010 and 2020, India's export-to-GDP ratio fell to 17.7%, only to recover marginally to 21.2% by 2024—levels similar to those recorded in 2016. In terms of global merchandise export share, India has increased its presence from 0.51% in 1990 to 1.81% by 2024, although most of this progress occurred in the earlier two decades.
- On a sectoral level, agriculture has seen moderate gains, increasing its global share from 0.85% in 1990 to 2.22% in 2024. Fuel and mining exports have expanded more sharply, from 0.32% to 2.62%, primarily driven by petroleum products. In manufacturing, although the sector has tripled its global share to 1.73%, this is still considered underwhelming. Nonetheless, pockets of strength remain in textiles (5.77%), pharmaceuticals (2.56%), and steel (2.64%).
- By contrast, services exports have outperformed goods. From holding 2.9% of the global services export market in 2010, India now commands a 4.2% share in 2024. This growth has been largely powered by sectors such as IT-BPM, telecom, and business services, while many other service categories continue to underperform.

Core Structural Constraints and Emerging Global Risks

- India's export challenge is no longer simply about external demand—it reflects deeper structural issues. The recent tariff shock from the United States highlights the weaponisation of trade policy and presents a severe threat to India's most lucrative market. Combined with a wider global slowdown, this could sharply reduce demand for Indian exports.
- Beyond external shocks, India's declining merchandise export share suggests eroding competitiveness. High input costs, inadequate logistics infrastructure, and complex regulatory processes hinder the growth of export sectors. Compounding the problem is India's increasing reliance on services exports, which now contribute more than twice the value of merchandise exports. Yet this services dominance is built on a narrow base: IT/ITES form the core, with telecom and business services accounting for around 40% of total services exports. Other areas remain significantly underdeveloped.
- In manufacturing, competitive strength is limited to a handful of industries such as textiles, pharmaceuticals, steel, chemicals, and telecom equipment. High-value manufacturing sectors—electronics, precision engineering, advanced materials—continue to be underrepresented, curtailing India's potential in global value chains.
- External risks also loom large. The global trend towards protectionism, the rise of tariff and non-tariff barriers, and strategic shifts such as reshoring and nearshoring are redefining trade flows. Moreover, the weakening of the WTO's dispute resolution system has curtailed India's ability to contest such actions, reducing its recourse in international trade disputes.

Recent Measures to Address Export Constraints

- India has rolled out several initiatives to address its export bottlenecks. The flagship *Export Promotion Mission (EPM)* launched under the 2025 strategy includes sector-specific programmes such as *Niryat Protsahan*, which aims to ease credit availability for exporters, and *Niryat Disha*, which focuses on improving market access, branding, and logistics.
- The *Remission of Duties and Taxes on Export Products (RoDTEP)* scheme has been expanded in 2025 to include sectors like steel, pharmaceuticals, and chemicals—even covering Domestic Tariff Area (DTA) units. This scheme is designed to refund previously non-rebatable central, state, and local taxes embedded in exports.
- Additionally, the *Export Promotion Capital Goods (EPCG)* scheme has been simplified. Under 2025 reforms, compliance requirements have been eased, deadlines extended, and fees reduced for struggling industries seeking to import capital goods duty-free for export production.
- To support agriculture, the *BHARATI* initiative has been launched by the Agricultural and Processed Food Products Export Development Authority (APEDA). This 2025 programme seeks to incubate 100 agri-food startups, leveraging AI-driven quality checks and blockchain-based traceability systems to enhance export readiness.
- The creation of *E-Commerce Export Hubs* is another noteworthy step. These hubs provide essential warehousing, customs clearance, and logistics infrastructure. A raised courier export threshold further benefits MSMEs and small-scale exporters, facilitating their integration into global supply chains.

Consequences for Growth, Employment, and Economic Stability

- A prolonged stagnation in exports poses serious risks to India's broader economic trajectory. A slowdown in external trade growth will directly impact GDP, which is already heavily reliant on domestic demand. Export weakness also curtails employment opportunities, especially in labour-intensive manufacturing sectors such as textiles, leather, and light engineering, which traditionally serve as large job creators.
- From a macroeconomic perspective, India's rising import bill—especially in energy and electronics—combined with sluggish exports, could undermine the country's balance of payments and external stability. Additionally, India's diminishing role in global trade may weaken its geopolitical influence, reducing its leverage in international negotiations and trade agreements.

Strategic Priorities for a Renewed Export Push

- To revive export momentum, India must take a multi-pronged approach. Enhancing the competitiveness of its manufacturing sector is crucial. This involves upgrading logistics infrastructure to bring costs down from the current 13–14% of GDP to the global benchmark of 8%. Reducing regulatory hurdles and integrating Indian firms more effectively into global value chains are equally important. Targeted investment in emerging sectors such as electronics, electric vehicles (EVs), green technologies, and semiconductors should form the bedrock of future industrial strategy.
- India also needs to diversify its export markets. Reducing dependence on the US and European Union requires strategic expansion into under-tapped regions such as Africa, Latin America, and ASEAN countries. This can be supported by leveraging free trade agreements already in place (such as those with the UAE and Australia) and fast-tracking negotiations with key partners like the United Kingdom.
- In services, the narrow IT-centric base must be broadened. Potential lies in developing sectors such as healthcare, education, tourism, financial services, and creative industries, all of which can contribute meaningfully to export revenues.
- Policymakers must also focus on institutional and policy frameworks. India should play an active role in advocating for WTO reform, while simultaneously strengthening bilateral and multilateral trade agreements. Incentivising research and development, along with encouraging quality and standards compliance among MSMEs, will be vital for long-term export growth.
- In agriculture and fuels, the shift must be towards value-added exports. This includes moving from the export of raw commodities

to branded, processed agricultural goods and promoting higher value addition in the petrochemicals sector.

Conclusion

India's export sector is facing a dual challenge of external trade disruptions and internal inefficiencies. While global shocks such as tariffs and protectionism are beyond its control, much of the stagnation also stems from eroded domestic competitiveness. Reinvigorating exports will require deep structural reforms in manufacturing, a strategic reorientation of markets, and a broader base of services exports. Only through such a comprehensive strategy can India regain its export momentum and secure its place in the rapidly evolving global trade architecture.

Incentive Scheme to Promote Critical Mineral Recycling

- The Union Cabinet has given its approval to an Incentive Scheme amounting to ₹1,500 crore, aimed at establishing domestic recycling capacity for the separation and recovery of critical minerals from secondary sources. This scheme forms an integral part of the National Critical Mineral Mission (NCMM), which seeks to strengthen domestic capabilities and enhance supply chain resilience for critical minerals.
- The scheme will be implemented over a six-year period, beginning in the financial year 2025–26 and continuing until 2030–31. With a total financial outlay of ₹1,500 crore, the initiative targets the development of a sustainable ecosystem for critical mineral recycling. Eligible feedstock under the scheme includes electronic waste (e-waste), Lithium-Ion Battery (LIB) scrap, and other forms of scrap distinct from e-waste and LIB.
- The beneficiaries of the scheme will include both large, well-established recyclers and smaller or emerging recyclers, including start-ups. To foster inclusivity and encourage participation by new entrants, one-third of the total financial outlay has been reserved specifically for small recyclers.
- Investments eligible for support under this scheme encompass the establishment of new recycling units as well as the expansion, modernization, and diversification of existing facilities. However, the incentive is strictly targeted at the recycling value chain engaged in the actual extraction of critical minerals, and not at operations limited to the production of black mass.
- Incentives under the scheme include a 20% capital subsidy on the cost of plant and machinery for those projects that begin production within the defined timeline. An additional operational subsidy, based on incremental sales, will be disbursed in two tranches—40% in the second year and 60% in the fifth year—subject to the fulfillment of defined sales benchmarks.
- To ensure widespread participation and equitable distribution of benefits, the total incentive available per entity has been capped. Large entities are eligible for a maximum of ₹50 crore, while small entities can avail up to ₹25 crore. The operational subsidies are further limited to ₹10 crore for large entities and ₹5 crore for smaller participants.
- Through the scheme, the government aims to establish a minimum of 270 kilotons of annual recycling capacity, leading to the production of approximately 40 kilotons of critical minerals each year. This is expected to attract investments worth ₹8,000 crore and generate nearly 70,000 direct and indirect employment opportunities.

Securities Appellate Tribunal (SAT)

In a recent legal move, the US-based trading firm Jane Street Group has approached the Securities Appellate Tribunal (SAT) to contest an order by the Securities and Exchange Board of India (SEBI) in connection with a suspected case of market manipulation.

About the Securities Appellate Tribunal

- The SAT is a statutory and quasi-judicial body established under the Securities and Exchange Board of India Act, 1992. It primarily adjudicates appeals against the decisions or orders issued by SEBI or by its adjudicating officers. With jurisdiction extending across India, the SAT is headquartered in Mumbai.
- Besides SEBI-related appeals, the SAT also hears cases involving orders from the Insurance Regulatory and Development Authority of India (IRDAI) and the Pension Fund Regulatory and Development Authority

(PFRDA), provided such matters have been filed before the Tribunal.

- Any individual or entity adversely affected by SEBI's actions—including market participants, listed companies, financial intermediaries, or investors—can appeal to SAT.

Composition and Eligibility

The Tribunal comprises one Presiding Officer along with a varying number of judicial and technical members, as determined by the Central Government.

The eligibility criteria for these roles are as follows:

- **Presiding Officer** must be a retired or sitting judge of the Supreme Court, the Chief Justice of a High Court, or a High Court judge with at least seven years of judicial service.
- **Judicial Members** must have served as High Court judges for a minimum of five years.
- **Technical Members** must be either:
    - Secretaries or Additional Secretaries in the Central or State Government; or
    - Individuals with a proven track record, integrity, and a minimum of 15 years' experience in financial sectors such as securities markets, insurance, pension funds, or commodities.

The Central Government appoints the Presiding Officer and Judicial Members in consultation with the Chief Justice of India or their designated nominee.

Tenure and Powers

- All members, including the Presiding Officer, are appointed for a term of five years, with eligibility for reappointment for an additional term of up to five years. However, no member may hold office beyond the age of 70.
- As a quasi-judicial authority, SAT holds powers similar to a civil court, including the authority to summon witnesses, record testimonies under oath, receive evidence, and mandate the production of relevant documents.

Appeals from SAT

Any person dissatisfied with SAT's ruling may appeal to the Supreme Court of India. However, such appeals are restricted strictly to questions of law.

India's Path to Atmanirbharta in Millets

Context

NITI Aayog's report, *"Strategies and Pathways for Accelerating Growth in Pulses towards the Goal of Atmanirbharta,"* while focused on pulses, offers broader insights into self-reliance in food crops such as millets. These crops share several common challenges, including low productivity, unstable prices, and sustainability concerns—making the lessons relevant for policy and implementation strategies aimed at millets as well.

Current Status and Trends of Millets in India

India plays a dominant role in global millet production, yet the domestic consumption and market ecosystem face critical challenges.

- India accounts for approximately **41% of global millet production**, with an annual output of around **16 million tonnes**, positioning it as the world's largest millet producer.
- Millet cultivation is **regionally concentrated**, with five states—**Rajasthan, Maharashtra, Karnataka, Uttar Pradesh, and Madhya Pradesh**—together contributing over **80%** of the country's output, pointing to a need for geographical diversification.
- Despite robust production, **per capita consumption** of millets has plummeted from **32 kg/year in the 1960s** to just **4 kg/year today**. This decline is attributed to the predominance of rice and wheat in the Public Distribution System (PDS) and in daily diets.
- On the export front, India recorded shipments of **1.8 million tonnes of millets in 2022–23**, primarily to countries such as the **UAE, Nepal, and Saudi Arabia**, signalling emerging global interest.
- The **Union Budget 2023–24** rebranded millets as **"Shree Anna"**, allocating resources for research, market linkages, and food processing initiatives to revive their relevance in the national food system.

Importance of Millets

Millets offer multifaceted advantages in terms of nutrition, environment, and rural livelihoods.

- **Nutritional Superiority**: Rich in **iron, calcium, protein, and dietary fiber**, millets can help combat widespread **malnutrition and anemia**, particularly among women and children.
- **Climate Resilience**: Requiring **70% less water than rice**, millets are drought-resistant and ideal for **arid and rainfed** regions, making them a vital crop amid growing climate stress.
- **Low-Input Farming**: Millets demand **minimal fertilizer and irrigation**, reducing cultivation costs and input dependence—especially beneficial for small and marginal farmers.
- **Food Security Enhancement**: Integrating millets into schemes like **Mid-Day Meals, ICDS, and the PDS** can improve nutritional outcomes for low-income populations.
- **Agri-Diplomacy and Branding**: As "Shree Anna," millets are now part of India's global soft power strategy, with increasing scope for export and **superfood positioning**.

Key Initiatives for Millets Promotion

India has taken several significant steps to revive millet cultivation and integrate it into mainstream agriculture and food systems.

- The **National Food Security Mission (NFSM-Millets)** promotes expansion of millet cultivation areas, seed distribution, and improved productivity.
- The **Shree Anna Mission (2023)** is a six-year national initiative focused on millet-specific **research, processing, branding**, and **market development**.
- States like **Karnataka** have pioneered millet integration into public schemes—for example, the **"Ksheera Bhagya"** program includes millets in school meals, fostering early dietary adoption.
- On the global stage, India successfully led the **UN General Assembly resolution** that declared **2023 as the International Year of Millets**, organizing international millet expos and buyer-seller meets.
- The **Agricultural and Processed Food Products Export Development Authority (APEDA)** is actively supporting **millet export promotion** through **branding, GI tagging**, and global market access, especially in the Middle East, USA, and EU.

Challenges Hindering Millets Revival

Despite policy attention, several structural barriers inhibit the mainstreaming of millets.

- **Consumer Preferences** have shifted toward rice and wheat due to **PDS subsidies** and cooking convenience, relegating millets to niche consumption.
- **Low Yields** continue to be a major concern, with millet productivity at **1.2 tonnes per hectare**, considerably below that of rice and wheat. This is due to **limited R&D**, weak hybrid seed availability, and underdeveloped agronomic practices.
- **Weak Market Linkages** and **fragmented value chains** discourage farmers, compounded by poor penetration of **Farmer Producer Organisations (FPOs)** and the absence of a **Minimum Support Price (MSP) safety net**.
- **Post-Harvest Bottlenecks** such as inadequate processing facilities, poor storage infrastructure, and low private investment restrict value addition and profitability.
- **Policy Bias** persists due to extensive subsidies for rice and wheat under the **National Food Security Act (NFSA)** and irrigation schemes, making millets less competitive, especially in rainfed areas.

Strategic Framework for Achieving Atmanirbharta in Millets

A comprehensive approach is needed to build millet self-reliance across the entire agricultural and food ecosystem.

- **Horizontal Expansion**: Millets should be cultivated in underutilized **rice fallows and degraded lands**, particularly in **Eastern India**, to sustainably expand acreage.
- **Vertical Intensification**: Investments are needed in **high-yielding, bio-fortified, and climate-resilient** millet varieties, supported by a robust seed supply and replacement system.
- **Cluster-Based Models**: A **district-level crop cluster approach**, similar to pulses,

can enable targeted interventions and regional productivity improvements.

- **Value Chain Integration**: Establishing **processing hubs, branding units**, and **FPO-led aggregation models** will integrate farmers into organized markets and boost income.
- **Climate-Smart Agriculture**: Adoption of **organic, water-efficient**, and **pest-resilient millet farming** practices aligns with India's climate commitments and Sustainable Development Goals (SDGs).

Way Forward

Achieving Atmanirbharta in millets calls for holistic reforms that span production, consumption, and market engagement.

- **Mainstreaming in Welfare Schemes**: Mandate the inclusion of millets in **NFSA, ICDS**, and other food security programs to build steady domestic demand.
- **Research and Development**: Accelerate R&D in **short-duration, bio-fortified millet varieties** and scale up **seed replacement rates** to ensure productivity gains.
- **Export-Driven Growth**: Create **value-added, GI-tagged millet brands** to serve global health-conscious consumers, especially in niche and premium markets.
- **Public Procurement Reform**: Ensure **MSP-backed procurement** of millets through **decentralized procurement centres**, making cultivation financially viable for farmers.
- **Public Awareness**: Launch a **nationwide campaign** promoting the health, climate, and lifestyle benefits of millets to revive consumer interest and counter dietary biases.

Conclusion

Millets offer India a strategic **triple advantage**—improving **nutrition security**, enhancing **climate resilience**, and uplifting **farmer livelihoods**. With focused institutional support, strong branding under "Shree Anna," and coordinated policy reforms, millets can transition from marginal crops to mainstream staples. The path to **Atmanirbharta in millets** will require synchronized action across production systems, market frameworks, and consumption patterns to realize their full potential as the **grain of the future**.

Aluminium Industry in India

Context: India's aluminium sector is under increasing pressure due to the rapid shift toward **UPVC plastic** in the construction industry and a surge in **low-cost imports** from ASEAN countries.

Overview of Aluminium Use: Aluminium is extensively used in **construction (doors, windows, roofs)**, **household items**, and **automotive parts**. It is now being replaced by **UPVC plastic**, a material derived from crude oil that contradicts India's **Paris Agreement climate commitments** due to its environmental footprint.

India's Aluminium Industry – Current Status: The **installed capacity** of the aluminium extrusion industry in India stands at **3 million tonnes per year**, but actual **capacity utilisation** remains low, at just **1.2 million tonnes**. Meanwhile, **imports exceed 1.5 million tonnes**, largely due to **price disparities**, **Free Trade Agreement (FTA) concessions**, and **duty-free imports** under various tariff codes. India's **per capita aluminium consumption** is around **4 kg**, significantly below the global average (**11 kg**) and far behind countries like **China (25 kg)** and the **USA (18 kg)**.

Industrial Importance of Aluminium:

- In **construction**, it is used for windows, facades, and structural elements due to its lightweight and durability.
- In the **automotive sector**, aluminium helps reduce vehicle weight, aligning with fuel efficiency and EV goals.
- It is crucial in the **renewable energy sector**, especially in **solar panels** and infrastructure.
- Despite strong demand potential, the low consumption rate limits domestic industry growth.

Raw Material Reserves in India: India possesses significant **bauxite reserves**, which serve as the primary ore for aluminium production. Major producing regions include:

- **Odisha** – the largest contributor, with mines in **Koraput, Kalahandi, Rayagada, Sundergarh** (notably NALCO's **Panchpatmali**).
- **Jharkhand** – with active mines in **Lohardaga, Gumla, Ranchi** (Hindalco).
- **Gujarat** – deposits found in **Jamnagar, Kutch, Junagadh**.

- **Chhattisgarh** – reserves in **Bilaspur, Durg**, and the **Amarkantak plateau**.
- **Maharashtra** – especially in **Kolhapur district**.
- **Madhya Pradesh** – located in the **Amarkantak plateau** and **Maikala range**.

The industry's sustainability and growth depend on domestic consumption expansion, policy support against imports, and environmental compliance.

Sample Registration System (SRS) Statistical Report 2023

The **Sample Registration System (SRS)**, managed by the **Office of the Registrar General & Census Commissioner of India**, is among the **largest demographic surveys globally**. It provides crucial **annual estimates of fertility and mortality** across India.

Key highlights from the 2023 report reveal several significant demographic shifts:

- The **Total Fertility Rate (TFR)** stands at **1.9**, which is **below the replacement level of 2.1**. **Bihar** reported the highest TFR at **2.8**, while **Delhi** recorded the lowest at **1.2**.
- The **Infant Mortality Rate (IMR)** has declined to **25 deaths per 1,000 live births**, compared to **26 in 2022** and **32 in 2018**. The highest IMR was observed in **Chhattisgarh, Madhya Pradesh, and Uttar Pradesh (37)**, while **Kerala** had the lowest at **5**. Nationally, about **1 in 40 infants die before reaching one year of age**.
- The **Under-5 Mortality Rate (U5MR)** has fallen to **29** in 2023 from **30** the previous year, primarily due to a reduction in **female child mortality**.
- The **Crude Birth Rate (CBR)** was **18.4 per 1,000 people**, with **Bihar** again leading at **25.8** and **Tamil Nadu** reporting the lowest at **12.0**.
- The **Crude Death Rate (CDR)** was **6.4 per 1,000 people**, with the highest in **Chhattisgarh (8.3)** and the lowest in **Delhi (4.5)**.
- The **Sex Ratio at Birth (SRB)** improved to **917 females per 1,000 males** for the period **2021–2023**, up from **914 during 2020–2022**. The **highest SRB** was seen in **Chhattisgarh (974)**, while the **lowest** was reported in **Uttarakhand (868)**. Additionally, the SRB was **914 in rural areas** and **925 in urban areas**.

Key demographic terms explained:

- **TFR** (Total Fertility Rate): The average number of children a woman would bear during her reproductive years.
- **IMR** (Infant Mortality Rate): Number of deaths of infants under one year per 1,000 live births.
- **U5MR** (Under-5 Mortality Rate): The likelihood, per 1,000 live births, that a child will die before reaching age five.
- **CBR** (Crude Birth Rate): Number of live births per 1,000 people in a year.
- **CDR** (Crude Death Rate): Number of deaths per 1,000 people in a year.
- **Sex Ratio at Birth**: Number of female births for every 1,000 male births.

India–Europe Energy Dynamics: India's Surging Diesel Exports Amid EU's Impending Ban on Russian Crude Products

As the European Union (EU) prepares to enforce a ban on fuels refined from Russian crude starting January 21, 2026, it is actively stockpiling petroleum products, particularly diesel, to cushion against potential supply disruptions. In this evolving landscape, India has emerged as a crucial swing supplier of refined petroleum products to Europe, reshaping the contours of the India-Europe energy relationship and highlighting India's growing significance in global energy trade.

India's Petroleum Exports to Europe: Economic Role and Strategic Growth

- India's petroleum sector plays a pivotal role in the country's economy by driving foreign exchange earnings and enhancing its global trade footprint. Exports to the European market—characterised by high energy demand and rigorous quality standards—not only boost India's economic positioning but also underscore its credibility as a reliable energy partner.
- Between April 2023 and January 2024, India's petroleum exports to Europe were valued at $18.4 billion. In July 2024 alone, exports increased by 26%, reaching 266,000 barrels per day (bpd), with diesel accounting for 238,000 bpd and aviation turbine fuel

contributing 81,000 bpd. The scale of this expansion is underscored by long-term trends: from 2018–19 to 2023–24, petroleum exports to Europe surged over 253,000% in volume and nearly 250% in value. This exponential growth reflects Europe's increasing reliance on Indian refined fuels amid shifting geopolitical and energy dynamics.

- When placed in the context of global petroleum exporters, India is not among the largest crude exporters—Saudi Arabia leads with 16.2%, followed by Russia (9.14%) and Canada (8.48%)—but it has carved out a growing niche through the export of refined products. These include diesel, gasoline, kerosene, fuel oil, and naphtha, as well as aviation turbine fuel, industrial fuels, and petrochemicals such as polypropylene and polyethylene used in manufacturing.
- India's advanced refining capacity positions it advantageously, particularly as Europe seeks steady and diversified energy sources. Exporters from India benefit from this trend by leveraging efficient logistics networks to scale operations and tap deeper into European demand.

Current Trends in India–Europe Energy Trade

- India's diesel exports to Europe reached approximately 260,000 bpd in August 2025—an increase of nearly 63% over July and 103% over the same month in 2024, according to analytics firm Kpler. Total petroleum product exports from India to Europe in August rose 41% month-on-month to nearly 399,000 bpd.
- Notably, all diesel exports from India to Europe in August 2025 originated from Reliance Industries Limited (RIL), the country's largest private-sector refiner and a major player in global petroleum exports. This concentration of supply from RIL highlights the company's strategic role in meeting Europe's diesel demand during a critical transitional period.

Factors Driving Export Growth

Several interrelated factors have contributed to the sharp increase in Indian exports to Europe:

- The EU's proactive stockpiling of fuel ahead of the January 2026 sanctions.
- The rescheduling of maintenance shutdowns at key European refineries, such as Shell's Pernis facility in the Netherlands, to avoid operational disruptions during the enforcement period of the ban.
- Anticipated refinery maintenance across West Asia in late 2025, which is expected to temporarily reduce regional fuel supplies to Europe.
- India's ability to act as a swing supplier of middle distillates—namely diesel, jet fuel, and kerosene—making it an increasingly indispensable source for European buyers.

Geopolitical Tensions and Western Criticism

India's rising energy exports to Europe have sparked criticism from some Western countries, particularly the United States and its allies. They allege that India is profiting by purchasing discounted Russian crude, refining it, and exporting the resulting products to Europe. However, India has firmly rejected these accusations, arguing that:

- The import of Russian crude is not illegal and remains within the boundaries of international trade law.
- The export of refined fuels is permitted under existing global trade norms.
- Any countries objecting to these exports have the choice to cease imports from India.

India maintains that its energy trade practices are legitimate and that its refineries process a diversified crude mix, which complicates simplistic attributions of origin.

EU's Ban on Russian-Origin Fuels: Scope and Implications

- The EU had already imposed a direct ban on the import of Russian petroleum products in February 2023. Beginning in January 2026, this restriction will extend to include fuels refined from Russian crude, regardless of whether the refining takes place within EU territory or in third countries. This widened scope aims to close potential loopholes but raises several practical enforcement challenges.
- Some nations—such as Canada, Norway, Switzerland, the UK, and the US—are exempt from these measures. In India, most refineries process crude from a mixed origin, typically with 60–70% non-Russian inputs. This mix makes it extremely difficult to trace the specific source of refined fuels. Notably, RIL

operates two distinct refining systems, allowing greater flexibility to separate and manage compliance with emerging trade restrictions.

Potential Impact on Indian Exports and Global Trade Adjustments

Should European regulators decide to halt imports of fuels refined from Russian crude—regardless of processing location—India may experience short-term disruptions. However, the impact is expected to be transitory. India's refiners could pivot to other international markets, many of which are traditionally served by West Asian exporters. Simultaneously, Europe may seek to increase imports from alternate suppliers, including those in West Asia, to compensate for reduced Indian volumes. In effect, global fuel flows would undergo a realignment, but not necessarily a reduction in volume.

Conclusion

India's emergence as a key swing supplier of petroleum products—particularly diesel—has elevated its importance in Europe's energy security calculus amid the continent's transition away from Russian crude. This development has redefined India-Europe energy dynamics, positioning India as a critical player during a pivotal geopolitical and economic shift.

Looking ahead, India must leverage this opportunity to consolidate its standing in global energy markets. Strategic actions such as diversifying export destinations, investing in compliant refining infrastructure, and maintaining strong diplomatic engagement will be essential to navigating future policy uncertainties, especially those arising from the EU's impending enforcement of its refined fuel ban in 2026.

The Declining Investor Sentiment Towards India: High Growth Amidst Capital Outflows

India has retained its position as the fastest-growing major economy in the world, registering an average GDP growth rate of 8.2% between 2021 and 2024. This pace has outstripped the performance of other prominent economies, including Vietnam and China. The upward trajectory continued into 2025, with the economy expanding by 7.4% in the first quarter and 7.8% in the second. However, this strong economic performance has not translated into consistent foreign portfolio investment (FPI) inflows. With the exception of 2023–24, which saw FPIs invest $25.3 billion, the broader trend across recent years has been dominated by net outflows—$18.5 billion in 2021–22, $5.1 billion in 2022–23, $14.6 billion in 2024–25, and $2.9 billion during 2025–26 up to September. This persistent dissonance between robust GDP growth and capital flight highlights ongoing investor caution and skepticism regarding India's medium-term outlook.

The Role of Foreign Capital in India's Economic Development

- Foreign capital, comprising both Foreign Direct Investment (FDI) and Foreign Portfolio Investment (FPI), has played a pivotal role in India's development since the liberalization of the economy in 1991. This external capital has helped fill financial gaps that domestic savings alone could not bridge, acting as a critical enabler of economic expansion. It has financed key investments, supported capital-scarce sectors, and supplemented domestic resources.
- FDI, in particular, has modernized several industrial sectors, introduced advanced technologies, improved infrastructure, generated employment, and furthered India's integration into global supply chains. It has also significantly bolstered India's global competitiveness. Meanwhile, FPI has added depth to India's capital markets and improved liquidity, albeit with the associated risks of volatility. Beyond capital inflows, foreign investments have driven innovation, enhanced digital services such as IT and e-commerce, and helped maintain balance of payments stability by financing current account deficits.

The Paradox of Foreign Capital: Growth Without Inflows

- Despite the impressive 7.8% GDP growth in early 2025, India has faced declining foreign capital inflows. Net capital flows dropped to $18.3 billion in 2024–25, marking the lowest level since the global financial crisis of 2008–09. Furthermore, capital inflows in the April–June 2025 quarter were more than 40% lower compared to the same period the previous year. Net capital flows encompass foreign investment, external borrowings, foreign aid, and deposits from non-resident Indians. According to Balance of Payments (BoP) data,

net foreign investment has plunged dramatically—from a peak of $80.1 billion in 2020–21 to just $4.5 billion in 2024–25. This total includes only $959 million in FDI and $3.6 billion in FPI, with most of the latter flowing into debt markets. BoP, which tracks financial transactions between India and the rest of the world, provides a comprehensive picture of money flows stemming from trade, investments, and loans involving individuals, corporations, and governments.

- Equity markets, however, experienced substantial sell-offs. Meanwhile, external commercial borrowings, which had declined in previous years, rebounded sharply to $15.8 billion in 2024–25. The persistent gap between India's strong GDP growth and weak foreign capital inflows underscores the broader unease among investors regarding India's economic prospects and future stability.

Underlying Factors Behind the Decline in Capital Flows

- One of the key drivers of the current decline in capital flows lies in the nature of past investments. A significant portion of the FDI inflows in the last decade—particularly during the peak year of 2020–21—came from private equity (PE) and venture capital (VC) funds targeting sectors such as retail, e-commerce, financial services, green energy, healthcare, and real estate. These investments are now reaching maturity, prompting many investors to exit and monetize their holdings, leading to diminished net inflows.
- Industry analysts report that PE and VC exits were valued at $24 billion in 2022, $29 billion in 2023, and $33 billion in 2024. In 2024, approximately 59% of these exits occurred via public markets, buoyed by strong stock valuations. FPIs have also been selling their holdings, but these exits have been largely offset by the sustained participation of domestic investors. This domestic support has helped maintain attractive market valuations, facilitating profitable exits for both FPIs and PE/VC players.

Mounting Balance of Payments Pressures

- India's merchandise trade deficit has surged significantly, reaching $287.2 billion in 2024–25—more than three times the level recorded in 2007–08. So far, strong surpluses in services exports and remittances have helped keep current account deficits below $50 billion in most years. These deficits have been financed by steady capital inflows, which have also contributed to the accumulation of foreign exchange reserves. However, new risks are emerging. The recent imposition of 50% tariffs on Indian exports by U.S. President Trump now threatens India's access to an $86.5 billion export market. Compounding this, capital inflows remain fragile, increasingly driven by investor confidence in corporate earnings and market valuations rather than headline GDP figures.
- As a result of recent capital outflows and heightened trade concerns, the Indian rupee has depreciated to a historic low of 88.37 against the U.S. dollar. In response to these pressures, the government has implemented a series of measures. These include reductions in the Goods and Services Tax (GST) rates to spur domestic consumption and corporate earnings, as well as the formation of a task force to push forward next-generation reforms aimed at improving the ease of doing business.
- Despite impressive economic growth, the weakening momentum of foreign capital inflows and mounting external vulnerabilities have raised significant concerns about the sustainability of India's current growth trajectory. The country now faces the dual challenge of maintaining investor confidence while navigating an increasingly complex global economic environment.

Indian Generics as a Global Public Good: Pharma Diplomacy and Trade Strategy

Context

India's pharmaceutical export sector, particularly its generics industry, is under mounting pressure due to rising trade tensions with the United States. The imposition of tariffs and increasingly stringent intellectual property (IP) demands from the U.S.—India's largest pharma export market—poses a threat to the long-term sustainability of Indian generic medicines. However, despite these challenges, Indian generics continue to form the cornerstone of affordable global healthcare, saving billions of dollars annually and playing a vital role in public health systems worldwide.

Current Status of the Indian Pharmaceutical Sector

- India has firmly established itself as the largest global supplier of generic medicines, exporting to over 200 countries and earning the title "Pharmacy of the World." The United States alone accounts for more than 31% of India's pharmaceutical exports and sources approximately 47% of its generics from India. In 2022, Indian generics saved the U.S. healthcare system an estimated USD 219 billion.
- The global generic pharmaceuticals market is expected to reach USD 614 billion by 2030, with India remaining a major contributor. Nonetheless, the industry faces serious headwinds, including protectionist U.S. trade policies, overreliance on China for Active Pharmaceutical Ingredients (APIs), and intensifying competition from emerging generic producers such as Brazil, China, and Eastern Europe.

Strategic Importance of Indian Generics

Indian generics have far-reaching implications across economic, public health, and diplomatic spheres:

- **Affordability and Access**: Indian generics are typically priced 20–25% lower than branded alternatives, making critical treatments for diseases like cancer, diabetes, and HIV accessible to millions worldwide.
- **Public Health Contribution**: In countries such as the U.S., generics constitute over 90% of all prescriptions. They are equally indispensable in low- and middle-income countries, where healthcare affordability is a persistent challenge.
- **Economic Impact**: Pharmaceutical exports from India contribute approximately USD 25 billion annually to the economy and support millions of jobs across the supply chain.
- **Strategic Diplomacy**: India's role in pharma extends to its soft power initiatives, exemplified by the "Vaccine Maitri" program during the COVID-19 pandemic, which distributed vaccines and medical supplies globally.
- **Innovation Leadership**: The country is increasingly investing in biosimilars, low-cost vaccine development, and affordable research-based pharmaceutical solutions, signaling its transition from a volume-based to a value-based industry.

Need for a Strategic Realignment

India must evolve its pharma trade approach from reactive concessions to proactive, long-term strategies. This includes:

- Challenging **TRIPS-plus** provisions that seek to extend monopolies and delay the entry of affordable generics.
- Reducing overdependence on the U.S. market by expanding outreach to Africa, Latin America, ASEAN nations, and Central Asia.
- Leveraging trade negotiations to secure **technology transfers** and promote **joint R&D**, particularly in exchange for pricing flexibility.
- Framing Indian generics as a **global public good** aligned with **Sustainable Development Goal 3 (SDG-3)**: "Ensure healthy lives and promote well-being for all at all ages."

Key Challenges to Indian Pharma Diplomacy

India's pharmaceutical sector is contending with a range of domestic and international obstacles:

- **Trade Barriers**: The U.S. has imposed a 26% tariff along with an additional 25% penalty on certain imports. Bilateral trade talks often push for zero-tariff regimes without ensuring reciprocal benefits.
- **IPR and Regulatory Pressures**: There is growing international advocacy for patent protections beyond what is mandated by TRIPS (Trade-Related Aspects of Intellectual Property Rights). Measures like **data exclusivity** and patent term extensions threaten to delay the availability of generics, escalating drug prices globally.
- **Domestic Vulnerabilities**: Continued dependency on China for APIs exposes India to supply chain risks. Fragmented research ecosystems and regulatory inefficiencies hamper innovation and timely drug approvals.
- **Global Competition**: Alternative manufacturing and R&D hubs are emerging, particularly in China, Brazil, and Eastern Europe, reducing India's competitive edge.

- **Public Health Implications**: Strengthening IP regimes globally, as demanded by some Western nations, could limit access to affordable medicines and exacerbate global health inequities.

Current Policy Initiatives and International Engagements

India has already taken several steps to reinforce its pharmaceutical sector and enhance its diplomatic footprint:

- Continued use of **TRIPS flexibilities**, including compulsory licensing, to protect public health and ensure access to essential medicines.
- The **India–US TRUST Initiative**, aimed at deepening cooperation in biotechnology, pharmaceuticals, and health technologies.
- The **Production Linked Incentive (PLI) Scheme** under the Make in India initiative, which seeks to reduce dependence on imported APIs and encourage local manufacturing.
- Enhanced **South–South cooperation**, with joint ventures and capacity-building in Africa, Latin America, and ASEAN countries.
- Advancement of **Health-Tech Diplomacy** by sharing vaccine platforms and generic drug technologies with developing nations.

Strategic Roadmap for the Future

To maintain and expand its global leadership in generics, India must adopt a comprehensive and forward-looking strategy:

- **Maximize Negotiation Leverage**: Push for a systemic review of TRIPS to align it more closely with global health needs. Actively oppose TRIPS-plus measures and advocate for generics as essential to global health security, especially in a post-COVID context.
- **Diversify Export Destinations:** Reduce exposure to U.S. market fluctuations by expanding exports to emerging markets across Africa, ASEAN, Latin America, and Central Asia.
- **Foster Global Joint Ventures**: Collaborate with Global South nations and with firms in the U.S. and EU on co-manufacturing, research, and technology development.
- **Build Domestic Capabilities**: Invest in self-sufficiency for APIs, strengthen R&D infrastructure, and implement regulatory reforms for faster and safer drug approvals.
- **Deploy Public Health Diplomacy:** Frame pharmaceutical exports as instruments of soft power, following the model of Vaccine Maitri. Engage in coalition-building at international forums such as the WTO, WHO, and BRICS to counterbalance the influence of Big Pharma.
- **Ensure Technology Transfer in Trade Deals**: Any pricing concessions or trade flexibility must be reciprocated through commitments to share technology and invest in local pharma ecosystems.

Conclusion

Indian generics are not merely commercial products—they are lifelines for millions across the globe, enabling access to essential medicines at a fraction of the cost. As the world's largest supplier of affordable pharmaceuticals, India must position its generics industry as a global public good. This requires resisting inequitable IP regimes, diversifying global partnerships, and using pharma diplomacy to shape a more inclusive and equitable global health order. Cementing its role as the "Pharmacy of the Global South," India can protect both its economic interests and its moral responsibility to global public health.

India Urges Fair Economic Practices at BRICS Summit 2025 Amid Global Trade Tensions

At the 2025 BRICS Summit, held virtually under Brazil's chairmanship, India took a firm stand on the evolving global economic order, urging the adoption of fair and transparent economic practices. Represented by External Affairs Minister (EAM) S. Jaishankar, India expressed strong opposition to the increasing tendency of linking trade measures with non-trade issues—an implicit critique of recent U.S. tariff escalations. This year's summit unfolded against the backdrop of heightened global tariff disputes, deepening geopolitical divides, and mounting pressure on multilateralism.

Context of the BRICS Summit 2025

The BRICS grouping—comprising Brazil, Russia, India, China, and South Africa—has steadily

evolved into a significant platform for shaping global governance and economic cooperation. Collectively accounting for about 42% of the global population and roughly a quarter of the world's GDP, BRICS continues to push for reforms in global financial and political institutions. The 2025 summit provided a venue for member states to share perspectives on economic disruptions and policy coordination amidst growing instability in the global trade environment.

Origins and Evolution of BRICS

The concept of BRICS originated in 2001 when economist Jim O'Neill coined the term "BRIC" to describe emerging economies poised to influence the global order. The first formal BRIC summit took place in 2009 in Russia. South Africa joined in 2010, expanding the group to BRICS. Since its inception, the bloc has aimed to reform global governance structures to better reflect the interests of emerging economies, promote intra-group trade and investment, and foster cooperation on sustainable development, technology, climate change, and security.

Achievements and Institutional Developments

BRICS has been instrumental in creating alternative financial institutions, most notably the New Development Bank (NDB), which funds infrastructure and sustainable development projects across member and partner countries. The Contingent Reserve Arrangement (CRA) was another important step, providing financial stability to members during economic crises. In addition to economic initiatives, the group has served as a critical platform for dialogue on global governance, counter-terrorism, energy security, and digital innovation.

Persistent Challenges Within BRICS

Despite its growing influence, the BRICS bloc faces internal and external challenges that limit its coherence and effectiveness. Tensions between India and China, especially due to ongoing border disputes, have frequently strained intra-group dynamics. China's overwhelming economic clout compared to the other members also exacerbates asymmetries. Additionally, BRICS members often diverge on critical geopolitical issues—ranging from conflicts in Ukraine and West Asia to approaches on trade policy. Moreover, intra-BRICS trade remains limited, constrained by protectionist policies and persistent trade deficits.

India's Concerns Over Trade and Tariffs

During the 2025 summit, India voiced sharp concerns regarding the rising use of trade restrictions as tools of geopolitical coercion. EAM Jaishankar specifically referenced the U.S. decision to impose steep 50% tariffs on exports from India and Brazil, a move linked to their continued oil trade with Russia. He criticised the weaponisation of trade policies and argued that coupling economic measures with unrelated political issues only serves to destabilise the international trading order. Such practices, he said, undermine the principles of free and fair trade and disproportionately harm developing economies.

India's Advocacy for Transparent, Rules-Based Trade

Jaishankar reaffirmed India's commitment to an international economic system that is open, equitable, transparent, and governed by established rules. He warned that growing protectionism and arbitrary trade barriers threaten the already fragile balance of global food, energy, and fertiliser security. At a time when developing countries are still recovering from the aftershocks of the pandemic and ongoing regional conflicts, he urged BRICS members to collectively reject discriminatory trade practices and champion inclusive development.

Call for Resilient and Diversified Supply Chains

A key theme of Jaishankar's address was the urgent need to build more resilient and diversified global supply chains. He drew attention to vulnerabilities laid bare by the COVID-19 pandemic, prolonged geopolitical conflicts, and the worsening climate crisis. India proposed the decentralisation and democratisation of manufacturing capabilities across geographies to reduce overreliance on specific nations or regions. Such diversification, he argued, is vital to mitigate disruptions and ensure equitable access to critical goods and services.

Highlighting the Global South's Struggles

Jaishankar also turned the summit's focus toward the pressing concerns of the Global South. He noted that many of these countries have borne the brunt of conflicts far from their borders—particularly those in Ukraine and West Asia—which have led to shortages of food, fuel, and fertilisers. Calling for urgent diplomatic efforts to end these conflicts, he emphasised the need for a

reformed multilateral system, especially within the United Nations, to better reflect contemporary geopolitical realities and the voices of developing nations.

Trade Imbalances Within the BRICS Framework

A candid part of India's intervention was its acknowledgment of persistent trade imbalances within the BRICS grouping itself. Jaishankar pointed out that India continues to face significant trade deficits with fellow BRICS members, most notably China. He urged the bloc to adopt cooperative and corrective mechanisms that could address these imbalances and enhance intra-BRICS trade. This, he argued, would not only strengthen economic ties among members but also help shield the group from external economic pressures.

Conclusion

India's message at the BRICS Summit 2025 was clear and assertive: global economic systems must return to fairness, transparency, and multilateralism. By pushing back against the trend of politicising trade, emphasising the need for resilient supply chains, and calling attention to the needs of the Global South, India positioned itself as both a critic of Western protectionism and a proponent of a more equitable global order. Whether BRICS can collectively respond to these challenges remains to be seen, but India's intervention has certainly set the tone for deeper introspection within the bloc.

Unified RERA Portal: One-Stop Transparency for India's Real Estate Sector

- At the fifth meeting of the Central Advisory Council in New Delhi, the Ministry of Housing and Urban Affairs launched the **Unified Real Estate (Regulation and Development) Act, 2016 (RERA) Portal**—accessible at **rera.mohua.gov.in**. This integrated platform marks a major step in centralising India's real estate regulatory data.
- RERA, introduced in 2016, was established to protect homebuyers from delays, fraud, and lack of transparency in the real estate sector. Previously, each state and union territory maintained its own RERA website, resulting in fragmented access to information. The Unified RERA Portal consolidates data from all state-level platforms into a single national database, making it significantly easier for stakeholders to track approvals, project progress, timelines, and developer histories.
- For homebuyers, the portal enhances transparency by allowing them to confirm whether a project has received required approvals, check its development status, and examine the compliance history of developers. This streamlines the process and reduces the need for repeated follow-ups or formal complaints. The portal also features grievance redressal tools, enabling users to lodge and monitor complaints.
- For developers, the portal simplifies compliance by standardising reporting mechanisms across states. They can update project details more efficiently, ensuring uniformity and easier regulatory oversight.
- The use of Artificial Intelligence (AI) is another key innovation on the platform. AI tools will help flag potentially stalled or delayed projects, allowing for early intervention by regulators.
- The portal aims to promote transparency, accountability, and standardisation in India's real estate sector, ultimately contributing to a more trustworthy and efficient housing market.

Nilgiri Tea: Aromatic Excellence Amidst Economic Challenges

- Tea growers in the Nilgiri region continue to face a persistent crisis concerning the cost price of green tea leaves. This issue has disproportionately impacted small-scale cultivators, with falling prices and rising input costs creating economic distress across the region.
- Nilgiri Tea is renowned for its intensely aromatic, fragrant, and flavorful character. It is cultivated in the southern stretches of the Western Ghats and takes its name from the Nilgiris, or Blue Mountains, where the unique climatic conditions impart its distinctive taste. Primarily grown in Tamil Nadu's Nilgiri district, with smaller cultivation pockets in Kerala

and Karnataka, Nilgiri Tea earned the Geographical Indication (GI) tag in 2008, underscoring its regional and commercial significance.

- The tea is cherished for its delicate floral and citrus aroma, making it particularly popular as an iced tea and a staple in many tea blends that seek to elevate taste profiles. Grown at elevations ranging from 1000 to 2500 metres above sea level, Nilgiri Tea thrives in laterite soil with annual rainfall between 150 to 230 centimetres. Unique to this region, tea cultivation takes place year-round, supported by the presence of two monsoon seasons.
- However, the industry is currently facing several challenges. The declining price for green tea leaves is central to the crisis. Additional concerns include an overdependence on Russian exports, which leaves growers vulnerable to market fluctuations; quality management issues that undermine the brand's global reputation; adulteration practices that compromise product integrity; and a general neglect of the domestic market, which reduces local consumption and hampers profitability.

China vs India in Rare Earth Elements (REEs)

- China recently introduced stringent interim measures to regulate rare earth mining and processing, reinforcing its dominant position in the global supply chain. Rare earth elements (REEs), a group of 17 metals critical for clean energy technologies such as electric vehicles and wind turbines, as well as for defense and advanced electronics, are at the heart of this competition between China and India.
- China holds approximately 50% of global REE reserves, making it the largest holder worldwide. India has significant deposits, though far smaller in scale, primarily located in the states of Kerala, Odisha, Andhra Pradesh, Jharkhand, and Tamil Nadu. In terms of production, China accounts for over 60% of the global output over the past five years, while India contributes less than 2%, mostly through Indian Rare Earths Limited under the Department of Atomic Energy.
- China also dominates the refining capacity, controlling around 92% of global refining operations, whereas India has very limited refining infrastructure, primarily exporting raw monazite sands with low processing technology. China supplies about 30% of global demand as the largest exporter, while India remains heavily reliant on imports, with over 75% of its REE imports sourced from China since 2021.

In research and innovation, China leads with roughly 30% of global REE research output, while India contributes about 6%. Policy-wise, China has imposed tight export controls starting April 2024 and 2025, along with bans on processing technology exports, supported by approximately $14 billion in annual exploration funding. India's efforts include the Atal Innovation Mission and the National Mineral Policy of 2019, but the absence of mid-sized firms and a robust R&D ecosystem limits its competitive edge.

India's Shipbuilding Sector – Poised to Enter Global Top 5

Introduction

India's maritime strength is increasingly viewed as a critical component of its economic and strategic aspirations. Although India currently commands less than a 1% share of the global shipbuilding market, the Union government has laid out an ambitious vision to position the country among the world's top five shipbuilding nations by 2047. This goal aligns with broader efforts to strengthen the Blue Economy through shipbuilding and repair. Through initiatives outlined in the Maritime India Vision 2030 and extensive investments in infrastructure, the government aims to transform the sector into a major driver of employment generation, environmental sustainability, and international competitiveness.

Current Status of Shipbuilding in India

Despite being the 16th largest maritime nation globally and contributing approximately 4% to its GDP, India's shipbuilding footprint in global markets remains limited. Indian shipyards—both state-owned and private—primarily focus on meeting domestic demand from defence and commercial shipping sectors, with minimal

international penetration. Key indicators underscore this gap: India commands less than 1% of the $200 billion global shipbuilding industry and contributes around 18 million deadweight tonnage, ranking it 16th worldwide. On a more promising note, Indian seafarers represent 12% of the global maritime workforce, indicating a strong human resource base.

Government Measures to Promote Shipbuilding

- To scale up the sector, the Indian government has implemented a comprehensive set of policy, financial, and strategic interventions aimed at modernising shipbuilding capabilities and attracting investment.
- On the financial front, schemes such as the Shipbuilding Finance Assistance Scheme provide capital support, while the Shipbreaking Credit Note Scheme incentivizes ship recycling. Additionally, upfront subsidies of up to 30% have been introduced for the construction of non-conventional, environmentally friendly ships.
- Developmental measures include the creation of a $3 billion Maritime Development Fund, with 45% earmarked for shipbuilding and repair and 20% aimed at increasing India's tonnage. A National Shipbuilding Mission has also been launched to facilitate technological upgrades and capacity enhancements across the industry.
- Policy reforms have enabled 100% Foreign Direct Investment (FDI) in shipbuilding and shipping through the automatic route. Moreover, an $82 billion investment plan is in place to expand port capacity by 2035, complemented by the promotion of integrated shipbuilding and repair clusters.

Strategic Goals for Shipbuilding Growth

India's long-term vision for its shipbuilding sector includes clearly defined milestones. By 2030, the government intends for India to break into the top ten maritime nations globally. By 2047, the goal is to secure a spot among the top five shipbuilding nations. The contribution of the maritime sector to national GDP is expected to rise from the current 4% to 12%. Additionally, India plans to double its share in the global seafaring workforce from 12% to 25%, reflecting both the sector's employment potential and its global aspirations.

News Summary

- During the INMEX SMM India 2025 event held in Mumbai, Shantanu Thakur, Minister of State for Ports, Shipping and Waterways, reaffirmed the country's trajectory toward becoming a top-five shipbuilding nation by 2047. He identified shipbuilding and repair as central engines of growth for the Blue Economy. The Director General of Shipping reiterated the importance of government-led initiatives—ranging from financial assistance to subsidies for green shipbuilding—in scaling up the maritime sector's contribution to GDP, which currently stands at 4%.
- Supporting this vision, the Chairman of the INMEX Advisory Board emphasized that nearly 45% of the Maritime Development Fund is specifically dedicated to shipbuilding and repair, reflecting an unprecedented level of government commitment. Furthermore, robust private sector participation, facilitated by liberalised FDI norms and public-private partnerships, has led to significant increases in maritime infrastructure investment. According to the Managing Director of Informa Markets India, with a projected $82 billion investment in ports by 2035, the maritime sector is well-positioned to become a key pillar of national economic growth.

India–Mauritius Special Economic Package: A Strategic Partnership for the Future

Context

During the recent visit of Mauritius Prime Minister Navinchandra Ramgoolam to Varanasi, India announced a USD 680 million Special Economic Package, marking a significant advancement in bilateral relations. This comprehensive package encompasses sectors such as health, infrastructure, maritime security, and education, reflecting India's commitment to deepening its engagement with Mauritius as part of its *Neighbourhood First* policy.

Overview of the India–Mauritius Special Economic Package

This special economic package aims to strengthen India–Mauritius cooperation across multiple domains, including economic development, maritime security, education, and cultural exchange. The package comprises both grants and lines of credit, focusing on critical sectors that have strategic, developmental, and symbolic importance for both nations.

Key Components of the Partnership

- In terms of **development and economic cooperation**, the USD 680 million package supports several flagship projects. In healthcare, this includes the construction of the New Sir Seewoosagur Ramgoolam National Hospital, which will be the largest healthcare facility in Mauritius. It also marks the establishment of the first *Jan Aushadhi Kendra* outside India and an AYUSH Centre of Excellence, promoting affordable medicines and traditional wellness practices.
- In the field of **education and research**, Memorandums of Understanding have been signed between institutions such as IIT-Madras, IIPM-Bengaluru, and the University of Mauritius. These aim to foster innovation, skill development, and knowledge exchange through collaborative research and academic programs.
- The package also focuses heavily on **infrastructure development**, including the expansion of the Motorway M4, completion of the Ring Road Phase II, construction of a new Air Traffic Control (ATC) tower at Sir Seewoosagur Ramgoolam International Airport, and procurement of advanced port equipment.
- Under the ambit of **maritime and strategic cooperation**, both countries are partnering on the redevelopment of Port Louis, with the goal of enhancing Mauritius' role as a regional maritime hub. Strategic collaboration includes the joint monitoring of the Chagos Marine Protected Area and hydrographic mapping of Mauritius' Exclusive Economic Zone (EEZ). Defence cooperation is also being bolstered through the provision of helicopters, capacity-building programs, and joint maritime security initiatives.

Cultural and Civilisational Ties

Cultural ties remain a cornerstone of the India–Mauritius relationship. With over 68% of the Mauritian population tracing their roots to India, shared heritage plays a vital role in bilateral relations. Prime Minister Ramgoolam's visit to Varanasi and his participation in the Ganga Aarti was not merely symbolic but also a reaffirmation of the civilisational bond that underpins this partnership.

Strategic Significance of the India–Mauritius Partnership

- The partnership carries considerable geopolitical weight. Located near key Sea Lanes of Communication (SLOCs) in the Indian Ocean, Mauritius plays a vital role in India's maritime domain awareness. Its strategic location makes it a valuable counterbalance to growing Chinese influence in the region, especially through China's Belt and Road Initiative (BRI). Mauritius also acts as a diplomatic gateway to Africa and is a trusted partner in multilateral platforms such as the Indian Ocean Rim Association (IORA), the Commonwealth, and the Indian Ocean Commission.
- Economically, Mauritius serves as a major conduit for Foreign Direct Investment (FDI) into India, thanks to favourable bilateral taxation treaties. The modernisation of its port infrastructure aligns with India's *Sagarmala* initiative and will enhance regional trade connectivity.
- In terms of soft power, the large Indian diaspora continues to generate goodwill, making Mauritius one of India's most reliable allies in the Indian Ocean Region. Initiatives such as AYUSH cooperation and training under the *Mission Karmayogi* program are also enhancing India's cultural and knowledge-based influence.

Challenges to the Partnership

- Despite strong momentum, several challenges persist. Geopolitically, China's increasing investment in the Indian Ocean, particularly under the BRI—such as its presence in Hambantota—presents a strategic challenge to India's outreach.

- Environmentally, Mauritius is vulnerable to the impacts of climate change, including cyclones, rising sea levels, and coastal erosion. These factors pose risks to newly constructed infrastructure and long-term sustainability.
- Economically, Mauritius' reliance on tourism and financial services makes it susceptible to global economic slowdowns and external shocks. Past Indian-funded projects in island nations have also faced execution delays due to logistical issues and bureaucratic bottlenecks.
- Maritime security threats such as piracy, illegal fishing, and the potential misuse of the EEZ by hostile actors require ongoing surveillance and joint security efforts.

Way Forward

- To sustain and deepen this strategic partnership, India and Mauritius must prioritise several forward-looking initiatives. Enhancing maritime cooperation through expanded EEZ surveillance, hydrographic mapping, and Coast Guard training under the SAGAR (Security and Growth for All in the Region) framework will be essential.
- Building climate-resilient infrastructure—incorporating cyclone-resistant designs, renewable energy sources, and ecological restoration such as mangrove replantation—will be critical in addressing environmental vulnerabilities.
- Speeding up project implementation through digital monitoring systems, streamlined approval mechanisms, and increased private sector involvement will help avoid delays and boost outcomes.
- On the economic front, the two countries can collaborate in emerging sectors such as fintech, green hydrogen, and digital public infrastructure, including the adoption of platforms like UPI and RuPay. These initiatives can help Mauritius diversify its economy and reduce dependence on traditional sectors.
- Deepening people-to-people ties through expanded scholarships, cultural exchanges, and heritage tourism circuits—such as linking Varanasi with Mauritius—will strengthen the civilisational bond and nurture long-term goodwill.

Conclusion

India–Mauritius relations are transitioning from a traditional partnership into a comprehensive, future-oriented strategic alliance. Anchored in cooperation across health, education, infrastructure, and maritime domains, this partnership exemplifies India's *Neighbourhood First* approach in practice. With shared heritage, mutual interests, and aligned strategic goals, the India–Mauritius relationship is poised to serve as a model for regional cooperation and development in the Indian Ocean Region.

India Targets 2028 for Swadeshi Solar Cells

Context:

- The Union Minister for New & Renewable Energy recently announced India's ambitious plan to establish a fully indigenous solar manufacturing ecosystem by 2028. This includes the domestic production of solar modules, cells, wafers, and ingots.
- India's 2028 solar manufacturing vision is a comprehensive national initiative aimed at achieving complete self-reliance in solar technology. The project is backed by the Ministry of New and Renewable Energy (MNRE), with robust support from Production-Linked Incentive (PLI) schemes, Goods and Services Tax (GST) reductions, and a series of policy reforms designed to stimulate the domestic solar value chain.

Objectives:

- The initiative seeks to significantly reduce the country's reliance on imported Chinese solar components, thereby strengthening energy security. It aligns with the broader "Make in India" strategy by positioning India as a global hub for solar manufacturing. Additionally, it is expected to generate both direct and indirect employment opportunities across the manufacturing and supply chain sectors, while attracting significant investments—including Rs 24,000 crore earmarked under the PLI scheme and foreign direct investment in the renewables sector.

- India has already achieved 100 GW of solar module manufacturing capacity, with plans now focused on expanding capacity for upstream components like wafers and ingots. The PLI scheme has driven approximately Rs 50,000 crore in investments and led to the creation of over 12,600 direct jobs. Initiatives such as the Surya Ghar Muft Bijli Yojana have already benefitted two million households, with half of them now enjoying zero electricity bills.
- Under the PM-KUSUM scheme, 1.6 million solar pumps have been installed or solarised, collectively saving approximately 1.3 billion litres of diesel annually. Policy support has included a GST reduction from 12% to 5%, streamlined single-window clearances, and expedited land allotments to facilitate project execution.

AIDIS and SAS 2026–27: Key National Surveys on Household and Agricultural Economics

Context:

The National Statistical Office (NSO), under the Ministry of Statistics and Programme Implementation (MoSPI), has announced that it will conduct the All India Debt and Investment Survey (AIDIS) and the Situation Assessment Survey (SAS) of Agricultural Households between July 2026 and June 2027.

AIDIS is India's flagship survey assessing household finance, including debt, assets, and investments across rural and urban sectors. Originating from the All India Rural Credit Survey in 1951–52 and expanded in 1961–62 to include urban areas and investment, it is now conducted by NSO.

Purpose and Objectives:

- The survey aims to evaluate the scale and nature of household indebtedness, assess asset ownership and distribution, and feed into national accounts. Its findings support the formulation of credit policies, financial inclusion strategies, and inequality studies for institutions such as RBI, MoSPI, and NITI Aayog.
- Last conducted as part of the 77th NSS Round in 2019, AIDIS provides detailed data segmented by region, income group, and type of credit (institutional vs. non-institutional). It informs a range of government schemes related to financial literacy, credit access, and asset creation.
- The Situation Assessment Survey evaluates the economic condition of agricultural households. It was first launched in 2003 and later expanded in 2013 and 2019. Conducted by NSO in collaboration with the Ministry of Agriculture, it delivers nationally representative insights into farming livelihood.
- SAS examines income sources, expenditure patterns, debt profiles, and production statistics related to crops and livestock. It also tracks access to government schemes and insurance coverage, thereby aiding the design of inclusive agricultural and rural development policies.
- The survey includes landless households engaged in agricultural activities and gathers data on land and livestock ownership, market access, and technology adoption. It is extensively used by NITI Aayog, the Ministry of Agriculture, banks, and research bodies.

Government Explores Isobutanol Blending with Diesel: A New Direction in India's Biofuel Strategy

India's biofuel policy is undergoing a significant transition as the government turns its attention to isobutanol blending with diesel. This strategic shift follows the unsuccessful trials of ethanol-diesel blends and signals renewed efforts to enhance energy security, diversify the fuel mix, and boost farmer incomes. Union Minister for Road Transport and Highways, Nitin Gadkari, recently announced that the Automotive Research Association of India (ARAI) is currently conducting trials to assess the viability of blending 10% isobutanol with diesel. These developments reflect the government's continued commitment to innovative, sustainable fuel solutions.

Challenges with Ethanol-Diesel Blending

- Ethanol blending has long been central to India's biofuel policy, especially in the transportation sector. Ethanol-petrol blending has seen notable success, achieving a 20% blend target ahead of

schedule. However, when it comes to diesel, ethanol has encountered significant obstacles. Its corrosive nature and limited compatibility with diesel engines have hindered its practical application and large-scale adoption in this segment.

- Despite technical setbacks, the ethanol policy has had a substantial positive impact on rural economies. Corn, a primary raw material in ethanol production, has emerged as a key beneficiary of the programme. Farmers have collectively earned more than ₹42,000 crore, with corn prices rising from ₹1,200 per quintal to between ₹2,600 and ₹2,800 per quintal since the policy's implementation. This price increase has bolstered agricultural incomes and contributed to economic resilience in rural areas.

Isobutanol as a Promising Alternative

- In light of ethanol's limitations in diesel applications, the government is now exploring isobutanol, an industrial alcohol commonly used as a solvent in the paints and coatings industry. Isobutanol presents several advantages over ethanol, particularly in its compatibility with diesel engines. ARAI is currently testing a 10% isobutanol-diesel blend, which may offer a more viable biofuel solution for the transport sector.
- Moreover, isobutanol shows potential not only as a diesel additive but also as a standalone fuel or in combination with compressed natural gas (CNG) for use in agricultural machinery and tractors. This expanded utility aligns with the government's broader aim to diversify energy sources, reduce dependence on fossil fuel imports, and promote environmentally sustainable farming practices.

Policy Initiatives to Support Farmers and Sugar Mills

- Parallel to fuel diversification efforts, the government is also reinforcing policies aimed at supporting sugarcane farmers and ensuring the financial sustainability of sugar mills. Union Minister for Consumer Affairs, Food, and Public Distribution, Pralhad Joshi, underscored that over 96% of cane payments for the current sugar season have already been cleared, with overall cane dues reaching historic lows.
- In a bid to further strengthen the biofuel ecosystem, Joshi urged ethanol producers to scale up production for both domestic consumption and export. He also advocated for the adoption of advanced technologies and expansion into second- and third-generation ethanol production, using alternative feedstocks like bamboo and agricultural residues. Additionally, he called on the industry to increase distillery capacity to meet growing fuel demands and improve the sector's economic viability.

Industry Concerns and Strategic Recommendations

- During the India Sugar and Bio-Energy Manufacturers Association (ISMA) conclave, industry leaders outlined several pressing challenges. The ISMA President called for aligning the fair and remunerative price (FRP) of sugarcane with rising input and procurement costs, pointing out that the minimum support price (MSP) has remained unchanged since 2019. The stagnation of MSP, he argued, undermines the financial stability of sugar mills and limits their capacity to invest in biofuel expansion.
- Another key recommendation was to increase the sugar export quota by 2 million tonnes for the 2025–26 season. By enabling mills to tap into international markets and secure better prices, this move could ease domestic market pressures and contribute to the overall health of the sugar economy.

Rising Sugar and Ethanol Output: A Foundation for Biofuel Integration

- India's sugarcane sector has demonstrated robust growth over the past decade, with production rising by 40% and sugar output increasing by 58%. Preliminary estimates from ISMA suggest that gross sugar production could rise by 20% year-on-year, reaching 34.9 million tonnes in the current season. This growth creates a strong foundation for aligning

the sugar industry more closely with India's energy goals.

- Integrating sugar production with biofuel initiatives such as isobutanol blending not only ensures better resource utilisation but also maximises benefits for farmers. As India pursues greater energy self-reliance and environmental sustainability, such integrated approaches could prove pivotal in shaping a resilient, inclusive biofuel economy.

Green Finance: The Foundation of a Resilient and Sustainable Economy

Context:

Union Minister for Environment, Forests, and Climate Change recently emphasised that green finance is not just a financial instrument but the backbone of building resilient and future-ready economies. Green finance refers to the mobilisation of financial resources for projects that promote renewable energy, energy efficiency, sustainable infrastructure, and other environmentally sound initiatives. At its core, it involves transforming the direction of capital flows so that every financial investment simultaneously generates economic returns and reinforces long-term sustainability. The underlying principle is to align profitability with planetary well-being.

The Importance of Green Finance

- India's green finance agenda is central to achieving its ambitious climate and development goals. The scale of the transformation required is immense—by 2070, the country will need more than USD 10 trillion in investments to meet its net-zero commitments. Green finance is instrumental not only for reaching emission reduction targets but also for ensuring national security, global competitiveness, and inclusive economic growth.
- Clean energy systems, climate-resilient agriculture, and robust infrastructure reduce vulnerabilities and bolster economic strength. By proactively engaging in green value chains, India can establish itself as a global hub for green industries, attracting capital, fostering innovation, and securing technological leadership in emerging sectors.
- Green finance is also a major employment generator. India is poised to witness a surge in green jobs, with projections indicating the creation of around 7.3 million such jobs by the financial year 2027–28. This figure is expected to rise significantly, reaching 35 million by the year 2047. These jobs span across renewable energy, sustainable transport, waste management, green construction, and more.
- In addition to employment and energy transition, green finance ensures a just transition—helping communities move away from fossil fuels without socio-economic disruption. It also plays a pivotal role in enhancing disaster preparedness, climate resilience, and environmental preservation.

Challenges Hindering Green Financing

- Despite its transformative potential, green finance in India faces several hurdles. One of the key challenges is regulatory complexity and policy fragmentation. Energy, being a subject under the Concurrent List, sees uneven implementation across states and sectors. This inconsistency creates investor uncertainty and complicates financing flows.
- Moreover, many financial institutions in India lack adequate expertise in Environmental, Social, and Governance (ESG) assessment, leading to an underdeveloped green credit ecosystem. ESG considerations remain peripheral in lending and investment decisions, limiting the integration of sustainability metrics.
- The high cost of green financing is another significant barrier. For instance, the financing rate for a 100 MW solar photovoltaic (PV) project in India ranges between 10.0% and 11.5%. This is substantially higher than the cost of financing similar projects in developed nations—approximately 2.8% in Germany and 5.3% in the United States. Such disparities make it harder for India to attract international investment at scale.

- India also faces a persistent green finance deficit. While green bond issuances have grown, they remain modest compared to the size of the renewable energy targets. As of 2023, India's cumulative green bond issuance stood at USD 21 billion. This is insufficient to meet its goal of achieving around 500 GW of renewable energy capacity by 2030.

Domestic and Global Efforts to Promote Green Financing

- Recognising the urgent need to scale up climate finance, both international and domestic mechanisms have been initiated.
- Globally, the **Green Climate Fund (GCF)** was established with a commitment from developed countries to mobilise USD 100 billion annually by 2020 to support climate action in developing countries. Similarly, the **Special Climate Change Fund (SCCF)** was designed to provide funding for adaptation, technology transfer, capacity building, and sustainable development in key sectors such as energy and transport.
- India has also undertaken several initiatives to strengthen its green finance architecture. Among these are the issuance of **Green, Social, Sustainability, and Sustainability-linked (GSSS) bonds**, which include specialised instruments like green bonds (for clean energy), yellow bonds (for solar projects), and blue bonds (for marine ecosystem projects). These instruments are designed to attract a wider pool of investors committed to sustainability.
- The government has also set up the **Climate Change Finance Unit (CCFU)** under the Ministry of Finance. Acting as the nodal agency for climate finance, the CCFU coordinates domestic and international climate finance flows, ensures policy alignment, and facilitates investment in low-carbon projects.

Conclusion

Green finance is not merely an auxiliary component of the economy—it is central to building a resilient, competitive, and sustainable India. With climate challenges intensifying and developmental goals expanding, reorienting capital to serve both economic and environmental objectives is no longer optional—it is imperative. While progress has been made, bridging the green finance gap will require policy coherence, institutional capacity, cost competitiveness, and global collaboration. Only through such a holistic approach can green finance become the foundation upon which future-ready and climate-resilient economies are built.

Strategic Mineral Mining Projects Exempted from Public Hearing under EIA

Context:

In a significant move, the Ministry of Environment, Forest and Climate Change (MoEFCC) has exempted certain mining projects related to national defence from mandatory public hearings under the Environmental Impact Assessment (EIA), 2006.

Details of the Exemption:

At the request of the Ministry of Defence and the Department of Atomic Energy, the exemption applies to mining operations involving atomic minerals like uranium and thorium, and critical or strategic minerals such as lithium, cobalt, and rare earth elements. These exemptions align with the Mines and Minerals (Development and Regulation) Amendment Act, 2023.

Reasons for the Exemption:

The exemption is driven by national security and strategic imperatives. These minerals are essential for India's defence manufacturing, clean energy technologies, and reducing dependence on imports—especially from countries like China. Additionally, the exemption is intended to attract investments by streamlining approvals and making project execution more predictable.

Concerns Raised:

The move, however, raises questions about weakening environmental governance. Public consultation is a statutory part of the EIA process and its removal reduces transparency and limits community participation. This may lead to unrest, legal disputes, and environmental degradation. Critics also argue that repeated exemptions set a precedent for diluting EIA norms, potentially undermining environmental protection mechanisms.

About the EIA:

The Environmental Impact Assessment process, governed by the 2006 notification under the Environmental (Protection) Act, 1986, is designed

to predict and assess potential ecological impacts of developmental projects. It includes crucial steps like screening, scoping, public consultation, and expert appraisal to ensure sustainable development and protect local communities and ecosystems.

Perpetual Bonds

Context:

The Indian Renewable Energy Development Agency Ltd (IREDA) recently raised ₹453 crore at an interest rate of 7.70% through the issuance of perpetual bonds to finance green energy initiatives.

About Perpetual Bonds:

- These are debt instruments with no maturity date, offering indefinite interest payments to bondholders. Also referred to as "perps" or "consol bonds," they provide permanent capital for issuers without obligating them to repay the principal.
- Issuers may include a call option to redeem bonds after a fixed period (typically 5–10 years), especially if market conditions are favourable. Perpetual bonds typically offer higher yields to compensate for their indefinite nature and higher risk. In the event of issuer bankruptcy, perpetual bondholders are ranked below other creditors but above shareholders.

In India, banks and large institutions issue these bonds to strengthen their capital base while retaining equity-like accounting treatment.

Decentralised Finance (DeFi)

Context:

There is growing concern over the misuse of DeFi platforms by terrorist groups for fundraising, infrastructure development, and network expansion.

About DeFi:

- Decentralised Finance is a blockchain-based financial system that allows direct transactions between individuals, bypassing traditional intermediaries like banks. Services such as saving, lending, investing, and insurance are facilitated through smart contracts and decentralised apps (D-Apps).
- Users can access DeFi through digital wallets without the need for formal registration or identity verification. This anonymity and flexibility enable faster, cheaper transactions but also pose risks related to illicit financing, fraud, and regulatory gaps.

Despite eliminating intermediaries, DeFi offers unprecedented control over personal finance. However, its unregulated nature and lack of accountability mechanisms remain key concerns for global financial governance.

Market Reforms 2025: Enhancing FPI Access and IPO Flexibility

Introduction

The Securities and Exchange Board of India (SEBI) has introduced a comprehensive package of market reforms aimed at attracting greater foreign portfolio investment, easing listing requirements for large companies, and improving institutional governance. These reforms come amid rising global economic turbulence, marked by foreign capital outflows triggered by high U.S. tariffs, inflated market valuations, and subdued corporate earnings. By balancing investor protection with regulatory simplification, SEBI's initiatives are poised to bolster India's standing as a competitive and investor-friendly destination.

Expanding Foreign Investor Access with SWAGAT-FI

- Among the most pivotal reforms is the launch of the SWAGAT-FI framework, which stands for *Single Window Automatic & Generalised Access for Trusted Foreign Investors*. This framework is designed to streamline entry and compliance processes for specific categories of trusted foreign investors, such as sovereign wealth funds, central banks, pension funds, insurance companies, regulated retail funds, and Foreign Venture Capital Investors (FVCIs).
- Key features of this framework include the introduction of a unified 10-year registration and Know Your Customer (KYC) cycle, a significant increase from the current 3-year term. Furthermore, SWAGAT-FI exempts entities from the 50% aggregate contribution cap applicable to Non-Resident Indians (NRIs), Overseas Citizens of India (OCIs), and resident Indian investors. The process is further simplified through the

India Market Access portal, which has been launched concurrently to reduce documentation burdens and streamline compliance.

- This reform is particularly timely, as India has experienced record foreign portfolio outflows of nearly ₹63,500 crore since July 2025. By simplifying processes and ensuring long-term regulatory clarity, the SWAGAT-FI initiative seeks to restore global investor confidence and re-attract long-term capital.

Relaxed IPO Norms for Large Issuers

- SEBI has also introduced major changes to Initial Public Offering (IPO) regulations, with a focus on easing dilution requirements for large-scale issuers. Previously, companies with high market capitalisation faced significant pressure to offload large portions of equity to the public, often deterring promoters from listing.
- Under the revised norms, companies with a market capitalisation between ₹1 lakh crore and ₹5 lakh crore are now required to offer only 2.75–2.8% of their post-issue market cap, a notable relaxation from the earlier 5% requirement. For companies planning mega-IPOs, the minimum public offer (MPO) threshold has been increased to ₹6,250 crore, giving them more flexibility during the listing process.
- Additionally, companies listing with a public shareholding below 15% will now be allowed up to 10 years to achieve the 25% minimum public float requirement—an increase from the current 3–5 year timeline. In terms of anchor investors, the anchor quota has been raised from one-third to 40% of the total issue, with mandatory allocations for key financial institutions such as mutual funds, life insurance firms, and pension funds. The minimum allotment size for anchor investors has also been increased to ₹5 crore, and a broader pool of anchor investors is now permitted to participate.
- These changes are expected to make IPOs more attractive for large private companies by reducing the immediate dilution burden and expanding institutional investor participation, thereby supporting deeper capital markets.

Improved Governance of Market Infrastructure Institutions

- Recognising the importance of sound governance in ensuring market integrity, SEBI has implemented structural reforms in the functioning of Market Infrastructure Institutions (MIIs), such as stock exchanges and clearing corporations. Going forward, MIIs will be required to appoint two executive directors who will independently oversee separate verticals—one responsible for critical market operations such as trading, clearing, and settlement, and the other tasked with regulatory compliance functions, including risk management and investor grievance redressal.
- In addition, the roles and responsibilities of managing directors and key managerial personnel have been clearly defined, with an emphasis on succession planning and accountability. These changes are being introduced in response to past incidents of governance lapses in major exchanges, which have undermined public and investor trust. The goal is to reinforce transparency, operational integrity, and investor confidence in the institutions that underpin India's capital markets.

Mutual Fund and Retail Investor-Oriented Reforms

- SEBI has also made targeted reforms to promote financial inclusion, particularly aiming to expand mutual fund participation among retail investors, including those from smaller towns and women investors. To encourage broader participation, the exit load on mutual fund schemes has been reduced from 5% to 3%, making such investments more attractive for long-term retail savers.
- To further incentivise geographical expansion, distributor incentive structures have been revised to specifically promote inflows from beyond the top-30 cities (B-30 regions). SEBI is also encouraging mutual fund investments among women by offering additional incentives for their participation.

- At the same time, SEBI has enhanced corporate governance norms by strengthening disclosure requirements for Related Party Transactions (RPTs). Thresholds for disclosure will now be linked to a company's turnover, ensuring proportionate scrutiny of large-value transactions and reinforcing transparency in business dealings.

Overall Significance of the Reforms

- SEBI's reforms are multidimensional and aim to deliver tangible benefits across several segments of the financial ecosystem. For corporate India, the revised IPO norms offer a more flexible and scalable framework for raising capital, especially for high-growth companies. For global investors, the SWAGAT-FI framework simplifies access to Indian markets while providing long-term regulatory stability, helping India position itself as a preferred investment hub amidst global capital volatility.
- For domestic retail investors, particularly those from underrepresented regions and demographics, the new measures offer better incentives and improved protection mechanisms. These reforms also align with India's broader goal of creating an inclusive and vibrant financial ecosystem that can sustain long-term growth, attract quality capital, and maintain the confidence of both domestic and global stakeholders.

India's First Bamboo-Based Ethanol Plant Inaugurated in Assam: A Milestone for Green Energy and Rural Growth

Introduction

India has been making steady progress in its transition toward renewable energy, with ethanol blending playing a central role in the country's clean energy strategy. While sugarcane and maize have been the primary sources for ethanol production so far, a significant milestone has now been achieved with the inauguration of the world's first bamboo-based ethanol plant in Golaghat, Assam. This pioneering facility marks a convergence of technological innovation, green energy advancement, and economic upliftment, particularly for the Northeast region. It demonstrates the potential of aligning biofuel production with rural development and livelihood generation.

Operational Mechanism of Bamboo-Based Ethanol Production

At the core of this innovation is bamboo, a lignocellulosic biomass that serves as the primary feedstock. Rich in cellulose and hemicellulose, bamboo can be transformed into fermentable sugars through a series of biochemical processes. The production process begins with mechanical and chemical pre-treatment, where cellulose and hemicellulose are separated from lignin. Following this, enzymes break down the cellulose into glucose and hemicellulose into xylose and other fermentable sugars during the hydrolysis stage. These sugars are then subjected to fermentation using specialised microorganisms to produce ethanol. The final step involves distillation, through which ethanol is purified to fuel-grade quality, making it suitable for blending with petrol.

Co-Products and Commitment to a Zero-Waste Model

Beyond ethanol, the Golaghat plant will generate a range of valuable co-products including acetic acid, furfural, and food-grade liquid carbon dioxide (CO_2). This diversification opens multiple revenue streams and contributes to the plant's economic sustainability. Moreover, lignin-rich residues remaining after the pre-treatment phase will be utilised for power generation within the plant, ensuring that the facility operates with energy self-sufficiency and adheres to a zero-waste approach.

Advantages Compared to Conventional Ethanol Sources

Unlike sugarcane or maize, bamboo is a non-food biomass and therefore does not interfere with food crop production. Its rapid regeneration and wide availability make it a highly sustainable and renewable resource. This initiative is especially relevant to Northeast India, a region endowed with rich bamboo reserves. By integrating local farmers and tribal communities into the production chain, the plant fosters inclusive development and embeds bio-economy within the rural fabric of the region.

Key Highlights from the Launch

- On September 14, 2025, Prime Minister Narendra Modi officially inaugurated the bamboo-based ethanol plant in Golaghat, Assam. The facility is designed to

consume five lakh tonnes of bamboo annually, sourced from Assam and neighboring states. It is expected to produce 48,900 metric tonnes (MT) of ethanol, 11,000 MT of acetic acid, 19,000 MT of furfural, and 31,000 MT of food-grade liquid CO_2 every year. This venture is projected to boost Assam's rural economy by ₹200 crore annually.

- Further underlining the government's industrial expansion goals, the foundation stone was also laid for a ₹7,230 crore polypropylene plant at the Numaligarh Refinery. This complementary project aims to strengthen the region's industrial ecosystem.
- During the inauguration, Prime Minister Modi highlighted the project as a step toward achieving India's larger vision of energy self-sufficiency and a developed nation (Viksit Bharat). He underscored the importance of such initiatives in reducing dependence on fossil fuel imports while simultaneously empowering local communities.

Broader Significance of the Project

The establishment of this bamboo-based ethanol plant carries multifaceted significance. In terms of energy security, it contributes to reducing India's reliance on imported crude oil, thereby conserving foreign exchange. From a developmental perspective, it enhances rural and tribal livelihoods by creating new market linkages and income streams. Environmentally, the adoption of bamboo-based biofuel aligns with India's commitment to combat climate change through emission reduction. Strategically, the project reinforces Assam's position on India's industrial map, aligning with national campaigns like Make in Assam and Make in India, thereby stimulating regional economic growth and infrastructure development.

Rationalising Tariffs for a Competitive India: Reforming Trade Policy for Growth, Investment, and Global Integration

Introduction and Context

India's trade policy has come under renewed global scrutiny following the United States' decision to impose a 50% tariff on certain Indian goods. This move, accompanied by the US labelling India as the "Tariff King," has reignited debates around the country's high import duties and their broader economic implications. Experts argue that India must urgently rationalise its tariff regime to enhance global competitiveness, attract foreign direct investment, and integrate effectively into global value chains (GVCs).

India's Current Tariff Landscape

- India's tariff regime is marked by significant protectionism and inconsistency. Among G20 economies, India has the second-highest simple average tariff rate at 16.2%, only behind Turkey. In the agricultural sector, the trade-weighted average tariff stands at a staggering 64.3%—the highest in the world—primarily to protect the livelihoods of nearly 46% of India's workforce that remains dependent on agriculture.
- In contrast, non-agricultural goods face a comparatively lower trade-weighted average tariff of 9.2%, though this still exceeds the corresponding figures in economies like Argentina, the European Union, and China. Compounding the issue is the irrational dispersion of duties—for instance, while cotton is imported duty-free, milk powder faces a 60% tariff and food preparations up to 150%. Such anomalies distort resource allocation and consumer choice.
- These high and inconsistent tariff rates have also emerged as major hurdles in trade negotiations, including the stalled India-UK Free Trade Agreement (FTA) and the India-EU Broad-based Trade and Investment Agreement (BTIA), limiting India's ability to engage in deeper trade integration.

The Case for Tariff Rationalisation

- There is a growing consensus that rationalising tariffs is essential for enhancing India's economic competitiveness. Lower tariffs can stimulate domestic firms to improve efficiency and embrace innovation, as was evident in the post-1991 liberalisation of the automobile sector. Consumer welfare would also be significantly enhanced, as reduced tariffs on essential imports such as edible oils can lower prices, ease

inflation, and improve nutritional security.

- A more predictable and transparent tariff regime would help India integrate into global value chains and attract greater foreign direct investment under the "China+1" strategy being pursued by global manufacturers. Furthermore, a rational tariff policy would enhance India's credibility and leverage in international trade negotiations, potentially unlocking long-pending agreements with the EU, UK, and Gulf Cooperation Council (GCC). It would also help reduce the risk of trade retaliation, as seen in the recent US tariff hike.

Economic Implications of Tariff Reform

- Tariff rationalisation holds significant potential for boosting India's economic growth. It would enable better integration with global supply chains, enhance export performance, and generate employment opportunities. A gradual liberalisation strategy, supported by safety nets, could help farmers transition toward high-value crops such as horticulture and pulses.
- Lower import duties on raw materials would also benefit the manufacturing sector by reducing input costs, thereby boosting productivity and competitiveness—especially for micro, small, and medium enterprises (MSMEs). Consumers would gain from more affordable goods and services. On the global stage, a more balanced and transparent tariff regime would position India as a responsible trade partner, improving its image within the World Trade Organization (WTO) and G20 frameworks.
- Crucially, increased competition resulting from lower tariffs would push domestic firms to invest in research and development (R&D), improve product quality, and drive innovation.

Challenges to Implementing Tariff Rationalisation

- Despite its benefits, tariff rationalisation faces considerable political and structural challenges. A significant portion of India's farming community could be adversely affected, particularly smallholders involved in sectors like dairy, sugar, and pulses. This could provoke political backlash and protests.
- Fiscal concerns also loom large, as customs duties form an important part of government revenue. Any significant reduction in tariffs must therefore be accompanied by strategies to offset potential revenue losses. MSMEs worry that liberalisation could expose them to unfair competition from cheaper imports unless productivity is simultaneously improved through technology and infrastructure support.
- Another major barrier is India's infrastructure deficit. Inadequate logistics, storage, and transportation facilities continue to erode the competitiveness of domestic firms, regardless of tariff adjustments. Additionally, entrenched policy inertia and lobbying from sectoral interests have historically resisted reforms, particularly in highly protected areas such as dairy and poultry.

Suggested Reforms and Pathways Forward

- To address these challenges, a structured and phased approach to tariff rationalisation is essential. A tiered tariff structure could be implemented, categorising imports as follows: 0–10% for raw materials, 10–20% for non-sensitive goods, 20–35% for sensitive goods, and 35–50% for luxury items. Introducing Tariff Rate Quotas (TRQs) would allow limited imports at reduced duties, balancing the need to protect vulnerable sectors such as dairy and pulses while ensuring price stability and supply.
- Boosting agricultural productivity must go hand in hand with tariff liberalisation. Doubling public expenditure on agricultural R&D to at least 1% of agricultural GDP (compared to the OECD average of 3%) would significantly enhance crop yields. Investments in precision farming and micro-irrigation technologies can also improve water-use efficiency and farm output.
- Fertiliser subsidies should be restructured by moving towards Direct

Benefit Transfer (DBT) models that deliver direct cash support to farmers. This would reduce leakages, promote efficient fertiliser use, and allow market-driven pricing.

- Strengthening agricultural value chains is equally critical. Investment in logistics infrastructure—such as cold chains, storage, and transportation—would reduce post-harvest losses, currently estimated at 15–20%, and increase farm gate prices. Encouraging the formation of Farmer Producer Organisations (FPOs) can facilitate aggregation and improved market access.
- The tariff regime itself should be aligned with the broader logic of the Goods and Services Tax (GST). A simplified and transparent tariff code would reduce litigation and minimise administrative discretion. The adoption of digital customs platforms could further streamline import procedures, enhance compliance, and improve ease of doing business.

Conclusion

- India's current image as the "Tariff Maharaja" is no longer compatible with its aspirations of becoming a competitive, innovation-driven global economy. Imports must be reimagined as a catalyst for growth rather than a threat to domestic industry. Rationalising tariffs, in line with Ricardo's principle of comparative advantage, would allow India to reallocate resources efficiently, improve consumer welfare, and enhance global trade participation.
- Such reforms would not only benefit Indian farmers through higher productivity and improved access to technology and markets but also strengthen the country's position in international trade forums. With careful planning, political will, and institutional coordination, India can transition from a tariff-protected economy to one that is open, resilient, and globally competitive.

PLI Scheme for White Goods

The Indian government has recently reopened the application window for the Production-Linked Incentive (PLI) scheme aimed at boosting white goods manufacturing.

About the PLI Scheme for White Goods

- This scheme is designed to establish a comprehensive component ecosystem specifically for the Air Conditioners and LED Lights industries within India, integrating the country more deeply into global supply chains. It operates as a pan-India initiative without being restricted to any particular region or demographic segment.
- The primary goal of the scheme is to offer financial incentives that encourage domestic manufacturing and attract significant investments into the white goods manufacturing value chain. It aims to remove sector-specific challenges, create economies of scale, enhance export capabilities, develop a robust component ecosystem, and generate employment.
- Under the scheme, eligible companies receive an incentive ranging between 4% to 6% on incremental turnover over the base year (2019-20) for goods sold domestically and exported internationally. These incentives are offered for a duration of five years.
- To qualify, applicants must be incorporated in India under the Companies Act, 2013, and meet specified thresholds for incremental sales and cumulative investment. Entities already benefiting from other government PLI schemes for the same products are not eligible under this scheme. The scheme will run from the financial year 2021-22 through 2028-29 and is managed by the Department for Promotion of Industry and Internal Trade (DPIIT), Ministry of Commerce and Industry.

India Secures International Seabed Authority Licence to Explore Polymetallic Sulphides

- India has taken a significant leap in its pursuit of critical mineral resources by obtaining a unique and unprecedented exploration licence from the International Seabed Authority (ISA). This newly acquired licence authorizes India to explore polymetallic sulphides in the Carlsberg Ridge, a geologically important

area located in the northwestern Indian Ocean. In the context of increasing global competition for rare minerals essential to clean energy technologies, this development marks a major milestone in advancing India's ambitions in deep-sea mining.

- In September 2025, India formalized an agreement with the Jamaica-based ISA, granting it the authority to explore polymetallic sulphur nodules spread over an expansive 300,000 square kilometres in the Carlsberg Ridge. These mineral-rich nodules contain vital elements such as manganese, cobalt, nickel, and copper—resources that are crucial for the production of batteries, renewable energy infrastructure, and advanced electronic manufacturing. This agreement is especially significant as it is the first of its kind globally for exploration in this particular region, positioning India at the forefront of accessing the Carlsberg Ridge's untapped mineral reserves.
- India's involvement in seabed mineral exploration is rooted in a long-standing commitment. It initially obtained exploratory rights in the Central Indian Ocean Basin in 2002 for polymetallic nodules. This was followed in 2016 by a second ISA contract to explore polymetallic sulphides along the Indian Ocean Ridge. These contracts, which remain valid until 2027 and 2031 respectively, have been instrumental in developing India's technological and institutional capabilities in deep-sea mining operations. Although several surveys have been carried out under these agreements, full-scale mineral extraction has yet to be realized due to ongoing environmental concerns and the prohibitive costs associated with deep-sea mining infrastructure.

Strategic Importance

- The implications of these newly acquired exploration rights extend well beyond the mere acquisition of mineral resources. As demand rises for critical minerals used in electric vehicles, renewable energy storage systems, and high-tech electronics, India's ability to secure such resources ensures a stronger position within global supply chains. Additionally, geopolitical dynamics have added urgency to this pursuit. Reports indicating the presence of Chinese research vessels in the region played a role in motivating India's application to the ISA in 2024. In this light, exploration licences are not only instruments for resource extraction but also serve as tools to pre-empt competing claims.
- Thus, this strategic acquisition contributes significantly to India's economic objectives and national security interests alike.

Legal and Environmental Dimensions

- Under the framework of the United Nations Convention on the Law of the Sea (UNCLOS), nations may claim rights to their continental shelves up to 350 nautical miles from their coastlines—or in specific regions like the Bay of Bengal, up to 500 nautical miles. However, territories beyond these limits fall under the purview of the ISA, which oversees resource rights in international waters.
- While India's new exploration rights represent a considerable economic opportunity, they also raise critical environmental questions. Deep-sea mining, particularly in fragile ecosystems, is fraught with ecological risks. Scientists warn that disruption of the seabed could result in irreversible damage to marine biodiversity. Globally, there is still no consensus on stringent safeguards, and as commercial interest grows, regulatory debates continue. India, while advancing its strategic goals, will be expected to align its activities with its environmental responsibilities and international commitments.

Global Context and Future Outlook

At present, a total of 19 countries hold seabed exploration rights under various ISA agreements. India's new licence, however, stands out both for the scale of its area and the strategic location of the Carlsberg Ridge, which demarcates the boundary between the Indian and Arabian tectonic plates. Looking ahead, India is expected to enhance its domestic capabilities in subsea technology, robotics, and environmental impact

assessments. In the broader context of the global transition to clean energy, reliable access to key minerals such as cobalt, nickel, and copper will be crucial for ensuring India's competitiveness in manufacturing and long-term energy security.

Why India Resists US Corn Imports

US Commerce Secretary Howard Lutnick recently criticised India's trade practices, particularly highlighting its unwillingness to import American corn. Lutnick argued that India benefits from preferential access to the US market while maintaining high tariffs on American goods, leading to what he described as a "one-way" trade relationship. Despite India's large population of 1.4 billion, Lutnick noted that it does not import even minimal amounts of US corn. He labelled this stance as unfair and inconsistent with the principles of "fair and reciprocal trade" promoted by the United States.

India's Import Policy on Corn and Its Rationale

- In the fiscal year 2024–25, India imported 0.97 million tonnes of corn, sourcing the majority from Myanmar (0.53 mt) and Ukraine (0.39 mt), while US corn imports remained negligible at just 1,100 tonnes. This limited engagement with US corn is rooted in two primary factors. First, India imposes a relatively low import duty of 15% on corn imports up to 0.5 million tonnes; however, any quantity exceeding this threshold is subject to a steep 50% tariff. Second, India enforces a ban on genetically modified (GM) corn, which dominates US corn production.
- Additionally, India ranks as the world's fifth-largest corn producer and is largely self-sufficient. Its corn sector is composed predominantly of small-scale farmers, whose livelihoods the government seeks to protect from foreign corporate competition. These protective measures have become a point of contention for the US, which remains the world's largest corn producer and exporter. In 2024–25, the United States produced 377.63 million tonnes of corn and exported 71.70 million tonnes, with key uses spanning livestock feed, ethanol production, and processed foods.

Declining Chinese Demand and the US Export Push

- The US has intensified its search for alternative corn markets due to rapidly declining demand from China. In 2022, China was the largest importer of US corn, purchasing $5.21 billion worth out of total US corn exports valued at $18.57 billion. By 2024, US corn exports had fallen to $13.70 billion, with Chinese imports plummeting to just $331 million—far behind Mexico ($5.51 billion), Japan ($2.73 billion), and Colombia ($1.52 billion). The trend has worsened in 2025; between January and July, amid escalating trade tensions, China imported a mere $2.4 million worth of US corn. This dramatic decline in Chinese purchases has intensified US pressure on other markets, including India, and underpins Lutnick's vocal criticism of India's restrictive trade policies.
- For 2025–26, US corn production is projected to reach a record 427.1 million tonnes, with exports expected to rise to 75 million tonnes. Most of this output originates from Midwestern states such as Iowa, Illinois, and Nebraska. As the US grapples with the loss of its largest corn buyer, it views India's growing demand as a critical opportunity.

India's Expanding Demand Versus US Trade Barriers

- India's corn consumption is forecast to surge in the coming decades due to a growing population, higher per capita income, and rising demand for protein-rich foods such as milk, eggs, fish, and meat. According to projections from the US Department of Agriculture, India's corn demand is expected to rise from 34.7 million tonnes in 2022–23 to 98 million tonnes by 2040, and further to 200.2 million tonnes by 2050, under a scenario of rapid income growth. This trajectory would necessitate imports of 46 million tonnes and 134 million tonnes, respectively. Even under a more moderate growth scenario, consumption could still reach 93 million tonnes by 2050, requiring 26 million tonnes of imports.
- Despite its cost advantage—US corn is the world's cheapest—America's efforts to access this future market face serious

roadblocks. Approximately 94% of US corn acreage is planted with GM varieties, which are banned in India for both import and cultivation. Although a proposal from NITI Aayog once suggested importing GM corn exclusively for ethanol production, it was ultimately shelved.

Outlook and Political Considerations

- India continues to resist US pressure, standing firm on its domestic agricultural policies, including opposition to GM corn and the maintenance of protective tariffs. Political factors further entrench this position. With assembly elections approaching in Bihar, India's third-largest corn-producing state (after Karnataka and Madhya Pradesh), the government is unlikely to risk backlash by easing import barriers or permitting GM corn.
- Economic considerations also play a role. The cost of US corn is less than ₹15 per kilogram, significantly lower than India's wholesale price of ₹22–23/kg and its Minimum Support Price (MSP) of ₹24/kg for the 2025–26 season. These price disparities make US corn an attractive but politically sensitive option, as any liberalisation could undercut domestic farmers.
- In conclusion, while the US continues to lobby hard for market access, particularly in light of declining exports to China, India remains committed to safeguarding its agricultural sector and public sentiment. The current stance suggests no immediate shift in policy, despite increasing pressure from Washington.

India's Outward Foreign Direct Investment and Tax Haven Exposure

Context and Overview

- Recent data released by the Reserve Bank of India (RBI) for the financial year 2024–25 reveals that nearly 56% of India's outward foreign direct investment (OFDI) was routed through low-tax jurisdictions such as Singapore, Mauritius, the UAE, the Netherlands, the United Kingdom, and Switzerland. This trend highlights the evolving nature of Indian firms' global expansion strategies and raises important questions about tax practices, regulatory frameworks, and the strategic use of offshore financial centres.
- Outward FDI refers to investments made by Indian companies to establish or acquire businesses overseas. These investments are often channelled through special purpose vehicles (SPVs) located in jurisdictions known for their favourable tax regimes, business-friendly regulations, and ease of cross-border fund transfers. Such jurisdictions—commonly termed as tax havens or low-tax countries—serve multiple roles beyond tax minimisation, including operational efficiency and investor confidence.
- In FY 2024–25, six jurisdictions accounted for over half of India's OFDI. Singapore emerged as the top destination, receiving 22.6% of total OFDI, followed by Mauritius (10.9%) and the UAE (9.1%). These three alone captured more than 40% of India's total outward investment. A significant portion—close to 60%—of the investments made through these destinations were intended for the formation of joint ventures, suggesting that Indian firms are using these locations as strategic hubs for international partnerships and global fundraising rather than merely as tax shelters.

Implications and Concerns

- The concentration of OFDI in low-tax jurisdictions raises several implications. From a tax policy perspective, it brings up concerns related to round-tripping—where domestic funds are routed abroad and reinvested in India to gain tax benefits—as well as broader issues of base erosion and profit shifting (BEPS). These practices can undermine the integrity of India's tax base and warrant the strengthening of oversight mechanisms.
- On the other hand, routing OFDI through these financial centres can improve capital efficiency. Such jurisdictions offer Indian firms easier access to global capital markets and greater flexibility in structuring cross-border deals. For firms operating in highly regulated or high-tariff sectors, setting up operations in countries with favourable regulatory frameworks can provide a strategic edge in global competition.
- The growing reliance on these jurisdictions also underscores the need for clear and robust FDI and tax treaty frameworks to ensure that the benefits of globalisation are not

compromised by regulatory arbitrage. Balancing tax transparency with the need to support Indian firms in their globalisation efforts remains a delicate policy challenge.

Conclusion

India's outward FDI patterns reflect a complex interplay of strategic business considerations, regulatory environments, and global tax structures. While the use of low-tax jurisdictions can facilitate investment and operational flexibility, it also poses significant risks related to tax avoidance and regulatory evasion. Going forward, India must strengthen its tax treaties, enhance regulatory oversight, and encourage greater transparency in overseas investments—without stifling the global ambitions of its domestic enterprises.

Indian Dairy Sector: A Critical Engine of Rural Livelihood and National Food Security

Context and Background

India's refusal to open up its dairy sector has emerged as a major stumbling block in the ongoing India–U.S. trade negotiations. The Indian government continues to resist external pressure, arguing that liberalisation poses a threat to both farmer livelihoods and national milk self-sufficiency. This stance is rooted in the historical evolution and strategic importance of India's dairy industry, which has undergone a remarkable transformation since the launch of Operation Flood (1970–1996). This landmark initiative turned India from a milk-deficient country into the world's largest producer, now contributing 26% of global milk output.

Current Landscape of the Dairy Sector

As of 2024–25, India's milk production has reached 248 million metric tonnes (MMT), with domestic consumption closely matching at 243 MMT, indicating a state of self-sufficiency. The sector supports over 80 million smallholder farmers, most of whom rear just 3–4 cows per household. Despite its massive scale, India's dairy productivity remains relatively low, with per-cow yields at just one-eighth of levels seen in the U.S. or New Zealand. The supply chain is heavily fragmented, with 70% of marketed milk passing through unorganised channels and only 30% being handled by formal co-operatives and private dairies.

Socio-Economic Significance

Dairy occupies a central role in India's agricultural economy, contributing 31% to agricultural GDP—more than any single crop including cereals, pulses, or oilseeds. It serves as a backbone of rural livelihoods, particularly for women, offering a steady income stream that remains resilient even during agricultural downturns or droughts. Beyond income generation, dairy plays a crucial role in ensuring nutrition security by providing affordable access to protein, calcium, and essential micronutrients, especially for India's largely vegetarian population. Moreover, the sector acts as a socio-economic equaliser by enabling landless and marginal farmers to participate in income-generating activities. It is also a key rural employment engine, with strong multiplier effects in allied sectors such as transport, retail, and milk processing.

India's Reluctance to Liberalise the Dairy Market

- India's resistance to opening up its dairy sector is driven by multiple interlinked factors. The foremost concern is the protection of its farmers. Any reduction in import tariffs could lead to an influx of cheaper foreign dairy products, driving down procurement prices and compelling small farmers to abandon dairy farming. Another key issue is the preservation of self-sufficiency; increased reliance on imports could erode domestic production capacity, leading to future shortages and price instability.
- There are also significant socio-political dimensions. Dairy acts as a buffer against rural distress, and sudden exposure to international market forces could destabilise local economies, triggering social unrest. Moreover, India's dairy industry is still in the process of maturing. Lacking economies of scale and technological efficiency, it remains vulnerable to competition from well-established global players. This is compounded by the political sensitivity of cooperative dairy institutions such as Amul, Nandini, and Verka, which hold deep roots in rural vote banks and are integral to regional political dynamics.

Global Trade Context

- Globally, there is an oversupply of dairy, with producers in the U.S., European Union, and

New Zealand facing stagnant domestic demand. These countries are eyeing India as a lucrative export destination. Consequently, dairy market access has become a major sticking point in India–U.S. Free Trade Agreement (FTA) negotiations. While India maintains high tariffs to shield its domestic sector, its dairy exports—particularly of ghee, butter, and milk powder—have doubled over the past three years, with key markets including Bangladesh and the UAE.

- Despite these gains, Indian producers face intense competition from multinational corporations such as Lactalis, Fonterra, and Danone, which possess vast surplus capacities and deep financial reserves. Liberalising the sector could enhance India's bargaining power in broader trade negotiations, but it also entails the risk of a rural economic backlash if domestic producers are undercut by global giants.

Challenges Facing India's Dairy Sector

India's dairy sector faces several structural and operational challenges. Low per-animal productivity continues to undermine cost competitiveness and restrict export potential. The reliance on paddy-straw feed, coupled with unhygienic animal housing and rising heat stress, further reduces milk yield and compromises animal health. Breeding inefficiencies persist, with limited adoption of artificial insemination and minimal use of sex-sorted semen to improve the yield potential of progeny.

Supply chain inefficiencies are also a major bottleneck. The dominance of the unorganised sector results in poor cold-chain infrastructure, high spoilage rates, and limited value addition. Additionally, the sector remains underfunded—despite contributing nearly one-third of the agricultural GDP, it receives only 4% of the overall agricultural budget.

Proposed Reform Agenda

- Addressing these structural deficiencies requires a multifaceted reform approach. Enhancing productivity is a priority, which involves promoting balanced feed practices, region-specific breed selection, and expanding access to IVF and sex-sorted semen to improve reproductive efficiency and yield outcomes.
- Infrastructure development is equally critical. The establishment of cluster-based dairy parks, chilling units, and mechanised milking systems can improve milk quality and reduce post-harvest losses. Encouraging farmer-producer organisation (FPO)-led aggregation will help achieve economies of scale, making smallholder operations more viable.
- On the policy front, a proportional increase in budgetary allocation is necessary to align with the sector's economic contribution. This should be complemented by greater access to credit and insurance for smallholders to mitigate risks.
- Expanding the value chain through increased processing of high-margin products like cheese, whey, and butter can enhance profitability. At the same time, building strong Indian dairy brands—particularly around niche segments like "A2 milk" and organic dairy—can increase global market share.
- Equally important is behavioural change. Farmers must be encouraged to treat dairy as a primary business rather than a supplementary income source. Investments in farmer training and extension services will be crucial in building awareness and capacity.

Conclusion

India's dairy sector is far too important—economically, nutritionally, and socially—to be left vulnerable to global price shocks. While protective measures are necessary to shield small farmers from premature exposure to international competition, these must be paired with far-reaching structural reforms aimed at boosting productivity, strengthening value chains, and enhancing competitiveness. With the right balance of investment, innovation, and policy support, India has the potential not only to safeguard rural livelihoods but also to emerge as a global dairy powerhouse.

Involution in China's EV Industry

- China's electric vehicle (EV) sector is currently grappling with a phenomenon known as "involution," which refers to a cycle of excessive competition that leads to diminishing returns and industry instability.
- Derived from the Latin word *involūtiōn-em*, meaning "to turn inward," and popularised

academically by anthropologist Clifford Geertz in his 1969 study *Agricultural Involution*, the term now describes an intense form of internal competition. In the context of EVs, it reflects a scenario where 120–130 manufacturers engage in relentless price wars, often selling vehicles below cost, leading to severe financial strain and mounting inventories.

- The situation has been exacerbated by high tariffs imposed by the US and EU, which have reduced export avenues, forcing Chinese firms to dump excess supply in the domestic market. The resulting hyper-competition has triggered government concern over potential economic instability.
- This involutionary cycle is pushing smaller firms toward bankruptcy, leading to industry consolidation and possible job losses. Profits have shrunk to levels that threaten future investments in research and development. The overflow of cheap Chinese EVs into emerging markets also risks destabilising local auto industries worldwide.

National Policy on Geothermal Energy: India's New Renewable Frontier

Context

The Ministry of New and Renewable Energy has released India's first-ever National Policy on Geothermal Energy, marking a strategic shift to diversify the country's clean energy portfolio and supporting its commitment to achieving net-zero carbon emissions by 2070.

- **Policy Scope and Vision**: The policy identifies 381 geothermal hot springs across 10 provinces as potential zones for harnessing geothermal energy. It supports both high-enthalpy applications (for electricity generation) and low to medium-enthalpy uses (for heating, cooling, agriculture, and industry). The framework covers the entire lifecycle of geothermal projects—from resource identification and assessment to end-use applications, including hybrid systems and the innovative repurposing of decommissioned oil and gas wells for geothermal extraction.
- **Sustainability and Regulatory Mechanisms:** To ensure environmental sustainability, the policy mandates safe reinjection of geothermal fluids, compliance with safety regulations, and mandatory stakeholder consultation in ecologically sensitive areas. A single-window clearance system through state nodal agencies has been proposed to streamline administrative processes.
- **Investment and Financial Framework:** The policy opens the geothermal sector to 100% foreign direct investment (FDI), encouraging domestic innovation and collaboration with oil and gas sectors. It offers a range of financial incentives such as risk-sharing mechanisms, concessional loans, Viability Gap Financing (VGF), green bonds, feed-in tariffs, and blended finance. In addition, fiscal concessions like GST exemptions, tax holidays, accelerated depreciation, and property tax relief have been proposed to attract investment.
- **Capacity Building and Collaboration:** The policy promotes international collaboration and capacity-building initiatives through knowledge sharing, technical training, and peer learning. This approach aims to strengthen India's geothermal capabilities through global best practices.
- **Leasing and Data Infrastructure:** Exploration leases are to be granted for 3–5 years, while development leases may extend beyond 30 years. Concessional land allotments are envisaged to support project viability. A centralized data repository will be established, with mandatory submission of exploration and production data to improve transparency and inform future policy decisions.
- **About Geothermal Energy:** Geothermal energy harnesses heat from beneath the Earth's surface—either from natural reservoirs or those created through engineering techniques. This thermal energy, accessible by drilling wells, can be utilised for electricity production, space heating, cooling systems, and other industrial applications.

India's New Geothermal Energy Policy: Potential, Benefits, and Challenges

India has introduced a national geothermal energy policy aimed at testing the commercial viability of geothermal technology. This initiative has already attracted interest from companies based in the United States, Iceland, and Norway,

which are undertaking research and development as well as pilot projects in regions such as the Gulf of Cambay, Arunachal Pradesh, and Uttarakhand.

Understanding Geothermal Energy

- Geothermal energy is derived from the Earth's internal heat, typically accessed through hot springs or underground reservoirs. This heat is used to produce steam, which drives turbines to generate electricity. Beyond electricity generation, geothermal energy offers additional applications such as space heating, cooling, greenhouse cultivation, and aquaculture.
- The Geological Survey of India (GSI) has identified 381 hot springs across the country, with surface temperatures ranging between 35°C and 89°C, highlighting the presence of significant hydrothermal resources.
- The process of tapping geothermal energy involves several steps. First, deep wells are drilled to reach hydrothermal reservoirs. In dry steam plants, steam is directly extracted and used to rotate turbines. Alternatively, in flash steam plants, high-pressure hot water is brought to the surface and rapidly depressurized in a flash tank to produce steam, which then drives the turbine.
- Once mechanical energy is generated by the turbine, it is converted into electricity via a generator. The cooled water or condensed steam is then reinjected into the reservoir, an essential measure to maintain reservoir pressure and ensure the sustainability of the system.
- India's geothermal potential is estimated at 10.6 GW, with key geothermal zones located in the Himalayan Geothermal Province—including Uttarakhand, Himachal Pradesh, Ladakh, Jammu and Kashmir, and Arunachal Pradesh—as well as in the Cambay Graben of Gujarat and the Andaman and Nicobar Islands. Abandoned oil wells, particularly in Cambay and Gandhar (operated by ONGC in Gujarat), are also under evaluation for geothermal adaptation.
- At the global level, installed geothermal capacity stands below 17 GW, with the United States, Indonesia, and the Philippines accounting for the majority. However, countries like Iceland and Norway are leading technological innovation in the field. According to the US International Trade Administration, the Puga and Chumathang geothermal fields in Ladakh are India's most promising sites. The International Energy Agency (IEA) projects that China, the United States, and India will together account for 75% of next-generation geothermal development, with India's installed capacity expected to reach 4.2 GW by 2035 and potentially approach 100 GW by 2045.

Policy Drive and International Collaborations

- The Ministry of New and Renewable Energy (MNRE) has launched the geothermal energy policy to accelerate exploration and development. Companies from Norway and Iceland have initiated pilot studies in locations such as the Gulf of Cambay, Arunachal Pradesh, and Uttarakhand. Collaborative ventures with the United States and Indonesia are also being explored, with a focus on enhanced geothermal systems that are better suited for large-scale power generation.
- The policy highlights the potential for geothermal energy to revolutionize energy access in remote regions. For example, in the Andaman and Nicobar Islands, where electricity costs range from ₹30 to ₹32 per unit, geothermal power could bring the cost down to ₹10 to ₹11 per unit. In Ladakh, geothermal systems could provide essential heating and electricity during the region's harsh winters, thereby significantly improving living conditions and energy security.
- India possesses thousands of decommissioned oil wells, particularly in the Gulf of Cambay, which are being considered for conversion into geothermal wells. Interest from the oil and gas sector is growing, with IIT Madras currently piloting a 450 kWh geothermal project in Barmer, Rajasthan. This initiative is supported by the MNRE in collaboration with Vedanta's Cairn Oil & Gas. Similarly, Reliance Industries is

exploring geothermal energy integration within its oil and gas portfolio.

Challenges and the Need for Policy Support

Despite its promise, geothermal development faces significant barriers, particularly high initial capital costs and exploration risks. On average, it costs an estimated ₹36 crore to establish one megawatt of geothermal capacity. To address these challenges, the national geothermal policy includes provisions for research and development, pilot projects, and enhanced coordination between stakeholders such as the Ministry of Petroleum and Natural Gas and various state governments. A viability gap funding (VGF) mechanism is also under consideration to offset financial risks and attract private investment.

Ongoing Initiatives and Future Outlook

The MNRE has already approved five geothermal pilot projects, including one led by Vedanta. With the rollout of the new policy, the ministry anticipates expanding this portfolio. This initiative follows the formation of a dedicated MNRE task force on geothermal energy in August 2024. The overarching goal is to establish the commercial feasibility of geothermal power in India and to create both technical and financial frameworks that will enable large-scale deployment in the future.

World Trade Report 2025 Highlights Transformative Role of AI in Trade and Inclusive Growth

The **World Trade Organization (WTO)** has released its *World Trade Report 2025*, focusing on the far-reaching impact of **artificial intelligence (AI)** on global trade dynamics and the pursuit of inclusive economic growth. The report frames AI as a **general-purpose technology**—a category reserved for innovations with the capacity to transform entire economies. With its pervasive influence across sectors and borders, AI is expected to reshape patterns of **wealth distribution, income, and labor** on a global scale.

AI as a Catalyst for Trade Expansion and Inclusive Growth

The report outlines several key mechanisms through which AI can significantly enhance global trade while also promoting broader economic inclusion:

- AI holds the potential to **lower trade costs** and increase **productivity** across supply chains. Through enhanced logistics optimization, streamlined regulatory compliance, automated contract enforcement, and real-time translation that mitigates language barriers, AI could contribute to a **34–37% increase in global trade volumes by 2040**. These efficiency gains are expected to particularly benefit developing economies by improving market access and competitiveness.
- A notable impact of AI lies in its influence on the **'skill premium'**—the wage gap between high-skilled and low-skilled workers. Unlike previous technological waves, AI is projected to substitute more tasks performed by **medium- and high-skilled workers** than those done by low-skilled workers. As a result, the **relative demand for high-skilled labor** may decline, causing the **global skill premium to drop by an estimated 3–4%**. This trend could help reduce income inequality, especially in countries where technological advances have disproportionately favored skilled professionals.
- The report also emphasizes the role of AI in accelerating **knowledge diffusion** through international trade. Countries more open to trade experience stronger **innovation spillovers**, with empirical data indicating that a **10% rise in digitally deliverable services trade** corresponds with a **2.6% increase in cross-border citations of AI-related patents**. This trend highlights how international trade can amplify innovation by spreading cutting-edge technologies beyond their points of origin.
- AI also opens up **new development pathways** for countries, particularly those endowed with **critical minerals** or **renewable energy resources**. Such nations could position themselves as key suppliers of upstream components like semiconductors or energy inputs, as well as become destinations for labor-intensive services such as **data collection, annotation, and digital**

processing. This diversification of economic roles offers emerging economies a unique opportunity to integrate into high-value segments of the global AI-driven economy.

Policy Concerns and Areas Requiring Immediate Attention

- Despite its transformative potential, the rise of AI presents significant challenges that demand urgent and coordinated policy responses.
- A primary concern is the **concentration of AI capabilities** within a limited number of firms and countries. The report warns that this concentration could lead to **unequal access to AI technologies**, reinforcing existing global inequalities and undermining the potential for inclusive development.
- In parallel, the **disruption of labor markets** remains a critical issue. As AI automates routine and cognitive tasks, some segments of the workforce are likely to face displacement. To mitigate this, the WTO calls for **investments in education, re-skilling, and active labor market policies** aimed at helping workers transition into new roles shaped by digital technologies.

Conclusion: Enabling Inclusive AI and Trade Integration

- The WTO concludes that realizing the **inclusive potential of AI in global trade** will require **proactive, coordinated, and forward-looking policies**. These include strategic investments in **digital infrastructure and digital literacy**, efforts to **promote regulatory coherence** across borders, and measures to **ensure competitive markets** that prevent monopolistic control over AI technologies.

Equally important is the role of **international cooperation**, with the WTO positioning itself as a central platform for policy dialogue, norm-setting, and cross-border collaboration. By fostering a global environment of trust, equity, and shared responsibility, the report envisions a future where AI not only boosts trade volumes but also contributes meaningfully to **equitable and sustainable economic growth** across all regions.

EU–India Strategic Roadmap: Trade, Technology, and Defence

The European Union has officially launched a comprehensive new **EU–India Strategic Roadmap** aimed at deepening cooperation across multiple critical sectors—trade, technology, defence, connectivity, and climate action. This initiative, unveiled against the backdrop of evolving global geopolitics, signals a clear recognition of India's rising stature and its importance as a strategic partner for Europe. The roadmap represents a concerted effort to elevate bilateral relations, providing a long-term framework for collaborative engagement and mutual growth.

Strategic Vision and Background

- The new roadmap was introduced by European Commission President Ursula von der Leyen as part of a broader joint communication on the *New Strategic EU–India Agenda*. It reflects the European Union's intent to significantly deepen its ties with India, leveraging shared values and mutual interests as the foundation of this partnership. The European Commission underscored the fact that the EU is already India's largest trading partner, and it reiterated its commitment to concluding the long-anticipated Free Trade Agreement (FTA) with India by the end of the year. This agreement, if finalised, would become the largest trade deal ever signed by the EU.
- While the roadmap demonstrates strong alignment between both parties, EU officials also acknowledged potential points of friction—most notably, India's ongoing purchases of Russian oil and its participation in Russian military exercises. These issues could present hurdles in fully realising the roadmap's ambitions, though both sides remain committed to navigating these challenges through dialogue and shared interests.

Pillars of Cooperation

- **Trade and Economic Relations:** Central to the roadmap is the deepening of trade and economic engagement. The EU continues to view the Free Trade Agreement as a pivotal component of the overall strategy. Alongside this, the roadmap highlights the importance of

diversifying global supply chains, increasing investment flows, and creating a business-friendly environment that encourages bilateral commerce. A notable proposal includes the establishment of an *EU–India Business Forum* to facilitate direct business-to-business interactions and foster private sector collaboration.

- **Technology and Innovation:** Technology is a cornerstone of the strategic partnership. The roadmap outlines initiatives focused on emerging technologies and digital transformation, including the strengthening of the existing *EU–India Trade and Technology Council (TTC)*. It proposes intensified digital cooperation, enhanced startup ecosystems, and India's participation in the *Horizon Europe* programme, a flagship EU research and innovation initiative. These efforts aim to bolster technological innovation and scientific collaboration between the two regions.
- **Defence and Security Cooperation:** A key advancement in the strategic roadmap is the proposed *EU–India Security and Defence Partnership*. This includes joint efforts in areas such as maritime security, cyber defence, counterterrorism, and crisis management. The roadmap proposes initiating negotiations for a *Security of Information Agreement*, which would allow for the exchange of classified data. It also stresses the importance of enhanced defence-industrial collaboration to foster innovation and strengthen technological capabilities in the security domain.
- **Connectivity and Global Governance:** Connectivity remains a priority area, with the roadmap placing emphasis on regional initiatives like the *India–Middle East–Europe Economic Corridor (IMEC)* and trilateral cooperation through the EU's *Global Gateway* strategy. The plan also focuses on global governance, with commitments to multilateralism, adherence to international law, and support for reforms in global institutions. Additionally, mobility and migration are addressed through the proposed *European Legal Gateway Office* and a broader framework for cooperation on study, research, and professional exchanges.
- **Climate Change and Sustainability:** Climate action forms a vital pillar of the partnership. Both the EU and India have reaffirmed their commitment to clean energy cooperation and sustainable development. The roadmap outlines joint initiatives in green technologies and reiterates the shared responsibility to combat climate change. This includes collaborative efforts on sustainable energy transition and environmental innovation to meet global climate targets.

India's Response and Strategic Implications

- Prime Minister Narendra Modi welcomed the launch of the roadmap, expressing India's strong commitment to reinforcing its partnership with the European Union. He also emphasised India's support for a peaceful resolution to the Ukraine conflict and extended an invitation for the upcoming India–EU Summit to be held in India. The roadmap not only affirms India's growing influence on the world stage but also underscores the EU's recognition of India as a central actor in shaping future global economic and security dynamics.
- Despite existing differences, both the EU and India remain focused on the broader convergence of their strategic interests. The roadmap highlights a mutual determination to uphold a rules-based international order and to collaborate closely in addressing shared global challenges—from economic resilience and technological advancement to climate action and global governance reforms.

PM MITRA Parks: Building a Textile Revolution in India

The Prime Minister recently laid the foundation stone for India's **first Pradhan Mantri Mega Integrated Textile Region and Apparel (PM MITRA) Park** in **Dhar district, Madhya Pradesh**, marking a transformative step toward positioning India as a global textile hub.

Concept and Vision

- The **PM MITRA scheme** envisions the creation of **mega textile parks** that

integrate **all stages of textile production**—from spinning and weaving to dyeing, printing, and garment-making—within a single, coordinated industrial ecosystem. Each park is spread over **1,000 acres or more** and is designed to function as a **self-sustained textile manufacturing cluster**. These parks can be established either as **Greenfield projects (new developments)** or **Brownfield projects (upgrading existing infrastructure)**.

- Inspired by the integrated supply chain model, the initiative aligns with the vision of "**Farm to Fibre to Factory to Fashion to Foreign**," aiming to make Indian textiles more competitive in terms of cost, quality, and speed to market.

Infrastructure and Economic Impact

- Each PM MITRA Park will house **modern infrastructure**, including robust road and utility networks, reliable power and water supply, housing for workers, logistical support, and **plug-and-play factory units**. Additionally, the parks will include space for **research and development, skill training centres, and commercial activity**, enabling a holistic development approach.
- The land within each park will be allocated based on the following model: **50% for core manufacturing**, **20% for utilities and logistics**, and **10% for commercial development**. The remaining area will support allied services and green spaces.
- These parks are projected to **generate 1 lakh direct and 2 lakh indirect jobs** per location and attract **investments of over ₹70,000 crore nationwide**. Each park will be developed through a **Special Purpose Vehicle (SPV)**, jointly owned by the **State Government and the Government of India**, operating under a **Public-Private Partnership (PPP) model**.
- **Financial Assistance and Geographic Spread**
- The **Ministry of Textiles** will provide **financial assistance of up to ₹800 crore** for Greenfield projects and **up to ₹500 crore** for Brownfield projects. **State governments** are responsible for providing the necessary land and augmenting utility infrastructure.

Seven states have been selected to host these mega parks:

- **Tamil Nadu (Virudhunagar)**
- **Telangana**
- **Gujarat**
- **Karnataka**
- **Madhya Pradesh**
- **Uttar Pradesh (Lucknow district)**
- **Maharashtra**

Equalising Primary Food Consumption in India: Addressing Hidden Hunger Through Policy Reform

The 2024 National Sample Survey (NSS) Household Consumption Survey has revealed a troubling disconnect: despite low official poverty levels, nearly half of rural India and a fifth of urban India cannot afford two basic meals—or *thalis*—a day at prevailing market prices. This gap underscores the need to shift from calorie-focused food security to comprehensive **primary food consumption** that ensures nutritional adequacy for all.

Understanding Primary Food Consumption

Primary food consumption refers to the minimum intake required for an individual to meet essential energy, protein, and micronutrient needs for a healthy life. This includes a balanced mix of:

- **Cereals** (mainly rice and wheat) for carbohydrates
- **Pulses** for protein
- **Vegetables** for vitamins
- **Fats** for energy
- **Milk/curd** for calcium

The **Thali Index** is used to measure affordability—reflecting the cost of a standard South Asian meal made up of roti or rice, dal, vegetables, curd, and salad.

Key Features of Primary Food Consumption

- **Balanced Nutrition**: Goes beyond calorie sufficiency to focus on immunity, growth, and health.
- **Universal Baseline**: Establishes a minimum, non-negotiable standard of dietary adequacy for all citizens.
- **Affordability Sensitivity**: Considers actual purchasing capacity after essential non-food expenses.

- **Equity-Focused**: Serves as a benchmark to highlight inequality in access to essential nutrients.
- **Policy Relevance**: Informs design and targeting of food subsidy schemes, especially the Public Distribution System (PDS).

Current Consumption Reality and Nutritional Gaps

Despite the expansion of PDS, India still struggles to provide **nutritional security**, particularly for the poorest segments:

- **Affordability Crisis**: About 50% of rural and 20% of urban households cannot afford two nutritious meals a day.
- **Cereal Parity Achieved**: Thanks to PDS, rice and wheat consumption is nearly equal among rich and poor.
- **Pulses Disparity**: The bottom 5% of households consume just half the pulses consumed by the top 5%, highlighting a **severe protein gap**.
- **Policy Misalignment**: PDS covers cereals comprehensively but fails to ensure access to pulses, the primary protein source in Indian diets.

The ultimate policy objective is to **raise the nutrition level of the poorest households to match the highest observed levels**, achieving **true food equity**.

Public Distribution System: Achievements and Shortcomings

India's PDS has had **notable success** in democratising access to cereals, but persistent inefficiencies remain:

- **Achievements**: Universal cereal coverage has led to uniform rice/wheat consumption across income groups.
- **Gaps**: Protein deficiency persists, with inadequate pulse distribution through PDS.
- **Fiscal Inefficiency**: Over 80% of the population, including well-off households, receives subsidised cereals, burdening the Food Corporation of India (FCI) and public finances.
- **Rural-Urban Divide**: While urban subsidies are relatively equitable, in rural areas, wealthier households disproportionately benefit.
- **Over-Entitlement**: Cereal quotas often exceed actual household needs, resulting in stock surpluses and economic inefficiencies.

Structural Challenges to Equalising Food Consumption

India's failure to equalise food consumption stems from systemic and logistical obstacles:

- **Fiscal Constraints**: The high cost of universal cereal subsidies limits the state's capacity to diversify diets.
- **Nutrition Deficit**: Despite cereal abundance, protein-energy malnutrition, anaemia, and stunting remain prevalent.
- **Infrastructural Gaps**: Regular pulse supply, cold storage, and buffer stock maintenance require robust logistics.
- **Targeting Inefficiencies**: Inclusion of non-poor and exclusion of deserving households weaken delivery.
- **Behavioural Barriers**: Food choices are influenced by affordability, cultural norms, and dietary awareness—even when better food is available.

Policy Proposal: Restructuring PDS for Nutrition Security

To address these gaps, experts propose a fundamental restructuring of the PDS with a **nutrition-first lens**:

- **Rationalise Cereal Allocations**: Limit rice/wheat entitlements to actual consumption needs of lower-income households.
- **Diversify Food Basket**: Incorporate pulses, millets, iodised salt, and fortified oil to ensure balanced diets.
- **Remove Top-End Subsidies**: Discontinue subsidised cereals for the top 20% income group to create fiscal space.
- **Dynamic Targeting**: Update beneficiary lists regularly using Aadhaar and SECC (Socio-Economic and Caste Census) data.
- **Technology Integration**: Use GPS for grain movement, Direct Benefit Transfers (DBT) for pulse subsidies, and e-POS for real-time monitoring.

Way Forward: Towards Nutritional Equity

India must pivot from ensuring **calorie sufficiency** to securing **nutritional adequacy** for all. Key measures include:

- **Pulse Procurement Missions**: Strengthen government procurement under NFSM (National Food Security

Mission); encourage pulse cultivation on rice fallows.

- **Redirect Subsidy Savings**: Use funds saved from rationalised cereal entitlements to strengthen nutrition-focused schemes like ICDS and PM Poshan.
- **Expand Community Kitchens**: Scale up affordable meal models like Tamil Nadu's Amma Canteens and Andhra Pradesh's Anna Canteens.
- **Promote Public Awareness**: Run campaigns on balanced diets, importance of protein, and benefits of millets to reshape consumer choices.

Conclusion

India has achieved remarkable success in ensuring widespread access to cereals. However, **nutrition security remains elusive**—especially among the poorest. The path forward lies in transforming the PDS into a **compact, efficient, and nutrition-sensitive system** that ensures not just food security, but **dietary equity**. By expanding access to pulses, trimming unnecessary subsidies, and targeting support effectively, India can move closer to eliminating **hidden hunger** and become a model for sustainable and equitable food systems globally.

India's Onion Sector: Price Distress, Farmer Protests, and Policy Challenges

Onion farmers in Maharashtra have launched widespread protests following a dramatic price crash that pushed market rates well below the cost of production. Their demands include immediate compensation for losses, stable and predictable export policies, and enhanced procurement support to shield them from recurring financial distress.

India's Onion Production Landscape

- India ranks as the world's second-largest onion producer, following China, with an average annual output of 25 to 30 million tonnes. The primary onion-producing states include Maharashtra, Madhya Pradesh, Karnataka, Gujarat, and Rajasthan. Onion cultivation in India occurs across three major crop cycles—Kharif, Late Kharif, and Rabi—with the Rabi crop being the most significant, contributing nearly 60% of total production due to its superior storability.
- Maharashtra leads the sector owing to favourable agro-climatic conditions and extensive cultivation in districts such as Nashik, Ahmednagar, Pune, and Solapur. Despite its dominance in production, the state's onion sector remains vulnerable to structural and policy-related issues.

Persistent Challenges in the Onion Sector

- The sector is plagued by chronic price volatility. Market rates often swing drastically due to oversupply, inadequate storage facilities, and abrupt policy decisions such as export bans. Rabi onions, though suitable for storage, suffer significant post-harvest losses because of poor infrastructure, resulting in distress sales. Export policy inconsistencies further exacerbate the problem; frequent restrictions not only disrupt the income cycle of farmers but also diminish India's credibility in international markets. This has allowed competitors like China and Pakistan to seize India's former market share.
- Meanwhile, rising production costs—driven by expensive inputs like fertilisers, seeds, labour, and storage—push per-quintal cultivation expenses to between Rs. 2,200 and Rs. 2,500. In contrast, farmers frequently receive prices far below this threshold, leaving them with unsustainable losses.

The 2025 Crisis and Maharashtra's Farmer Agitation

- On September 12, 2025, onion growers in Maharashtra began protesting after market prices fell sharply. Farmers are currently receiving only Rs. 800 to Rs. 1,000 per quintal, less than half their input costs. The situation deteriorated further as Rabi onions, stored in anticipation of better prices, began to rot, triggering a wave of panic sales.
- Compounding the crisis, the central government released onion buffer stocks through the National Cooperative Consumers' Federation (NCCF) and the National Agricultural Cooperative Marketing Federation of India (NAFED). While this move was intended to stabilise consumer prices, it led to a further decline

in wholesale prices, intensifying farmer losses.

Farmers' Key Demands

Farmers have put forth a set of urgent demands in response to the crisis. They are seeking compensation of Rs. 1,500 per quintal to offset losses incurred due to the price crash. Additionally, they have called for an immediate suspension of buffer stock sales in urban markets, as these releases are driving down already low prices. Farmers are also pushing for a consistent and reliable export policy to rebuild trust among international buyers, particularly in markets like Bangladesh and Sri Lanka, which were once significant importers of Indian onions.

Impact of Fluctuating Export Policies

India's onion exports dropped significantly from 25.25 lakh tonnes in 2022–23 to just 11.47 lakh tonnes in 2024–25. This steep decline has weakened India's position in global markets, enabling countries like China and Pakistan to replace India in several key importing regions. Experts argue that this loss of competitiveness is largely a result of policy unpredictability, which has tarnished India's reputation as a dependable supplier.

Proposed Alternatives and Policy Suggestions

Farmers and exporters are urging the government to introduce incentives for onion exports to help reclaim India's lost market share. One proposed approach is to replicate Andhra Pradesh's procurement model, where onions are purchased at a fixed rate of Rs. 1,200 per quintal, ensuring a baseline price for growers. Additionally, long-term solutions such as expanding cold storage facilities and strengthening farmer-producer organisations (FPOs) are being highlighted. These measures would not only improve post-harvest management but also enhance farmers' collective bargaining power in both domestic and export markets.

Conclusion: A Sector in Urgent Need of Reform

- The ongoing onion crisis in Maharashtra reflects deep-rooted structural issues in India's agricultural and trade policy frameworks. Although interventions like buffer stock releases aim to stabilise retail prices for consumers, they often come at the expense of farmers' incomes. The current wave of protests underscores the pressing need for comprehensive reform—including stable export policies, better procurement strategies, and infrastructure development.
- Unless these systemic flaws are addressed through long-term policy vision and immediate support mechanisms, onion farmers in India will continue to face devastating price shocks, repeated agitations, and the consequences of reactive governance.

FAO's Technical Cooperation Programme and India's Blue Ports

- India's Ministry of Fisheries, Animal Husbandry and Dairying has signed a Technical Cooperation Programme (TCP) agreement with the Food and Agriculture Organization (FAO) to bolster Blue Port infrastructure in the country.
- FAO's TCP is designed to offer member countries technical support and solutions in key areas such as agriculture, fisheries, nutrition, and food safety. The initiative helps governments address pressing challenges and achieve sustainable development goals.
- Under this agreement, FAO will assist in enhancing the technical capacity of fishing ports to handle environmental, social, and economic challenges along the aquatic value chain. Pilot projects will begin in Vanakbara (Diu) and Jakhau (Gujarat), where strategic tools will be developed to design investment projects for sustainable fishing infrastructure.
- India's Blue Ports Framework, supported by the Pradhan Mantri Matsya Sampada Yojana, is focused on creating smart, integrated fishing harbours equipped with IoT devices, energy-efficient systems, and environmentally sustainable features like rainwater harvesting and waste management.

Petroleum and Natural Gas Regulatory Board (PNGRB): Enhancing Consumer Choice

- The Petroleum and Natural Gas Regulatory Board (PNGRB), a statutory body established under the PNGRB Act of 2006, recently proposed an LPG interoperability framework. This would allow households to refill gas cylinders from any Public Sector Undertaking (PSU)

distributor, similar to mobile number portability.

- PNGRB's primary mandate is to safeguard consumer interests while promoting competition and regulating the distribution and marketing of petroleum products and natural gas. It oversees activities like refining, processing, and pipeline operations—excluding the upstream extraction of crude oil and natural gas.
- The board also adjudicates disputes, monitors retail service obligations, and ensures compliance with safety and pricing standards. Its decisions hold legal authority, with powers akin to those of a civil court. Based in Delhi, the board consists of a Chairperson, three members, and one legal expert, and functions under the Ministry of Petroleum and Natural Gas.

India's Manufacturing Momentum: A Structural Transformation

Context and Recent Trends

- India's manufacturing sector is witnessing renewed dynamism, driven by policy reforms, global demand shifts, and domestic investments. In **July 2025**, the **Index of Industrial Production (IIP)** registered a **year-on-year growth of 3.5%**, a significant improvement from **1.5% in June**, with the **manufacturing segment growing at 5.4%**, indicating a clear revival in demand.
- At the same time, the **HSBC Manufacturing PMI surged to 59.3**, the **highest level in 16 months**, further affirming positive sentiment in the industrial sector.
- India's merchandise **exports grew 2.52% year-on-year** between **April and August 2025**, reaching **US$ 184.13 billion**, bolstered by strong performance in **electronics, pharmaceuticals, and automobiles**.
- On the employment front, the **national unemployment rate eased to 5.0%**, with the male unemployment rate touching a **five-month low**, while the **female workforce participation rate rose to 32%**, suggesting a more inclusive job recovery.
- In terms of investments, **Foreign Direct Investment (FDI)** inflows touched **US$ 81.04 billion in FY25**, reflecting a **14% year-on-year increase**, with **manufacturing FDI alone growing 18% to US$ 19.04 billion**.

Key Drivers of the Manufacturing Revival

- Multiple structural initiatives are propelling this manufacturing momentum. The **Production Linked Incentive (PLI) scheme**, with an outlay of **₹1.97 lakh crore across 14 sectors**, has been instrumental in attracting global OEMs, encouraging domestic production, and boosting exports. The **National Manufacturing Mission** serves as an integrated platform across ministries, promoting **clean-tech manufacturing** in areas such as **solar energy, EV batteries, and green hydrogen**.
- Major infrastructure initiatives like **PM GatiShakti** and the development of **Industrial Corridors** are significantly lowering logistics costs and enhancing connectivity. Simultaneously, the **GST 2.0 reforms** — featuring a simplified two-slab structure, rationalised tax rates, and faster refunds — are easing compliance burdens and stimulating domestic consumption.
- India's **electronics and mobile manufacturing sector** has experienced a dramatic expansion, growing from just **2 units to over 300 units**, representing a **150-fold increase**. Exports from this segment have crossed **₹2 lakh crore**, contributing significantly to the reduction in import dependence and enhancing technological self-reliance.

Economic Impact and Strategic Gains

- The manufacturing sector now contributes approximately **17% of India's GDP**, with a national target of **25% by 2030**. Achieving this would support a sustained **7–8% annual growth trajectory**. Over the past decade, the sector has helped create **17 crore jobs**, with its employment share rising from **6% during 2004–14** to **15% in 2014–24**.

- Sectors such as **electronics, pharmaceuticals, and automobiles** are key to India's **export diversification strategy**, helping to reduce pressure on the current account. Rising FDI inflows also reflect **global confidence in India's stable policy environment** and its evolving industrial ecosystem. Additionally, new **manufacturing clusters**, including **PM MITRA parks** and **Electronics Manufacturing Clusters (EMCs)**, are contributing to **balanced regional development** across states.

Challenges Hindering Full Potential

- Despite this positive momentum, several challenges continue to limit India's manufacturing potential. **Logistics costs remain high at 13–14% of GDP**, significantly above the global average, thereby hurting export competitiveness. There is a pronounced **mismatch in workforce skills**, with limited availability of workers trained in **Industry 4.0 technologies**, necessitating investments in **advanced vocational training** and **apprenticeships**.
- **Regulatory bottlenecks**, including delays in **land acquisition** and **layered compliance requirements**, often deter MSMEs from scaling operations. **External risks**, such as **geopolitical tensions**, **protectionist trade policies**, and **global supply chain disruptions**, could adversely impact export performance. Moreover, growing **environmental concerns** demand an urgent transition to **green manufacturing practices**, in line with India's commitment to **Net Zero by 2070** and rising global ESG expectations.

The Road Ahead

- To build on the current momentum, India needs to focus on **strengthening plug-and-play manufacturing parks**, especially for MSMEs, to reduce project gestation periods and accelerate production timelines. The proposed **Skill India 4.0 initiative** must focus on creating **Centres of Excellence**, upgrading **Industrial Training Institutes (ITIs)**, and aligning training curricula with **AI, robotics, and digital manufacturing**.
- **Tariff rationalisation**—particularly lowering import duties on key raw materials like **steel, copper, and aluminium**—is essential to avoid cascading tax effects that hinder exports. MSMEs, the backbone of India's manufacturing ecosystem, require targeted support in the form of **concessional credit**, **technology grants**, and access to **digital export platforms**.
- India must also accelerate its efforts in **global integration**, by finalising **Free Trade Agreements (FTAs)** with the **UK**, **EU**, and other strategic partners, while securing access to **critical raw materials** and **energy sources abroad**. Deepening engagement in **supply chain alliances** will further enhance resilience and global market positioning.

Conclusion

India's current manufacturing momentum represents a **structural transformation**, not a transient phase. With continued focus on **policy stability**, **infrastructure readiness**, **skill development**, and **green industrialisation**, India is well on its way to becoming a **US$ 1 trillion manufacturing economy by FY26**. This shift is not just economic—it is central to the vision of **Viksit Bharat @2047**, promising widespread job creation, enhanced exports, and a globally competitive industrial base.

Low Inflation in India: Fiscal Challenges and Nominal GDP Growth Impact

Recent economic data from August indicates that consumer price index (CPI) inflation stood at 2.07%, while wholesale price index (WPI) inflation was even lower at 0.52%. This comes as a welcome development for households, easing pressure on their daily expenses. However, while low inflation benefits consumers through stable prices, it presents serious complications for the government's fiscal planning. In particular, it undermines revenue mobilisation and complicates budget projections.

Understanding Inflation

Inflation refers to the broad-based increase in prices across an economy, typically caused by a rise in money supply. It can also result from higher input costs, such as food and energy prices, which push up overall prices and erode the purchasing power of money. As a result, people can afford

fewer goods and services with the same income. While wages may adjust over time, most households find themselves allocating a larger share of their income to essentials like food and rent, thereby reducing their disposable income.

The Upside of Moderate Inflation

Inflation, when moderate, is not inherently bad. In fact, it can stimulate economic activity during times of underutilised resources. Increased consumer spending, spurred by expectations of rising prices, drives higher production and job creation. This idea aligns with Keynesian economics, which warns against the "Paradox of Thrift"—the tendency for consumers to reduce spending during falling prices, thereby deepening economic slowdowns. Moderate inflation also benefits debtors by reducing the real burden of debt repayments over time, particularly aiding homeowners with fixed-rate mortgages.

Who Gains from Inflation

Certain groups benefit more from inflation. Debtors and individuals with fixed-rate mortgages gain because they repay loans with money that is less valuable over time. Employees in stable jobs also fare better as their income may keep pace with inflation, and holders of foreign currencies benefit from a weakening domestic currency, which boosts the relative value of their assets.

The Risks of High Inflation

However, inflation becomes problematic when it rises too high. Excessive inflation rapidly erodes purchasing power, leading to decreased consumer confidence, increased borrowing costs, and potential job losses. It makes large purchases like homes unaffordable and disproportionately affects fixed-income earners and long-term bond investors whose returns lag behind inflation. High inflation introduces instability and weakens the overall economic environment.

Low Inflation and Its Impact on Government Finances

Despite real GDP growing at a robust 7.8% in the April–June 2025 quarter, nominal GDP growth stood at only 8.8%, falling short of the government's budgeted assumption of 10.1%. This shortfall has significant implications, as nominal GDP, which includes inflation, is the foundation for fiscal projections, including tax revenue forecasts.

Budget Expectations vs Reality

The Union Budget for 2025–26 projected India's nominal GDP at ₹357 lakh crore, with an expected tax revenue growth of nearly 11%. However, consistently low inflation has subdued nominal GDP growth, weakening the government's ability to raise sufficient revenue. This mismatch between projections and reality is already exerting pressure on public finances.

Impact on Tax Collections

The fiscal impact is evident in revenue trends. With WPI inflation averaging only 0.1% and CPI inflation at 2.4% for the current fiscal year, tax inflows have slowed considerably. Between April and July, gross tax revenue increased by just 1% year-on-year, while net tax revenue actually declined by 7.5%. Although consumers are enjoying price stability, the government is facing tighter fiscal constraints, making it increasingly difficult to meet its FY26 budgetary goals.

Challenges in Meeting Nominal GDP Targets

- Historically, actual nominal GDP growth has often diverged from Budget assumptions. Over the past 13 years, nominal GDP growth has undershot expectations in nine instances. However, three of the last four years did see nominal growth exceeding budgeted figures. This trend underlines the inherent volatility and difficulty in accurately forecasting nominal GDP.
- The GDP base for 2024–25 has been revised upward by 2% to ₹331 lakh crore. This revision lowers the nominal GDP growth required for 2025–26 to around 8% in order to meet the Budget's target of ₹357 lakh crore. Despite this reduced threshold, meeting it remains critical for maintaining fiscal metrics such as the targeted fiscal deficit of 4.4% and the debt-to-GDP ratio of 56.1%, assuming the fiscal deficit stays within the estimated range.
- Economists are becoming increasingly cautious about the fiscal outlook for FY26. Many, including Morgan Stanley, now expect nominal GDP growth to fall short of the Budget's 10.1% projection, forecasting growth as low as 8.3%. This suggests a continued slowdown from the April–June quarter's 8.8% nominal growth. Moreover, upcoming reductions in Goods and Services Tax (GST) rates are

expected to further suppress inflation. While this may benefit consumers, it will also likely depress nominal GDP growth even further, exacerbating fiscal challenges.

Low Inflation: Interpreting the Underlying Causes

- It is important to understand that low inflation is not inherently a negative indicator; its implications depend on its root causes. If driven by supply-side improvements, it reflects healthy economic conditions and sufficient demand. However, if low inflation is caused by weak consumer demand, it becomes a cause for concern. A recent RBI study highlighted that in the April–June period, private sector companies recorded sales growth of 5.5% but net profit growth of 17.6%. In the manufacturing sector, profits surged by 27.7% despite modest sales growth of 5.3%, largely due to falling global commodity prices.
- Despite these strong profit margins and healthy cash reserves, capital expenditure by companies remains muted. This reluctance to invest suggests that the private sector perceives demand to be weak, not that it is achieving efficiency through productivity gains. Economists interpret this trend as a warning signal, pointing to subdued demand rather than robust economic momentum, thereby raising fresh concerns about the sustainability of India's current growth trajectory.

Semiconductor Designers Power India's Chip Dreams: A Strategic Leap Toward Global Tech Leadership

Context

India is rapidly positioning itself as a global semiconductor hub, having approved **10 semiconductor fabrication and assembly projects** under the ₹76,000 crore **Semicon India Mission**. Simultaneously, India's chip design ecosystem is flourishing, with the country now home to **20% of the world's semiconductor design engineers**. This dual thrust—on design and manufacturing—is shaping India's ambition to become a key player in the global semiconductor value chain.

India's Semiconductor Design and Manufacturing Landscape

- India has emerged as a **design powerhouse**, with around **1.25 lakh semiconductor design engineers** and **over 3,000 chips being designed annually**. The government's policy interventions, including the **Semicon India Programme**, offer significant capital support—**50% from the Centre** and an additional **20–25% from states**—for semiconductor fabrication, assembly, and testing units.
- Manufacturing infrastructure is also beginning to take shape. **Micron's ₹22,500 crore ATMP facility in Gujarat**, currently under construction, is expected to commence operations in 2024. To ensure a future-ready workforce, the **Chips to Startup (C2S)** initiative aims to train **85,000 engineers over five years**.
- India's domestic consumption of semiconductors is projected to reach **$110 billion by 2030**, accounting for nearly **10% of global demand**, creating a solid economic case for indigenous capability.

Key Drivers Behind India's Semiconductor Surge

Several macro and microeconomic factors are propelling India's semiconductor ambitions:

- **Geopolitical Realignment**: The global "**China+1**" strategy is driving supply chain diversification, with India emerging as a preferred destination for semiconductor investments.
- **Consumer Market Strength**: India is the **second-largest smartphone manufacturer** and the **fastest-growing consumer electronics market**, offering a vast domestic base for semiconductors.
- **Supportive Policy Ecosystem**: Schemes such as **PLI (Production Linked Incentive)**, **DLI (Design Linked Incentive)**, and **SPECS (Scheme for Promotion of Manufacturing of Electronic Components and Semiconductors)** have made India more globally competitive by offsetting cost disadvantages.

- **Skilled Talent Pool**: With **over 8 lakh engineers graduating annually**, and growing access to **EDA (Electronic Design Automation)** tools, India has seen a democratization of chip design talent.
- **Academic and Industry Collaborations**: Leading institutions like **IITs, IISc, and IIITs** are actively collaborating with global firms such as **Synopsys, Cadence, and Lam Research**, focusing on cutting-edge R&D in semiconductor technologies.

Economic and Strategic Implications

The rise of India's semiconductor sector has far-reaching implications:

- **High-Value Employment Generation**: Jobs in this sector have a **6.7x multiplier effect**, driving employment across related industries and services.
- **Export Growth Potential**: Electronics exports are expected to **quintuple by 2026**, helping reduce India's **electronics trade deficit** and enhancing export competitiveness.
- **National Security and Strategic Autonomy**: Building domestic chip production capabilities is critical for **defence, telecommunications, and critical infrastructure**, reducing dependency on foreign suppliers.
- **Boost to Innovation**: Increased **patent filings and IP generation** in chip design can significantly enhance India's position in the global innovation ecosystem.
- **Balanced Regional Development**: The emergence of new semiconductor hubs in **Gujarat, Karnataka, and Odisha** is helping decentralize growth and create high-tech job clusters beyond traditional urban centres.

Flagship Government Initiatives

India's strategic vision for the semiconductor sector is being implemented through a range of focused programs:

- **Semicon India Programme (₹76,000 Cr)**: Provides **50% capital assistance** for the establishment of **fabs, ATMP/OSAT units**, and **display manufacturing** facilities.
- **Design Linked Incentive (DLI) Scheme**: Offers **up to 50% of eligible R&D costs** to support **fabless startups** and promote indigenous chip design.
- **Chips to Startup (C2S) Programme**: Aims to train **85,000 engineers** and extend **free access to EDA tools** to over **100 academic institutions**, enabling hands-on skill development.
- **PLI Scheme for IT Hardware and Electronics**: Encourages domestic manufacturing of devices like **smartphones, servers, and laptops**, increasing downstream demand for chips.

Challenges That Persist

Despite promising momentum, India faces several structural and execution challenges:

- **High Capital Intensity**: Building semiconductor fabs requires **$10–15 billion per unit**. Long-term, predictable **subsidies and fiscal support** are crucial to stay globally competitive.
- **Talent Readiness Gap**: Although India produces a large volume of engineers, only a fraction are **industry-ready for semiconductor roles**. **Specialized training programs** must scale up rapidly.
- **Infrastructure Bottlenecks**: Stable electricity, **ultra-pure water**, and **high-quality logistics** are non-negotiable for chip manufacturing, and gaps in these areas pose major roadblocks.
- **Funding Constraints**: Long gestation periods and capital-heavy requirements deter **venture capital** interest in semiconductor startups.
- **Policy Uncertainty**: Sudden **tariff changes or regulatory shifts** can disrupt investor confidence, highlighting the need for **predictable and consistent policies**.

Strategic Recommendations and the Road Ahead

To ensure long-term success and global competitiveness, India must pursue a multi-pronged strategy:

- **Prioritise Legacy Nodes**: Instead of competing in cutting-edge 3nm nodes, India should focus on **28nm and higher** processes suitable for **automotive, IoT, and energy sectors**, where demand is high and technical entry barriers are lower.
- **Increase R&D Investment**: India's public and private sectors must work towards **raising R&D expenditure from 0.7% to**

1.5% of GDP, creating a stronger innovation pipeline.

- **Adopt Risk-Sharing Models**: Public-Private Partnerships (PPP) should be structured to **de-risk early-stage capital investment**, while maintaining market efficiency and accountability.
- **Develop Semiconductor Clusters**: Ecosystems must be built near **universities and industrial corridors**, combining education, industry, and infrastructure in one geographic location.
- **Expand Global Partnerships**: Strengthening cooperation under the **India-US Semiconductor MoU** and establishing tech-transfer partnerships with **Japan, Taiwan, and the EU** can provide the necessary technological and strategic leverage.

Conclusion

Semiconductors represent the **"commanding heights" of the digital economy**, and India's emergence as a global design centre offers a once-in-a-generation opportunity to lead in the technology space. With strong policy backing, a skilled talent base, and rising domestic demand, India is well-positioned to move beyond chip assembly and **become a global innovation leader**. However, this potential can only be realised through **strategic execution, deep ecosystem development**, and **stable, long-term policy frameworks**. India must not just build chips—it must **build capabilities** that power the digital future.

Ministry of Commerce and Industry Launches Key Initiatives to Boost India's Logistics Sector

The Ministry of Commerce and Industry has unveiled a series of strategic initiatives aimed at improving the performance, efficiency, and global competitiveness of India's logistics sector. These efforts are part of a broader national vision to lower logistics costs, enhance infrastructure, and digitize operations, in line with the government's commitment to making India a global supply chain hub. The newly launched initiatives include a comprehensive cost assessment, integrated planning frameworks, advanced tracking systems, and performance benchmarking tools.

Assessment of Logistics Cost in India Report

A landmark report prepared by the **National Council of Applied Economic Research (NCAER)** provides a data-driven estimate of India's logistics costs.

- For **FY 2023–24**, logistics costs are estimated at **7.97% of India's GDP**, amounting to approximately **₹24.01 lakh crore**.
- Within this, **road transport emerges as the largest cost component**, accounting for **41.7%**, followed by **storage and warehousing**.
- The report offers critical insights that will serve as a baseline for measuring future improvements in logistics efficiency and cost competitiveness.

Integrated State and City Logistics Plans

Launched under the **SMILE (Strengthening Multimodal and Integrated Logistics Ecosystem)** Programme, this initiative is a collaborative effort with the **Asian Development Bank (ADB)**.

- The SMILE Programme seeks to **establish a unified logistics policy framework**, streamline multimodal operations, and improve service delivery across the supply chain.
- The initiative begins with eight pilot cities across eight states, aiming to:
  - Assess the current state of logistics infrastructure,
  - Identify existing bottlenecks and service gaps,
  - Formulate **state- and city-specific logistics plans** to enhance efficiency and reduce costs.
- These integrated plans will play a pivotal role in shaping **localized policy interventions** and investments aligned with national logistics goals.

Logistics Data Bank (LDB) 2.0

To enhance end-to-end visibility in cargo movement, the Ministry launched the **LDB 2.0 platform**, developed by **NICDC Logistics Data Services (NLDSL)** under the **National Industrial Corridor Development Programme**.

- LDB 2.0 introduces **real-time tracking of export containers on high seas**, providing exporters and importers with greater visibility into shipment status.
- It also supports **multi-modal shipment visibility**, integrating data from road, rail, and sea transport channels.

- This upgraded platform aims to **reduce dwell times, improve planning**, and strengthen **supply chain predictability**.

Logistics Ease Across Different States (LEADS) 2025

Inspired by the **World Bank's Logistics Performance Index**, the **LEADS initiative** is designed to benchmark and enhance logistics performance across Indian States and Union Territories.

- **LEADS 2025** introduces a more **granular, data-driven assessment** model.
- Key new features include:
  - **Performance evaluation of 5–7 key logistics corridors**, focusing on **journey time, truck speeds, and waiting periods**,
  - **API-based evaluation of section-wise speeds** on major road corridors, providing real-time analytics for policy and operational planning.
- This ranking framework will help states identify areas of improvement and drive **competitive federalism** in logistics reforms.

Conclusion

These initiatives mark a significant step in India's ambition to transform its logistics sector into a **cost-efficient, technology-driven, and globally integrated ecosystem**. With the logistics cost still high compared to global benchmarks, these targeted interventions aim to lower costs, reduce delays, and enhance multimodal integration. Collectively, these reforms promise to strengthen India's competitiveness in manufacturing and exports while fostering economic decentralization and regional development.

SEBI Proposal May Permit FPIs to Trade in Gold, Silver, and Base Metals

The Securities and Exchange Board of India (SEBI) is currently evaluating a proposal that could significantly expand the role of foreign portfolio investors (FPIs) in the country's commodity markets. The proposal seeks to allow FPIs to participate in non-cash settled, non-agricultural commodity derivatives. If implemented, it would grant FPIs the ability to invest in commodities such as gold, silver, zinc, and other base and ferrous metals. The primary objective is to broaden investor participation and enhance the depth and efficiency of India's commodity derivatives market.

Understanding Commodity Derivatives

Commodity derivatives are financial instruments whose value is tied to physical commodities such as oil, gold, wheat, or other tangible assets. These instruments are widely used either to manage price risks or to generate profits from market fluctuations.

The functioning of these derivatives hinges on the value of the underlying asset, which could be farm produce, metals, or energy products. The contracts typically involve agreements between two parties to carry out transactions at predetermined prices and quantities on a specified future date. As the prices of the underlying commodities change, so does the value of these contracts.

Commodity derivatives serve two main purposes: hedging and speculation. Producers and consumers utilize them to hedge against price volatility, thereby stabilizing their input or output costs. On the other hand, traders and investors engage in these instruments to speculate and profit from anticipated price changes.

The two principal types of commodity derivative contracts are futures and options. Futures are binding agreements to buy or sell a commodity at a fixed price on a specific date. Options, in contrast, grant the right—but not the obligation—to conduct a transaction at a pre-agreed price within a certain timeframe.

Commodities underlying these contracts are generally grouped into three broad categories: agricultural (such as wheat, corn, cotton, and coffee), energy (including crude oil and natural gas), and metals (such as gold, silver, copper, and aluminum).

SEBI's Proposal to Open Commodity Derivatives to FPIs

Under current regulations, FPIs are permitted to trade only in cash-settled non-agricultural derivative contracts. These include commodities like crude oil, natural gas, and index-based futures and options. However, FPIs are restricted from trading in physically settled contracts involving ferrous metals, base metals, and precious metals.

SEBI's new proposal seeks to change this by allowing FPIs access to physically settled non-agricultural commodity derivatives. This includes a range of metals, such as gold, silver, zinc, and lead. While SEBI is already working with a

committee to bolster the agricultural commodity space, a separate group is being formed to focus on non-agricultural commodity markets.

This initiative comes on the heels of SEBI's recent decision to streamline the entry of foreign investors through a single automatic window, even as FPIs have collectively withdrawn more than ₹60,000 crore from Indian equities since July 2025.

Implications of Expanded Access for FPIs

- If approved, the proposal will significantly widen the investment options available to FPIs by opening markets where India has a strong global presence. This includes key metals markets like gold and silver. Analysts suggest that this move could enhance capital efficiency and attract greater foreign interest in India's commodity segment.
- The involvement of FPIs, known for their financial muscle and analytical strength, could infuse much-needed liquidity into commodity contracts, especially those with longer maturities that currently suffer from low participation. Improved liquidity would, in turn, enable industrial users to hedge their exposure more effectively and reduce costs associated with frequent contract rollovers.
- Furthermore, increased domestic market participation by FPIs might encourage Indian corporations to shift their hedging strategies from international exchanges to local platforms. This shift would not only reduce forex-related risks but also reinforce India's commodity markets.
- SEBI's broader intent behind this regulatory shift is to foster deeper, more liquid markets, which are essential in times of global geopolitical uncertainty. By inviting FPIs into the fold of non-cash settled commodity derivatives, SEBI aims to strengthen price discovery, encourage domestic hedging, and bring Indian commodity markets closer in structure and maturity to global standards.

Indian Tea Sector – Scope for Global Opportunities

Introduction

India's tea sector occupies a distinctive and influential role in the global landscape as one of the leading producers and consumers of tea worldwide. Tea is not only an integral part of India's cultural identity but also a crucial economic driver, especially in rural regions where it sustains livelihoods, fuels domestic markets, and contributes significantly to export revenues. Recent evaluations by international experts have spotlighted the immense untapped potential within the sector, particularly in raising quality benchmarks, expanding into emerging international markets, and elevating per capita tea consumption domestically.

The Indian Tea Sector: An Overview

India ranks as the second-largest producer and consumer of tea and holds the position of the third-largest exporter globally. Tea cultivation is concentrated in key states such as Assam, West Bengal, Kerala, and Tamil Nadu, directly employing over 1.2 million workers and supporting the livelihoods of millions more through indirect means. In 2024, India produced 1.303 billion kilograms of tea, making a substantial contribution to the global output of 7.074 billion kilograms. Domestic consumption reached 1.22 billion kilograms, underscoring India's pivotal role in balancing international supply and demand. On the export front, India shipped 255 million kilograms of tea, generating approximately $800 million in revenue, placing it just behind Kenya, China, and Sri Lanka in global export rankings.

Challenges in the Sector

Despite its scale and heritage, the Indian tea sector faces several structural and operational challenges. One significant issue is the lower realisation per export unit compared to competitors like Sri Lanka and Kenya, largely due to inconsistency in quality. Additionally, domestic per capita consumption has stagnated at around 840 grams annually—well below Turkey's leading consumption rate of 3 kilograms per person. The sector is also grappling with environmental and operational pressures, including the impact of climate change, ageing tea bushes, and rising labour costs, all of which are collectively affecting productivity and profitability.

Recent Steps by the Government and Industry

In response to these challenges, both government agencies and industry stakeholders have initiated targeted interventions. The Tea Development Board is spearheading efforts to modernise tea estates and enhance productivity. The "India Tea"

brand has been promoted internationally to improve market recognition and consumer trust. Furthermore, there are increasing incentives for the production of organic and specialty teas aimed at capturing niche, high-value markets around the world.

News Summary

- At the India International Tea Convention held in Kochi, industry leaders and global experts highlighted the substantial opportunities that remain untapped in the Indian tea sector. They emphasized that improving quality is essential for commanding better prices in the global marketplace. Additionally, there is a pressing need to diversify exports by entering newer and growing markets such as those in South America and Africa, beyond the traditional buyers.
- On the domestic front, consumer preferences are evolving, with a growing willingness to pay more for premium-quality tea. It was noted that even a modest increase in per capita consumption—from 840 grams to 1 kilogram—could enable the country to absorb its entire annual production domestically. Comparatively, while Kenya exports nearly all its tea and Sri Lanka earns $1.4 billion from just 245 million kilograms, India, despite exporting a higher volume, generates significantly lower revenue—highlighting the importance of quality and brand value. Experts concluded that with its vast scale, rich legacy, and increasingly discerning consumer base, India is uniquely positioned to emerge as a global tea superpower.

Conclusion

India's tea sector stands at a decisive point in its journey. While the country benefits from its large-scale production and culturally ingrained demand, it must now concentrate on enhancing quality, refining global brand presence, and accessing new international markets. Simultaneously, the domestic market offers untapped promise, driven by rising consumer aspirations and a shift towards premium offerings. If these challenges are systematically addressed, India has the capacity not just to maintain its current status but to transform itself into a dominant force in the global tea industry.

India's Fusion Energy Roadmap: Towards Clean Energy Leadership by 2060

Context and Background

Researchers at the Institute for Plasma Research (IPR), Gandhinagar, have unveiled a comprehensive roadmap for India's fusion energy programme. The centrepiece of this roadmap is the proposed development of *SST-Bharat*, a superconducting tokamak designed to serve as a fusion-fission hybrid reactor, with the broader goal of achieving a demonstration-scale fusion reactor by 2060. This plan marks a significant strategic step in India's transition to a low-carbon future and aligns with its Net Zero 2070 target.

Understanding Nuclear Fusion

Nuclear fusion is a process in which light atomic nuclei — typically isotopes of hydrogen such as deuterium and tritium — fuse to form heavier elements, releasing vast amounts of energy. Unlike nuclear fission, which splits heavy atoms and generates hazardous radioactive waste, fusion produces minimal waste, carries no risk of meltdown, emits no greenhouse gases, and relies on abundant fuel sources like water and lithium. These attributes position fusion as a potentially revolutionary clean energy source.

India's Current Fusion Power Infrastructure

India's fusion energy programme is built on a modest but significant foundation:

- **SST-1 Tokamak at IPR, Gandhinagar** serves as India's primary experimental platform. This research reactor has achieved plasma durations of up to 650 milliseconds.
- **Participation in ITER (International Thermonuclear Experimental Reactor)** in France demonstrates India's global engagement. As a key contributor, India supplies both funding and technological components to this collaborative international project, the largest magnetic confinement fusion experiment in history.

Key Elements of the Roadmap

The roadmap sets ambitious goals for India's fusion future:

- **SST-Bharat Project**: A fusion-fission hybrid reactor projected to generate approximately 130 MW (100 MW from fission and 30 MW from fusion) at an

estimated cost of ₹25,000 crore. This intermediate step is designed to bridge the gap between existing technologies and future pure fusion reactors.

- **Demonstration Fusion Reactor by 2060**: Aims for a 250 MW power output with a *Q-factor* (power gain) of 20 — meaning the reactor would produce 20 times more energy than it consumes. This target exceeds ITER's Q=10 goal and positions India at the high-performance frontier of fusion energy research.
- **Technological Innovations**: The roadmap highlights the adoption of advanced tools, including digital twinning for simulating plasma behaviour, machine learning techniques for plasma confinement, and the development of radiation-resistant structural materials critical for long-duration reactor operation.

Comparative Global Landscape

India's fusion roadmap is unfolding amid significant global activity:

- The **UK's STEP programme** targets a prototype fusion plant by 2040.
- **US-based start-ups** aim to connect fusion power to the grid by the 2030s, leveraging private capital and agile R&D models.
- **China's EAST tokamak** holds the world record for sustained plasma.
- **France's WEST tokamak** plans to maintain plasma for 22 minutes by 2025.

In contrast, India's 2060 timeline, while ambitious, places it behind several international benchmarks and highlights the urgency for accelerated progress.

Core Features of India's Strategy

India's fusion strategy is characterised by several defining features:

- **Magnetic Confinement via Tokamaks**: Utilising powerful magnetic fields to replicate the extreme conditions of stellar fusion, India is investing heavily in tokamak-based research.
- **Steady-State Superconducting Technology**: This approach enables the sustained confinement of plasma with minimal energy loss, allowing for continuous operation and higher energy efficiency.
- **Fusion-Fission Hybrid Design**: SST-Bharat will serve as a transitional system, using fission reactions to support and stabilise fusion processes — a pragmatic approach to overcoming current limitations in pure fusion technology.
- **State-led Research and Development**: Unlike the US and Europe, where private firms play a leading role, India's fusion R&D is predominantly driven by public institutions such as IPR and the Department of Atomic Energy, with limited private sector engagement to date.
- **Integration with Clean Energy Goals**: Fusion is positioned as a long-term component of India's Net Zero 2070 strategy, complementing other non-fossil sources like solar, wind, and fission.

Challenges to Implementation

Despite its promise, the roadmap faces significant hurdles:

- **Technological**: Sustaining high-temperature plasma over long durations remains a challenge. Achieving a $Q > 1$ consistently, and eventually $Q = 20$, will require breakthroughs in plasma control, materials science, and magnet technology.
- **Financial**: Fusion research demands heavy investment. SST-Bharat alone is projected to cost ₹25,000 crore. Moreover, fusion must compete with rapidly falling costs of renewables like solar and wind.
- **Policy and Regulatory Gaps**: India lacks a specific legislative or regulatory framework for fusion energy, and the current energy policy remains focused on near-term priorities such as solar, wind, and nuclear fission.
- **Global Competition**: Nations like China, the US, and the UK are targeting operational fusion systems by the 2030s or early 2040s. India's 2060 horizon risks leaving it technologically behind.
- **Uncertain Economic Viability**: The commercial affordability of fusion-generated electricity remains untested. Given the potential for long gestation periods and cost overruns, economic feasibility is still uncertain.

Strategic Way Forward

To accelerate its progress and close the global gap, India must adopt a multi-pronged strategy:

- **Enhanced R&D Investment**: Substantial public funding is required for core areas such as plasma physics, superconducting technologies, and AI-assisted simulations.
- **Public-Private Partnerships**: Encouraging Indian start-ups and industry players to participate in fusion R&D can drive innovation and efficiency.
- **Strengthened International Collaboration**: Beyond ITER, India should deepen bilateral and multilateral cooperation with programmes such as the UK's STEP, US private fusion ventures, and China's EAST initiative.
- **Policy and Institutional Reforms**: A dedicated *National Fusion Energy Mission* under the NITI Aayog or Department of Atomic Energy could provide strategic oversight and coordination.
- **Capacity Building**: Developing a skilled workforce through targeted training for physicists, engineers, and technicians is essential to support fusion research infrastructure.
- **Leverage Technological Spin-offs**: Innovations from fusion research — such as superconducting magnets, radiation-resistant materials, and advanced AI systems — can benefit India's defence, space, and high-tech industries.

Conclusion

India's fusion energy roadmap is a bold but measured plan that seeks to balance technological ambition with economic and institutional realism. Although commercial fusion power may not materialise before 2060, the pursuit itself carries strategic value. The development of enabling technologies, coupled with enhanced scientific capacity, will ensure India does not remain a passive observer but becomes an active contributor to the future of global energy. Through this, India has the potential not only to secure energy independence but also to co-create the next phase of the global energy revolution.

Supreme Court Urges Finance Ministry to Amend SARFAESI Act to Address Anomalies

The Supreme Court has recently clarified that a borrower's right to redeem a mortgaged property ceases once an auction notice is issued under the SARFAESI Act. This interpretation has brought to light key inconsistencies in the legislation and prompted the Court to urge the Finance Ministry to consider amending the law to eliminate existing anomalies.

Overview of the SARFAESI Act, 2002

The *Securitisation and Reconstruction of Financial Assets and Enforcement of Security Interest Act, 2002* (SARFAESI) is a critical legal mechanism that empowers banks and financial institutions to recover non-performing assets (NPAs) without the need for court intervention. Under this Act, if a borrower defaults on a secured loan, the lender is entitled to seize and auction the residential or commercial property pledged as collateral, with the notable exception of agricultural land. The legislation has played a significant role in speeding up the reclamation of liquidity and offering a formal structure for the management of distressed financial assets.

Issues Arising Under the SARFAESI Framework

- Despite its benefits, the SARFAESI Act has faced criticism due to several operational and legal shortcomings. A major concern lies in the ambiguity surrounding Section 13, which has led to inconsistencies when read alongside SARFAESI Rules. This lack of clarity has resulted in interpretative confusion, particularly regarding the extent of a borrower's right to redeem property after default and before auction.
- Legal and judicial delays further hamper the effectiveness of the Act. The slow pace of proceedings, especially through Debt Recovery Tribunals (DRTs), undermines the goal of swift asset recovery. Additionally, complexities in identifying and liquidating assets—particularly when these assets have been transferred to third parties—continue to challenge lenders.
- The Act's limited applicability also raises concerns. It excludes unsecured loans and defaults below ₹1 lakh, which restricts its reach. Moreover, misuse of the law by some creditors has led to instances where borrowers' rights are infringed upon, highlighting the need for stronger oversight. The performance of supporting institutions like DRTs and Asset Reconstruction Companies (ARCs) has also been called into question, with

criticisms centered on inefficiency and lack of accountability.

Proposed Way Forward

To enhance the efficacy and fairness of the SARFAESI regime, reforms are necessary. Simplifying the SARFAESI Rules would help address ambiguities, while stringent safeguards must be introduced to prevent arbitrary or unfair practices by creditors. Speedier resolutions through DRTs would help restore stakeholder confidence. The Supreme Court's call to the Finance Ministry signals an opportunity to bring clarity, balance, and procedural efficiency to the Act's implementation.

Launch of GSTAT and GSTAT e-Courts Portal: A Leap in Tax Justice System

The launch of the **Goods and Services Tax Appellate Tribunal (GSTAT)** marks a significant development in the implementation of India's GST regime, reinforcing the country's framework for resolving indirect tax disputes.

About GSTAT and Its Role

Established under **Section 109 of the Central GST Act, 2017**, GSTAT acts as the second appellate authority for cases arising under the GST framework. Typically, taxpayers first appeal within the tax department, and if dissatisfied, can escalate to the GSTAT for an independent and impartial review.

The tribunal will operate through a **Principal Bench in New Delhi** along with **31 State Benches** located across **45 cities** in India. Each Bench comprises two Judicial Members, one Technical Member (representing the Centre), and one Technical Member (from the respective State), reflecting a balanced structure aligned with federal principles.

GSTAT e-Courts Portal

Complementing the physical tribunal, the **GSTAT e-Courts Portal** is a digital interface developed by the **Goods and Services Tax Network (GSTN)** in collaboration with the **National Informatics Centre (NIC)**. It enables taxpayers to file appeals electronically, track case progress, and attend hearings via digital means, streamlining access to tax justice and enhancing transparency.

Together, the GSTAT and its digital counterpart are poised to bring efficiency, accessibility, and legal certainty to GST dispute resolution in India.

Breakthrough in Perovskite Solar Cell Stability

In a major scientific advancement, researchers from **Chalmers University of Technology** in Sweden have used **AI-powered simulations** to resolve the long-standing issue of **halide perovskite instability**, a major hurdle in the commercial viability of **Perovskite Solar Cells (PSCs)**.

Understanding Perovskite Solar Cells (PSC)

- Perovskite Solar Cells are a new-generation **thin-film photovoltaic technology** that utilizes **perovskite-structured materials** with the general chemical formula **ABX_3**, where 'A' and 'B' are cations and 'X' is an anion. These materials are named after the naturally occurring mineral **calcium titanium oxide ($CaTiO_3$)**. In practical solar applications, perovskites often comprise **hybrid organic-inorganic metal halides**, typically involving a **metal cation** (like lead or tin), a **halide anion** (such as iodide, bromide, or chloride), and an **organic cation** (e.g., methylammonium or formamidinium).
- Perovskite cells have drawn global attention for their **high power conversion efficiencies (PCEs)**—reaching over **25%** in laboratory settings—rivaling traditional silicon-based solar panels. They are also **lightweight, flexible, and inexpensive to manufacture**, with potential for deployment on various surfaces, including **windows, mobile devices, vehicles, and building exteriors**. Their tunable bandgap and excellent light absorption and charge transport properties make them strong candidates for **tandem solar cell** applications alongside silicon.

Counterfeit Seeds and GI Crops like Basmati: A Strategic Regulatory Response

Context and Policy Shift

The Indian government has initiated a comprehensive plan to tackle the growing threat posed by counterfeit and substandard seeds, particularly those affecting Geographical Indication (GI)-tagged crops such as Basmati rice. This strategy involves the rollout of a nationwide digital seed traceability platform—**SATHI (Seed Authentication, Traceability, and Holistic**

Inventory)—alongside a proposed amendment to the **Seeds Act, 1966**. These efforts are aimed at protecting farmers from fraud, ensuring seed quality, and preserving India's reputation in global agricultural markets.

Significance of GI Crops Like Basmati

- GI-tagged agricultural products hold enormous strategic importance. Basmati rice alone accounts for nearly **60% of India's rice export earnings**, serving as a critical source of foreign exchange and cementing India's premium positioning in the global rice trade. Beyond economic value, GI crops represent India's **agro-climatic uniqueness and cultural heritage**, reflecting traditional practices passed through generations.
- For millions of Indian farmers, GI-certified seeds offer not just higher yield predictability but also better prices due to their premium branding. Fake seeds, however, severely undercut these advantages, jeopardizing **income security** for cultivators. GI crops like Basmati, Darjeeling tea, and Alphonso mangoes also contribute to **India's soft power**, enhancing agricultural diplomacy and strengthening the country's voice in international trade negotiations.

The Scale and Impact of Counterfeit Seeds

- The proliferation of fake and substandard seeds poses both economic and reputational risks. These seeds frequently **fail to germinate or produce suboptimal yields**, pushing farmers—especially small and marginal ones—into financial distress. This not only lowers national agricultural productivity but also increases rural indebtedness.
- Internationally, poor-quality output from counterfeit seeds threatens India's **brand value**, as importers may reject inferior produce. The scale of the problem is underscored by 2024–25 data: of the **2.53 lakh seed samples tested**, **32,525 were found substandard**, with the highest incidence reported in West Bengal, Tamil Nadu, and Madhya Pradesh.
- The counterfeit seed trade often involves **illegal and unregulated sales**, with unauthorised sellers bypassing Agriculture Ministry approval. Lacking proper certification, these seeds are frequently mislabelled and sold through informal networks. States such as Telangana, Rajasthan, Gujarat, and West Bengal are identified as **regional hotspots**, primarily due to extensive crop cultivation and a high dependence on formal seed markets.

Government's Multi-Pronged Strategy

- To combat this growing menace, the government is implementing both technological and legislative interventions.
- The **SATHI Project**, introduced in phases, forms the digital backbone of India's seed traceability system. **Phase I**, launched in 2023, was rolled out across **23 states and union territories**, covering seed production and processing agencies to create a transparent digital repository. **Phase II**, underway in 2025, extends traceability to the retail and end-user level. It incorporates **QR code-enabled packaging**, enabling farmers to verify seed authenticity before purchase.
- The government also seeks to overhaul the outdated **Seeds Act, 1966**. Under the current law, seed certification remains optional, allowing companies to market "truthfully labelled" seeds without independent verification. This loophole compromises regulatory control. Proposed amendments aim to **mandate certification and traceability**, hold seed dealers and companies legally accountable, and establish **stronger penalties** for violations.
- Alongside traceability and legal reform, the focus has also turned to strengthening **seed testing infrastructure**. India operates **178 Seed Testing Laboratories (STLs)** to ensure seed quality, with **10 labs accredited by the National Accreditation Board for Testing and Calibration Laboratories (NABL)** and **2 certified by the International Seed Testing Association (ISTA)**. These accreditations enhance India's international credibility and alignment with global quality standards.

The Indian Seed Industry: Size and Structure

- India's seed industry is currently valued at approximately **$6.3 billion (~₹55,200 crore)**, positioning it as one of Asia's largest. Given the increasing food demand, expanding population, and agri-tech innovations, this market is projected to grow to **$12.7 billion by 2028** and **$20 billion by 2040**, with an anticipated **compound annual growth rate (CAGR) of 10%**.
- The private sector dominates high-value segments—accounting for **98% of cotton seed sales**, and around **70% in field crops and vegetables**. However, most seed varieties originate from public research institutions such as ICAR, reflecting a **public-private synergy**, where public R&D fuels innovation and private firms ensure large-scale dissemination.

Persistent Challenges

- Despite policy advances, several challenges persist. **Enforcement at the ground level remains inconsistent**; while raids and FIRs are registered, counterfeit seeds continue to circulate. **Farmer vulnerability is a key concern**, particularly for small and marginal cultivators who often lack awareness of certification protocols and are lured by cheaper, low-quality alternatives.
- **Logistical and technological limitations** also hinder the implementation of universal traceability. Gaps in rural digital infrastructure, uneven internet access, and limited IT literacy in farming communities slow the adoption of QR code verification.
- The international implications are significant. Instances of counterfeit seeds in GI crops like Basmati could lead to **export rejections**, affecting not just trade but also India's **agricultural credibility on global platforms**. Additionally, **compliance costs may be burdensome for smaller seed firms**, potentially fostering monopolisation by larger players with greater resources, thus widening the equity gap within the sector.

The Path Forward

- To ensure comprehensive protection against counterfeit seeds, the SATHI system must be **scaled up to cover all states**, accompanied by targeted training for farmers to facilitate **QR-based seed authentication**. Legislative reforms to **amend the Seeds Act should be expedited**, making certification and traceability mandatory, with **harsher penalties**, including criminal liability and licence cancellation, to deter violations.
- A nationwide **awareness campaign is essential** to educate farmers about the risks of fake seeds and the importance of purchasing from certified dealers. This must be complemented by **public-private collaboration**, particularly in developing **blockchain-enabled traceability solutions** and expanding the number of accredited seed labs to ensure broader coverage.
- Additionally, India must seize the opportunity to **brand its GI crops more assertively on international platforms**, using **authenticity certifications** as a competitive advantage. This will enhance export reliability and bolster farmer incomes.

Conclusion

Counterfeit seeds represent a silent but serious threat to Indian agriculture—undermining **farmer incomes, seed sovereignty, and the international reputation** of the country's GI-tagged crops. Basmati rice, a symbol of both economic strength and cultural legacy, is particularly vulnerable. Through a combination of **digital innovation, legislative reform, regulatory enforcement, and farmer empowerment**, India can decisively combat this menace. Protecting seed integrity is not merely an issue of agricultural policy—it is central to ensuring **food security, rural prosperity, and global trust in India's agricultural exports**.

Mahi Banswara Rajasthan Atomic Power Project (MBRAPP)

- Prime Minister Narendra Modi has laid the foundation stone for the Mahi Banswara Rajasthan Atomic Power Project (MBRAPP) near the Mahi Dam in Banswara, Rajasthan. The project will consist of four Indigenous Pressurized Heavy Water Reactors (PHWRs), each with a capacity of 700 MWe.

- The plant is being developed by Anushakti Vidhyut Nigam (ASHVINI), a joint venture between the Nuclear Power Corporation of India Limited (NPCIL) and the National Thermal Power Corporation Limited (NTPC). MBRAPP is part of India's "fleet mode" strategy, under which ten identical 700 MW PHWRs are being constructed nationwide to streamline procurement and design.
- As of January 30, 2025, India operates 24 nuclear reactors across seven locations, with an installed capacity of 8,180 MW. Plans are underway to expand this capacity to 22,480 MW by 2031-32. Nuclear energy currently accounts for 3.61% of India's total electricity production, ranking fifth among non-fossil fuel sources.
- India remains in the first stage of its three-stage Nuclear Power Programme, which uses uranium-fueled PHWRs. The second stage will use plutonium-based Fast Breeder Reactors (FBRs), while the third stage will utilize thorium-based fuels.

HSBC–IBM Quantum-Enabled Algorithmic Trading

- HSBC and IBM have embarked on what is believed to be the world's first hands-on trial of a quantum-enabled algorithmic trading system for bonds.
- This experimental trial deployed a hybrid quantum-classical computing approach using actual production-level trading data from the European corporate bond market. The objective was to augment existing classical algorithmic trading workflows with quantum computing capabilities.
- Rather than relying exclusively on quantum computing, the trial adopted a hybrid model. HSBC and IBM integrated the IBM Heron quantum processor into their classical systems to enhance performance. This quantum augmentation allowed more efficient processing without abandoning the proven reliability of traditional computing infrastructure.
- Algorithmic trading involves computer programs automatically executing buy or sell orders in securities markets—such as stocks, bonds, futures, or options—according to predefined rules. These rules, encoded in programming languages like Python, Java, or C++, take into account indicators such as timing, price movements, volume, or technical signals.
- In practice, a trading strategy might dictate something like: "buy 100 shares if the 5-minute moving average crosses above the 20-minute average." The algorithm continuously monitors live data feeds and, when conditions are met, executes the transaction in milliseconds without human intervention.
- Algorithmic trading offers several key benefits: speed (execution in milliseconds), removal of emotional bias (consistency in following rules), scalability (simultaneous operation across strategies and asset classes), and the ability to backtest strategies against historical data before going live.
- Algorithmic trading has been officially recognised in India since 2008. The National Stock Exchange (NSE) introduced features like co-location and smart order routing by 2011. The Securities and Exchange Board of India (SEBI) now enforces rules requiring all algorithmic trading strategies to be approved by exchanges, assigned unique identifiers, and subjected to risk controls and audit trails by brokers. SEBI also discourages the use of unauthorised third-party "black-box" algorithms to ensure transparency and accountability.

2G Ethanol

- In a recent policy development, India has approved the export of 2G ethanol, mandating the use of export licenses and verified feedstock certificates to ensure compliance and sustainability.
- Second-Generation (2G) ethanol is an advanced biofuel produced from non-food, lignocellulosic biomass. Its sources include agricultural waste, forestry residues, woody biomass, municipal solid waste, and algae. In contrast to First-Generation (1G) ethanol, which is derived from food crops like sugarcane and maize,

2G ethanol promotes food security and represents a more sustainable fuel option.

- The production of 2G ethanol begins with the collection of crop residues such as rice and wheat straw, bagasse, corn stover, wood chips, and algae. The feedstock undergoes pretreatment through mechanical, thermal, or chemical processes to break down the tough cell walls. This is followed by enzymatic hydrolysis, where enzymes like cellulases release fermentable sugars from cellulose and hemicellulose. Subsequently, fermentation by microorganisms—either wild or genetically engineered yeasts—converts the sugars into ethanol. Finally, distillation and purification yield bioethanol suitable for blending with conventional fuels or for industrial purposes.
- 2G ethanol stands out due to its sustainability profile. By using waste biomass, it helps reduce stubble burning and food waste. It is a low-carbon fuel, with the potential to cut greenhouse gas emissions by 85–108% compared to conventional gasoline. Being non-food-based, it avoids the food-versus-fuel conflict, and India has significant potential to scale production, with an estimated 62 million metric tonnes of municipal waste available annually. Policy incentives such as India's early achievement of the E20 fuel blending target for 2030 support its growth.
- Its applications are wide-ranging: in the transport sector through petrol blending, in aviation as a potential green fuel, and in industrial sectors like pharmaceuticals, chemicals, and beverages. Environmentally, it supports better waste management and reduction of agricultural residue burning.

US President Announces 100% Tariffs on Branded Pharmaceutical Drug Imports

The President of the United States has declared that, effective 1 October, a 100% tariff will be imposed on all branded or patented pharmaceutical drug imports, unless the exporting companies are actively setting up manufacturing operations within the United States. This move is expected to have significant implications for global pharmaceutical trade.

India's Role and Exposure in the Global Pharmaceutical Market

India, widely regarded as the "Pharmacy of the World," is among the largest pharmaceutical exporters globally, commanding a 5.71% share in the international market. The US, being India's largest pharmaceutical market, accounts for approximately 35% of its pharma exports, estimated at $10 billion for FY25.

Impact of US Tariffs on India's Pharmaceutical Exports

- Although the announced tariffs specifically target branded or patented drugs, India's pharmaceutical exports are predominantly composed of low-cost generics and Active Pharmaceutical Ingredients (APIs), which currently fall outside the scope of the proposed tariff. However, the situation is not without complications.
- There is concern regarding the interpretation of the term "branded pharmaceutical drug" by US authorities. Generic medicines, while not patented, are often labeled by manufacturers, which could potentially place them under scrutiny if a broad or inconsistent definition is applied. Such ambiguity may lead to increased inspections, delays in customs clearance, and unforeseen compliance costs for Indian exporters.
- Moreover, India boasts the largest number of USFDA-compliant pharmaceutical manufacturing facilities located outside the United States. If the new tariff policy incentivizes companies to shift production to the US, it could adversely affect India's domestic pharmaceutical manufacturing sector.
- On the other hand, there may be short-term advantages for Indian suppliers. The increased cost of imported branded drugs in the US market could drive higher demand for cost-effective generic alternatives, thereby potentially boosting India's exports in that segment.

Overview of India's Pharmaceutical Sector

- India currently ranks third globally in terms of pharmaceutical production volume and eleventh by value. The sector

is on a strong growth trajectory, with projections indicating a market size of USD 130 billion by 2030 and USD 450 billion by 2047.

In terms of exports, India primarily ships drug formulations and biologicals, which constitute approximately 75% of its total pharmaceutical exports. Additionally, India contributes an impressive 60% to the global vaccine supply, underscoring its pivotal role in the international pharmaceutical ecosystem.

The Weakening Rupee: Causes, Implications, and Policy Pathways

Context

The recent depreciation of the Indian Rupee (INR) against the US dollar is rooted in a persistent trade imbalance and sluggish investment inflows. These domestic challenges have been exacerbated by global financial tightening, which has heightened pressure on emerging market currencies, including the rupee.

Trends in the Rupee's Decline

Since January 2025, the rupee has depreciated by more than 3% against the US dollar, a sharper decline than that experienced by several other emerging economies. This depreciation is not limited to the dollar; the rupee has also weakened against other major currencies such as the euro and the pound, indicating a broader decline in currency strength. In regional terms, the rupee's performance mirrors that of currencies in Bangladesh and Pakistan, although the pace of India's decline has been notably steeper. In the short term, the rupee has seen a depreciation of over 1.3% within just one month, highlighting heightened currency volatility.

Underlying Causes of Rupee Weakness

- A key driver of the rupee's depreciation is the persistent trade imbalance. Exports remain stagnant amid rising global protectionism, while imports — particularly of crude oil and electronics — remain high, exacerbating the Current Account Deficit (CAD). Notably, India imports nearly 85% of its crude oil needs, which are priced in dollars, making the currency particularly vulnerable.
- Investment inflows have also weakened. Amid global economic uncertainty and underwhelming domestic corporate earnings, both Foreign Portfolio Investment (FPI) and Foreign Direct Investment (FDI) have become sluggish or even negative. For instance, recent net FPI outflows of $1.5 billion have reduced dollar availability in Indian markets.
- Further weakening the rupee is the relative global demand for the dollar. As international investors seek safer assets, the rupee loses attractiveness in comparison to the dollar. Subdued GDP growth, recorded at approximately 6.1% in the first quarter of FY26, has also eroded investor confidence, dissuading capital retention in India.
- Moreover, global financial tightening — particularly strong returns on US assets such as bonds and equities — has drawn capital away from emerging markets like India, compounding the rupee's decline.

Impacts of Rupee Depreciation

The effects of the rupee's depreciation are mixed, with both negative and positive implications.

- On the downside, the weakening rupee increases import-driven inflation, particularly for essential goods like crude oil, fertilizers, and electronic components. Companies with unhedged external commercial borrowings also face higher rupee-denominated repayment costs, raising corporate financial stress. The CAD widens further as dollar-denominated imports become costlier, and consumers are burdened by rising expenses for foreign services such as education, tourism, and healthcare.
- However, there are some beneficial effects. Depreciation improves the price competitiveness of Indian exports, making them more attractive in global markets. It also boosts tourism and remittances, as Non-Resident Indians (NRIs) enjoy better rupee returns on their dollar remittances. Additionally, rising import costs encourage domestic manufacturing, aligning with India's "Atmanirbhar Bharat" vision for self-reliance.

Policy Landscape and Government Response

- The Reserve Bank of India (RBI) has opted for a calibrated approach to intervention, using its foreign exchange reserves — currently around $570 billion — to

smooth excessive volatility, rather than aggressively defending the rupee.

- On the fiscal side, the government is prioritizing import reduction through initiatives such as the Production-Linked Incentive (PLI) schemes and ethanol blending to curb the oil import bill. Structural efforts are also underway to enhance long-term trade infrastructure via the India-Middle East-Europe Corridor (IMEC) and to reduce logistical costs through the National Logistics Policy.
- Internationally, India is aligning with broader de-dollarisation trends through forums like BRICS+, promoting trade in local currencies with partners such as the UAE and Russia.

Way Forward

- To ensure a more stable and resilient rupee, India must strengthen its export competitiveness by investing in high-value manufacturing and actively negotiating Free Trade Agreements (FTAs) with key global markets. Energy diversification is crucial, with an urgent need to accelerate the adoption of renewable energy, green hydrogen, and ethanol blending to reduce oil dependency.
- Attracting long-term capital requires greater policy stability and streamlined approval processes to facilitate sustained FDI inflows. India must also deepen its financial markets, particularly the bond market, to better absorb external shocks, while encouraging the use of the rupee in trade invoicing.
- The RBI's role will remain critical. A carefully calibrated approach is needed to manage short-term currency volatility without depleting foreign reserves or undermining market confidence.

Conclusion

The rupee's depreciation reflects deeper structural vulnerabilities — notably, a high trade imbalance, volatile capital flows, and heavy reliance on imports. While a weaker rupee can support exports and encourage domestic production, unchecked depreciation poses inflationary risks and undermines investor trust. True currency resilience lies in addressing these fundamental challenges through diversified exports, a robust investment environment, and improved macroeconomic fundamentals. A rupee that is stable and anchored in sustainable growth will bolster India's economic stability and global competitiveness.

Discovery of Natural Gas in the Andaman Basin: A Strategic Milestone for India's Energy Security

- The Ministry of Petroleum and Natural Gas has announced the discovery of natural gas in the Andaman Basin, marking a significant step in India's pursuit of energy self-sufficiency. The gas was found in the Sri Vijayapuram-2 well, located approximately 17 kilometers from the shoreline on the eastern coast of the Andaman Islands.
- According to India's Hydrocarbon Resource Assessment Study (HRAS), the Andaman-Nicobar (AN) Basin holds an estimated 371 million Metric Tons of Oil Equivalent (MMTOE) in hydrocarbon resources. Geologically, the basin lies at the intersection of the Andaman and Nicobar basins, forming a part of the Bengal-Arakan sedimentary system. The tectonic setting at the junction of the Indian and Burmese plates has resulted in the formation of several stratigraphic traps, which are favorable for hydrocarbon accumulation.
- Similar gas reserves have been identified in nearby basins, such as North Sumatra in Indonesia and the Irrawaddy-Margui basin in Myanmar, reinforcing the strategic significance of the region for exploration activities.
- This discovery aligns with India's broader vision of transitioning to a Gas-Based Economy by 2030. The government aims to raise the share of natural gas in the country's primary energy mix to 15% by 2030, from its current level of around 6.5%. At present, domestic production meets only about 50% of India's natural gas demand, with the remainder fulfilled through imports from countries such as Qatar, the United States, and the UAE.
- To accelerate domestic exploration and production, several initiatives have been

launched. The *Hydrocarbon Exploration and Licensing Policy (HELP)* introduced in 2016 established a uniform licensing framework and enabled the Open Acreage Licensing Policy (OALP). The *National Deep Water Exploration Mission* seeks to unlock offshore resources through extensive deepwater drilling. Other efforts include the creation of the *National Data Repository*, the *National Seismic Program*, and the allowance of 100% Foreign Direct Investment (FDI) in the natural gas sector.

- This latest find in the Andaman Basin represents a significant development that not only enhances India's energy security but also strengthens its positioning in the evolving global energy landscape.

Reimagining Green Economy Through Landscapes

- India's bioeconomy has expanded significantly over the past decade (2014–2024), multiplying nearly sixteen-fold to reach a valuation of $165.7 billion. It now contributes approximately 4.25% to the nation's GDP. However, this rapid growth has been uneven, with a growing rural–urban divide highlighting the need to rethink economic models. A landscape-oriented green economy is being proposed as a more inclusive and sustainable alternative.
- A green economy refers to an economic framework that promotes sustainable development by minimizing ecological degradation and environmental risks. It supports a shift toward low-emission growth, efficient use of resources, and inclusive development that integrates marginalised communities into the green transition.
- A defining feature of this model is its low carbon footprint. It encourages renewable energy, electric mobility, and energy-efficient technologies to reduce greenhouse gas emissions. Resource efficiency is central, with a focus on recycling, waste-to-energy initiatives, sustainable agriculture, and circular economic practices. Equally critical is inclusivity—ensuring that women, rural populations, and MSMEs are integrated into emerging green value chains.
- The model also prioritizes the restoration of ecosystems through the protection of biodiversity, soil quality, forests, and water bodies. A strong technological backbone supports these initiatives through the application of artificial intelligence, Internet of Things (IoT), smart grids, and platforms for carbon trading and monitoring.

Why the Green Economy Matters for India

- Adopting a green economy enhances climate resilience by reducing India's exposure to extreme weather events and ensuring long-term food and water security. It also holds the potential to generate approximately 35 million green jobs by 2030, facilitating inclusive economic growth. Reducing fossil fuel dependence through clean energy initiatives strengthens energy security under the Aatmanirbhar Bharat framework.
- Furthermore, it positions India to maintain global competitiveness by addressing potential trade barriers such as carbon border taxes and tapping into emerging sustainable markets. Equally important, it fosters social equity by narrowing the rural–urban divide through access to clean energy, sustainable agriculture, and gender empowerment.

Constitutional and Policy Framework

- India's constitutional provisions, such as Article 21 (Right to Life) and Article 48A (Directive Principles on environmental protection), lay the foundation for environmental governance.
- Article 243G empowers Panchayati Raj Institutions (PRIs) to participate in local natural resource planning.
- Various policy instruments and missions—such as the National Bio-Energy Mission, the 2024 BioE3 Policy, the National Action Plan on Climate Change (NAPCC), the Bharat 6G Vision, and the environmentally oriented components of MGNREGA—serve to institutionalize green economic practices.

Emerging Trends in India's Green Economy

- India's bioeconomy now contributes 4.25% to GDP, with biofuels, bioplastics, and pharmaceuticals emerging as leading sectors. The nation has achieved 20% ethanol blending and witnessed a 250% rise in renewable energy capacity between 2015 and 2021. While projections estimate 35 million green jobs by 2030, only 11% of rooftop solar roles are held by women, reflecting a persistent gender disparity. Urban centres continue to attract most green investments, from electric vehicles to green buildings, whereas rural areas lag in infrastructure and access.
- Similarly, western and southern states such as Maharashtra, Karnataka, Gujarat, and Telangana dominate the green economy landscape, while resource-rich eastern and tribal-dominated regions remain underrepresented.

Challenges and Trade-Offs

- The transition to a green economy faces multiple structural and socio-economic hurdles. Access to green resources and technology is skewed in favour of urban areas, which continue to attract disproportionate investments. Rural areas struggle with inadequate irrigation efficiency, poor adoption of renewables, and minimal clean-tech penetration. Despite being resource-rich, northeastern states contribute less than 6% to the national bioeconomy.
- Energy transition efforts are undermined by conflicting policies—while renewable energy is aggressively promoted, fossil fuel subsidies still account for up to 40% of total energy support, reducing the net impact. The widespread distribution of solar pumps, though beneficial, raises concerns about over-extraction of groundwater. Heavy industries such as steel, cement, and thermal power, which are hard to decarbonise, contribute around 23% of national greenhouse gas emissions. Transitioning these sectors to green alternatives remains expensive, with costs often exceeding traditional methods by more than four times.
- Socio-economic risks are also significant. A rapid green shift threatens the livelihoods of coal workers, MSMEs, and small-scale manufacturers. Given that agriculture supports nearly 58% of rural households, these populations remain especially vulnerable to the uncertainties of climate change. The gender and social equity dimensions of the transition are similarly skewed—women occupy just 1–3% of technical roles in green jobs, and tribal and marginalised communities are often treated as passive recipients rather than active agents of change.
- Policy fragmentation further exacerbates these issues. Despite promising missions like BioE3 and national renewable targets, weak inter-ministerial coordination and poor on-ground enforcement reduce their overall effectiveness.

A Landscape-Based Strategy: The Way Forward

- To address these systemic challenges, a landscape-based approach is proposed. This model views landscapes as integrated systems comprising land, water, biodiversity, energy, and local markets. It emphasises participatory ecosystem valuation, with assessments conducted from village-level planning to macroeconomic scaling.
- Institutional frameworks such as the 2.5 lakh Panchayati Raj Institutions and 12 million women-led self-help groups should be leveraged for co-designing, monitoring, and owning the green transition. Building circular and locally-rooted economies is crucial, particularly by promoting tribal-led models involving non-timber forest produce and agri-waste reuse.
- Gender mainstreaming should be a priority, with focused training, leadership opportunities, and financial incentives for women to take up roles in solar energy, biofuels, and waste-to-energy sectors. Investment in green infrastructure and innovation must also expand, including green budgeting, targeted fiscal incentives, and government procurement of sustainable products. The creation and strengthening of over 100 labs for 5G and 6G technologies can help in making digital infrastructure greener.

- Waste and resource management require urgent attention. While urban centres are responsible for 75% of the country's solid waste, rural regions struggle with unsegregated organic and plastic waste. Standard operating procedures (SOPs), decentralised finance mechanisms, and circular economy models need to be developed to manage this efficiently.

Conclusion

India's green transition must evolve beyond an urban-industrial focus and embrace a landscape-oriented, community-centric model. By integrating local ecological knowledge, women's leadership, and tribal bioeconomic potential with cutting-edge technology, India can build a resilient, equitable, and globally competitive green economy. The vision for 2047 should not be confined to GDP growth alone but must reflect ecological regeneration, social equity, and climate leadership on the global stage.

Corporate Average Fuel Efficiency (CAFE) – Overhaul of India's Vehicle Emissions Framework

India has recently introduced the **draft Corporate Average Fuel Efficiency (CAFE) 3 norms**, developed by the **Bureau of Energy Efficiency (BEE)**. These proposed regulations aim to **tighten fuel efficiency standards** and **curb vehicle emissions**, while also incorporating **greater flexibility** for manufacturers, particularly concerning **small cars and electric vehicles (EVs)**. This marks a significant step in reshaping the country's vehicle efficiency and environmental policy landscape.

Understanding India's Current CAFE Framework

- The **Corporate Average Fuel Efficiency (CAFE)** framework was first introduced in **2017** by the BEE under the aegis of the **Ministry of Power**. Its primary objective is to regulate **fuel consumption and carbon emissions** from **passenger vehicles**. The norms apply to all vehicles under 3,500 kilograms, including those powered by **petrol, diesel, LPG, CNG, hybrid systems**, and **electric drivetrains**.
- The framework was designed to address India's increasing **oil dependency** and rising **air pollution**, thereby compelling auto manufacturers to lower **CO_2 emissions**. Additionally, it offers **incentives for cleaner technologies** like EVs, hybrids, and CNG-powered vehicles.
- Under the second iteration—**CAFE 2**, implemented during 2022–23—the efficiency standards were made more stringent. Fuel consumption was capped at **4.78 litres per 100 kilometres**, and **CO_2 emissions were limited to 113 grams per kilometre**, with enhanced penalties for non-compliance.

Rationale for CAFE 3

- A major critique of the existing Indian CAFE framework is that it **inverts global logic**. While **global regulatory regimes** in countries like the **United States, the European Union, China**, and **Japan** allow **relaxed CO_2 norms for smaller, lighter vehicles**, India has so far **favoured heavier SUVs** with leniency, placing a disproportionate burden on **compact cars**.
- This regulatory imbalance has contributed to the **decline of the small car segment**, with sales falling by **71% over six years**. The proposed **CAFE 3 norms** aim to **align India's policies with global best practices**, correct these disparities, and support **affordable, efficient mobility**.

Salient Features of the Draft CAFE 3 Norms

Scope and Applicability

The proposed norms will apply to **M1 category passenger vehicles**, which include cars designed to carry up to **nine persons (including the driver)** and weigh a maximum of **3,500 kilograms**. Non-compliance will attract penalties under the **Energy Conservation Act, 2001**, thereby giving the framework legal and regulatory teeth.

Revised Efficiency Targets and Formula

The CAFE 3 norms propose a new efficiency calculation formula: **[0.002 × (W – 1170) + c]**, measured in **petrol-equivalent litres per 100 km**, where:

- **W** is the average weight of the manufacturer's fleet.
- **1170 kg** is a fixed reference weight.
- **0.002** is a standard multiplier.
- **'c'** is a dynamic constant that **declines each year** to make targets stricter.

The constant 'c' starts at **3.7264 in FY28**, decreasing progressively to **3.0139 by FY32**. The structure inherently **favors lighter vehicles**, which will find it easier to meet compliance standards than **heavier SUVs or premium vehicles**.

Support for Small Cars and Market Revival Measures

- In a direct response to the decline in small car sales, the norms include **additional relaxations** for **compact petrol vehicles**. Cars with an **unladen mass up to 909 kg**, **engine capacity not exceeding 1200 cc**, and a **length under 4000 mm** will receive a **relaxation of 3.0 grams of CO_2/km**, with a **maximum allowable cap of 9.0 g/km**.
- This initiative is designed to **revive consumer interest** in the small car segment. It also complements recent **GST 2.0 reforms**, under which the **Goods and Services Tax on small cars** has been **reduced from 28% to 18%**, making them more affordable.

Boost for EVs and Alternative Fuel Vehicles

Super Credits System

To accelerate the transition to **cleaner mobility**, the proposed norms introduce a **"super credits" system**. This system allows manufacturers to **gain additional credit** towards meeting their overall efficiency targets based on the type of alternative vehicle they sell:

- **Battery Electric Vehicles (BEVs)**: counted **three times**.
- **Plug-in Hybrid Electric Vehicles (PHEVs)**: counted **2.5 times**.
- **Strong Hybrids**: counted **twice**.
- **Flex-fuel ethanol vehicles**: counted **1.5 times**.

This multiplier mechanism offers manufacturers an incentive to **diversify their vehicle portfolio** towards low-emission and zero-emission vehicles, helping them meet stringent fleet-level standards with greater flexibility.

Carbon Neutrality Factor (CNF)

The norms also propose a **Carbon Neutrality Factor (CNF)**, offering **tailpipe CO_2 reduction credits** based on the **type of fuel** used:

- Vehicles using **E20–E30 petrol blends** receive an **8% CNF credit**.
- **Flex-fuel ethanol vehicles** and **strong hybrids** are eligible for a **22.3% CNF credit**.

This mechanism further enhances the attractiveness of **alternate fuel vehicles**, aligning with India's goal of **phased ethanol blending** and **fuel diversification**.

Collaborative Compliance through Emissions Pooling

- The draft also introduces an **emissions pooling mechanism**, allowing up to **three automakers** to **form a compliance pool**. These pooled entities will be treated as a **single manufacturer** for the purpose of efficiency targets. A **designated pool manager** will bear legal responsibility for compliance and penalties.
- This structure is intended to **reduce compliance costs**, **encourage collaboration**, and foster **strategic alliances**, especially for smaller manufacturers who may struggle to meet the targets independently.

Conclusion: Implications and Future Challenges

- The proposed **CAFE 3 norms** represent a **transformative shift in India's approach to vehicular emissions and efficiency**. By **revamping the regulatory framework**, the government seeks to achieve multiple objectives: **reviving the small car market**, **promoting EV adoption**, and **tightening long-term fuel efficiency standards**.
- If effectively implemented, these measures could substantially **reduce India's dependence on oil imports**, **accelerate the shift towards green mobility**, and **bring Indian standards in line with global climate obligations**, such as those outlined in the **Paris Agreement**.

However, the transition will not be without challenges. The **automotive industry will need to adapt**, consumers must be **willing to adopt alternate fuel vehicles**, and **infrastructure for EVs and flex-fuel systems** must scale up rapidly. Success will depend not only on regulation but also on **coordinated policy implementation**, industry readiness, and public acceptance.

EV Charging Infrastructure – Government Introduces 100% Subsidy

- The government has recently unveiled guidelines under the Rs. 10,000 crore **PM E-Drive scheme**, which provides a **100% subsidy** for the development of electric vehicle (EV) charging infrastructure. This initiative is a critical step toward accelerating India's shift to clean and sustainable mobility by addressing the longstanding issue of insufficient charging facilities.
- India has set forth ambitious objectives to transition its transportation sector toward sustainability, with electric vehicles occupying a central role in this vision of clean mobility. A significant barrier to this transition has been the lack of adequate infrastructure for EV charging. To bridge this gap, the government has launched guidelines under the Rs. 10,000 crore PM E-Drive scheme, which offers up to a full subsidy for establishing EV charging stations as well as battery swapping stations. This move is intended to boost the adoption of EVs by directly tackling the infrastructural shortcomings that have hindered the sector's growth.

India's Drive for EV Adoption

- Over the last decade, India's EV market has gathered momentum, bolstered by supportive policies such as the **Faster Adoption and Manufacturing of Hybrid and Electric Vehicles (FAME)** scheme and various incentives at the state level. Despite this progress, the country still faces a severe deficit in charging infrastructure. Presently, India has fewer than 20,000 public charging stations, a figure that pales in comparison to the numbers in global EV frontrunners like China and the United States.
- The PM E-Drive scheme targets this bottleneck by prioritizing subsidies specifically for high-density urban centers, designated smart cities, and key transport corridors. By linking subsidy disbursements to aggregated demand, the scheme fosters a **coordinated effort among central ministries, state governments, and public sector enterprises**, ensuring a more strategic and efficient deployment of charging infrastructure.

Key Features of the PM E-Drive Subsidy Scheme

- Within the larger Rs. 10,000 crore budget, Rs. 2,000 crore has been earmarked exclusively for EV charging infrastructure development. The guidelines highlight several important aspects:
- The scheme offers **100% financial support** to eligible participants for upstream infrastructure components such as transformers, cables, circuit breakers, and civil works. In select cases, subsidies may even extend to the cost of EV supply equipment (EVSE), including charging guns.
- Geographically, the focus is on cities with populations exceeding one million, notified smart cities, satellite towns adjacent to metropolitan areas, and cities included in the **National Clean Air Programme (NCAP)**. Furthermore, the scheme plans to make certain inter-city and inter-state highways EV-ready, working closely with the Ministry of Road Transport and Highways to integrate charging facilities along these critical routes.
- Eligible entities for submitting proposals include central ministries, state governments, public sector undertakings (PSUs), and central public sector enterprises (CPSEs). Major companies such as IOCL, BPCL, HPCL, NHAI, AAI, and metro rail corporations are also invited to participate. To ensure operational flexibility, these entities may either manage charging stations themselves or appoint dedicated **Charge Point Operators (CPOs)**.

Expected Impact on the EV Ecosystem

- This subsidy scheme is designed to facilitate the creation of a robust network of charging stations that keeps pace with the growing adoption of electric vehicles in India. One of the immediate outcomes anticipated is a significant boost to EV sales, as the assurance of widespread and accessible charging infrastructure is likely to encourage more consumers to transition away from internal combustion engine vehicles.
- The involvement of major public sector players such as IOCL and NHAI ensures that the scheme will benefit from the expansive networks and operational expertise these entities bring, enhancing the chances of successful implementation. By prioritizing

cities under the National Clean Air Programme and capital cities, the infrastructure expansion aligns closely with India's broader environmental objectives, particularly the goal of reducing urban air pollution.
- In addition to environmental benefits, the expansion of charging networks will generate new economic opportunities for a variety of stakeholders, including Charge Point Operators, manufacturers of charging equipment, and ancillary service providers.

Challenges Ahead

- Despite the promising nature of this subsidy scheme, several challenges must be addressed to ensure its success. One of the foremost issues is **land acquisition**, as finding and securing appropriate sites for charging stations in densely populated urban environments remains difficult.
- Another critical challenge lies in **grid readiness**. India's power distribution infrastructure will need to be strengthened to handle the increased electrical load from widespread EV charging without causing disruptions or blackouts.
- Moreover, it is vital to promote **private sector participation** to complement the efforts led by public sector undertakings. A balanced rollout between public and private players will likely accelerate infrastructure growth.
- Finally, raising **consumer awareness** is essential. Users need to be well-informed about where charging stations are located, how pricing models work, and the relevant safety standards associated with EV charging.

India Secures Second Deep-Sea Mineral Exploration Contract in the Indian Ocean

- India has recently inked a new contract with the International Seabed Authority (ISA) that grants it exclusive rights to explore Polymetallic Sulphides (PMS) in the Carlsberg Ridge region of the Indian Ocean. This achievement makes India the first country globally to hold two ISA contracts simultaneously, thereby controlling the largest seabed area internationally allocated for PMS exploration. The National Centre for Polar and Ocean Research (NCPOR) based in Goa is scheduled to commence exploration activities in 2026, employing geophysical and hydrographic surveys to investigate the site.
- The application for this contract, submitted in 2024, was approved just last week, granting India rights over a 10,000 square kilometer area along the Carlsberg Ridge. This new contract complements India's initial agreement secured in 2016 for exploration in the Central and Southwest Indian Ridges, representing both a significant scientific milestone and a strategic advantage for the country.

Polymetallic Sulphides and Their Strategic Importance for India

- Polymetallic Sulphides are valuable seabed deposits that contain a variety of metals such as copper, zinc, lead, gold, silver, along with trace quantities of rare and precious elements. These deposits are typically found near hydrothermal vents on the ocean floor, where seawater infiltrates cracks in the Earth's crust, interacts with magma, and resurfaces as mineral-laden hot water, which then solidifies on the seabed. For India, exploring these PMS deposits holds critical importance due to the limited availability of such minerals in terrestrial reserves.
- Securing PMS resources is vital to India's strategic industries, including those involved in renewable energy, high technology, and green technologies. By tapping into these underwater mineral deposits, India aims to enhance its resource security and reduce dependency on external supplies, thereby fostering greater self-reliance.

India's Experience and Expertise in PMS Exploration

- Since signing its first contract with the ISA in 2016, India's NCPOR has conducted extensive surveys along the central and southwest Indian Ocean ridges, steadily building expertise and developing the necessary infrastructure. The government's Deep Ocean Mission has further bolstered these efforts by providing advanced deep-sea vessels and cutting-edge technology such as

Autonomous Underwater Vehicles (AUVs).

- In addition, the upcoming Matsya submersible, part of the Samudrayaan mission, is expected to significantly expand India's deep-sea exploration capabilities. NCPOR's approach follows a systematic three-phase plan: initial reconnaissance surveys using ship-mounted tools to locate promising PMS sites; detailed near-seabed investigations employing AUVs and Remotely Operated Vehicles (ROVs) to confirm the presence of deposits; and comprehensive resource evaluation of identified sites to assess their economic viability.

The Significance of the Carlsberg Ridge

- The Carlsberg Ridge is a segment of the mid-ocean ridge system in the Indian Ocean, created approximately 40 million years ago through seafloor spreading between the Indian Plate and the Somali Plate. Characterized by a relatively slow spreading rate of 2.4 to 3.3 centimeters per year, the ridge features rugged terrain with a median valley typical of slow-spreading ridges. Its hydrothermal vent systems make the Carlsberg Ridge a prime location for Polymetallic Sulphide deposits.
- India has studied this ridge and its hydrothermal systems for over three decades. Strategically, the Carlsberg Ridge is located near 2°N latitude, much closer to India than the Central and Southwest Indian Ridges, which lie near 26°S. This proximity enhances its importance for both resource security and scientific exploration efforts.

Complexity of PMS Exploration Compared to Other Underwater Mineral Searches

- Exploration of Polymetallic Sulphides is considerably more challenging than other underwater mineral investigations. PMS deposits are found near hydrothermal vents along mid-ocean ridges at depths ranging between 2,000 and 5,000 meters, in environments that are rocky, uneven, and remote. Survey operations require deep-sea vessels equipped with dynamic positioning systems, precise navigation, and advanced communication capabilities.
- Unlike other seabed mining explorations, PMS investigations demand a multidisciplinary team that includes marine geologists, geophysicists, oceanographers, biologists, and deep-sea technology specialists. The exploration process involves ship-mounted geophysical surveys for initial reconnaissance and the use of AUVs and ROVs for detailed seabed mapping and sample collection. Highly sophisticated instruments are essential to analyze mineral composition accurately, making PMS exploration one of the most technically demanding deep-sea missions globally.

How the International Seabed Authority Allocates Exploration Sites

- The International Seabed Authority, established under the United Nations Convention on the Law of the Sea (UNCLOS), governs mineral exploration activities in international waters. Countries apply through their governments or authorized entities for exploration rights. These applications must include a detailed description of the proposed area, a comprehensive work plan, baseline environmental studies, and evidence of technical and financial capabilities.
- The ISA's Legal and Technical Commission (LTC) reviews the applications for compliance. Upon approval, the application is forwarded to the ISA Council for final endorsement, after which exclusive exploration rights in the designated seabed area are granted to the applicant.

India's Future Plans for Mineral Exploration in the Indian Ocean

- As part of its broader Blue Economy initiatives, India is actively pursuing additional seabed mineral exploration rights within the Indian Ocean. Beyond its current contracts for Polymetallic Sulphides, India has submitted an application to the ISA seeking rights to explore cobalt-rich ferromanganese crusts on the Afanasy-Nikitin Seamount

located in the Central Indian Ocean. This application is presently under review.

- Securing such exploration rights would further enhance India's access to critical minerals essential for technological development, renewable energy infrastructure, and long-term resource security, reinforcing the country's strategic positioning in the region.

CONSTITUTION, POLITY & GOVERNANCE

India's Federal Design and the Debate on Jammu & Kashmir's Statehood

The Supreme Court's recent directive concerning the restoration of statehood to Jammu and Kashmir has reignited critical discussions about the nature of India's federal structure. At the heart of this debate lies the question of how to balance the Union government's authority with the autonomy granted to States under the Constitution, particularly in contexts marked by political and security sensitivities.

Introduction: A Renewed Federal Discourse

The issue of restoring statehood to Jammu and Kashmir has brought renewed focus to India's federal design. In December 2023, the Supreme Court upheld the abrogation of Article 370, which previously granted special status to the erstwhile State. However, the Court simultaneously directed the Union Government to reinstate statehood and conduct Assembly elections in the region. Although elections were held in October 2024, the government has yet to outline any concrete plan or timeline for restoring full statehood. This delay has intensified concerns about the erosion of the federal spirit embedded in the Indian Constitution and the growing concentration of power in the Union government.

Constitutional Provisions for the Formation and Reorganisation of States

- The Indian Constitution provides a structured legal framework for the creation and modification of States through three distinct processes: admission, establishment, and formation. The process of admission pertains to the integration of political entities such as Jammu and Kashmir, which acceded to India in 1947 through the Instrument of Accession. Establishment refers to the inclusion of new territories like Goa and Sikkim, following their acquisition under international law.
- The most commonly invoked method is formation, governed by Article 3 of the Constitution, which empowers Parliament to reorganise existing States by altering boundaries, renaming them, or merging and dividing them. However, while Parliament is constitutionally empowered to undertake such reorganisation, this power does not extend to permanently converting a State into a Union Territory. That limitation is essential to the federal architecture of the Indian polity and affirms the commitment to shared governance between the Union and States.

India's Federal Character: Union with Federal Features

- India's constitutional design describes the nation as a "Union of States" rather than a conventional federation. The deliberate use of the term "Union" was intended to emphasise the country's indivisibility, reinforcing a strong central government while incorporating federal features to accommodate India's vast diversity. The federal structure of India includes several core elements.
- The indivisibility of the Union ensures that no State has the right to secede, thereby maintaining national integrity. The bicameral Parliament, especially the Rajya Sabha, serves as a permanent platform for State representation at the national level. Moreover, the Supreme Court has recognised federalism as a component of the Constitution's basic structure, which cannot be amended or diluted by any constitutional change. This layered arrangement underscores India's distinctive federalism — one that allows for decentralised governance within a robustly unified nation-state.

The J&K Reorganisation and Its Federal Implications

- The passage of the Jammu and Kashmir Reorganisation Act in 2019 marked a dramatic shift in the region's constitutional status, bifurcating the State into two Union Territories — Jammu & Kashmir and Ladakh. This move was upheld by the Supreme Court in 2023, which ruled the reorganisation constitutional. Nonetheless, the Court insisted that the Union Government must eventually restore statehood to Jammu and Kashmir.
- Critics of the delay argue that prolonging Union control through the Lieutenant Governor weakens democratic federalism by diminishing the power of elected local representatives. They view this as a disproportionate assertion of central authority, undermining the constitutional balance between the Centre and the States. On the other hand, supporters of continued

Union oversight contend that given Jammu and Kashmir's sensitive security environment, it is prudent to maintain stronger central control until lasting stability is achieved.

Why Restoring Statehood Matters

- The restoration of Jammu and Kashmir's statehood carries profound implications, both constitutionally and politically. It reaffirms India's commitment to the federal principle, underscoring the importance of shared governance between the Centre and the States. It also restores the democratic rights of the region's citizens by empowering an elected Assembly and ensuring accountability in governance.
- By rebalancing the relationship between the Lieutenant Governor and local representatives, it corrects the current imbalance in favour of democratic federalism. Moreover, compliance with the Supreme Court's directive strengthens the legitimacy of constitutional processes and fosters institutional trust. Politically, restoring statehood could also help reduce alienation within the region, reinforcing people's faith in the broader Indian federal framework and contributing to long-term stability.

The Broader Federal Design Challenge

India's federal system has often been described as "quasi-federal," marked by a unique blend of strong central authority and regional autonomy. This design has played a crucial role in preserving national unity while also allowing for regional diversity in governance. However, the tensions between these two elements become pronounced when the Union exercises its powers to an extensive degree, as seen in the ongoing situation in Jammu and Kashmir. The current debate highlights a fundamental dilemma facing Indian federalism: how to reconcile national security concerns with constitutional commitments to decentralisation and State autonomy. The answer may lie in a careful balancing act — one that acknowledges the necessity of security in the short term while remaining faithful to the principles of democratic governance and federal integrity in the long run.

Supreme Court Reconsiders RTE Exemption for Minority Institutions

The Supreme Court of India has recently referred the contentious issue of exempting minority institutions from the Right of Children to Free and Compulsory Education (RTE) Act to a larger Bench. This move questions the validity of the Court's own 2014 ruling, which had granted a blanket exemption to all minority institutions from complying with key provisions of the Act. The development signals a potential shift in the legal interpretation of how constitutional rights to education and minority autonomy coexist.

Introduction

- The RTE Act, enacted in 2009, represents a pivotal legislative commitment to ensuring free and compulsory elementary education for every child in India. Despite its transformative intent, the Act has long been at the centre of a legal debate: Should minority-run educational institutions—protected under Article 30 of the Constitution—be exempt from its regulatory framework?
- This question re-entered the spotlight on September 1, 2025, when the Supreme Court referred the issue to a larger Bench for reconsideration. The move indicates a possible re-evaluation of the 2014 judgment in *Pramati Educational and Cultural Trust v. Union of India*, which had categorically excluded all minority institutions from the scope of the RTE Act.

The Core of the Debate: RTE vs. Minority Autonomy

- At the heart of this legal and constitutional dilemma lies a fundamental tension between two key provisions of the Constitution. Article 21A guarantees free and compulsory education to children aged 6 to 14, while Article 30(1) protects the rights of religious and linguistic minorities to establish and administer educational institutions of their choice.
- In 2014, a Constitution Bench of the Supreme Court held that Section 12(1)(c) of the RTE Act—which mandates 25% reservation in private unaided schools for children from economically weaker sections and disadvantaged groups—was incompatible with the rights of minority institutions. The Court reasoned that imposing such obligations would interfere with their autonomy and their ability to preserve cultural and linguistic identities. As a result,

both aided and unaided minority institutions were granted complete exemption from the provisions of the RTE Act.

- Critics of the ruling argue that the blanket exemption undermines the vision of a unified, inclusive schooling system. They contend that it enables institutions to exploit minority status to circumvent national education norms, thereby weakening the commitment to equitable access. Proponents, however, argue that the ability to remain free from state interference is essential for minority institutions to retain their distinct identity and values.

Case Background: Teacher Eligibility Test and Minority Status

- The current reference to a larger Bench arose from legal appeals challenging the requirement imposed by certain state education departments that teachers in minority institutions must pass the Teacher Eligibility Test (TET)—a standard laid out under Section 23 of the RTE Act.
- A two-judge Bench of the Supreme Court, while examining these appeals, expressed serious concerns that the 2014 judgment may have "unknowingly jeopardised the very foundation of universal elementary education." The Bench underscored that by completely exempting minority institutions from the RTE framework, the state's broader objective of inclusive and equitable education could be compromised, thereby creating educational silos rather than integrated learning environments.

Supreme Court's Observations and Justification for Reconsideration

- In referring the matter to a larger Bench, the Supreme Court highlighted several important observations that question the logic and impact of the 2014 decision:
- The Bench questioned the rationale for granting complete exemption, asserting that applying provisions of the RTE Act—such as Section 12(1)(c)—does not infringe upon or eliminate the minority character of an institution. The judges stated that preserving minority identity need not come at the expense of broader social obligations.
- They also emphasised the social value embedded in Section 12(1)(c), which mandates that 25% of seats in private unaided schools be reserved for children from economically and socially disadvantaged backgrounds. According to the Court, this provision is essential for promoting social integration and educational equity.
- The judges further clarified that the RTE Act provides financial reimbursement to private institutions for admitting students under this reservation clause. Hence, concerns about fiscal burden on minority institutions are addressed within the law itself, and do not justify wholesale exclusion.
- The Court underscored that one of the foundational aims of Article 21A is to foster inclusive classrooms where children from diverse socio-economic backgrounds can learn together. This vision, they argued, aligns with the RTE's goal of nation-building and must not be undermined by exclusionary practices.
- Importantly, the Court also pointed to evidence suggesting that some institutions have acquired minority status specifically to escape compliance with RTE mandates. This trend, the Bench warned, could lead to the emergence of "enclaves of privilege," thereby frustrating national development objectives and further marginalising underprivileged children.
- Following these observations, the matter will now be placed before the Chief Justice of India, who will constitute a larger Bench to determine whether the current blanket exemption should continue or be replaced with a more context-specific and balanced approach.

Conclusion

- The Supreme Court's decision to revisit the exemption of minority institutions from the RTE Act represents a turning point in India's constitutional and educational discourse. The case touches upon critical themes of equality, autonomy, inclusivity, and the right to education.
- If the larger Bench chooses to revise the 2014 ruling, minority institutions may be brought under the purview of key RTE provisions, such as the 25% reservation for disadvantaged students under Section 12(1)(c). This would reinforce the ideal of a common schooling system and foster classrooms that reflect India's social diversity.

Ultimately, the resolution of this issue will hinge on how the Court balances the constitutional promise of minority rights with the imperative of universal education. A nuanced, equitable, and legally sound approach could shape the future of India's education policy, ensuring that both diversity and inclusivity are preserved in equal measure.

Multi-Lane Free Flow (MLFF) Tolling System

- In a significant move toward modernising India's toll collection system, the Indian Highways Management Company Limited (IHMCL)—a firm promoted by the National Highways Authority of India (NHAI)—has partnered with ICICI Bank to introduce the country's first end-to-end Multi-Lane Free Flow (MLFF) tolling system. This will be implemented at the Choryasi Fee Plaza located on National Highway 48 in Gujarat.
- The MLFF system is designed to eliminate physical toll booths and enable seamless, uninterrupted toll payments. It utilises advanced technologies, including high-performance RFID (Radio Frequency Identification) readers and Automatic Number Plate Recognition (ANPR) cameras. These systems scan FASTags and vehicle registration numbers as vehicles pass at highway speed, removing the need to stop or slow down.
- This transition to a barrier-less tolling model holds considerable significance for highway efficiency. It reduces vehicular congestion at toll plazas, shortens travel times, and increases fuel efficiency, which collectively help in curbing vehicle emissions. In addition to environmental and logistical benefits, the MLFF system is expected to improve toll revenue collection and contribute toward developing a more efficient and intelligent national highway network.
- The National Highways Authority of India, under whose oversight this initiative falls, is India's principal authority for highway development and maintenance. Functioning under the Ministry of Road Transport and Highways, NHAI was constituted through the National Highways Authority of India Act, 1998, and became operational in February 1995. Its organisational structure includes a full-time Chairperson along with up to five full-time members and four part-time members. The part-time members typically include high-ranking officials such as the Secretaries of Road Transport and Highways, Expenditure, and Planning, along with the Director General of Roads Development and Special Secretary.

Pradhan Mantri Garib Kalyan Anna Yojana (PMGKAY)

- The Central Government is currently reviewing the **Pradhan Mantri Garib Kalyan Anna Yojana (PMGKAY)** to reduce the escalating food subsidy expenditure by identifying and removing beneficiaries who do not qualify for the scheme. This step has become necessary as the food subsidy bill for the fiscal year 2026 has exceeded ₹2 lakh crore.
- PMGKAY is a government initiative designed to distribute free food grains under the framework of the **National Food Security Act (NFSA), 2013**. It provides rice and wheat at no cost to eligible households through the **Public Distribution System (PDS)**. The scheme was launched in **March 2020** as an emergency relief measure during the COVID-19 pandemic to support vulnerable populations.
- Implemented by the **Ministry of Consumer Affairs, Food and Public Distribution**, the program aims to ensure the food and nutritional security of the poor, alleviate hardships during emergencies such as pandemics and economic downturns, and promote the principles of equity and inclusion as enshrined in the NFSA. The scheme targets two key beneficiary groups: the **Antyodaya Anna Yojana (AAY) households**, which receive 35 kilograms of food grains per family every month, and the **Priority Households (PHH)**, which are entitled to 5 kilograms of rice or wheat per person each month. Distribution occurs through approximately **5.4 lakh fair price shops** spread across India.
- Currently, PMGKAY covers an estimated **81.35 crore beneficiaries**, comprising around 75% of the rural population and 50% of the urban population. The program annually provides about **56 to 58 million tonnes of food grains**. Since January 2023, the scheme has been made completely free of

cost, eliminating the earlier requirement under NFSA for nominal payments by beneficiaries. For transparency and accountability, ration cards have been linked with **e-KYC and Aadhaar verification**, with 83% of cards successfully verified so far. For fiscal year 2026, a food subsidy budget of ₹2.03 lakh crore has been allocated. To improve targeting, a **re-verification drive** is underway aimed at removing ineligible beneficiaries, such as taxpayers, vehicle owners, and non-users.

The Immigration and Foreigners Act, 2025

- The **Immigration and Foreigners Act, 2025** has come into force, empowering the Central Government to regulate the immigration process, including the entry, stay, and departure of foreigners in India. This new law replaces four earlier statutes: the **Passport (Entry into India) Act, 1920**, the **Registration of Foreigners Act, 1939**, the **Foreigners Act, 1946**, and the **Immigration (Carriers' Liability) Act, 2000**.
- The Act authorizes the Central Government to designate specific immigration posts as official entry and exit points for foreigners. It also mandates the establishment of a **Bureau of Immigration**, tasked with overseeing immigration functions such as visa issuance and monitoring the entry, transit, stay, and movement of foreigners within the country. Upon arrival, all foreigners are required to register with a designated **Registration Officer**.
- The law places obligations on carriers, educational institutions admitting foreign students, and medical facilities treating foreign nationals to report relevant information about these individuals. Violations, such as entering India without valid passports or other travel documents, can lead to imprisonment for up to five years, fines up to ₹5 lakh, or both. The Act grants police officers of the rank of **Head Constable or above** the authority to arrest foreigners without a warrant. Additionally, civil authorities can restrict or close premises frequently visited by foreigners or refuse their entry to these locations.

Van (Sanrakshan Evam Samvardhan) Amendment Rules, 2025

- Under the powers conferred by the **Van (Sanrakshan Evam Samvardhan) Adhiniyam, 1980**, the Central Government has issued amendments to the rules in 2025, refining procedures for forest conservation and management.
- The updated rules introduce a more **streamlined approval process** by extending the validity of in-principle approvals from two to five years. Provisions have been added to accept offline applications for projects related to defence, national importance, and emergencies. The process now clearly distinguishes between **Stage-I (in-principle)** and **Stage-II (final)** approvals.
- The amendments enhance compensatory afforestation measures by introducing a **land banking system**, allowing central government schemes related to afforestation to fulfill compensatory requirements. States are permitted to transfer forest land to Forest Departments after obtaining Stage-I approval.
- Strategically, the rules provide special provisions for **critical mineral mining**, reducing the minimum land-use duration from 20 to 10 years. Enforcement powers have been strengthened by expanding the authority of forest officers to initiate legal proceedings, alongside enhanced requirements for monitoring and reporting.

Evolution of the Forest (Conservation) Act

- Prior to 1980, forests were governed as a **State subject**, leading to widespread diversion of forest lands for agriculture, mining, and industrial use. However, the **42nd Constitutional Amendment in 1976** moved forests to the **Concurrent List**, allowing both the central and state governments to legislate on forest matters.
- The **Forest (Conservation) Act of 1980** was enacted to curb deforestation by centralizing the approval process for diverting forest land. In 1988, the Act was amended to regulate leasing forest lands to private entities. The most recent amendment in 2023 seeks to balance developmental needs with ecological protection and climate commitments.

Gender Imbalance in the Supreme Court of India

Context and Significance

The retirement of Justice Sudhanshu Dhulia in August 2025 has left only one woman judge—Justice B.V. Nagarathna—on the bench of the Supreme Court of India, which comprises 34 judges. This stark under-representation has once again brought to the forefront serious concerns regarding gender diversity, inclusion, and equitable representation in the country's highest judicial institution. The situation raises critical questions about how closely the composition of the judiciary reflects the constitutional promises of equality and social justice.

Understanding the Gender Imbalance in the Supreme Court

- Gender imbalance in the Supreme Court refers to the systemic and persistent under-representation of women judges, despite the constitutional guarantees of equality under Articles 14, 15, and 16. Since its establishment in 1950, only 11 women judges have been appointed to the Supreme Court out of a total of 287—constituting a mere 3.8%. Presently, just one out of 34 sitting judges is a woman.
- The first woman judge to be appointed to the Supreme Court was Justice Fathima Beevi in 1989. However, women judges often serve significantly shorter tenures compared to their male counterparts due to their late elevation to the bench, effectively denying them opportunities to ascend to leadership positions such as Chief Justice of India or to participate meaningfully in the Collegium system that governs appointments.

Underlying Causes of Gender Imbalance

- The gender disparity in the Supreme Court stems from a combination of structural, societal, and institutional factors. One major structural barrier is the absence of any formal criteria within the Collegium system to prioritize diversity or ensure gender representation in judicial appointments. Gender is not treated as a relevant factor during selection, and appointments are often made without clearly stated reasons.
- Societal norms and gender stereotypes prevalent in the legal profession further deter women from aspiring to or attaining leadership roles. These biases manifest early in their careers, reducing their presence in senior positions and limiting the pool of women eligible for elevation.
- Institutional inertia also plays a significant role. Women judges are typically elevated late in their careers, leaving them with shorter tenures and excluding them from the Collegium, which is responsible for recommending new appointments. Additionally, the pathway from the Bar to the Bench remains heavily skewed, with very few women Senior Advocates being directly elevated to the Supreme Court—the only exception being Justice Indu Malhotra.
- The overall appointment process remains opaque, discretionary, and exclusionary. Without transparent benchmarks or public disclosure of selection criteria, it becomes difficult to assess why deserving women are being overlooked.

Challenges in Addressing the Imbalance

- Several structural and cultural challenges obstruct efforts to correct the gender imbalance in the judiciary. The Collegium system remains opaque, with no written diversity policy and no requirement to explain the rationale behind appointments. Women are often promoted late in their judicial careers, limiting their potential to hold senior roles or to be considered for the Chief Justice position.
- The male-dominated culture of the Bar and the judiciary further marginalizes women, making it harder for them to break through and reach higher levels of the judicial hierarchy. Gender is rarely considered a relevant factor in appointments, unlike caste, religion, or regional representation. This absence of institutional and political will to treat gender diversity as a serious issue results in a lack of accountability. There is currently no mechanism to monitor or enforce gender parity in the higher judiciary.

Implications of Gender Imbalance

- The consequences of a gender-skewed judiciary are far-reaching, both for the institution and for society at large.
- **Within the Judiciary**, the absence of gender diversity narrows the range of perspectives reflected in judicial decisions. This lack of diversity undermines the inclusiveness and representativeness of the Supreme Court, weakening its legitimacy as a national institution. Important areas of jurisprudence—such as gender justice, sexual

harassment, reproductive rights, and workplace equality—suffer from the lack of insights shaped by women's lived experiences.

- Short tenures due to late appointments mean women judges are rarely in a position to lead the judiciary or shape future appointments through the Collegium. This limits their ability to influence institutional culture or champion reform from within.
- **For Society**, this imbalance creates a trust deficit. The judiciary, while expected to uphold the values of equality and fairness, appears internally inconsistent when its own composition fails to reflect those ideals. This lack of representation also acts as a deterrent for aspiring women lawyers, who see few role models at the highest level.
- Moreover, the failure to include women meaningfully in the judiciary undermines constitutional morality. It erodes the spirit of Articles 14 and 15, which advocate for substantive equality and the dismantling of entrenched social hierarchies. A judiciary that does not mirror the gender diversity of the society it serves contributes to a broader democratic deficit, reducing its claim to be a truly representative and impartial institution.

The Way Forward

- Addressing the gender imbalance in the Supreme Court requires both systemic reform and cultural change. The Collegium system must evolve to institutionalize gender diversity as a formal and non-negotiable criterion for appointments. Resolutions recommending judges should clearly state how diversity goals are being met, and selection criteria must be made transparent and open to public scrutiny.
- The problem must also be tackled at the source by strengthening the pipeline. This includes increasing the appointment of women in High Courts and creating institutional mechanisms to support women from the Bar through mentorship and structured opportunities. Reservation in the lower judiciary and judicial services could also help build a strong foundation for women judges to progress upward.
- Policymakers must anchor judicial appointments in constitutional morality and adopt a written diversity policy for the higher judiciary, as previously recommended by the Second Administrative Reforms Commission. Embedding substantive equality into institutional practices is essential for creating a judiciary that is both fair and forward-looking.
- India can also learn from global experiences. Countries such as Canada and the United Kingdom actively pursue diversity in their top courts through formalized frameworks and inclusive appointment processes. These international models show that gender diversity can be institutionalized without compromising merit, and that doing so strengthens public trust and judicial credibility.

Conclusion

The legitimacy of the Supreme Court as the guardian of constitutional equality depends not only on the principles it upholds in its judgments but also on the diversity of its own composition. Bridging the gender gap in the highest court is not a matter of token representation—it is a constitutional necessity and a moral imperative. A judiciary that reflects the diversity of Indian society will be more inclusive, more representative, and ultimately, more just.

Coconut Development Board – Revised Schemes and World Coconut Day

- On the occasion of **World Coconut Day**, the **Coconut Development Board (CDB)** launched its newly revised schemes, marking a renewed push toward the integrated development of coconut farming and product diversification in India.
- Established on **12 January 1981**, the CDB functions as a **statutory body** under the **Ministry of Agriculture and Farmers Welfare, Government of India**. Its mission is to enhance coconut productivity, promote value addition, and support market access for coconut-based products.
- The Board's **headquarters** is located in **Kochi, Kerala**, with **regional offices** in Bangalore (Karnataka), Chennai (Tamil Nadu), Guwahati (Assam), and Patna (Bihar).

Key functions of the CDB include:

- Advising and supporting coconut farmers and the industry with technical guidance.

- Promoting expansion of coconut cultivation through financial and other incentives.
- Encouraging the adoption of modern technologies for processing and product development.
- Recommending fair pricing strategies and market development for coconut products.
- Regulating import and export policies related to coconut and its derivatives.
- Establishing and enforcing quality standards for coconut-based goods.

These revised schemes aim to modernize the coconut sector and enable farmers to benefit from emerging market opportunities.

Foreigners Tribunal – New Powers and Legislative Framework

The **Union Ministry of Home Affairs (MHA)** has extended significant new powers to **Foreigners Tribunals (FTs)**, which were previously unique to Assam, by granting them the authority of a **first-class judicial magistrate**.

Background:

- Foreigners Tribunals were established under the **Foreigners (Tribunals) Order, 1964**, based on Section 3 of the **Foreigners Act, 1946**, with the purpose of allowing state authorities to refer cases of suspected foreigners for adjudication.
- Though the 1964 Order applied nationwide, FTs were operational only in **Assam**. In other states, suspected illegal immigrants were presented before local courts. However, a **2019 amendment** to the Tribunal Order empowered states (not just the Centre) to establish such tribunals.

Structure and Powers:

Each FT is chaired by a member with a judicial background, drawn from a pool of judges, advocates, or experienced civil servants. Under the 1964 Order, these tribunals held powers equivalent to a civil court, including summoning individuals, recording evidence under oath, and reviewing documentation.

Procedure:

- Once a case is referred, a notice is issued (in English or the state's official language) within 10 days.
- The individual has another 10 days to respond and an additional 10 to submit evidence.
- FTs are expected to resolve cases within **60 days** of the reference.
- If citizenship cannot be proven, the FT may direct detention in a **transit camp**, with the objective of deportation.

Immigration and Foreigners Order, 2025:

The **newly enacted Immigration and Foreigners Act, 2025** replaces the older Foreigners (Tribunal) Order. The updated order significantly enhances the legal framework by:

- Empowering FTs to issue **arrest warrants** and detain individuals who fail to prove their nationality or appear in person.
- Providing FTs with the **powers of a civil court** under the Code of Civil Procedure, 1908, and the powers of a **judicial magistrate of first class** under the **Bharatiya Nagarik Suraksha Sanhita, 2023**.

Under these powers, FTs may:

- Summon individuals and examine them under oath.
- Demand the discovery and production of documents.
- Issue commissions for witness examination.
- Direct individuals to appear personally.
- Issue arrest warrants in cases of non-compliance.

This new legal empowerment aims to streamline the process of identifying, verifying, and detaining foreign nationals residing illegally in India, with greater legal consistency and authority.

Debate on Exceeding the 50% Reservation Limit in India

The ongoing discourse around the 50% reservation ceiling in India has gained renewed momentum amid fresh legal challenges and political demands. With petitions before the Supreme Court and proposals such as an 85% reservation in Bihar, the debate has reignited longstanding tensions between affirmative action policies and the constitutional principles of equality.

Revisiting the Reservation Framework

- At the heart of this debate is the question of whether the State should be allowed to exceed

the judicially determined cap of 50% on reservations in public education and employment. The issue has become increasingly contentious as various social and political groups demand a reassessment of how benefits are distributed, both in terms of percentage and reach.

- The constitutional framework allows for positive discrimination through Articles 15 and 16. These provisions guarantee equality before the law and equal opportunities in public employment while simultaneously empowering the State to make special provisions for the advancement of socially and educationally backward classes, as well as Scheduled Castes (SCs) and Scheduled Tribes (STs).

Currently, at the central level, reservations are allocated as follows:

- OBCs: 27%
- SCs: 15%
- STs: 7.5%
- Economically Weaker Sections (EWS): 10%

This aggregates to a total reservation share of 59.5%, which already surpasses the 50% cap. However, this has been rationalised on the grounds that the EWS quota targets a distinct category not covered under the "backward classes" umbrella.

Judicial Landmarks Shaping the Cap

- The reservation ceiling has been significantly shaped by the judiciary, which has attempted to balance formal equality—where every citizen is treated alike—and substantive equality, which promotes equity through affirmative action.
- In *Balaji v. State of Mysore* (1962), the Supreme Court asserted that reservations must stay within "reasonable limits," thereby proposing the 50% threshold. The *State of Kerala v. N.M. Thomas* (1975) case, however, redefined the interpretation of equality by noting that reservations are not exceptions but extensions of the right to equality.
- The landmark *Indra Sawhney v. Union of India* (1992) decision upheld the 27% quota for OBCs while explicitly affirming the 50% ceiling. This case also introduced the concept of the 'creamy layer'—a mechanism to exclude the more affluent within OBCs from reservation benefits.
- The 2022 verdict in *Janhit Abhiyan v. Union of India* validated the 10% EWS quota, emphasizing that the 50% ceiling applies specifically to reservations for backward classes, and not to economically weaker sections.
- Most recently, in *State of Punjab v. Davinder Singh* (2024), a seven-judge Constitution Bench stressed the importance of implementing creamy layer provisions even within SC and ST categories, a move that could significantly alter the existing framework of reservations.

Rising Demands and Emerging Complexities

- The present demands for exceeding the reservation cap are not merely political, but are also backed by calls for better demographic representation and data-driven policymaking. Some political leaders argue that the percentage of reserved seats should correspond to the actual population share of backward classes, which, according to estimates, is significantly higher than 50%. These arguments have intensified demands for a comprehensive caste census to generate reliable data on population and social backwardness.
- Adding another layer to the debate is the skewed distribution of benefits within reserved categories. The Rohini Commission's findings revealed that approximately 97% of OBC reservation advantages have been captured by just 25% of eligible castes, while nearly 1,000 OBC communities have seen little to no representation. Parallel concerns exist within the SC and ST categories, prompting calls for sub-categorisation to ensure equitable access across different groups.
- A critical point of contention is the absence of a creamy layer filter for SCs and STs. While this mechanism exists for OBCs, its lack for other groups has led to claims that relatively well-off sections monopolise the benefits, leaving more vulnerable sub-groups excluded. On the other hand, opponents of this idea argue that excluding the creamy layer could be counterproductive, especially since many SC and ST positions remain vacant due to systemic recruitment failures rather than saturation of beneficiaries.

- Indeed, government records suggest a significant backlog of vacancies in reserved positions—estimated to range between 40% and 50% across SC, ST, and OBC categories. These unfilled posts indicate structural inefficiencies in recruitment and capacity-building mechanisms, rather than a lack of eligible candidates.

Navigating the Balance Between Equality and Social Justice

- The broader dilemma remains one of balancing two competing constitutional ideals: ensuring equality of opportunity for all citizens, and delivering social justice to historically disadvantaged communities. Expanding reservations beyond the 50% limit is often seen as diluting meritocracy and eroding the principle of equal treatment. Yet, persistent underrepresentation of marginalized groups suggests that affirmative action policies, in their current form, may not be adequately meeting their intended objectives.
- Experts and policy analysts have proposed several reforms to recalibrate the system without abandoning its foundational goals. These include sub-categorisation within OBC and SC/ST communities to prevent monopolisation of benefits, and the development of a "two-tier" approach that prioritises the most disadvantaged within each category.
- Furthermore, many advocate for a shift in focus from reservations alone to broader socio-economic development strategies. This includes enhanced investment in skill development, education, and job creation, which would reduce the excessive reliance on public-sector reservations as the primary route for social mobility.
- Ultimately, the debate on whether to breach the 50% reservation limit is not merely a legal or political question—it is a deeper examination of how India conceptualizes fairness, equity, and inclusion in a rapidly evolving socio-economic landscape.

UGC Draft Undergraduate Curriculums: Core Features and Federal Objections

The University Grants Commission (UGC) has recently circulated draft undergraduate curriculum frameworks for public consultation. These proposals, intended to align with the National Education Policy (NEP) 2020, have received pushback from certain Opposition-ruled states, most notably Karnataka and Kerala. Both states have established expert committees to examine the drafts and prepare official responses. Although the UGC has invited feedback from across the country, the resistance from these states underscores growing concerns over federal balance, academic autonomy, and the ideological tone of higher education content.

The Learning Outcomes-Based Curriculum Framework (LOCF)

- At the centre of the new drafts lies the Learning Outcomes-Based Curriculum Framework (LOCF), an educational model designed to reform higher education by emphasizing learning outcomes over mere content delivery. Developed by the UGC and similar bodies, LOCF aims to foster academic excellence through skill-based, flexible, and holistic education.
- The LOCF approach defines education through key hierarchical components: "graduate attributes" outlining broad intellectual and ethical qualities; "programme outcomes" that specify what students are expected to achieve over the course of an entire degree; and "course outcomes" that describe the measurable achievements for individual subjects.
- The intent is to move the focus of undergraduate learning away from rote memorisation and passive absorption of information, instead fostering active knowledge construction and real-world application. By recasting the teacher's role from that of an instructor to a facilitator, the framework encourages students to take ownership of their learning journey. LOCF also prioritises essential 21st-century skills such as critical thinking, problem-solving, and analytical reasoning, preparing students for a technology-driven and knowledge-based economy.
- In doing so, it seeks to increase employability while ensuring holistic development that encompasses not just academic proficiency but also values, ethics, and a commitment to lifelong learning.

Key Elements of the UGC's Proposed Undergraduate Framework

- The UGC's new draft LOCFs cover nine subjects: anthropology, chemistry, commerce, economics, geography, home science, mathematics, physical education, and political science. These curriculums are framed around clearly defined learning outcomes and are meant to deliver not only conceptual knowledge but also practical and interdisciplinary skills.
- These proposed courses support the NEP 2020 vision by promoting flexible, four-year multidisciplinary undergraduate programmes with multiple exit and entry points. A key feature of the drafts is the integration of Indian Knowledge Systems (IKS) into mainstream higher education, reflecting an effort to harmonise traditional Indian scholarship with modern academic frameworks.
- For instance, mathematics electives include topics like 'Kala Ganana,' a course that explores India's timekeeping traditions through its lunar, solar, and lunisolar calendars. Another course, 'Philosophy of Indian Mathematics,' introduces students to ancient Indian texts such as the Vedas, Vedangas, Puranas, and Darshanas, recognising these as foundational sources of mathematical and philosophical knowledge. The aim is to offer a fusion of traditional insights with contemporary scientific and analytical learning.

Emphasis on 'Bharatiya' Knowledge Systems

- A distinguishing feature of the new draft LOCFs is their deliberate emphasis on Indian Knowledge Systems across multiple disciplines. In chemistry, for example, a new unit under "food chemistry" introduces students to traditional Indian dietary principles derived from Ayurveda. Suggested texts for this course include works like *Ayurvedic Cooking for Self-Healing*.
- In commerce, a new course has been proposed on Indian management practices, drawing from sources such as the *Bhagavad Gita*, *Ramayana*, and Vedantic philosophy. These components are meant to supplement rather than replace modern management theories, creating a hybrid model of learning.
- While earlier LOCFs—issued since 2019 under the Choice-Based Credit System (CBCS)—did not feature such content, the rollout of NEP 2020 has prompted a revision that integrates more indigenous perspectives. Under NEP, a future Higher Education Commission of India (HECI) will serve as the authority responsible for formulating outcome-based frameworks, although this body has not yet been formally constituted.

State-Level Opposition to the Draft Curriculums

- The proposed curriculum has attracted sharp criticism from opposition-ruled states, particularly Kerala and Karnataka. Kerala's Higher Education Minister dismissed the drafts as "unscientific," "obsolete," and ideologically skewed towards Hindutva narratives. Experts from the state have questioned the inclusion of references such as "Ram Rajya" in the commerce curriculum under corporate social responsibility topics. They have also criticised the political science draft for recommending *The Indian War of Independence* by V. D. Savarkar as essential reading, alongside the introduction of a separate elective focused on Savarkar's ideology.
- Karnataka's Higher Education Minister has echoed these concerns, alleging that the draft frameworks reflect central government ideologies and represent an infringement on the academic autonomy of state governments. The state has expressed objections to what it sees as unilateral attempts by the UGC to influence or standardise curricula across diverse regional and educational contexts.
- In response, the UGC has clarified that while it provides national-level academic guidelines, universities retain full autonomy to adapt, modify, or redesign individual modules according to their own institutional needs and regional relevance. The Commission also pointed out that during earlier LOCF implementations, several universities—including the University of Kerala—had already revised their courses in alignment with UGC recommendations, signalling a precedent for cooperative adaptation rather than enforced conformity.

Conclusion

The UGC's new draft undergraduate curriculums represent a significant attempt to reframe higher education in India around learning outcomes, interdisciplinary flexibility, and the inclusion of

indigenous knowledge systems. While the integration of Indian traditions into modern education has been welcomed in some quarters as a move towards cultural rootedness, the objections from Kerala, Karnataka, and other opposition-led states highlight underlying tensions over federalism, academic freedom, and ideological neutrality in education policy. As the consultation process continues, the final shape of the curriculum will depend not only on academic merit but also on the resolution of these broader political and constitutional concerns.

Unique Disability ID (UDID) Card

- As per recent data, less than 40% of India's estimated population of Persons with Disabilities (PwDs) have been issued a Unique Disability ID (UDID) Card, despite its pivotal role in accessing a range of government benefits.
- The UDID card serves as a standardized, nationwide identification document for PwDs. Mandated under the Rights of Persons with Disabilities (RPwD) Act, 2016, the card can be issued by the hospital in the home district of the PwD or by the medical facility where the person is receiving treatment.
- Comprising 18 alphanumeric characters, the UDID has a defined structure: the first two characters denote the state code, followed by two for the district code, one for the CMO code, two for the type of disability, four for the year of birth, six for a running serial number, and a final checksum character for added security.

The UDID card is color-coded to reflect the severity of disability:

- **White Card**: For PwDs with disability below 40%
- **Yellow Card**: For those with 40% to 80% disability
- **Blue Card**: For those with disability above 80%

- The UDID Project is an initiative of the Department of Empowerment of Persons with Disabilities under the Ministry of Social Justice & Empowerment. Its primary objective is to build a centralized national database of PwDs and issue a single, universally accepted identification card.
- The initiative facilitates seamless data integration across village, block, district, state, and national levels to track both physical and financial progress of beneficiaries.

It aims to create a comprehensive, end-to-end system encompassing:

- ❖ Centralized web-based access to PwD data
- ❖ Online and offline application systems for Disability Certificates/UDID cards
- ❖ Medical evaluation to determine disability percentage
- ❖ Elimination of duplicate records
- ❖ Easy renewal and update of records
- ❖ Management Information System (MIS) for reporting
- ❖ Integration of benefits across government schemes

Provision for new disabilities (currently 21 recognized types)

National Institutional Ranking Framework (NIRF)

- The **National Institutional Ranking Framework (NIRF) 2025** was recently released by the Union Minister of Education, continuing its role as the principal tool for assessing the quality of higher education institutions in India.
- The NIRF was launched in **2015** by the **Ministry of Human Resource Development** (now Ministry of Education) as a systematic methodology to rank educational institutions across the country. The framework evaluates institutions based on five key parameters: **Teaching, Learning and Resources**; **Research and Professional Practice**; **Graduation Outcomes**; **Outreach and Inclusivity**; and **Peer Perception**.
- The **2025 edition of the rankings** spans across **17 distinct categories**, including Overall, SDG Institutes, Universities, Colleges, Research Institutions, Engineering, Management, Pharmacy, Medical, Dental, Law, Architecture and Planning, Agriculture and Allied Sectors, Open Universities, Skill Universities, and State Public Universities.

Among the notable highlights:

- **IIT Madras** retains the **top position in the Overall Category** for the **seventh consecutive year**.
- **Indian Institute of Science (IISc), Bengaluru** leads the **Universities Category** for the **tenth year in a row**.

- **IIM Ahmedabad** maintains its **number one rank in the Management discipline**, marking its **sixth consecutive year** at the top.
- **AIIMS Delhi** continues to be the **top-ranked Medical institution**, an honour it has held for **eight consecutive years**.
- **IIT Roorkee** secures the **first place in Architecture and Planning** for the **fifth year**.
- **National Law School of India University, Bengaluru**, remains the **top Law institution**.
- **Jamia Hamdard, New Delhi**, is ranked **number one in Pharmacy** for the **second consecutive year**.

India vs. French Vote of Confidence: A Comparative Analysis

Context:

France is currently navigating a significant political crisis as Prime Minister François Bayrou is expected to lose a vote of confidence. The crisis has been triggered by the unpopularity of recent austerity measures introduced by the government. This situation draws attention to how votes of confidence function in different political systems — particularly in France's semi-presidential model and India's parliamentary framework.

The French Semi-Presidential System: The Fifth Republic

- France operates under a semi-presidential system established by the **1958 Constitution**, which marked the beginning of the Fifth Republic. This constitution was crafted to end the instability of the earlier parliamentary-dominated Fourth Republic. The French model blends elements of both presidential and parliamentary systems, creating a **dual executive** comprising a **directly elected President** and a **Prime Minister who is accountable to the legislature**.
- Under this system, the President of France serves as **Head of State**, directly elected by the people for a five-year term, and exercises substantial authority, particularly in foreign affairs, national defence, and emergency situations. The President also has the power to appoint the Prime Minister, dissolve the National Assembly, and call for referendums.
- The Prime Minister, as **Head of Government**, is responsible for the country's domestic policy and daily administration. Though appointed by the President, the Prime Minister must maintain the **confidence of the National Assembly** to remain in office. The government — led by the Prime Minister and Cabinet — can be removed through a **Motion of Censure**, France's equivalent of a no-confidence vote, under **Article 49(2)** of the Constitution.
- France's Parliament is bicameral, comprising the **National Assembly** (directly elected) and the **Senate** (indirectly elected). The National Assembly holds the power to dismiss the government and has the final say on most legislation. However, executive stability is maintained through "rationalised parliamentarianism," which streamlines legislative procedures to avoid stalemates.
- A key feature of the French system is **cohabitation**, which occurs when the President and the National Assembly majority belong to opposing political parties. In such scenarios, the President retains significant control over foreign policy, while the Prime Minister handles domestic affairs. Though rare since the 2000 reform that aligned presidential and legislative election cycles, cohabitation remains a constitutional reality of the Fifth Republic.
- Major reforms to the French Constitution include the **2000 amendment**, which reduced the presidential term from seven to five years to align with parliamentary terms and minimise cohabitation, and the **2008 amendment**, which expanded parliamentary powers and curbed the use of **Article 49(3)** — a provision that allows the government to pass legislation without a vote unless a no-confidence motion is passed.

India's Parliamentary System

- India operates under a **pure parliamentary system**, where executive power is vested in the **Council of Ministers**, headed by the Prime Minister, and collectively responsible to the **Lok Sabha**, the lower house of Parliament. The entire government must retain the **confidence of the Lok Sabha** to remain in power.
- A **vote of confidence** — or more commonly, a **no-confidence motion** — may be moved by

opposition members under **Rule 198** of the Lok Sabha Rules. Article **75(3)** of the Constitution mandates collective responsibility of the Council of Ministers to the Lok Sabha, ensuring that loss of majority support results in the government's resignation. A no-confidence motion is passed by a **simple majority** of those present and voting in the House.

- If the government loses the vote, the entire Council of Ministers must resign. The President then has two choices: invite another leader who can demonstrate majority support to form a new government, or dissolve the Lok Sabha and call for fresh elections.

Comparing Votes of Confidence in India and France

- Though both countries practice parliamentary accountability, the mechanisms and implications of a vote of confidence differ significantly due to their respective systems.
- In **France**, only the **Prime Minister and Cabinet** are subject to a vote of confidence. The **President remains in office regardless of the outcome**, underscoring the independent mandate the President enjoys from direct election. The **Motion of Censure**, outlined in Article 49(2) of the Constitution, must be passed by an **absolute majority** of all members of the National Assembly — a higher threshold than India's simple majority requirement.
- Additionally, the French system includes **Articles 49-1 and 49-3**, which give the Prime Minister procedural tools to navigate legislation. Article 49-3, in particular, allows the government to **tie the passage of a bill to a vote of confidence**. If the Assembly does not pass a Motion of Censure, the bill is automatically adopted. If the government loses, the **Prime Minister and Cabinet must resign**, though the **President continues in office**, potentially appointing a new Prime Minister — even from the opposition during periods of cohabitation.
- In contrast, India's **parliamentary system places confidence in the entire government**, including the Prime Minister and all ministers. The process is initiated solely through a **no-confidence motion**, and there are no provisions for the executive to bypass the legislature in the passage of bills. **Only Parliament** has the power to test the majority. The **President plays a neutral role**, intervening only after the government loses the vote.

Key Differences Summarised

- **System Type:** India functions under a pure parliamentary model; France follows a semi-presidential framework.
- **Accountability:** In India, the **entire government** is accountable to Parliament. In France, **only the Prime Minister and Cabinet** are accountable; the President is not affected by a no-confidence vote.
- **Initiation Process:** India allows opposition MPs to move a no-confidence motion; in France, MPs of the National Assembly can move a Motion of Censure.
- **Majority Required:** India requires a **simple majority** of members present and voting; France demands an **absolute majority** of total Assembly members, making it harder to pass.
- **Consequences of Defeat:** In India, the government must resign and may trigger general elections. In France, only the Cabinet resigns, and the President appoints a new Prime Minister.
- **Executive Flexibility:** India lacks provisions like Article 49-3. In France, the government can **tie legislation to a vote of confidence**, giving the Prime Minister strategic leverage.

Conclusion

- The vote of confidence in India and France reflects their fundamentally different constitutional designs. India's system enshrines **parliamentary supremacy**, with the government entirely dependent on legislative support. This ensures direct and full accountability of the executive to the legislature.
- In contrast, France's **semi-presidential model** creates a **dual executive** where the President holds independent authority, insulated from parliamentary no-confidence votes. This model balances **strong executive leadership** with **parliamentary accountability**, but also introduces complexities like cohabitation and split responsibility in governance.

- Ultimately, while both systems uphold democratic checks on executive power, they do so through distinct institutional arrangements that shape their respective political dynamics.

Angikaar 2025 Campaign

- The Ministry of Housing and Urban Affairs has launched **Angikaar 2025**, a nationwide outreach initiative under **Pradhan Mantri Awas Yojana – Urban (PMAY-U) 2.0**. This campaign is designed to fast-track housing delivery while enhancing awareness among beneficiaries and ensuring that the benefits of the housing scheme reach the intended population.
- **Angikaar 2025** is positioned as a last-mile outreach programme intended to close existing implementation gaps in the PMAY-U 2.0 framework. Its core objective is to generate widespread awareness about the scheme, while also facilitating the verification of applications and accelerating the completion of sanctioned houses. The campaign will be conducted over a two-month period across more than 5,000 Urban Local Bodies (ULBs) across the country.
- As part of its outreach strategy, Angikaar 2025 will involve activities such as **door-to-door campaigns, loan melas, cultural events**, and the **PM Awas Mela – Shehri**. Special attention will be given to reaching vulnerable groups, and there will be a strong emphasis on convergence with other social welfare schemes. A key target of the campaign is the completion of pending housing projects and the delivery of an additional one crore houses sanctioned under PMAY-U 2.0, thereby boosting both housing access and public confidence in urban development initiatives.

Rajasthan Coaching Centres (Control and Regulation) Bill, 2025

- The **Rajasthan Coaching Centres (Control and Regulation) Bill, 2025**, recently passed by the Rajasthan Assembly, seeks to bring much-needed regulation to the state's rapidly expanding coaching industry. The move comes amid rising concerns over student suicides, intense academic pressure, and increasing commercialisation in the coaching ecosystem.
- This state-level legislation introduces a framework for **mandatory registration, monitoring, and regulation** of coaching centres. It aims to ensure accountability among institutes while prioritising student welfare. Under the bill, a special regulatory body comprising officials, parents, doctors, and police will be established to oversee the functioning of coaching centres. Any coaching centre accommodating more than 100 students will be required to register and comply with prescribed standards.
- The legislation mandates that coaching facilities must provide adequate space per student, hire only qualified teachers, and refrain from making false claims about guaranteed ranks or scores. To address mental health concerns, the bill limits coaching hours to a maximum of five per day and mandates weekly holidays for students and staff. Counselling services will also be made available to support student well-being.
- Strict penalties ranging from ₹50,000 to ₹2 lakh will be imposed for violations, and repeat offenders risk the cancellation of their operating licence. While the bill is a step toward safeguarding student interests, it also recognises the coaching sector's contribution to employment and the local economy, aiming to balance regulation with developmental support.

Yoga and Sudarshan Kriya for Prisoners: Reforming Inmates through Inner Peace

- In a significant move towards prison reform, the Chhattisgarh government has implemented a wellness initiative that introduces **Yoga** and **Sudarshan Kriya** practices in all district jails. This reform seeks to help inmates experience psychological healing, instil self-discipline, and promote a positive mindset during incarceration.
- Yoga, an ancient Indian practice, combines physical postures (asanas), breathing techniques (pranayama), and meditation to bring about holistic health and spiritual balance. Sudarshan Kriya, developed by spiritual leader Sri Sri Ravi Shankar and propagated by the Art of Living Foundation, is a specific form of rhythmic breathing intended to harmonize the mind, body, and emotions. This initiative is implemented

under the foundation's "Prison Course" program, which aims to bring emotional stability and mental clarity to inmates.

- The program is not merely symbolic; it aims to transform prisons from punitive spaces into reformative institutions. Many inmates, having been exposed to violence and trauma, benefit from practices that encourage peace and self-reflection. The approach helps reinforce traits like self-control, optimism, and social reintegration. Moreover, it reduces the administrative burden on prison staff by lowering incidents of indiscipline and aggression. Beyond individual transformation, the program also sends a broader message of peace and rehabilitation, particularly relevant in regions affected by conflict and unrest.

State Emblem of India: A Symbol of Sovereignty and Justice

- The State Emblem of India came into national focus after nearly 50 individuals were detained in Srinagar following the vandalism and removal of a plaque bearing the emblem inside the Hazratbal shrine.
- India's State Emblem is an official adaptation of the Lion Capital of Ashoka, originally erected at Sarnath by Emperor Ashoka in the 3rd century BCE. The emblem was formally adopted on 26 January 1950, coinciding with India's transition into a Republic. Symbolizing the authority of the state, it stands for the foundational values of truth, justice, and sovereignty.
- The Lion Capital, discovered in 1905 and preserved at the Sarnath Museum in Uttar Pradesh, was initially constructed to commemorate Buddha's first sermon and propagate the message of **Dhamma** (righteousness). The emblem features four Asiatic lions standing back-to-back, representing power, courage, pride, and confidence. Below them is a frieze (abacus) adorned with high-relief carvings of an elephant, bull, lion, and horse, all separated by **Dharma Chakras** (wheels of law). The original structure includes a bell-shaped lotus base, which was excluded from the official state emblem.
- India's adopted emblem showcases three visible lions, with the **Dharma Chakra** prominently placed in the center. A bull is positioned to the right, and a galloping horse to the left, with outlines of wheels at each end of the abacus. The national motto, **"Satyameva Jayate"** (Truth Alone Triumphs), is inscribed in Devanagari script below the emblem.

Supreme Court: Aadhaar Valid for Identity Verification, Not Citizenship

- In a key ruling, the Supreme Court has directed the Election Commission to recognise Aadhaar as the 12th valid identity document for the ongoing Special Intensive Revision (SIR) of electoral rolls in Bihar. The Court clarified, however, that Aadhaar can be used solely to establish a person's identity—not their citizenship.
- This judgment expands the ability of individuals who have been excluded from the electoral rolls to use Aadhaar—alongside other recognised documents—to contest deletions or to submit claims for inclusion. Given Aadhaar's wide penetration, covering over 87% of India's population, the ruling is expected to substantially increase the scope for voter inclusion during the revision process.

Clarifying the Distinction Between Identity and Citizenship

The Court drew a clear legal distinction between the concept of identity, which Aadhaar confirms, and citizenship, which must be established through more substantive documentation. According to the ruling, citizenship cannot be assumed merely from possession of an Aadhaar card.

To prove citizenship, individuals must provide one or more of the following:

- A valid Indian passport
- A birth certificate that includes details of parentage
- A certificate of Indian citizenship or naturalisation issued by the competent authority
- Official records issued by a government agency or educational institution, supported by additional corroborative evidence

The Supreme Court emphasised that the authority to determine citizenship lies solely with the Central Government under the **Citizenship Act**.

Booth-level officers (BLOs), who are tasked with field verification during the SIR process, are not empowered to assess or decide an individual's citizenship status. Their role is limited to verifying local identity and residential address.

Recognised Documents for Electoral Roll Inclusion in Bihar

In addition to Aadhaar, the Election Commission has listed several other documents as valid for establishing identity during the Bihar SIR process. These documents are intended to offer broad and inclusive options for individuals seeking to be enrolled in the electoral rolls. These include:

- Identity cards or Pension Payment Orders issued to regular employees or pensioners of Central/State Governments or Public Sector Undertakings (PSUs)
- Government-issued documents, certificates, or identity cards (including from banks, post offices, LIC, and PSUs) issued before July 1, 1987
- Birth certificates issued by a competent authority
- Indian passports
- Matriculation or other educational certificates from recognised boards or universities
- Permanent residence certificates issued by a competent State authority
- Forest Rights Certificates
- Caste certificates (OBC/SC/ST) issued by authorised government bodies
- Records from the **National Register of Citizens** (where available)
- Family registers prepared by state or local authorities
- Government-issued land or house allotment certificates

Wider Implications of the Ruling

- The Supreme Court's decision reinforces the legal status of Aadhaar as a tool for identity verification but not as a basis for determining nationality. By formally including Aadhaar in the list of valid documents for the Bihar electoral roll revision, the Court has effectively expanded access to the democratic process for a large section of the population that may lack traditional documents such as birth certificates or passports.

This move may also help reduce the chances of wrongful exclusions from the electoral rolls, particularly in regions with significant documentation gaps or among communities historically underserved by formal bureaucratic systems. However, the Court's insistence on the Central Government's exclusive authority over citizenship decisions ensures that this increased accessibility does not compromise the legal integrity of citizenship determination in India.

Global Capability Centres (GCCs) in India: Opportunities and Challenges

India has emerged as a global destination for Global Capability Centres (GCCs), with nearly 1,600 such centres operating across a wide range of sectors. These centres, owned by multinational corporations (MNCs), contribute significantly to India's services exports, generate substantial employment, and support the country's growing digital economy. However, while their short-term benefits are clear, concerns are mounting regarding their long-term implications for India's domestic IT services industry, innovation capacity, and intellectual property (IP) development.

Understanding Global Capability Centres (GCCs)

GCCs are fully-owned offshore units of MNCs, strategically set up in talent-rich, cost-efficient geographies like India to manage specialised functions such as information technology, finance, research and development (R&D), and customer service. Initially created to serve as back-office support hubs and achieve cost savings, GCCs have now evolved into centres of excellence, driving product development, innovation, and complex business processes. They are integral to global business operations, offering multiple advantages including:

- Access to a highly skilled and diverse talent pool
- Enhanced operational control and efficiency
- Localisation of innovation
- Global scalability of processes and functions

GCCs in India: Current Landscape

- India is home to over **1,600** GCCs, employing around **1.9 million** professionals and generating an estimated **$64.6 billion** in revenue as of

2024. Major hubs include Bengaluru, Hyderabad, Pune, Chennai, Mumbai, and the National Capital Region (NCR).
- Projections suggest the sector will expand to **2,400 GCCs**, employing over **2.8 million people** and generating **$105 billion** in revenue by **2030**, establishing India as a core destination for enterprise operations, technology solutions, and innovation services.

Growth Drivers and Sector Impact

India's position as a global GCC leader stems from its transformation into a provider of high-value, technology-driven services. GCCs now contribute:
- Approximately **40%** of all digital transformation initiatives undertaken globally
- Around **20%** of the world's semiconductor chip design talent
- Nearly **40%** of India's services exports, second only to the IT services sector

Notable examples include **Amazon's largest global office in Hyderabad** and **Goldman Sachs' key operations in Bengaluru and Hyderabad**, showcasing how India has become, for global services, what China is for hardware manufacturing.

The rapid expansion of GCCs in India is driven by several factors:
- A large pool of engineers and STEM graduates
- Competitive cost advantages in labour, infrastructure, and real estate
- Liberal regulatory environment with simplified labour laws and flexible working hours
- Rising global demand for outsourced R&D, data analytics, and digital services

Emerging Challenges and Strategic Concerns

Despite the positive momentum, the rise of GCCs brings a set of critical challenges that merit close scrutiny:

Impact on Domestic IT Services Sector
- GCCs often overlap with traditional IT outsourcing firms, potentially diverting revenue from Indian IT companies.
- There is concern about a zero-sum scenario, where gains by GCCs directly translate into losses for domestic IT players.

Nature of Work and Innovation Deficit
- Most GCCs in India focus on standardised, non-core tasks that are easily outsourceable, rather than leading-edge innovation.
- India often lacks the presence of Chief Technology Officers (CTOs) or strategic decision-makers within GCCs.
- There is limited IP creation and a low rate of patent registration by Indian branches of MNCs, undermining India's ambitions to lead in tech innovation.

Quality and Sustainability of Employment
- There is a growing trend of hiring lower-paid science graduates rather than engineers, potentially reducing the overall skill level in the tech workforce.
- As artificial intelligence (AI) tools advance, there is a risk that routine, low-skill tasks handled by GCCs could be automated, threatening job security.

Policy Dilemmas
- Policymakers must carefully balance the promotion of GCCs with the need to protect and strengthen India's domestic IT industry.
- There are risks of international backlash if India follows a trajectory similar to China's rapid industrial dominance, particularly if localisation mandates increase.

Government's Strategic Response

To address these issues, the Indian government is adopting a multi-pronged strategy:
- **Promoting India as a "Product Nation"**: Emphasis is being placed on upgrading the quality of work from services to innovation-led product development.
- **IP Localisation Incentives**: The government is considering mandatory localisation of intellectual property, including proposals like the **Design Linked Incentive (DLI) 2.0 scheme** aimed at encouraging chip design and domestic IP ownership.
- **Support for Domestic IT Firms**: Indian IT companies are being encouraged to adopt GCC-like models to stay competitive and avoid being displaced.

Conclusion: Turning GCCs into Long-Term Assets

India stands at a strategic inflection point. While the growth of GCCs offers tremendous

opportunities in terms of employment, foreign investment, and integration into global value chains, the focus must now shift from **cost arbitrage to value creation**.

For GCCs to serve as long-term assets, India must:

- Encourage the localisation of innovation and IP generation
- Promote higher-end R&D and the presence of strategic decision-making roles within Indian operations
- Reskill its workforce in emerging technologies, including artificial intelligence, semiconductor design, and advanced digital systems

If these steps are implemented effectively, GCCs can evolve from peripheral support hubs into true centres of global innovation and enterprise leadership.

Political Interference in Governance: Nature, Implications, and Reforms

Context:

A case was recently registered in Solapur against a leader from the Nationalist Congress Party (NCP) and others for obstructing officials during an anti-illegal excavation drive. The issue drew wider public scrutiny after a video surfaced in which Maharashtra's Deputy Chief Minister was seen reprimanding IPS officer Anjana Krishna over the phone. This incident has reignited debates around political interference in governance and its adverse implications.

Understanding Political Interference in Governance

Political interference involves elected representatives or party workers exerting undue influence over civil servants. It compromises the foundational values of impartiality, legality, and merit-based administration. By overriding institutional procedures, it distorts the relationship between political leadership and professional bureaucracy.

Key Characteristics of Political Interference

- **Undue Pressure:** Politicians often pressurize civil servants to alter or delay enforcement actions—such as stopping raids or easing compliance norms—which undermines objectivity and rule enforcement.
- **Patronage and Favouritism:** Administrative decisions, such as transfers, promotions, and project allocations, are influenced by political loyalty rather than competence, creating networks of patronage that weaken meritocracy.
- **Erosion of Political Neutrality:** Civil servants risk becoming instruments of the ruling political establishment rather than impartial executors of public policy, violating constitutional principles.
- **Short-Term Populism:** Politically motivated directives—such as blanket loan waivers or unauthorized construction permissions—prioritize electoral gain over long-term sustainability and legality.
- **Diluted Accountability:** The blurred lines between ministerial directions and bureaucratic execution make it difficult to assign responsibility when governance fails or rules are bent.

Ethical Dimensions of Political Interference

- **Constitutional Morality:** Interference often violates **Article 14** of the Constitution, which guarantees equality before the law, and undermines rule-based, impartial governance.
- **Conflict of Interest:** Elected officials often face tensions between their duty to uphold public interest and their desire to shield political allies or party workers from lawful scrutiny.
- **Erosion of Public Trust:** Perceptions of partisan or biased administration reduce citizens' faith in democratic institutions and the fairness of governance.
- **Demoralisation of Civil Servants:** Officers committed to integrity often face humiliation, arbitrary transfers, or threats, which discourage ethical conduct in public service.
- **Gender and Dignity Concerns:** Incidents of verbal rebukes, especially towards women officers, raise serious questions about workplace respect and ethical treatment in public institutions.
- **As Noted by 2nd ARC:** The Second Administrative Reforms Commission (ARC) explicitly states: *"The greatest threat to probity comes from the politicisation of the civil service and erosion of neutrality."*

Philosophical Perspectives on Governance and Ethics

- **Plato – Philosopher King and Justice:** Plato, in *The Republic*, advocated that rulers should be guided by wisdom and justice. Political interference driven by personal or partisan motives runs counter to this ideal, replacing reasoned governance with arbitrary rule.
- **Aristotle – Rule of Law over Rule of Man:** Aristotle warned that governance should be based on laws, not the whims of individuals. Interference bypasses legal frameworks, introducing subjective and often unfair decision-making.
- **Immanuel Kant – Duty and Moral Law:** Kant's deontological ethics stresses the primacy of moral duty and the categorical imperative. When politicians coerce civil servants to act against law or conscience, they reduce governance to a tool for self-interest.
- **Max Weber – Bureaucratic Neutrality:** Weber viewed neutrality, hierarchy, and rule-based authority as essential for modern administration. Political meddling compromises these pillars, turning bureaucracy into an extension of political will.

Structural Challenges in Addressing Political Interference

- **Lack of Legal Safeguards:** Civil servants currently have limited statutory protection, especially against oral or informal instructions from political leaders.
- **Frequent Transfers:** The average tenure of officers is under 16 months, as per ARC data. This instability discourages initiative and rewards pliable behaviour over integrity.
- **Weak Institutional Shields:** Civil Services Boards, tasked with overseeing postings and transfers, often lack autonomy, leaving officers vulnerable to arbitrary interventions.
- **Low Accountability for Politicians:** There is no enforceable code of ethics for legislators, allowing elected officials to exert pressure without facing disciplinary consequences.
- **Culture of Silence:** Officers, fearing retaliation or career damage, seldom report instances of interference, allowing systemic issues to fester unchecked.

Reform Measures: The Way Forward

To protect the integrity of governance and the dignity of civil service, a combination of institutional, legal, and cultural reforms is essential:

- **Fixed Tenure and Strengthened Civil Services Boards:** As recommended by the ARC, secure tenures and independent postings can insulate officers from arbitrary political influence.
- **Legal Protections Against Illegal Orders:** Amendments to the Civil Services Conduct Rules, along with statutory backing, can empower officers to resist unlawful directives.
- **Code of Ethics for Politicians:** A formal, enforceable ethical code—as proposed by the ARC—can help promote accountability, respect for institutional boundaries, and adherence to constitutional values.
- **Independent Grievance Redressal Mechanism:** Establishing an autonomous body to log and act upon complaints of political interference would offer recourse for officers and act as a deterrent.
- **Ethics and Leadership Training:** Regular training in conflict resolution, ethical reasoning, and public leadership can prepare civil servants to handle political pressure without compromising integrity.
- **Public Awareness and Media Oversight:** A vigilant civil society and free press play a key role in exposing abuse of power, reinforcing transparency and public accountability.

Conclusion

Political interference undermines neutrality, weakens institutions, and corrodes the ethical foundation of public service. It threatens the very ideals of justice, equality, and rule of law upon which Indian democracy rests. Reforms must aim to restore the professional autonomy of civil servants and reinforce institutional checks on political power. Only when political authority respects administrative independence can governance truly uphold the values of constitutional morality and public trust.

Men's Hockey Asia Cup 2025: India's Triumph and Road to the World Cup

- India secured a remarkable victory over Korea with a 4-1 scoreline in the final of the Men's Hockey Asia Cup 2025, held in Rajgir, Bihar. This triumph marked India's fourth Asia Cup title and ensured direct qualification for the 2026 FIH Men's Hockey World Cup in Belgium and the Netherlands.
- The Men's Hockey Asia Cup, a quadrennial tournament organized by the Asian Hockey Federation, is the premier continental championship in Asian men's field hockey. The 2025 edition was hosted by India for the first time in the state of Bihar, specifically in Rajgir, from August 29 to September 7.
- The tournament's mascot, named Chaand, is a dynamic tiger adorned in a red cape and topped with a magician's hat. It symbolises agility, courage, and pride, drawing inspiration from Bihar's Valmiki Tiger Reserve.
- India's performance throughout the tournament was commanding, highlighted by an unbeaten streak that included dominant victories over teams like China (7-0) and Malaysia. With this latest win, India now joins the ranks of Korea (five titles) and Pakistan (three titles) as one of the top-performing nations in Asia Cup history.
- The 12th edition of the Men's Asia Cup not only showcased India's growing prowess in international hockey but also elevated Bihar's profile as a capable host for global sports events, reinforcing the state's emergence on the international sporting map.

Vice President Election – System of Proportional Representation

Context:

The polling for the Vice Presidential election commenced on September 9, 2025, following the resignation of Jagdeep Dhankhar. The election saw the Prime Minister of India casting the inaugural vote. The contest was primarily between CP Radhakrishnan and Justice B. Sudershan Reddy.

Overview of the Vice President Election System: Proportional Representation

The Vice President of India is chosen by an Electoral College comprising members of both Houses of Parliament—namely, the Lok Sabha and the Rajya Sabha, including both elected and nominated members. This election employs a system of proportional representation through the single transferable vote (STV) method, and voting is conducted by secret ballot to maintain confidentiality.

Detailed Process of Vice President Election

1. **Composition of the Electoral College:** The Electoral College responsible for electing the Vice President consists exclusively of all elected and nominated members from both the Lok Sabha and the Rajya Sabha. Notably, unlike the Presidential election, members of the State Legislatures do not participate in this election process.
2. **Vote Value Equality:** Each Member of Parliament (MP) holds a vote of equal value, with each vote counting as one. This uniform value simplifies the election process, differentiating it from the Presidential election where the vote value of MPs varies depending on the population they represent.
3. **Ballot Paper and Preference Marking:** The ballot paper used is pink and bilingual, featuring both Hindi and English languages. The first column lists the names of the candidates, while the second column is reserved for the MPs to indicate their preferences. Voters mark their preferences by writing numerals such as 1, 2, 3, and so on, against the candidates' names. These numerals can be expressed in international numerals, Indian scripts, or Roman numerals. However, spelling out the numbers (e.g., "one," "two") or leaving the preference blank will invalidate that particular choice.
4. **Quota Calculation for Victory:** To win, a candidate must secure a minimum quota of votes, which is calculated using the formula: (Total Valid Votes Cast ÷ 2) + 1. For instance, if 780 MPs cast valid votes, the quota required for victory would be (780 ÷ 2) + 1, equating to 391 votes.

5. **Counting and Transferring Votes:** The counting process begins with tallying all the first-preference votes (those marked as "1"). If any candidate achieves the quota in this initial count, they are immediately declared elected. If no candidate meets the quota, the candidate with the fewest votes is eliminated. The votes of the eliminated candidate are then transferred to the next preferred candidate indicated by the MPs (marked as "2" on those ballots). This process of elimination and vote transfer continues until one candidate crosses the required quota and is elected.
6. **Secret Ballot and Voting Freedom:** Voting is conducted through a secret ballot, ensuring the confidentiality of MPs' choices. Since the anti-defection law does not apply to this election, MPs are not compelled to follow party whips, allowing them to vote freely. This provision encourages cross-voting, which can lead to unpredictable election outcomes.

Significance of the Vice President Election System

The proportional representation system used in the Vice President's election plays a critical role in maintaining democratic legitimacy by ensuring that the elected candidate enjoys the majority support of MPs across various political parties. It also acts as a safeguard against any candidate winning unfairly by a simple plurality due to the preference voting mechanism. Furthermore, this electoral system reinforces institutional balance by strengthening the Vice President's position, who serves as the ex-officio Chairman of the Rajya Sabha.

Employees' State Insurance Corporation (ESIC) Initiatives

- In a significant move aimed at improving India's social security landscape and simplifying industrial compliance, the Employees' State Insurance Corporation (ESIC) has launched two key initiatives—SPREE-2025 and the AMNESTY Scheme-2025.
- **SPREE-2025 (Scheme for Promoting Registration of Employers and Employees)** is designed to remain operational until 31st December 2025. This scheme offers unregistered industries and workers an opportunity to enroll on the ESI Portal, Shram Suvidha Portal, or the Ministry of Corporate Affairs Portal without being required to pay past dues. Employers who register under SPREE-2025 will be considered covered from the date of registration or the date they declare, and their employees will begin receiving ESI health and social security benefits from that date onward.
- Unlike punitive measures, SPREE-2025 promotes voluntary compliance by reducing litigation, facilitating formal registration, and fostering mutual trust between employers and employees.
- **The AMNESTY Scheme-2025**, active from 1st October 2025 to 30th September 2026, serves as a one-time dispute resolution mechanism. It aims to settle disputes related to damages, interest, and coverage under the ESI Act. By providing employers with an opportunity to resolve longstanding legal and compliance issues, the scheme seeks to reduce litigation and ensure smooth delivery of employee benefits.
- Regional Directors have been authorized under this scheme to withdraw legal cases where contributions and interest have already been paid. They are also permitted to close cases filed more than five years ago against insured individuals where no formal notices were issued. Importantly, for the first time, the scheme also covers disputes related to damages and interest on coverage issues.

CP Radhakrishnan – 15th Vice President of India

- CP Radhakrishnan has been elected as the 15th Vice President of India, defeating Justice B. Sudershan Reddy in the election held on 9 September 2025. Born on 20 October 1957 in Tiruppur, Tamil Nadu, he has previously served as the Governor of Maharashtra, Jharkhand, and held additional charges in Telangana and Puducherry. He won the Vice Presidential election with 452 votes against his opponent's 300, with an impressive turnout of over 98% among Members of Parliament.

- The office of the Vice President is constitutionally established under Articles 63 to 65, designating it as the second-highest constitutional position in India. The Vice President serves as the ex-officio Chairperson of the Rajya Sabha, does not hold any office of profit, and assumes the role of President if the latter's office becomes vacant, until a new election is held within six months.
- Eligibility criteria for the Vice President include Indian citizenship, a minimum age of 35 years, and qualification for election as a Rajya Sabha member. The individual must not hold any office of profit except as Vice President, Governor, or Union/State Minister.
- The Vice President holds office for a five-year term but continues until a successor is sworn in. The officeholder can resign by addressing the President and may be removed through a Rajya Sabha resolution passed by a majority and agreed upon by the Lok Sabha, following a 14-day notice. During absence or vacancy in the President's office, the Vice President assumes all associated powers and privileges. As Chairperson of the Rajya Sabha, the Vice President presides over debates, maintains order, and votes only to break ties.

Swachh Vayu Survekshan 2025: Indore Leads in Air Quality Management Amid National Progress

- The *Swachh Vayu Survekshan (SVS) 2025*, conducted under the Ministry of Environment, Forest and Climate Change as part of the National Clean Air Programme (NCAP), has once again ranked Indore as the top-performing city in India for air pollution mitigation, reinforcing its position as a national leader in environmental sustainability. This achievement comes despite a marginal increase in PM10 levels.
- The SVS is an annual survey that evaluates 130 cities under NCAP to promote healthy competition in air quality management. The assessment is comprehensive and multi-tiered, covering eight parameters such as road dust control, solid waste management, vehicular and industrial emission control, construction and demolition waste handling, and public awareness campaigns. It also factors in actual reductions in particulate matter concentrations, especially PM10.
- In the million-plus population category, Indore secured the top spot, followed by Jabalpur, and Agra/Surat in joint third place. Navi Mumbai ranked fourth, followed by Kanpur, Bhopal, Prayagraj, and Chandigarh. Ahmedabad, Pune, and Nagpur shared the tenth rank. Other major urban centres such as Varanasi, Raipur, Lucknow, Hyderabad, Mumbai, Jaipur, Delhi, Bengaluru, Kolkata, and Chennai featured further down the list, with Chennai ranked 41st.
- In the 3–10 lakh population category, *Amravati* emerged as the top performer, while *Dewas* in Madhya Pradesh secured the first rank among cities with under 3 lakh population. Parwanoo in Himachal Pradesh and Angul in Odisha followed closely.
- Out of the 130 cities surveyed, PM10 levels declined in 103 cities. Mumbai registered the highest reduction in PM10 concentrations, with a 44% drop compared to 2017–18 levels. Other metro cities also showed significant improvements: Kolkata recorded a 37% drop, while Hyderabad and Bengaluru each saw reductions of 26%. Delhi and Chennai also improved, with declines of 15% and 12% respectively. Despite this progress, only 22 cities met the National Ambient Air Quality Standards (NAAQS), which set the annual average PM10 limit at 60 micrograms per cubic metre. Among major metros, only Chennai managed to meet this benchmark, recording an annual average of 58 $\mu g/m^3$.
- The SVS 2025 results highlight both commendable progress and the challenges that lie ahead in India's battle against air pollution. While cities like Indore continue to set national examples, sustained policy efforts and public engagement remain crucial for achieving cleaner air across urban India.

Geotagging in India's 2027 Census: Process, Benefits, and Implementation

India's upcoming 2027 Census will mark a transformative moment in the country's demographic data collection, introducing a range of technological and procedural innovations. Among the notable firsts are digital enumeration, self-enumeration, and the reintroduction of caste-based counting for the first time since 1931. One of the most significant technological advancements, however, will be the geotagging of every building across the country. Through the use of GPS-enabled mobile devices, each structure—whether residential or non-residential—will be assigned precise geographic coordinates. This innovation is expected to substantially enhance the accuracy of household and institutional mapping, eliminate duplications, improve coverage, and build a robust spatial database. Such a database will have far-reaching implications for urban planning, infrastructure development, and the effective implementation of welfare schemes.

Understanding Geotagging

Geotagging refers to the process of assigning exact latitude and longitude coordinates to physical structures, which are then recorded and visualized on a Geographic Information System (GIS) map. A GIS is a digital framework that captures, stores, and displays data associated with locations on the Earth's surface. Latitudes, which run horizontally, measure the distance north or south of the equator, while longitudes, which run vertically, measure the distance east or west of the prime meridian located in Greenwich, UK. These two coordinate systems form a grid that enables the unique identification of any point on Earth. When applied to buildings, this system gives each structure a precise and unambiguous geographic identity.

Building Statistics from Census 2011

To appreciate the scale of this initiative, it is useful to consider data from the 2011 Census. At that time, a 'Census House' was defined as any building or part of a building with a separate main entrance, used as a distinct unit. These could be occupied or vacant and used for residential, commercial, or mixed purposes. The 2011 Census recorded a total of 330.84 million Census Houses in India. Of these, 306.16 million were occupied, and 24.67 million were vacant. Rural areas accounted for 220.70 million Census Houses, while 110.14 million were located in urban areas. This vast number underlines the scale and complexity of the upcoming geotagging effort.

Implementation of Geotagging in the 2027 Census

The process of geotagging will be integrated into the first phase of the 2027 Census—Houselisting Operations (HLO)—which is scheduled to be carried out between April and September 2026. This phase will be followed by the Population Enumeration phase, starting in February 2027, which will record individual demographic, socioeconomic, and cultural data. For regions such as Ladakh, Jammu & Kashmir, Himachal Pradesh, and Uttarakhand, the Houselisting Operations will begin earlier, in September 2026, due to weather and logistical considerations.

Role of Enumerators in the Geotagging Process

Enumerators will play a central role in the execution of geotagging. Each enumerator will be assigned a specific Houselisting Block (HLB), which is a clearly defined area within a village or urban ward represented through notional maps. During their visits, enumerators will use smartphones equipped with Digital Layout Mapping (DLM) applications. By enabling location services, they will geotag each building they survey. In addition to capturing geographic coordinates, enumerators will record the number of Census Houses and Households within each structure. They will also classify buildings into categories—residential, non-residential, partly residential, or landmarks. These distinctions will help refine data quality and improve its utility for planning purposes.

Definition of a Household

According to the 2011 Census, a household is defined as a group of individuals who normally live together and share meals from a common kitchen, unless circumstances such as work prevent them from doing so. This definition will continue to guide household enumeration in the 2027 Census.

Advantages of Geotagging in the Census Framework

- Incorporating geotagging into the Census will bring several important advantages. First and foremost, it will allow for highly accurate estimation of Census Houses and Households, ensuring that enumerator workloads are evenly and fairly

distributed. Unlike earlier Censuses, which relied on manually drawn maps and sketches, digital geotagging offers unmatched precision, speed, and reliability. Moreover, the government already employs geotagging technology in various schemes, notably in monitoring housing projects under the Pradhan Mantri Awaas Yojana (PMAY) in both rural and urban areas. These existing implementations serve as proof of concept for the larger-scale use of geotagging in the Census, highlighting its practicality and effectiveness.

- By embracing geotagging, India's 2027 Census is set to become a model for data accuracy and technological integration in large-scale public data collection. This shift represents not only a modernisation of methods but also a foundational improvement in how demographic and geographic data will inform governance, development, and welfare delivery in the years to come.

The Great Nicobar Island Project: Balancing Strategic Vision with Sustainable Development

Context

The Government of India has officially approved the Great Nicobar Island Project, a comprehensive and multi-dimensional development plan of strategic, economic, and environmental importance in the Indian Ocean Region. Positioned at the intersection of India's security imperatives and developmental goals, the project aims to transform Great Nicobar into a critical logistics, trade, and defence hub, reinforcing the nation's footprint in the Indo-Pacific.

Overview of the Great Nicobar Island Project

The Great Nicobar Island Project is envisioned as a mega integrated initiative designed to elevate the island's strategic relevance while fostering regional economic growth. Its core objective is to develop the island as a central node in India's maritime and defence architecture, supported by infrastructure that aligns with environmental and tribal welfare norms. The project is planned in accordance with the Environmental Impact Assessment (EIA) Notification 2006 and the Shompen Policy 2015, ensuring a sustainable development framework that respects ecological limits and protects indigenous communities.

Key Components of the Project

- Central to the initiative is the construction of an International Container Transhipment Terminal (ICTT), with a planned capacity of 14.2 million Twenty-foot Equivalent Units (TEUs). This terminal is expected to significantly reduce India's dependency on external transhipment hubs such as Colombo and Singapore, positioning Great Nicobar as a major global shipping hub.
- The project also includes a Greenfield International Airport that will enhance air connectivity, support tourism, and facilitate rapid movement of personnel and supplies—particularly vital during strategic or humanitarian emergencies.
- In terms of energy infrastructure, a 450 MVA power plant combining gas and solar technologies is planned to provide a reliable and sustainable power supply, essential for both residential and industrial use.
- A carefully designed integrated township spread across 16,610 hectares will offer housing, modern amenities, and essential infrastructure for residents and workers. The project is structured to be developed in three phases between 2025 and 2047, allowing staggered investment, reduced ecological pressure, and adaptive planning over two decades.

Strategic and Economic Significance

- The project's geographical positioning near the Malacca Strait—one of the world's busiest shipping lanes—offers India a significant strategic advantage. It enhances the country's ability to oversee vital maritime routes and assert its naval presence in the Indo-Pacific. This strategic edge aligns with broader initiatives like *Sagarmala* and *Maritime India Vision 2030*, which aim to transform India into a global maritime power.
- The development also reinforces the operational readiness of the Andaman & Nicobar Command, India's only tri-service military command. By enabling faster deployment and greater surveillance

capabilities, the island strengthens India's maritime defence posture.

- Economically, the ICTT alone is projected to reduce transhipment costs by $200–300 million annually, thereby increasing the competitiveness of India's exports and imports. Additionally, the project promises to create substantial direct and indirect employment opportunities, promote skill development, and foster eco-tourism, which can provide sustainable livelihoods for local communities.

Challenges and Concerns

- Despite its strategic and economic appeal, the project faces considerable challenges. The ecological sensitivity of Great Nicobar is a major concern, with approximately 1.82% of forest land proposed for diversion. This may impact endemic species and critical nesting sites, especially for leatherback turtles.
- Protecting the interests of Particularly Vulnerable Tribal Groups (PVTGs) such as the Shompen and Nicobarese is another priority. Ensuring there is no displacement and preserving their cultural heritage will require careful planning and community engagement.
- The island's location in a high seismic zone introduces further complexity. As the devastating 2004 tsunami demonstrated—claiming over 6,000 lives in the Andaman & Nicobar Islands—future infrastructure must be designed to withstand tsunamis, cyclones, and other natural disasters.
- Logistical issues also pose a challenge. The remote location increases costs related to transportation, manpower, and infrastructure maintenance, necessitating highly efficient and resilient supply chain systems.
- International scrutiny is expected to intensify as environmental watchdogs and global advocacy groups may raise concerns regarding biodiversity loss, climate impact, and the displacement of indigenous communities.

Way Forward

- To address these challenges, environmental monitoring must be robust, using real-time satellite surveillance and third-party audits to ensure strict compliance with EIA norms. Involving tribal communities in the planning process and offering livelihood options through eco-tourism, mangrove restoration, and handicraft promotion will foster inclusivity and cultural preservation.
- Sustainable development should remain central, with emphasis on green infrastructure such as renewable energy, rainwater harvesting, and low-emission construction techniques. Climate-resilient planning, including early warning systems, disaster shelters, and earthquake-resistant buildings, must be integral to the project's execution.
- Strategic cooperation with regional partners under the *Security and Growth for All in the Region* (SAGAR) doctrine—such as Quad and BIMSTEC—can facilitate access to investment, advanced logistics capabilities, and joint maritime security frameworks.

Conclusion

The Great Nicobar Island Project represents a delicate yet ambitious fusion of economic aspiration, national security, and ecological responsibility. If implemented with rigorous environmental safeguards, participatory governance, and climate-resilient planning, it can serve as a blueprint for sustainable island development. Moreover, it will significantly bolster India's influence in the Indo-Pacific, reinforcing the country's strategic posture and maritime ambitions in an increasingly contested region.

The 130th Amendment Bill: Accountability or Constitutional Overreach?

Background and What the Bill Proposes

In 2025, the Indian government introduced the **130th Constitutional Amendment Bill**, which would automatically remove Ministers—whether at the Union or State level, including the Prime Minister or Chief Ministers—if they are held in custody for **30 consecutive days** in relation to offences punishable by **five years or more**.

Issues of Constitutional and Legal Concern

Violation of the Basic Structure Doctrine

The Bill is argued to go against the core ethos of India's constitutional framework, especially the principles upheld in *Kesavananda Bharati v. State of Kerala* (1973). That judgment made clear that Parliament cannot amend elements of the Constitution considered basic or essential—such as the rule of law and the separation of powers. Critics allege this amendment attempts to transfer decisive power from Parliament and the Judiciary to Executive discretion, weakening checks and balances.

Departure from Established Judicial Precedents and Laws

Under the **Representation of the People Act, 1951**, disqualification of elected representatives occurs only after conviction—not merely after arrest or detention. The Bill departs from that precedent. In *A.R. Antulay* (1988), the Supreme Court struck down procedural shortcuts that prejudiced Article 21 rights (the right to life and personal liberty). The proposed amendment risks similar violations by equating detention with guilt.

Undermining the Principle of Collegial Cabinet Responsibility

The doctrine of collective responsibility obliges the Council of Ministers to act together and share both responsibility and decision-making. If Ministers (or Chiefs) can be removed automatically after 30 days in detention, it shifts power heavily toward those overseeing or controlling detention or arrests—often the Executive. Cases like *S.R. Bommai* (1994), which reinforced federalism and the limits of central authority, emphasize that the Cabinet should not be hostage to individual executive decisions.

Risk of Misuse by Investigative Agencies

Agencies such as the Enforcement Directorate (ED) and the Central Bureau of Investigation (CBI) have been accused of using arrests or detentions to target opposition or critical voices. Bail often remains difficult under laws like PMLA (Prevention of Money Laundering Act), where detention can stretch past 30 days even absent proof of guilt. The Bill could make removal of office a default outcome of such detentions, increasing scope for political vendetta.

Dilution of Liberty and Due Process

India's constitutional jurisprudence—cases like *Maneka Gandhi v. Union of India* (1978)—requires that any law curtailing liberty must be "fair, just and reasonable." Establishing removal after 30 days of detention, without conviction, may be seen as arbitrary, converting mere investigation or suspicion into sufficient grounds for losing public office.

Comparative Constitutional Perspectives

Looking at other democracies, there is a useful contrast:

- In the United Kingdom, ministers may resign under moral pressure, but there is no legal requirement for removal before conviction. Political norms, not statute, govern such departures.
- In the United States, the Constitution does not provide for ministerial removal on the basis of arrest; political pressures prompt resignations, as seen in scandals like Watergate (1974), not as a matter of law.
- In South Africa, removal of ministers generally follows either conviction or impeachment, preserving due process and the presumption of innocence.

These systems show a stronger protection of due process and place burden of proof before stripping someone of official duties.

Possible Impacts and Consequences

If enacted, the 130th Amendment Bill could lead to a range of unintended or harmful effects. It may provoke instability in governance by forcing frequent changes in the cabinet when ministers are detained—even if charges are spurious or later dropped. The risk of political weaponisation is high: opposition or state governments could be weakened preemptively through legal or investigatory tactics. Such removal without trial would erode the public mandate—that is, the right of people to choose their leaders could be overridden by executive or agency action. Additionally, courts may become overburdened with challenges contesting automatic removals, diverting resources. Finally, the moral purpose of accountability may be undermined if citizens see legal processes used as partisan tools rather than instruments of justice.

Suggested Safeguards and Pathways Forward

To reconcile the aim of greater accountability with constitutional protections, the following alternatives or modifications should be considered:

- Trigger removal only after a judicial milestone, for example once formal charges are framed by a court, so that

frivolous arrests do not lead to loss of office.
- Establish judicial oversight that requires High Courts to review removal orders expeditiously (say within seven days), to balance fairness with the need for accountability.
- Preserve the principle of cabinet collegiality by making removal decisions subject to collective responsibility—ensuring the Cabinet collectively shares consequences rather than concentrating power in a central executive.
- Create independent bodies—such as a strengthened Lokpal or Ethics Commission—to review situations where detention may lead to removal, thereby reducing the chance of political vendetta.
- Promote voluntary political norms of moral accountability, reviving traditions of resigning on principle rather than relying solely on legal compulsion.

Conclusion

On paper, the 130th Amendment Bill addresses a legitimate concern: the damage to governance and public trust when individuals accused of serious offences retain ministerial positions while under detention. However, by equating detention with guilt, the Bill risks executive overreach, misuse of investigatory powers, and erosion of core constitutional values. Any reform toward accountability must be anchored in judicial safeguards, principles of due process, and preserving the separation of powers—so that democracy is strengthened, not weakened.

PM Modi's Manipur Visit: Navigating the State's Ongoing Crises

- Prime Minister Narendra Modi is set to visit Manipur on September 13 — marking his first trip to the conflict-affected state since ethnic clashes between the Meitei and Kuki-Zo communities began in May 2023. Over the past 27 months, Manipur has experienced a prolonged period of instability, marked by large-scale violence, widespread displacement, the breakdown of law and order, the resurgence of armed groups, the imposition of President's Rule, and a general election conducted amid deepening divisions.
- Although overt violence has reduced in recent months, the state's return to normalcy remains uncertain. Five major challenges — rehabilitation of displaced populations, restoration of mobility and access, reconciliation between ethnic groups, revival of democratic governance, and resolution of border-related tensions — continue to define Manipur's fragile recovery process.

Rehabilitation of Displaced Communities

- An estimated 57,000 individuals remain displaced, residing in over 280 relief camps across Manipur. Many have been living under such conditions for more than two years. The displacement followed a dual pattern: Kuki-Zo people were largely driven out of Imphal and other valley towns, while Meiteis were forced to flee border and hill districts such as Moreh, Churachandpur, and Kangpokpi. Additionally, residents from fringe areas situated along the valley-hill interface fled amid threats or direct attacks from opposing ethnic groups.
- In July 2025, the state government proposed a three-phase resettlement strategy aimed at closing all relief camps by the end of the year. The first phase prioritises the return of fringe-area residents, followed by the construction of prefabricated housing for others once sufficient normalcy is achieved. Although approximately 5,000 displaced persons had returned prior to the announcement of this plan, progress has since stagnated, casting doubt on the feasibility of the proposed timeline.

Mobility Restrictions and the Emergence of Buffer Zones

- The ethnic conflict has led to the formation of sharp boundaries separating the valley and hill districts, which have evolved into de facto "buffer zones" heavily guarded by security forces. These zones have effectively cut off direct interaction between Meitei and Kuki-Zo areas, creating a state of spatial and social segregation. Meiteis are largely confined to the valley and lack safe access to national highways, while Kuki-Zo populations are unable to enter Imphal or

access critical infrastructure such as the airport.

- Following the imposition of President's Rule in February, the central government attempted to enforce the principle of "free movement" on state highways. However, renewed violence in the aftermath of this attempt led to one fatality and multiple injuries. At present, Kuki-Zo groups allow the passage of essential commodities into the valley but continue to restrict Meitei movement across buffer zones. Meanwhile, there are no equivalent provisions in place to guarantee safe travel for Kuki-Zo individuals through Meitei-dominated areas, exacerbating the sense of division and mistrust.

Ethnic Polarisation and the Absence of Dialogue

- The ethnic clashes in Manipur have resulted in over 250 deaths, with the last major incident of violence recorded in November 2024. Though large-scale hostilities have decreased, officials and observers warn that the underlying situation remains highly volatile. Both the Meitei and Kuki-Zo communities remain heavily armed, and there has been little progress towards any form of structured inter-community dialogue.
- The central government continues to engage with both groups independently. It recently renewed a Suspension of Operations (SoO) agreement with Kuki-Zo insurgent factions. While these groups have formally committed to upholding Manipur's territorial integrity, they continue to demand the creation of a Union Territory with its own legislature — a position that appears to contradict the spirit of the pact.
- This development has triggered fresh concerns among Meitei organisations, who view the agreement as tacit recognition of Kuki-Zo insurgents. Conversely, the Kuki-Zo community continues to accuse former Chief Minister N Biren Singh's administration of supporting Meitei militias and failing to protect minority populations — charges that have deepened the divide and further eroded trust.

Political Vacuum and the Question of Governance

- The resignation of N Biren Singh in February 2025 followed mounting opposition from both Kuki-Zo leaders and a significant segment of Meitei BJP legislators. His departure led to the imposition of President's Rule — a demand long pushed for by the Kuki-Zo community and initially welcomed by various factions across the political spectrum.
- However, within weeks, elected representatives from the valley and Naga-dominated constituencies began calling for the reinstatement of a democratically elected government. These leaders cited growing public unrest and a desire to return to constitutional normalcy. Despite such appeals, the central government has adopted a cautious approach, prioritising stability over a rushed political transition. As a result, President's Rule remains in force, and there appears to be no immediate plan to restore the state government.

Border Security and Cross-Border Tensions

- Manipur's open border with Myanmar continues to be a significant source of tension, particularly for Meitei communities, who allege that illegal immigration by Chin groups from Myanmar has contributed to the ongoing unrest. In response to these concerns, the Indian government revoked the Free Movement Regime (FMR), which previously allowed tribals from both sides to travel up to 16 km across the border without documentation. The Centre has also announced the construction of border fencing.
- These measures have sparked widespread anger among the Kuki-Zo and Naga communities, many of whom share familial, cultural, and economic ties with tribes across the Myanmar border. In a direct show of opposition, the United Naga Council imposed a trade embargo on key transport corridors ahead of the Prime Minister's visit. Although the embargo has been temporarily lifted, it reflects the growing discontent among

border communities who view the new security policies as a threat to their way of life.

Conclusion

- Prime Minister Modi's upcoming visit to Manipur carries immense symbolic and political weight. It comes at a time when the state remains mired in deep ethnic divides, institutional dysfunction, and unresolved questions of governance and identity. While the reduction in violence may suggest a surface-level calm, the underlying challenges — prolonged displacement, entrenched segregation, absence of inter-ethnic dialogue, political instability, and cross-border tensions — continue to hinder Manipur's path to reconciliation and recovery.
- Unless these issues are addressed through inclusive dialogue, structural reforms, and genuine political will, the state risks remaining trapped in a cycle of fragile peace and simmering unrest. The Prime Minister's visit offers an opportunity to reset the narrative — but its success will depend on whether it leads to tangible, long-term commitments rather than symbolic gestures.

From Right to Information to a Right to Deny: The Impact of the DPDP Act on RTI

Context

The passage of the Digital Personal Data Protection (DPDP) Act, 2023, has sparked serious concerns among transparency advocates due to its amendment of Section 8(1)(j) of the Right to Information (RTI) Act. This critical clause, once a safeguard ensuring a balance between privacy and public interest, has now been drastically curtailed to a vague phrase, enabling sweeping denials of information under the label of "personal data." Critics fear that this shift represents a fundamental transformation — from a citizen's right to access information to a legally sanctioned "right to deny information," with grave consequences for accountability and democratic oversight.

The RTI Framework: A Cornerstone of Participatory Governance

Enacted in 2005, the Right to Information Act empowered Indian citizens to seek information from public authorities, enforcing the constitutional guarantee of freedom of speech and expression under Article 19(1)(a). Over the past two decades, it has been instrumental in enabling social audits, exposing corruption, and strengthening citizen-led oversight. Section 8(1)(j) of the Act was particularly important: it allowed authorities to deny information only when it lacked public interest or constituted an unwarranted invasion of privacy. A key proviso in the section ensured that if any information could not be withheld from Parliament or a State Legislature, it could not be denied to any citizen either. This clause preserved a vital principle of parity and transparency in governance.

The DPDP Act's Overreach and Its Consequences for RTI

- While the DPDP Act aims to establish a framework for protecting digital personal data, its intersection with the RTI Act has sparked alarm. The amendment to Section 8(1)(j) effectively reduces its language to a vague, sweeping clause that broadens the grounds for denying access to information. The definition of "personal data" under the DPDP Act is so expansive that it includes not only individuals but also firms, companies, Hindu Undivided Families (HUFs), associations, and even the State itself. As a result, nearly any piece of information requested under RTI — even non-sensitive or publicly relevant data — could now be denied on the grounds of privacy.
- This expansive interpretation, coupled with the DPDP's provision for imposing penalties of up to ₹250 crore for data breaches, places immense pressure on Public Information Officers (PIOs). In the absence of clarity and legal safeguards, these officers may prefer to issue blanket denials rather than risk punitive action. Such a trend risks eroding the very foundation of the citizen's right to know.

Undermining Transparency: Emerging Concerns

- One of the most immediate consequences of the amendment is the weakening of transparency in public service delivery. Requests for routine information such as pension lists, employment rosters, or public distribution system (PDS) beneficiary data could now be rejected

under the pretext of protecting personal information. In effect, this removes the public interest test that previously served as a bulwark against arbitrary denial.

- The constitutional principle of maximum disclosure has been replaced by an expectation that citizens must now prove an overriding public interest to access even routine records. This shift reverses the burden of proof and introduces a chilling effect among PIOs, many of whom may now reject applications pre-emptively to avoid legal entanglements.
- The erosion of transparency also creates fertile ground for corruption. Without access to basic records, it becomes significantly harder to detect anomalies such as ghost employees, fake welfare beneficiaries, rigged recruitment processes, and irregular procurement contracts. In effect, the amendment shields malfeasance under a veneer of privacy.
- This legislative change undermines the role of citizens as democratic watchdogs and dilutes the mechanisms of accountability that are essential to any functioning democracy. The RTI Act, once a cornerstone of citizen empowerment, risks becoming a bureaucratic dead end.

Structural and Legal Challenges

- The DPDP amendment comes at a time when institutional weaknesses already plague the RTI ecosystem. A long-standing conflict remains unresolved between the right to privacy, as articulated in the Supreme Court's *Puttaswamy* judgment, and the need for transparency in public functioning. A coherent legal framework that balances these rights proportionately is still missing.
- Furthermore, the Central Information Commission (CIC) and several State Information Commissions suffer from chronic understaffing, with vacancy rates hovering between 30–40%. This has led to massive backlogs and prolonged delays in the resolution of appeals, undermining the effectiveness of the law.
- The increasing digitisation of RTI processes has introduced new forms of exclusion. For the rural poor and technologically marginalized communities, pursuing appeals through online portals is often an insurmountable hurdle, thereby reducing the inclusiveness of the law. Compounding these problems is a noticeable decline in civil society mobilisation around RTI issues. Unlike the early 2000s, when grassroots movements drove the RTI's passage, today's public pressure to protect transparency laws remains limited.
- Politically, there is little incentive to restore robust RTI provisions. Governments, irrespective of party, often benefit from reduced scrutiny and opacity in administration. As a result, there is minimal momentum from within the political establishment to undo the changes brought by the DPDP Act.

Restoring the RTI Spirit: A Democratic Imperative

- Given the gravity of these developments, restoring the RTI's core spirit requires both legislative and institutional responses. Reinstating the proviso that bars denial of information to citizens if it is accessible to Parliament or State Legislatures would help re-establish parity and safeguard accountability.
- The definition of "personal information" under the DPDP Act must be narrowed to include only truly sensitive categories, such as health data or family details, in keeping with the principle of proportionality. This would ensure that non-sensitive, publicly relevant information cannot be withheld arbitrarily.
- Institutional capacity also needs urgent strengthening. Vacancies in the CIC and State Commissions must be filled, and adequate funding ensured. Time-bound norms for disposing of appeals should be instituted to reduce pendency. Proactive disclosure by public authorities—such as publishing welfare beneficiary lists, public tender details, and employee rosters—can significantly reduce the need for individual RTI applications.
- Most importantly, the balancing of privacy and transparency must be grounded in

constitutional principles. The proportionality test laid out in the *Puttaswamy* judgment offers a clear path: any restriction on information must serve a legitimate aim, be necessary, and use the least restrictive means available. Applying this test would allow privacy and transparency to coexist within a coherent legal framework.

Conclusion

The RTI Act stands as one of India's most potent anti-corruption tools, enabling ordinary citizens to hold power to account. Diluting it through ambiguously framed privacy provisions not only erodes two decades of transparency gains but also risks reversing democratic progress. As India navigates an increasingly digital and complex governance landscape, the commitment to openness must not falter. Legislators, courts, and civil society must come together to preserve the RTI as a vital tool of participatory democracy and ensure that the citizen's right to know remains robust, actionable, and protected.

Supreme Court Urges Centre to Protect Homebuyers and Revive Stalled Housing Projects

The Supreme Court has called upon the Union Government to proactively safeguard the interests of homebuyers, especially those affected by stalled residential projects. This judicial intervention underscores the Court's recognition of housing not merely as a commodity but as a **fundamental right** under the broader interpretation of the **Right to Life guaranteed by Article 21 of the Constitution**. The Court issued a set of suggestions aimed at preventing the liquidation of viable projects and addressing systemic failures in India's real estate sector.

Ongoing Challenges in the Indian Housing Sector

- India's housing market is grappling with a series of complex and interrelated challenges. One of the most visible is the **decline in affordable housing stock**. While affordable homes comprised over 50% of new housing launches in 2018, they now account for a mere 17% of supply, making housing increasingly inaccessible to the urban poor and middle class.
- Simultaneously, the problem of **stalled housing projects** remains acute. Over **500,000 housing units across 44 Indian cities** have been indefinitely delayed, largely due to financial mismanagement and insolvency among real estate developers. This crisis has left thousands of homebuyers in limbo, having invested their savings without receiving possession or returns.
- The **high cost of land acquisition** is another structural constraint. Despite their economic significance, India's top ten cities together occupy only **0.2% of the country's land mass**, driving up land prices and limiting the viability of large-scale housing projects.
- Additionally, the lack of **uniformity in RERA (Real Estate Regulation and Development Act) implementation** across states has complicated regulatory oversight. Each state has enacted its own version of RERA rules, resulting in uneven enforcement and legal ambiguities that adversely affect both developers and consumers.

Supreme Court Recommendations to the Centre

- To address these systemic issues, the Supreme Court has made several recommendations designed to promote fairness, transparency, and viability in the housing sector. It has urged the Union government to explore the establishment of a **revival fund under the National Asset Reconstruction Company Limited (NARCL)** and to expand the existing **SWAMIH (Special Window for Affordable and Mid-Income Housing) Fund**, which has already played a pivotal role in reviving stalled projects.
- The Court also proposed the **creation of a dedicated corporate body**, modeled on NARCL, to specifically manage and revive stalled housing projects. Such an institution could bring professional oversight, structured financing, and legal clarity to revive non-performing real estate assets.
- In addition, the Court highlighted the urgent need to **harmonise RERA rules** across states. A centralised framework

would help standardise consumer protection mechanisms, ensure regulatory uniformity, and facilitate inter-state project development.

- To monitor implementation and ensure impartial oversight, the Supreme Court directed the **constitution of a high-level committee**, chaired by a retired High Court Judge. This committee is expected to provide strategic guidance, assess project viability, and safeguard homebuyer rights through legal and administrative channels.

Supreme Court Guidelines on DNA Evidence: Protocols, Precedents, and Legal Significance

Introduction

In the landmark case of *Kattavellai @ Devakar v. State of Tamil Nadu*, the Supreme Court of India established critical guidelines for the proper handling of DNA evidence in criminal investigations. The judgment underscored the need for rigorous protocols to preserve the integrity of biological samples used in forensic analysis. The Court directed all Directors General of Police (DGPs) across the states to develop standardised Chain of Custody Register forms and associated documentation. These were to be disseminated to all district-level authorities with clear instructions to ensure the protection, traceability, and reliability of DNA samples in the criminal justice system.

The Need for Uniform Protocols in DNA Evidence Handling

- The Supreme Court's intervention in the *Devakar* case arose from serious procedural lapses in the investigation of crimes involving rape, murder, and robbery. The Court observed that there were unexplained delays in sending vaginal swab samples to the Forensic Science Laboratory, and no proper chain of custody was maintained. These shortcomings raised legitimate concerns about possible sample contamination, which could compromise the integrity of the evidence.
- The Court highlighted that while certain investigative bodies and forensic departments had issued DNA handling protocols, these lacked uniformity across states. The absence of a standardised national procedure meant that the reliability of DNA evidence varied significantly depending on the jurisdiction. Although "Police" and "Public Order" are subjects under the State List in the Constitution, the Supreme Court considered it necessary to issue uniform guidelines applicable nationwide. This was crucial to maintain consistency, prevent miscarriage of justice, and uphold the evidentiary value of DNA in courts.

Supreme Court Guidelines on DNA Evidence Collection and Handling

- To address systemic gaps, the Supreme Court issued four essential guidelines that must be followed during DNA evidence collection and analysis in criminal investigations.
- First, the collection of DNA samples must be conducted with extreme care. Each sample must be securely packaged and labelled with details from the First Information Report (FIR) and other relevant case information. Additionally, the documentation must bear the signatures of the medical examiner, investigating officer, and at least one independent witness to ensure transparency and accountability.
- Second, it is the responsibility of the investigating officer to promptly transport the collected samples to the appropriate police station or hospital and ensure their delivery to the Forensic Science Laboratory within 48 hours. If any delay occurs, a written explanation must be provided along with details of how the samples were preserved during the interim.
- Third, once samples are stored, they must remain sealed and cannot be opened, altered, or re-sealed without prior authorisation from the trial court. This measure is designed to eliminate opportunities for tampering and safeguard the evidentiary chain.
- Finally, a Chain of Custody Register must be maintained throughout the life cycle of the DNA sample—from initial collection through final judicial disposition (either conviction or acquittal). This register must be included in the trial record, and

the investigating officer will be held directly accountable for any breaches or discrepancies in the process.

Judicial Precedents on DNA Evidence

- The Supreme Court has consistently affirmed that while DNA evidence is a powerful tool in criminal investigations, its evidentiary value is entirely dependent on rigorous adherence to scientific and legal standards. In *Anil v. State of Maharashtra* (2014), the Court accepted DNA profiling as valid and reliable, provided laboratory procedures follow strict quality control measures.
- Conversely, in *Manoj v. State of Madhya Pradesh* (2022), the DNA evidence was rejected because the sample had been recovered from an open, unprotected area and was both insufficient and degraded. This raised the possibility of contamination and made the evidence unreliable. Similarly, in *Rahul v. State of Delhi* (2022), DNA evidence was discarded because it remained in police custody for nearly two months without proper sealing or documentation, raising doubts about its authenticity and possible tampering.
- In the *Devakar* case, the Court reiterated that quality assurance outside the laboratory—particularly in the processes of collection, packaging, transportation, and timely submission—is equally crucial. The judgment made it clear that the responsibility for maintaining evidentiary integrity lies not only with forensic scientists but also with police and investigative personnel.

Legal Significance and Limitations of DNA Evidence

- DNA evidence, derived from biological material such as blood, bone, saliva, semen, skin, or hair, plays a vital role in linking a suspect to a crime scene. It provides a high degree of scientific reliability in establishing whether the DNA found at a crime scene matches that of the accused. However, the Supreme Court in *Devakar* clarified that DNA evidence falls under the category of "opinion evidence" as defined under Section 45 of the Indian Evidence Act, which is now Section 39 of the Bharatiya Sakshya Adhiniyam, 2023.
- This classification implies that while DNA can strongly indicate a common biological origin, it is not considered conclusive proof on its own. The probative value of DNA evidence must be assessed in light of the specific facts and circumstances of each case. Thus, DNA evidence must not only be scientifically valid but also legally admissible and procedurally sound to carry weight in a criminal trial.

Conclusion

The Supreme Court's guidelines mark a pivotal step in strengthening the integrity of DNA evidence in India's criminal justice system. By mandating uniform protocols and emphasising chain of custody, the Court has sought to minimise the risks of contamination, mishandling, and wrongful convictions. However, the effectiveness of these reforms depends entirely on their consistent implementation by state police forces and forensic laboratories. Ensuring that these guidelines are followed in letter and spirit will be critical in upholding the fairness, accuracy, and credibility of criminal investigations and trials involving DNA evidence.

Presidential Reference on Governor's Assent to Bills: Federalism, Judicial Oversight, and Constitutional Clarity

Introduction

The Supreme Court of India has reserved its opinion on a Presidential reference made under Article 143(1) of the Constitution, seeking clarity on the powers of the President and Governors in granting or withholding assent to state legislation. This reference follows the Court's April 2025 ruling in which it declared Tamil Nadu Governor R. N. Ravi's delay in granting assent to ten Bills unconstitutional. In that judgment, the Court invoked Article 142 to enforce assent and introduced procedural timelines to avoid indefinite delays. The reference has opened up critical constitutional questions involving federalism, the separation of powers, the Governor's role, and the scope of judicial review.

Nature and Legitimacy of the Reference

- The reference was made under Article 143(1), which empowers the President to consult the Supreme Court on any question of law or fact that is of public

importance. States opposing the reference argue that it effectively serves as an indirect appeal against a binding judgment, violating the principle of *stare decisis*—the legal doctrine that past decisions should guide future ones. They maintain that any review should lie only before the same Bench that delivered the original ruling.

- The Centre, however, has countered that the advisory jurisdiction under Article 143 operates independently of regular appellate procedures. According to the Union government, the provision allows the Court to re-express or clarify constitutional interpretations, even if they have already been adjudicated in previous rulings. Past precedents exist where the Court declined to respond to Presidential references, illustrating the discretionary nature of this jurisdiction.

The Governor's Role: Discretion vs. Popular Mandate

- The debate centres on the extent of a Governor's discretion in the legislative process. The states assert that Governors, under Article 163, are bound to act on the aid and advice of the elected Council of Ministers. Their role is not to exercise personal judgment but to function within the framework of democratic governance that reflects the people's mandate. The Supreme Court, in various earlier rulings, has circumscribed the Governor's authority to prevent executive overreach.
- In contrast, the Centre argues that the Governor is more than a ceremonial figure or a mere conduit for ministerial decisions. Discretionary powers are said to exist in exceptional situations. One such instance was the 2004 Punjab law that attempted to unilaterally annul a river water-sharing agreement involving multiple states. The Supreme Court struck down that legislation in 2016, underlining the need for Governors to exercise judgment in complex federal matters. The Union further pointed to empirical data showing that out of approximately 17,000 Bills passed since 1970, only 20 were withheld by Governors, with over 90% receiving assent within a month—suggesting that discretionary powers are rarely misused.

Veto Powers and the "Pocket Veto" Debate

- The Supreme Court's April 2025 ruling in *State of Tamil Nadu v. Governor of Tamil Nadu* concluded that Governors cannot withhold assent indefinitely, effectively ruling out the practice of a "pocket veto" by inaction. The Court declared that such delays subvert constitutional principles and undermine legislative functioning.
- The Centre has argued that the power to withhold assent results in the Bill lapsing, referencing the Government of India Act, 1935, where initial withholding of assent by the Governor constituted an absolute veto. States rebut this by asserting that India's Constitution deliberately moved away from the colonial framework. Governors were not intended to be successors to the Viceroy with unchecked powers. The omission of similar absolute veto provisions in the Constitution reflects a conscious commitment to democratic norms and accountability.

Timelines and Judicial Enforcement

- To prevent misuse of assent powers, the Supreme Court introduced procedural timelines, mandating that Governors act within a reasonable time frame. The Centre strongly objects to this intervention, arguing that it amounts to a judicial amendment of the Constitution. The Constituent Assembly had explicitly debated and rejected fixed timelines, choosing instead the phrase "as soon as possible" in Article 200 to allow flexibility.
- According to the Centre, resolving such deadlocks should be a matter of political dialogue, not judicial imposition. Courts, it argued, should avoid becoming supervisory authorities or "judicial headmasters" in executive matters. States have pushed back, insisting that "as soon as possible" carries an inherent sense of urgency. They further clarified that the Supreme Court's April 2025 judgment did not establish automatic assent after a deadline, but rather, laid out conditions under which judicial review would become permissible in case of delays.

Writ Jurisdiction and Fundamental Rights

- The Centre has also challenged the very maintainability of writ petitions filed by states under Article 32, arguing that this provision is meant to protect individual fundamental rights and cannot be invoked by state governments. States responded by highlighting the Governor's dual role as a constitutional link between the Union and the states. Denying writ remedies to state governments, they contend, would disturb the federal balance and limit their capacity to challenge constitutional violations.
- Interestingly, even the state of Andhra Pradesh, which is ruled by a party aligned with the Union coalition, has supported the argument that states should be allowed to invoke Article 32 to protect their legislative autonomy and constitutional rights.

Broader Constitutional and Political Implications

- This Presidential reference has evolved into a larger constitutional flashpoint, testing the boundaries between the judiciary and the executive. It has also revealed a court divided across Benches—raising the question of whether the current five-judge Bench will reaffirm or deviate from the two-judge ruling of April 2025.
- The matter holds significant implications for Indian federalism. Several opposition-ruled states have backed the judiciary's assertion of oversight over gubernatorial powers, while the Centre resists this trend, arguing that it infringes upon executive discretion and the constitutional scheme of governance. The underlying issue is whether an unelected Governor can override or delay the legislative will of an elected assembly, thereby affecting democratic accountability and popular sovereignty.

Possible Way Forward

- A long-term resolution to this recurring conflict over gubernatorial powers requires greater constitutional clarity. A clear definition of timelines, along with a codified framework detailing the scope of a Governor's discretion, could prevent future disputes. Such reform would not only curb potential misuse but also reinforce the federal structure envisioned by the Constitution.
- Strengthening institutional coordination among the Centre, states, and Governors is also vital. Instead of relying on judicial mandates to settle executive-legislative disputes, political dialogue and intergovernmental mechanisms should be the primary recourse. At the same time, the judiciary must exercise prudence, respecting the separation of powers while safeguarding constitutional morality and ensuring timely governance.
- In the long run, there may be merit in considering constitutional amendments or the statutory codification of the Governor's functions to remove ambiguities and pre-empt the judicialisation of governance.

Conclusion

The Presidential reference under Article 143(1) presents a pivotal moment in Indian constitutional development. It offers an opportunity to define the limits of gubernatorial authority, clarify the meaning of legislative assent, and strike a balance between federal autonomy and central oversight. At its core, the issue is about how India navigates the evolving tensions between democratic will, constitutional procedure, and the role of judicial interpretation in upholding the integrity of its federal structure.

Supreme Court Case Backlog Reaches Record Levels: A Justice System Under Strain

- India's judiciary is facing an unprecedented crisis of pendency. According to the National Judicial Data Grid (NJDG), the Supreme Court alone has 88,417 pending cases — an all-time high. At the national level, the numbers are even more staggering, with over 4.7 crore cases pending in subordinate courts and more than 63 lakh in High Courts. These figures highlight a systemic problem that undermines access to timely justice, weakens the rule of law, and strains public confidence in the judicial system.
- A key contributor to this crisis is the persistent shortage of judges. As per data from the Ministry of Law and Justice, there are more than 5,600 judicial vacancies

across India. This includes a worrying trend in High Courts, where vacancy rates have surged from 16% in 2006 to 30% in 2024. The situation is compounded by India's low judge-to-population ratio, which stands at approximately 21 judges per million people — starkly lower than the 150 per million in the United States. This shortage severely limits the judiciary's capacity to process the growing volume of litigation.

- A significant portion of this litigation comes from the government itself. Various government departments are responsible for nearly half of all legal cases in Indian courts. This over-litigious posture not only clogs the system but also diverts public resources that could be better used elsewhere. Furthermore, infrastructural and administrative bottlenecks — including the shortage of courtrooms, judicial clerks, and technical support staff — exacerbate delays in the dispensation of justice. The India Justice Report 2022 highlighted how these limitations directly hinder the efficiency of court operations.
- Other procedural inefficiencies also add to the backlog. The absence of mandatory timelines for case resolution, frequent adjournments, and extended court vacations all contribute to prolonged trials. These delays have serious ramifications. At a fundamental level, the principle that "justice delayed is justice denied" holds true. Victims endure prolonged suffering, and the deterrent value of legal punishment is diminished.
- The economic impact of judicial delays is also significant. Businesses and individuals face heightened uncertainty and rising legal costs. India's low score on the "enforcing contracts" parameter in the World Bank's Ease of Doing Business rankings reflects this challenge. Prolonged disputes discourage investment, harm commercial relationships, and reduce economic efficiency.
- Moreover, the ripple effect extends to the prison system. According to the Indian Justice Report 2025, over half of India's prisons are overcrowded. Alarmingly, 76% of the prison population comprises undertrials who are yet to be convicted, many languishing behind bars simply due to case delays. This situation not only violates the principle of presumption of innocence but also imposes heavy costs on the criminal justice system and the state.
- In response, various measures have been proposed and must be expedited. The Law Commission's 120th Report recommends increasing the number of judges to 50 per million population. A significant structural reform in this direction would be the establishment of the All India Judicial Service (AIJS), which could enable uniform recruitment and ensure that subordinate courts operate at full capacity.
- Digital and procedural reforms also hold promise. The e-Courts Mission Mode Project (now in Phase III) seeks to digitise court processes, deploy AI for case management, and reduce procedural bottlenecks. These reforms are crucial for improving transparency, reducing human error, and expediting case flow.
- While these steps are promising, systemic and coordinated efforts are required to reverse the trend of rising judicial pendency. Addressing this issue is not just a matter of administrative efficiency but a prerequisite for upholding justice, economic vitality, and democratic accountability in India.

North East India: From Frontier to Growth Epicentre – A National Vision

- In a recent address, the Prime Minister highlighted the North Eastern Region (NER) not as a peripheral entity but as central to India's growth strategy. Emphasising the transformative potential of the Act East vision, he noted that the region has moved from being a distant frontier to becoming a front-runner in national development. With the Act East Policy as the anchor, the government is actively promoting NER as India's gateway to Southeast Asia, through a multi-sectoral push encompassing infrastructure, digital connectivity,

financial empowerment, and transparent governance.

- Under the Act East Policy, the government has deployed the EAST strategy — Empower, Act, Strengthen, and Transform — to unlock the NER's potential. This vision has translated into significant improvements across connectivity, healthcare, education, and livelihoods. One of the most visible changes has been in physical infrastructure. In railways, the Bairabi–Sairang line has for the first time since independence connected Aizawl, the capital of Mizoram, to the national rail network. Road infrastructure has similarly advanced, with 16,207 kilometres of National Highways completed in the region by July 2025. Key projects like the Thenzawl–Sialsuk Road and Chhimtuipui River Bridge reflect the government's commitment to bridging remote areas.
- Digital and air connectivity have also seen rapid growth. Through initiatives like BharatNet, gram panchayats in remote villages now enjoy high-speed internet, which has been crucial for education, health services, and local governance. Air connectivity under the UDAN scheme has expanded regional air routes, linking previously underserved airports and heliports to the national aviation network, thereby boosting tourism and mobility.
- The financial and institutional architecture to support this transformation is spearheaded by the Ministry of Development of North Eastern Region (MDoNER). Through schemes like PM-DevINE, the government provides dedicated funding for critical infrastructure, communication, and connectivity projects. To further streamline planning and implementation, platforms such as the Poorvottar Vikas Setu (PVS) Portal have been launched, facilitating transparent and real-time monitoring of developmental projects. These mechanisms are designed to make governance faster, efficient, and citizen-centric.
- However, challenges to the region's development persist. Geographical and logistical difficulties, such as rugged terrain and frequent flooding, continue to hinder connectivity. The dependence on the narrow Siliguri Corridor for mainland access poses strategic vulnerabilities. Security concerns remain prevalent, with longstanding insurgencies led by groups like ULFA and NSCN, along with recurring ethnic clashes, such as those witnessed in Assam-Mizoram in 2021 and Manipur in 2023. The porous international borders further exacerbate issues of illegal migration and human trafficking.
- Economically, the region remains reliant on subsistence agriculture, with weak industrialisation and low levels of private investment. These factors contribute to high rates of youth outmigration in search of better opportunities. Social concerns also loom large, particularly in relation to tribal identity and demographic shifts. The debate over the National Register of Citizens (NRC) in Assam is emblematic of broader anxieties over migration and cultural preservation.
- Thus, while the government's focused efforts are gradually reshaping the NER's economic and strategic profile, a long-term and sensitive approach is required to address entrenched socio-political and infrastructural challenges.

Supreme Court Ruling on Anticipatory Bail in Caste Crime Cases

The Supreme Court recently overturned a Bombay High Court order that had granted anticipatory bail in a caste-related offence, in the case of *Kiran vs Rajkumar Jivaraj Jain*. The case involved allegations of caste-based assault, abuse, and intimidation arising from an electoral dispute. The Bench, headed by Chief Justice of India B. R. Gavai, emphasized that under Section 18 of the Scheduled Castes and Scheduled Tribes (Prevention of Atrocities) Act, 1989, anticipatory bail is expressly prohibited when a prima facie case is established.

Overview of the SC/ST (Prevention of Atrocities) Act, 1989

- The SC/ST (Prevention of Atrocities) Act, 1989, was enacted to provide comprehensive protection to members of Scheduled Castes and Scheduled Tribes

from systemic discrimination, violence, and social exclusion. The legislation criminalises a wide array of caste-based atrocities, including verbal abuse, physical violence, land dispossession, economic and social boycotts, denial of access to public amenities, and sexual assault.

- To ensure justice and deterrence, the Act mandates the establishment of special courts for prompt trials, prescribes stringent punishments, and introduces safeguards like victim and witness protection, as well as provisions for relief and rehabilitation. Central to the law is Section 18, which precludes the granting of anticipatory bail to accused persons under the Act. This provision is based on the recognition that victims, often vulnerable and marginalised, face heightened risks of coercion, intimidation, or retaliation if accused persons are allowed pre-arrest bail. Subsequent amendments have further fortified the Act by expanding its scope, improving victim compensation schemes, and increasing accountability among public officials to prevent neglect in addressing caste-based atrocities.

Background of the Case

- The case arose in November 2024, when a member of a Scheduled Caste filed a First Information Report (FIR) alleging that he and his family were attacked and verbally abused with casteist slurs after refusing to vote in line with the accused's instructions during the Assembly elections. The Additional Sessions Judge at Paranda rejected the anticipatory bail plea, noting that the allegations reflected caste-based animus and were supported by corroborative evidence.
- However, the Bombay High Court's Aurangabad Bench later overturned the lower court's decision, granting anticipatory bail to the accused. The High Court characterised the case as politically motivated and inconsistent. This order was subsequently challenged before the Supreme Court.

Bar on Anticipatory Bail under the SC/ST Act

- The Supreme Court reiterated that Section 18 of the SC/ST (Prevention of Atrocities) Act creates an explicit bar on anticipatory bail under Section 438 of the Criminal Procedure Code (now Section 482 of the Bharatiya Nagarik Suraksha Sanhita). This legislative safeguard was specifically introduced to prevent interference with the prosecution process and to protect victims from possible threats or manipulation by the accused.
- The Court drew upon established precedents, including *Ram Krishna Balothia* (1995), *Vilas Pawar* (2012), and *Prathvi Raj Chauhan* (2020), to affirm the constitutional validity of this provision. It underscored that offences under this Act are of a distinct nature, rooted in systemic caste-based discrimination, and that the exclusion of anticipatory bail aligns with Articles 14 and 21 of the Constitution. Importantly, the Court clarified that at the anticipatory bail stage, the judiciary's role is not to delve into a detailed evaluation of evidence or conduct a "mini-trial." Instead, courts must only ascertain whether a prima facie case exists under the Act.
- In the present matter, the use of caste slurs, the nature of the public assault, and the electoral context of the attack were sufficient to bring the offence within the ambit of the Act. Accordingly, the grant of anticipatory bail was impermissible.

Supreme Court's Key Observations

- The Supreme Court made several important clarifications in its judgment. It ruled that insults and assaults that occur outside the complainant's residence, in view of the public, fall within the scope of "public view" as defined under Section 3(1)(r) of the SC/ST Act. Furthermore, it held that targeting a Scheduled Caste individual based on his voting preference constituted an offence under Section 3(1)(o), which penalises electoral coercion or retaliation directed at members of SC/ST communities.
- The Court also found that the prosecution's case was supported by independent witness accounts, the recovery of weapons, and medical

records, all of which reinforced the veracity of the allegations. The High Court's reasoning—dismissing the FIR and calling it politically coloured—was found to be unsustainable. The Supreme Court issued a strong caution to High Courts, warning against assessing the credibility of evidence at the pre-arrest bail stage, which is not the appropriate forum for such an inquiry.\

- Ultimately, the Supreme Court held that the High Court had committed a "manifest error and jurisdictional illegality" in granting anticipatory bail, and therefore set aside its order, reaffirming the statutory bar under the SC/ST Act.

Supreme Court's Interim Stay on Select Provisions of the Waqf (Amendment) Act, 2025

- The Supreme Court of India has passed an interim order staying specific provisions of the Waqf (Amendment) Act, 2025, while refraining from imposing a complete stay on the law as a whole. The Act, enacted in April 2025, introduced far-reaching changes in the management and regulation of Waqf properties, sparking widespread constitutional challenges and public debate.
- The validity of the Waqf (Amendment) Act, 2025, is currently under scrutiny in the Supreme Court following a consolidated group of approximately 65 petitions. These petitions have been filed by various political leaders and organisations, including MPs Asaduddin Owaisi (AIMIM), Mahua Moitra (TMC), Manoj Kumar Jha (RJD), along with parties such as the YSR Congress and CPI. The central claim advanced by the petitioners is that the amended law violates Article 26 of the Indian Constitution, which guarantees religious denominations the right to manage their own religious affairs, and that it infringes upon the autonomy of the Muslim community in the administration of Waqf properties.
- In dealing with the constitutionality of a statute, the Court reiterated the principle established under Article 13(2) of the Constitution — that only the specific provisions of a law that infringe upon fundamental rights can be declared void, not the entire statute. Accordingly, the Court issued a calibrated interim order staying only those provisions that, on a prima facie basis, appeared to be unconstitutional.

Interim Relief Granted by the Supreme Court

- Among the most significant provisions stayed by the Court was **Section 3C**, which vested District Collectors with powers to declare a Waqf property as government land during an inquiry. The Court found this provision to be prima facie arbitrary and in violation of the principle of separation of powers. As an interim safeguard, the Court directed that such properties shall continue to retain their Waqf status during the pendency of the inquiry, that no dispossession shall take place, and that no third-party rights shall be created unless and until the matter is adjudicated by a Waqf Tribunal.
- The Court also addressed concerns over the **composition of Waqf Boards and the Central Waqf Council**, which, under the amended law, permitted a non-Muslim majority. To prevent ambiguity and potential violation of the community's right to religious self-management, the Court issued a direction capping non-Muslim representation: no more than four out of 22 members in the Central Waqf Council, and no more than three out of 11 members in State Waqf Boards, may be non-Muslims.
- Another provision stayed was the **five-year rule requiring that only Muslims who had actively practised Islam for at least five years could create a Waqf**. The Court found this criterion problematic and held that the stay would continue until the government establishes a clear regulatory mechanism for determining religious practice, which is inherently subjective and susceptible to misuse.

Provisions That Were Not Stayed

- Despite strong opposition from petitioners, the Court declined to stay the **abolition of the doctrine of "Waqf by Use"**, which had allowed land that had been used over time for Muslim religious

or charitable purposes to be deemed Waqf even in the absence of formal registration. Petitioners argued that the omission of this principle undermines historical religious usage and community traditions. However, the government countered that this doctrine was being exploited to regularise encroachments on government land. The Court held that it did not find sufficient prima facie grounds to stay this prospective change in law.

- Another contested change was the **applicability of the Limitation Act** to claims involving Waqf properties. Under the earlier 1995 Act, Waqfs were exempt from limitation periods, allowing them to pursue recovery of encroached properties at any time. The 2025 amendment removed this exemption, requiring Waqfs to act within specified legal time limits. The Court endorsed this change, observing that it corrected an imbalance and addressed earlier discriminatory treatment in property litigation.

Broader Legal and Constitutional Concerns

- The case raises deeper issues around the intersection of property rights, religious freedom, and secularism. Notably, the Court's decision to uphold the exclusion of non-Muslims from creating Waqfs goes against historical precedents such as *Motishah v. Abdul Gaffar* (1956), where the Nagpur High Court had recognised the right of non-Muslims to establish Waqfs. Critics argue that such restrictions undermine the broader concept of philanthropic endowments and limit the use of property for secular purposes like schools, hospitals, and public welfare.
- Moreover, the requirement that officials determine whether someone is a "practising Muslim" before permitting the creation of a Waqf introduces the problematic idea of the state acting as arbiter of personal faith — a role that runs counter to the secular ethos of the Constitution. While the Waqf framework faces scrutiny, similar endowment laws for Hindu, Sikh, Buddhist, and Jain communities also contain specific exclusions and regulatory frameworks, raising questions about parity and uniformity in legal treatment.
- Some legal scholars have viewed this as a missed opportunity to move toward a **Uniform Civil Code (UCC)**, which could offer a comprehensive and consistent framework for managing religious endowments across all faiths, thereby reducing religious disparities in law and regulation.

Conclusion

The matter remains sub judice, and the interim stay will persist until the Court delivers a final verdict on the constitutional validity of the Waqf (Amendment) Act, 2025. The case presents a complex and significant test of constitutional values — balancing the religious freedoms guaranteed under Article 26 with the imperatives of secular state oversight and the protection of property rights. The eventual judgment is expected to have far-reaching consequences not only for the governance of Waqf properties, but also for minority rights, religious autonomy, and the principle of separation of powers within India's constitutional framework.

NITI Aayog's 'AI for Viksit Bharat Roadmap': A National Blueprint for AI-Driven Growth

Context and Launch

NITI Aayog has unveiled the 'AI for Viksit Bharat Roadmap' along with the 'Frontier Tech Repository', as part of its Frontier Tech Hub initiative. This strategic roadmap presents a comprehensive national framework to position Artificial Intelligence (AI) as a critical driver for India's economic transformation.

Vision and Objectives

- The roadmap outlines a long-term vision to leverage AI for productivity enhancement, sector-specific adoption, and innovation-led R&D. The central objective is to bridge 30–35% of India's projected growth gap and enable sustained GDP growth of over 8% by 2035. To achieve this, the approach focuses on accelerating AI adoption in high-impact industries, deploying generative AI to transform R&D, and building a robust infrastructure of data, compute power, talent, and governance to enable inclusive growth.
- The roadmap emphasizes AI's transformative potential, estimating that it could contribute $500–600 billion to the national GDP by 2035

through enhanced productivity and operational efficiencies. Sectoral priorities have been clearly defined: banking and manufacturing are projected to derive 20–25% of their GDP from AI, while the pharmaceutical and automotive sectors are seen as ripe for leapfrogging innovation through AI integration.

- India is also positioning itself to become the "Data Capital of the World" by establishing trusted, anonymized data ecosystems. Initiatives like AI Kosh, sectoral data grids, and integration with Digital Public Infrastructure (DPI) such as UPI, Aadhaar, ABHA, and Account Aggregator will facilitate scalable AI deployment.
- The roadmap places significant emphasis on building an AI skilling ecosystem. Proposals include launching an AI Open University, creating AI Chairs at premier institutions, introducing national certification programs, and reskilling the existing workforce to bridge talent gaps. Generative AI is expected to revolutionize R&D, with projections suggesting it could reduce drug discovery timelines by 60–80%, accelerate automotive design validation, and lower innovation costs substantially.
- The accompanying *Frontier Tech Repository* includes over 200 case studies across sectors like agriculture, education, healthcare, and national security, offering practical models for states and districts. Additionally, the *Frontier 50 Initiative* aims to support 50 aspirational districts in deploying frontier technologies to achieve full service saturation. To foster competitive spirit and innovation in governance, the *Impact Awards* will recognize the top three states leveraging technology across governance, health, education, and livelihoods.
- India's demographic edge, particularly its large STEM workforce, positions it well to lead in AI development and global service exports. Combined with the scale and integration of DPI and the creation of AI Kosh backed by a 38,000+ GPU compute network, India could emerge as a global hub for AI R&D. Sectors like manufacturing, pharmaceuticals, and auto components, when AI-enabled, can significantly enhance India's participation in global value chains.
- Furthermore, inclusive AI adoption in agriculture, health, and education is projected to improve public service delivery in rural and underserved areas, addressing long-standing development gaps.

Challenges Hindering AI Scale-Up

- Despite the ambitious vision, several structural and operational challenges remain. There is a marked shortage of high-end AI researchers and professionals trained in applied AI. India's data ecosystem is fragmented, lacking standardized, privacy-compliant, sectoral frameworks for data sharing. Compute infrastructure also presents a bottleneck, with shortages of GPUs and underdeveloped edge-cloud networks.
- Regulatory uncertainty adds to the complexity. Issues such as intellectual property rights for AI-generated drugs and cybersecurity compliance for AI systems remain unresolved. Moreover, the cost barrier may leave out MSMEs and smaller financial institutions, creating an adoption divide that could widen existing inequalities in the tech landscape.

Future Roadmap and Strategic Imperatives

- The path forward requires swift execution of the National AI Mission, coupled with regular performance monitoring. There is a need to develop AI-ready infrastructure, including federated compute networks, industrial parks tailored for AI, and robust data exchanges.
- Large-scale skilling is critical. This includes introducing AI micro-credentials, lifelong learning pathways, and programs to attract top talent from the Indian diaspora. Simultaneously, strong AI governance frameworks must be established to ensure ethical use, explainability, risk management, and consumer protection.
- Public-private partnerships will be vital in scaling innovation. By incentivising collaboration among startups, academia, and industry, India can foster a thriving ecosystem for AI innovation.

Conclusion

The *AI for Viksit Bharat Roadmap* represents an ambitious and forward-looking strategy to place India at the heart of the global AI revolution. If implemented effectively, it holds the potential to bridge economic growth gaps, create millions of high-quality jobs, and catalyze responsible and

inclusive development. However, success will depend on the timely execution of policy measures, the development of governance frameworks, and the scale and speed of national skilling initiatives. India's ability to lead or lag in the AI era will be determined by how well it can align execution with its strategic vision.

NPS to UPS: Government Extends One-Time Switch Option for Central Employees

- The Central Government has extended the one-time window for employees currently under the National Pension System (NPS) to switch to the newly introduced Unified Pension Scheme (UPS), with the deadline now set for September 30, 2025. This option is available to all eligible central government employees who joined service after January 1, 2004. Despite approximately 23.94 lakh employees being eligible for the switch, only around 40,000 have opted for UPS so far.
- To regulate service conditions and related matters for those transitioning to UPS, the Department of Pension and Pensioners' Welfare issued the Central Civil Services (Implementation of the Unified Pension Scheme under the National Pension System) Rules, 2025, on September 2. These rules lay out the operational framework for the UPS and formalize its place within the NPS structure.

Government Allows Recent Joiners to Opt for UPS

- Additionally, the government has allowed central government employees who joined service between April 1 and August 31, 2025, under the NPS, to shift to the UPS. These employees too must exercise this one-time option by September 30, 2025, aligning with the deadline applicable to other eligible employees.
- Importantly, employees who choose UPS will retain the right to revert to NPS at a later date, providing flexibility for individuals to adjust their retirement planning strategies based on changing personal or financial circumstances.
- While those opting for UPS are given a one-time opportunity to return to NPS, this switch comes with conditions. The transition must be completed at least one year before the employee's retirement date or at least three months before voluntary retirement (VRS). Employees facing dismissal, removal, compulsory retirement, or those with pending disciplinary proceedings are barred from making this switch.
- Employees who do not exercise the option to return to NPS will continue under UPS. Those who switch back to NPS will not only receive the usual NPS benefits but also gain an additional 4% differential contribution, offering enhanced flexibility and potentially higher post-retirement returns.

Unified Pension Scheme (UPS): A Middle Ground Between OPS and NPS

- Historically, central government employees appointed before January 1, 2004, were covered under the Old Pension Scheme (OPS), which guaranteed a fixed pension without requiring any employee contribution. Employees joining after this date were placed under the NPS, a market-linked scheme where both the employee and employer contribute, and returns are not guaranteed.
- In response to growing demand for the restoration of OPS, the Union Cabinet approved the Unified Pension Scheme in August 2024 as an optional scheme under NPS. The UPS became available from April 1, 2025, specifically targeting central government employees hired on or after January 1, 2004, who currently fall under the NPS framework.
- Approximately 23 lakh employees are eligible to choose between continuing with NPS or migrating to UPS. The UPS guarantees a pension equal to 50% of the average basic pay received in the 12 months leading up to retirement, contingent upon a minimum of 25 years of government service. In the event of the pensioner's death, the surviving spouse will be entitled to up to 60% of the pension amount being drawn.
- Unlike OPS, where employees made no contributions, UPS mandates contributions from both the employee and employer. This model blends the

security of assured benefits with the discipline of regular contributions.

Comparing UPS and NPS: Key Structural Differences

- The NPS is a mandatory scheme for eligible employees, whereas the UPS is optional, with the government offering a one-time switch and a limited chance to revert. Under NPS, employees contribute 10% of their basic pay plus dearness allowance (DA), while the government contributes 14%. Pension benefits are based solely on the accumulated corpus.
- In contrast, UPS also involves a 10% contribution each from the employee and employer, but includes an additional 8.5% contribution by the government to form a pooled corpus. This corpus funds an assured pension, set at 50% of the average basic pay over the last 12 months before retirement, provided the employee completes at least 25 years of service.
- Furthermore, UPS assures a minimum monthly pension payout of ₹10,000 after 10 years of service—a security not available under NPS. It also provides a lump sum equivalent to one-tenth of the last basic pay plus DA for every six months of completed service, another feature missing from NPS. However, employees who are dismissed from service will not be eligible for UPS benefits.

Why Adoption of UPS Remains Low Despite Extended Deadline

- Despite the extended deadline of September 30, 2025, adoption of the Unified Pension Scheme has been sluggish. Efforts by the Department of Pension and Pensioners' Welfare to raise awareness have had limited impact so far. Many employees continue to favour the Old Pension Scheme, which required no employee contribution and offered a guaranteed pension of 50% of last drawn basic pay plus DA—benefits seen as superior to both NPS and UPS.
- The Central Secretariat Service Forum has openly criticised the NPS and UPS alike, reaffirming its demand for a full-scale return to the Old Pension Scheme. Concerns remain among employees that UPS, while offering more predictability than NPS, still does not match the advantages once guaranteed under OPS, largely due to the mandatory contribution component and conditional eligibility requirements.
- The future success of UPS will likely depend on increased awareness, greater clarity about long-term benefits, and the government's ability to address lingering concerns about financial security and retirement adequacy.

Judicial Experimentalism with Section 498A: A Critical Examination

In the 2025 case of *Shivangi Bansal vs Sahib Bansal*, the Supreme Court upheld the Allahabad High Court's directives mandating a two-month "cooling period" and referral of cases to Family Welfare Committees (FWCs) before any coercive legal action under Section 498A of the Indian Penal Code—now Section 85 of the Bharatiya Nyaya Sanhita (BNS). While the intention behind these directions is to prevent misuse of the provision and foster reconciliation, this move has reignited the debate on judicial experimentalism. Critics argue that such interventions risk delaying access to justice for victims and could bypass established statutory procedures.

Understanding Judicial Experimentalism in the Context of Section 498A

- Judicial experimentalism refers to instances where courts, instead of limiting themselves to interpreting existing laws, proactively devise new remedies, procedural innovations, or institutional frameworks. These experimental directions are often aimed at addressing legislative or administrative gaps and resolving complex socio-legal issues.
- This approach is characterised by three core features: the formulation of innovative remedies not explicitly provided in the statutory framework, judicial encroachment into policy-making—traditionally the domain of the legislature or executive—and a trial-and-error method where judicial directions are open to future modification, dilution, or revocation based on their implementation and impact.
- There are several notable precedents of such judicial initiatives. The *Vishaka*

Guidelines (1997) filled a legislative vacuum on workplace sexual harassment until a statutory law was enacted. Similarly, the *Prakash Singh* case (2006) introduced guidelines for police reform in response to prolonged legislative inaction. In the *Rajesh Sharma* case (2017), the Supreme Court had previously endorsed the formation of FWCs to vet complaints under Section 498A—though these were subsequently struck down in *Social Action Forum for Manav Adhikar vs Union of India* (2018) for being legally untenable.

Section 498A and the Evolution of Judicial Safeguards

- Enacted in 1983, Section 498A was designed to protect married women from cruelty, particularly in the context of dowry-related harassment. However, concerns over its misuse have been raised by the judiciary, especially in light of increasing instances where allegations were found to be false or exaggerated, resulting in arbitrary arrests of husbands and their families.
- Over time, several judicial and legislative safeguards have been introduced to address these concerns. In *Lalita Kumari vs Government of U.P.* (2013), the court permitted preliminary inquiry before the registration of an FIR in matrimonial disputes. The 2008 amendment to the Criminal Procedure Code introduced the principle of necessity for arrest. The landmark ruling in *Arnesh Kumar vs State of Bihar* (2014) laid down specific guidelines, including issuing a "notice of appearance" to avoid unwarranted arrests. Further, *Satender Kumar Antil* (2022) bolstered the rights of the accused by reinforcing bail provisions in cases of wrongful arrest.

The Cooling Period: A Controversial Judicial Innovation

- In 2022, the Allahabad High Court directed that every complaint under Section 498A be referred to a Family Welfare Committee and that no coercive legal action be taken for two months. This initiative aimed to prevent the immediate criminalisation of family disputes and to provide space for potential reconciliation.
- In *Shivangi Bansal vs Sahib Bansal* (2025), the Supreme Court lent judicial legitimacy to this "cooling period" model. The Court effectively institutionalised the two-month delay as a mandatory step before law enforcement or judicial officers could proceed with coercive measures. This endorsement, while rooted in the objective of discouraging frivolous complaints, raises significant legal and constitutional concerns.

Concerns with the Cooling Period Mandate

- One of the primary criticisms is that the cooling period may result in undue delay for victims seeking timely legal intervention. Women facing domestic abuse may be forced to endure continued harassment while being denied immediate recourse to legal protections such as restraining orders or arrests.
- Another concern is the potential jurisdictional overreach. Family Welfare Committees, as envisaged in this model, have no statutory backing under the BNS or CrPC. Their involvement in quasi-judicial functions effectively bypasses the criminal procedure established by law. This issue was central to the Supreme Court's own decision in *Social Action Forum* (2018), which deemed the 2017 FWC mechanism unconstitutional.
- The ruling also invites criticism for undermining the autonomy of law enforcement agencies and judicial officers. By removing their discretion and imposing a blanket procedural pause, the judiciary risks compromising the balance of powers. Furthermore, such judicial innovations may have psychological consequences for victims, particularly if they perceive the delay as institutional apathy or disbelief, potentially leading to mental trauma or a chilling effect on the reporting of genuine cases.

Implications and the Way Forward

- Despite these concerns, the ruling does offer certain positive outcomes. It introduces procedural safeguards that may protect innocent individuals from wrongful arrests and reduce the social

stigma attached to matrimonial criminal proceedings. Moreover, the cooling period creates a structured window for the parties to explore non-adversarial resolutions, thereby potentially reducing the burden on the criminal justice system.

- However, the negative implications are more pressing. Delayed justice undermines the very intent of Section 498A, which was enacted as a protective provision. By mandating reconciliation without the victim's consent, the judiciary may inadvertently perpetuate a system where the victim's autonomy and agency are sidelined. Furthermore, such procedural mandates, not backed by legislative sanction, blur the line between judicial interpretation and judicial lawmaking.
- To strike a fair balance between innovation and the victim's right to justice, certain safeguards must be institutionalised. Any reconciliation or alternative dispute resolution mechanisms must be backed by explicit statutory provisions to ensure legitimacy, transparency, and accountability. Police reforms and sensitisation—particularly adherence to the *Arnesh Kumar* guidelines—can continue to prevent arbitrary arrests without compromising access to justice.
- The creation of fast-track matrimonial courts may address the need for timely resolution without resorting to blanket cooling periods. Importantly, a victim-centric approach must prioritise immediate relief such as shelter, medical aid, and protection orders without delay.

Reassessing Judicial Overreach and Legislative Responsibility

- The Supreme Court must revisit its position in *Shivangi Bansal* in light of its own precedent in *Social Action Forum* to uphold the constitutional guarantee of access to justice under Article 21. The solution lies not in court-created procedural detours but in well-defined legislative frameworks that balance the protection of innocent individuals with the rights of victims.
- Parliament must step in to clarify procedures under Section 85 of the BNS, providing a legally robust and victim-sensitive framework. While encouraging voluntary pre-litigation mediation can be a constructive measure, it should remain an option, not an obligation. Policy decisions must also be data-driven: National Crime Records Bureau (NCRB) statistics already show a declining trend in arrests under Section 498A, suggesting that existing safeguards are proving effective without the need for additional judicially mandated barriers.

Conclusion

Judicial experimentalism, when rooted in the pursuit of justice, can be a valuable tool. However, it must not come at the cost of procedural integrity or constitutional rights. The judiciary must tread carefully, ensuring that innovation enhances rather than obstructs justice. While curbing misuse of Section 498A is essential, the right to timely legal protection remains paramount. Any judicial intervention must be aligned with statutory frameworks and democratic accountability, ensuring that the rule of law remains the guiding principle.

Enforcement Directorate and Narcotics Control Bureau

The **Enforcement Directorate (ED)** has recently reported a **conviction rate exceeding 94%** under the **Prevention of Money Laundering Act (PMLA)** across 53 adjudicated cases. Additionally, the agency has successfully facilitated the return of over **₹34,000 crore** to victims of financial crimes. These figures highlight not just the punitive function of the ED but also its role in restoring financial justice to aggrieved parties.

Significance of High Conviction and Recovery Rates

The high conviction rate under PMLA serves as a strong indicator of the **robustness of the ED's investigative processes** and the effectiveness of the legal framework underpinning money laundering prosecutions. Importantly, the ability to **recover and return significant sums** to victims showcases the ED's role not just in prosecution, but in **victim compensation and asset restitution**, a critical but often overlooked aspect of economic justice.

Challenges Facing the Enforcement Directorate

However, the apparent success is tempered by several persistent challenges:

- **Limited Case Base**: The conviction rate is derived from a relatively small number of completed cases. With a vast backlog still pending, concerns remain over the **overall pace and efficiency** of case disposal.
- **Legal Conflicts**: Procedural overlaps and **jurisdictional conflicts with the Insolvency and Bankruptcy Code (IBC)** create challenges in asset attachment and liquidation, often leading to **delays and legal ambiguity**.
- **Evolving Nature of Crime**: The ED must constantly upgrade its capabilities to tackle **technologically sophisticated financial crimes**, such as **cyber-fraud, online betting**, and digital asset laundering, which demand cutting-edge expertise in forensic finance and cyber law.

About the Enforcement Directorate

Established in **1956**, and headquartered in **New Delhi**, the ED operates under the **Department of Revenue**, Ministry of Finance. It enforces the following key legislations:

- **Prevention of Money Laundering Act, 2002 (PMLA)**: A criminal statute to investigate and prevent money laundering and to seize proceeds of crime.
- **Foreign Exchange Management Act, 1999 (FEMA)**: A civil law focused on foreign exchange regulation compliance.
- **Fugitive Economic Offenders Act, 2018 (FEOA)**: Targets economic offenders who attempt to evade Indian law by staying outside the country's jurisdiction.
- The ED is empowered to conduct **searches, seizures, arrests**, and **prosecutions**, and has the authority to **summon individuals**, ensuring it operates with wide-ranging investigative and enforcement powers.

Drug Trafficking in India: Insights from the NCB Annual Report 2024

- The **Narcotics Control Bureau (NCB)**, operating under the **Ministry of Home Affairs**, is the national agency tasked with combating **drug trafficking and abuse** under the **Narcotic Drugs and Psychotropic Substances (NDPS) Act, 1985**. Its headquarters is also located in **New Delhi**.
- According to the **2024 Annual Report**, India faces increasing challenges due to its **geopolitical location**—situated between two major narcotics-producing zones: the **Death Crescent** (Afghanistan, Pakistan, Iran) and the **Death Triangle** (Myanmar, Thailand, Laos).

Drug Trafficking Landscape in India

India's vulnerability to drug trafficking stems from both **land and maritime routes**:

- **Northern Routes**: States like **Punjab, Rajasthan, and Jammu & Kashmir** are particularly susceptible to heroin trafficking from Pakistan via land borders.
- **North-Eastern Routes**: Proximity to **Myanmar** exposes states like Manipur, Mizoram, and Nagaland to trafficking in methamphetamine and opium.
- **Coastal Smuggling**: Ports and coastlines in **Mumbai, Gujarat, Kerala, and Tamil Nadu** are increasingly being used to smuggle **synthetic drugs and precursors**, facilitated by India's vast coastline.

Emerging Trends in Narcotics Trade

The evolving dynamics of drug trafficking reveal several alarming trends:

- **Shift Toward Synthetic Drugs**: Use and production of drugs like **Methamphetamine, LSD, Mephedrone**, and others are rising sharply.
- **Secret Laboratories**: Clandestine drug manufacturing units have been unearthed in **Maharashtra, Gujarat, Punjab, and the North-Eastern States**.
- **Darknet and Cryptocurrencies**: The use of **anonymised digital platforms** and **cryptocurrency-based transactions** is facilitating cross-border drug sales while making enforcement more complex.
- **Maritime Routes and Drone Use**: Drug shipments via **ports like Chabahar,**

Gwadar, and Karachi, as well as **drones used along the India-Pakistan border**, are the latest tactics employed by traffickers.

India's Counter-Narcotics Initiatives

To address the growing menace, India has launched multiple strategic and technological interventions:

- **Legal Frameworks**: Implementation of the **Prevention of Illicit Traffic in NDPS Act, 1988** enhances cross-border and domestic enforcement capabilities.
- **Technological Tools**: Platforms such as the **National Narcotics Coordination Portal (NCORD)** and **National Integrated Database on Arrested Narco Offenders (NIDAAN)** help centralise intelligence and track offenders.
- **Public Outreach and Helplines**: Campaigns like **Drug-Free India**, the **MANAS helpline**, and school-level awareness drives are integral to demand-side reduction and early intervention.

Strategic Recommendations for Curbing Drug Trafficking

To dismantle drug trafficking networks and adapt to their complex, transnational operations, a multi-layered strategy is essential:

- **State-Level Strategies**: Each state must develop a **dedicated framework** targeting three key layers of narcotic cartels: **entry-level traffickers**, **interstate distributors**, and **local-level peddlers**.
- **Inter-Agency Collaboration**: A joint enforcement mechanism involving the **NCB, CBI, and state police forces** should be institutionalised to bring **fugitives and foreign-based operatives** within reach of Indian law enforcement.
- **Financial Trail Surveillance**: Every state should establish **specialised squads** capable of following the **financial trail**, especially those linked to **hawala operations**, **cryptocurrency transactions**, and **cyber-enabled money flows**.
- **Technology Integration**: Use of **AI, blockchain analytics, and advanced surveillance tools** must be enhanced to monitor darknet activities and drone-enabled cross-border smuggling.

Conclusion

The ED's high conviction and recovery rates under PMLA signal encouraging progress in tackling white-collar financial crime. Simultaneously, the NCB's report underscores the growing sophistication and geographical spread of drug trafficking networks in India.

While both agencies demonstrate increasing effectiveness, they face challenges that require **systemic reforms**, **technological modernisation**, and **inter-agency collaboration**. Ensuring **judicial efficiency**, **statutory alignment**, and **cross-border cooperation** will be essential for sustained success in both financial crime enforcement and narcotics control.

Draft Civil Drone (Promotion and Regulation) Bill, 2025

- The Ministry of Civil Aviation has released the Draft Civil Drone (Promotion and Regulation) Bill, 2025 for public feedback. This proposed legislation aims to provide a more comprehensive legal framework for the regulation and promotion of unmanned aircraft systems (UAS) in India, replacing the earlier Drone Rules, 2021.
- The bill, spearheaded by the Ministry of Civil Aviation with the Directorate General of Civil Aviation (DGCA) as the chief regulatory authority, seeks to ensure the safe, secure, and responsible deployment of drones. It also aims to encourage innovation, expand the drone industry, and facilitate the integration of drones into India's civil airspace. A central goal is to enhance public safety and privacy by introducing stricter compliance mechanisms and more severe penalties for violations.

Key Provisions and Features:

The bill mandates the registration of all drones with a Unique Identification Number (UIN) and requires type certification from the DGCA before manufacturing, selling, or operating any drone. Operators must hold a valid remote pilot certificate. Airspace management will be governed by the "Digital Sky" framework, classifying zones as:

- **Green Zone:** Open for general operations without clearance.

- **Yellow Zone:** Requires Air Traffic Control (ATC) approval.
- **Red Zone:** Demands prior permission from the central government.

In addition, drone operators will be required to have third-party liability insurance. The legislation introduces essential safety mechanisms including anti-tampering features, compliance with airworthiness standards, and traceability systems. Violations attract stringent penalties: imprisonment from 3 months to 3 years, fines up to ₹1 lakh, and the classification of restricted zone breaches as cognisable offences. Enforcement authorities, including DGCA and police, will have the power to confiscate drones, relevant electronic devices, and associated data. In case of accidents, victims are entitled to compensation — ₹2.5 lakh for fatalities and ₹1 lakh for grievous injuries — with claims to be handled through the Motor Accident Claims Tribunal.

Central Information Commission (CIC)

- **Context:** The Central Information Commission (CIC) has once again become headless — the seventh such instance in the past eleven years — following the retirement of Chief Information Commissioner Heeralal Samariya.
- **About the CIC:** The CIC is the apex appellate authority under the Right to Information (RTI) Act, 2005. Established by a central notification on October 12, 2005, under Section 12 of the Act, the CIC plays a critical role in ensuring transparency in governance by adjudicating second appeals and complaints related to public access to information. It is headquartered in New Delhi.
- **Structure and Appointment:** The Commission comprises a Chief Information Commissioner and up to ten Information Commissioners. Appointments are made by a committee led by the Prime Minister, along with the Leader of the Opposition in the Lok Sabha and a Union Cabinet Minister nominated by the PM.
- **Mandate and Powers:** The CIC's responsibilities include hearing second appeals against Central Public Information Officers (CPIOs), handling complaints regarding denial or delay in information, and ensuring public authorities comply with proactive disclosure obligations. It can impose penalties on non-compliant officials and must submit an annual report to Parliament.
- Quasi-judicial in nature, the CIC holds powers to summon witnesses, enforce attendance, collect evidence under oath, and examine public records. It may also issue directives to improve information dissemination systems across government bodies.

Operation Weed Out

- **Context:** The Directorate of Revenue Intelligence (DRI) has seized over 108.67 kg of hydroponic cannabis in just 20 days under its ongoing nationwide crackdown titled "Operation Weed Out."
- **About the Operation:** Launched by the DRI under the Ministry of Finance's Central Board of Indirect Taxes and Customs (CBIC), Operation Weed Out is a targeted anti-drug mission designed to intercept high-potency hydroponic cannabis entering India from Southeast Asia. The operation supports the government's broader Nasha Mukt Bharat Abhiyan (Drug-Free India campaign).
- **Salient Features:** The campaign involves intelligence-based raids across major airports and urban hubs, in close coordination with customs, local police, and airport security. The DRI also investigates financial trails, seizing proceeds from drug trafficking and identifying the masterminds. Legal proceedings are carried out under the stringent provisions of the NDPS Act, 1985.
- **Impact and Importance:** The operation protects public health, especially the youth, by curbing the spread of potent synthetic narcotics. It also plays a vital role in national security by dismantling international drug networks that use India as a trafficking hub, and it disrupts the flow of illicit funds that often fuel organized crime.

Directorate of Revenue Intelligence (DRI): India's Apex Anti-Smuggling Agency

As part of the ongoing **"Operation Weed Out"**, the **Directorate of Revenue Intelligence (DRI)** recently seized **39.2 kg of hydroponic weed** at **Chhatrapati Shivaji Maharaj International Airport, Mumbai**, reinforcing its position as India's leading anti-smuggling agency.

Mandate and Structure

- Established in **1957**, the DRI functions as the **premier intelligence and investigative agency against smuggling** and related economic offences. It operates under the **Central Board of Indirect Taxes and Customs (CBIC)**, which is part of the **Ministry of Finance, Government of India**.
- The agency enforces provisions under the **Customs Act, 1962**, and over **50 other allied laws**, including the **NDPS Act**, **Wildlife Protection Act**, **Arms Act**, **COFEPOSA**, and the **Antiquities and Art Treasures Act**, among others.

Functions and Operations

The DRI is tasked with combating:

- **Drug trafficking**
- **Illicit trade in wildlife and endangered species**
- **Smuggling of gold, arms, and counterfeit currency**
- **Evasion of customs duties and commercial frauds**

The DRI has a **nationwide network of zonal and regional units**, including sub-regional intelligence cells. It collects and analyzes intelligence, supports field operations, maintains seizure statistics, and recommends policy changes to plug legal and procedural loopholes.

DRI also leads **S-CORD**, the **national anti-smuggling coordination centre**, and plays an active role in **international customs cooperation**, under **Customs Mutual Assistance Agreements** with over 60 countries, focusing on intelligence-sharing and adopting best practices.

Electronic Voting Machines (EVMs) to Feature Colour Photographs for Greater Clarity

The Election Commission of India (ECI) has updated the guidelines for Electronic Voting Machine (EVM) ballot papers under Rule 49B of the Conduct of Election Rules, 1961. Starting with the Bihar Assembly elections, ballot papers on EVMs will now feature colour photographs of candidates, larger serial numbers, and a cleaner layout to enhance voter clarity.

Objective and Scope of the Reform

- This initiative is intended to improve the transparency and user-friendliness of the voting process. The inclusion of colour photos aims to minimize voter confusion, especially in constituencies with multiple candidates having similar names or symbols. The reform aligns with the ECI's commitment to conducting free and fair elections.
- Chief Electoral Officers (CEOs) across all States and Union Territories have been directed to adopt the new format. Printing will primarily occur at government or semi-government presses, with private facilities allowed only under strict safety protocols when necessary.
- The redesigned ballot paper includes candidate photos occupying 75% of their allocated space for better visibility. Serial numbers, including that of the NOTA option, will be printed in bold international numerals (size 30). Pink paper with standardized RGB values will be used for Assembly elections. Each sheet will accommodate a maximum of 15 candidates, with unused space left blank if the number of candidates is fewer. Names will be printed in a uniform bold font for ease of reading.
- The reform enhances the voting experience, particularly for first-time voters, the elderly, and visually challenged individuals. It also boosts electoral transparency by reducing the risk of impersonation or mistaken identity, thereby reinforcing public trust in democratic processes.

SC Guidelines vs Adani Gag Order: Free Speech, Defamation, and the Legal Debate Over Prior Restraint

In a recent and controversial development, a lower court issued a far-reaching *ex parte* gag order against several journalists, notably including Paranjoy Guha Thakurta, prohibiting them from publishing any allegedly defamatory content related to Adani Enterprises Limited (AEL). The order extended further, directing the

removal of a significant volume of online content—articles and social media posts alike. Acting on this directive, the Ministry of Information and Broadcasting issued takedown notices, which led to the removal of 138 YouTube videos and 83 Instagram posts. Notably, some of the removed content included satirical takes and indirect references to Adani, raising serious concerns about overreach and the suppression of legitimate speech.

Supreme Court Guidelines on Defamation Injunctions: The Legal Framework

- The Supreme Court of India has consistently adhered to the legal principle established in the *Bonnard v. Perryman* case (1891), commonly referred to as the Bonnard standard. According to this principle, courts should issue an injunction in defamation cases only when it is evident that the defendant will not be able to justify the allegedly defamatory statement. Merely suspecting defamation is not sufficient to warrant such a restriction.
- This principle was reaffirmed in the Supreme Court's 2024 ruling in the *Bloomberg-Zee* case. In that instance, the Court overturned an *ex parte* injunction which had directed Bloomberg to remove an article about Zee Entertainment. The Court stressed that pre-trial injunctions in matters concerning free speech should be granted only in exceptional situations—specifically, when denying such an injunction would result in a greater injustice. The ruling made it clear that the default position must favour freedom of expression.
- Additionally, the Court has expressed strong reservations about issuing *ex parte* orders in cases that involve restrictions on speech. Such orders, the Court noted, should be granted only when the contested content is clearly "malicious" or "palpably false." In the absence of such clarity, pre-publication bans may suppress legitimate criticism and obstruct the public's right to access information, thereby posing a serious threat to democratic discourse.

The Adani Gag Order: A Legal and Constitutional Challenge

- On September 6, 2024, a Delhi court issued a blanket gag order against Paranjoy Guha Thakurta and other journalists, restraining them from publishing any content related to AEL and ordering existing material to be taken down within 36 hours. This order raised multiple legal and constitutional concerns.
- Crucially, there was no judicial examination of the allegedly defamatory material prior to the issuance of the order. This omission effectively gave AEL unchecked authority to control and sanitize public discourse about itself. Furthermore, the order prohibited the publication of "unverified or defamatory" reports, effectively constituting *prior restraint*—a concept that is fundamentally at odds with the right to free speech guaranteed under Article 19(1)(a) of the Indian Constitution.

Why Prior Restraint is Legally Contentious

- While Article 19(2) of the Constitution permits reasonable restrictions on free speech on specific grounds—such as national security, public order, decency, morality, and defamation—*prior restraint* is treated with particular scepticism in Indian jurisprudence. The burden of proof in such cases is exceptionally high. Courts have long held that pre-publication bans are rarely justified and must be considered only under extraordinary circumstances.
- Moreover, in any defamation case, journalists must be given an opportunity to defend their content. Truth, public interest, and fair comment are well-established defences in defamation law. Denying the accused a hearing before ordering content removal not only violates principles of natural justice but also undermines the legal rights of both the press and the public.

Delhi Court's Reversal: A Partial Correction

Subsequently, a District Judge in Delhi quashed the gag order in relation to four journalists—Ravi Nair, Abir Dasgupta, Ayaskant Das, and Ayush Joshi—on the grounds that the initial order was legally unsustainable. The court underscored that the journalists had not been given an opportunity

to be heard, thereby violating the fundamental principle of natural justice.

The judgment stressed the irreversible damage that can result from prematurely removing content, especially if the material is later found not to be defamatory. It pointed out that restoring such content retroactively would be practically infeasible, further emphasizing the need for caution in issuing sweeping takedown orders.

Key Takeaways from the Ruling

- The District Judge ruled that the original gag order was *ex parte* and, therefore, procedurally flawed. An *ex parte* order—passed without hearing the opposing party—is generally granted only in urgent circumstances requiring temporary relief, such as restraining orders meant to prevent immediate harm. However, in cases involving speech, such urgency must be balanced against the fundamental right to a fair hearing.
- The court reaffirmed that before issuing blanket takedown orders, it is essential to allow the accused parties an opportunity to present their defence. The judgment also served as a caution against the irreversible consequences that may arise from hasty censorship, especially in cases where the content may ultimately be deemed non-defamatory.
- While the ruling narrowed the scope of the original gag order, it did not address related pending appeals or the main defamation trial. Thus, the broader legal battle over speech, defamation, and corporate influence remains ongoing.

Conclusion: Balancing Free Speech and Reputation in the Digital Age

- The controversy surrounding the Adani gag order reflects a deeper tension between the constitutional guarantee of free speech and the protection of individual or corporate reputations. Although defamation laws serve an important function in preserving dignity and truth, their misuse—particularly through *ex parte* injunctions—can lead to disproportionate suppression of speech.
- The Supreme Court's evolving jurisprudence on the matter, especially its reliance on the Bonnard standard and its caution against pre-trial censorship, highlights the judiciary's growing recognition of this delicate balance. The partial reversal by the Delhi court marks a corrective step, reaffirming that procedural fairness and the right to be heard are indispensable when adjudicating matters that impact the public's right to know.
- As the remaining proceedings unfold, the case is likely to shape future discourse on defamation, prior restraint, and the permissible limits of corporate power over media narratives in India's democratic framework.

Moran Community's Push for Scheduled Tribe Status

- The Moran community, a lesser-known ethnic group mainly residing in Assam's Tinsukia district and parts of Arunachal Pradesh, is intensifying its demand for recognition as a Scheduled Tribe (ST). Historically, the Morans are believed to have had an independent kingdom at Bengmara—modern-day Tinsukia—before the arrival of the Ahoms.
- Linguistically, the Morans originally spoke a dialect derived from the Bodo group within the Tibeto-Burman language family. However, over time, they transitioned to using Assamese as their primary language. Religiously, the community now largely follows the Vaishnava tradition and belongs to the Moamoria sect, a conversion attributed to the influence of Sri Aniruddha Deva, a disciple of the Bhakti saint Sri Sankara Deva. Before adopting Vaishnavism, they followed the Shakta faith and were affiliated with the Kechaikhati Than, a shrine dedicated to the worship of the mother goddess.
- Culturally, the Moran community celebrates unique festivals such as *Gasar Talar Bihu*, a form of Bihu dance performed under a tree, and *Kheri*, reflecting their distinct identity and heritage.

SLAPP: Strategic Lawsuits Against Public Participation

- More than a year prior to a civil court imposing an ex-parte injunction against journalists in a case involving Adani Enterprises, the Supreme Court of India had already raised concerns over the growing misuse of the judicial process to stifle public discourse through Strategic Lawsuits Against Public Participation (SLAPP).
- SLAPP suits are frivolous legal cases intended not to win on merit but to burden critics—especially journalists, activists, NGOs, artists, and researchers—with prolonged litigation. These lawsuits are commonly used by powerful individuals or corporate entities to silence opposition, deter public accountability, and drain the financial and emotional resources of those engaging in public-interest advocacy.
- Typically filed under vague legal provisions, SLAPPs rely on exaggerated damage claims and smear tactics to overwhelm defendants, exploiting the disparity in financial and legal power between the parties. While countries such as the United States, Canada, and the United Kingdom have passed anti-SLAPP laws that allow early dismissal and compensation for the targeted party, India lacks a dedicated anti-SLAPP framework. Courts must instead depend on the general civil procedure and constitutional protections. The Supreme Court has reiterated the importance of safeguarding journalistic freedoms and warned against the misuse of defamation laws to undermine free expression.

20 Years of the Protection of Women from Domestic Violence Act, 2005

- As the Protection of Women from Domestic Violence Act (PWDVA) completes 20 years since its enactment, it remains one of India's most crucial legal tools for safeguarding women in intimate and familial relationships. The Act is designed to provide protection to wives or female live-in partners from abuse by husbands or male partners and their relatives.
- According to the "Crime in India 2022" report by the National Crime Records Bureau (NCRB), India registered approximately 4.45 lakh cases of crimes against women, with the majority involving cruelty by husbands or their relatives—an issue directly addressed by the PWDVA. The law defines domestic violence comprehensively to include not only physical and sexual abuse but also verbal, emotional, and economic abuse. It also criminalizes harassment linked to unlawful dowry demands.
- The Act mandates a robust institutional mechanism for enforcement. State governments are required to appoint Protection Officers, register Service Providers, and designate shelter homes and medical facilities. Protection Officers are responsible for assisting victims in filing domestic incident reports with Magistrates, facilitating legal aid, and ensuring access to safe shelters. Service Providers extend legal, medical, and financial assistance.
- The Act entitles aggrieved women to a wide range of legal remedies including protection orders, residence orders, custody of children, monetary relief, and access to medical and shelter facilities. Importantly, it upholds a woman's right to reside in the shared household, regardless of her legal title or ownership.
- However, several challenges persist. Deep-rooted social and cultural barriers—such as victim-blaming and economic dependence—deter many women from seeking redress. Structural shortcomings include inadequate shelter infrastructure, low conviction rates, and limited awareness of the law. Institutional gaps, such as the undertraining of police and Protection Officers, further reduce the effectiveness of the Act. Additionally, concerns have been raised about the misuse of the legislation in a growing number of false or exaggerated complaints, which complicate genuine grievance redressal.

National Maritime Heritage Complex (NMHC): Showcasing India's Seafaring Legacy

- The Prime Minister is scheduled to review the progress of the National Maritime Heritage Complex (NMHC), currently under development in Lothal, Gujarat—a site of immense archaeological and historical significance from the Indus Valley Civilization.
- The NMHC, a flagship project under the Sagarmala Programme, aims to chronicle India's 5,000-year-old maritime history. Lothal, being the only known port city of the Indus Valley era, houses the world's oldest man-made dockyard, making it an apt location for the complex.
- Spread over 400 acres with an estimated budget of ₹4,500 crore, the NMHC will feature museums, thematic galleries, a recreated Lothal city, and a maritime institute. Phase 1 includes Indian Navy and Coast Guard galleries and a lighthouse museum, projected to be the tallest in the world.
- The Indian Ports Association and Indian Port Rail Corporation Ltd. are responsible for implementation. Funded through grants and future contributions, NMHC aims to become a global heritage destination showcasing India's maritime prowess through immersive digital experiences and infrastructure.

WAVES Bazaar 2.0 – Empowering Digital Content Creators

The Information and Broadcasting (I&B) Ministry has launched the second phase of **WAVES Bazaar**, a digital content marketplace aimed at empowering Indian creators and enhancing their global presence. This new phase introduces advanced features such as **AI-driven matchmaking**, **online pitching sessions**, and **secure viewing rooms**, underscoring the government's commitment to making India a global content powerhouse.

Introduction

India's media and entertainment sector is in the midst of a significant transformation, propelled by rapid digitisation, increased global collaboration, and the rising influence of independent content creators. In response to these shifts, the I&B Ministry launched **WAVES Bazaar** in January 2025 as a **hybrid content marketplace** designed to connect various stakeholders in the creative economy. Now entering its second phase, the platform brings in enhanced digital tools to further empower creators and position India more prominently on the global content stage.

About WAVES Bazaar

- **WAVES Bazaar** is a government-backed initiative that serves as a comprehensive digital platform linking **content creators, investors, production houses, OTT platforms, distributors, and financiers**. It spans a wide spectrum of media formats, including **films, television, animation, gaming, music, advertising, sound design, radio, and podcasts**.
- Since its inception, the platform has made significant progress: It has successfully onboarded more than **6,000 creators and sellers** along with **5,500 buyers and companies**. Over **2,000 projects** have gone live, and the inaugural summit in Mumbai alone generated more than **₹1,300 crore** in business leads. Furthermore, international editions in **Toronto and Melbourne** facilitated investment discussions valued at **₹100 crore**, attracting delegations and buyers from over **40 countries**.

Key Features in the Second Phase

The second phase of WAVES Bazaar introduces a suite of new features designed to streamline collaboration and enhance global visibility for Indian content.

1. **Online Pitching and Secure Viewing Rooms:** Emerging creators can now present their projects directly to investors, OTT platforms, and production houses through structured online pitching sessions. In addition, secure viewing rooms provide a safe and transparent environment for buyers to preview creative works, promoting trust and protecting intellectual property.
2. **AI-Driven Matchmaking:** An AI-powered recommendation engine will match creators with relevant financiers, production houses, and distributors. The system also assists in **automated profile creation, project profiling, and pitch deck enhancement**, enabling creators to optimise visibility and engagement opportunities.

3. **Knowledge and Skill Development:** A dedicated knowledge hub offers **webinars and masterclasses** conducted by industry experts. AI tools will provide personalised suggestions to improve creators' project portfolios, while an integrated scoring system will aid buyers in making more informed decisions.
4. **Global Outreach and Co-Production Opportunities:** WAVES Bazaar aims to expand its international footprint through participation in global events and trade delegations. The initiative also supports the strengthening of **co-production treaties**, offering Indian creators access to wider markets and collaborative opportunities across borders.

Significance for India's Creative Economy

- WAVES Bazaar 2.0 is poised to play a transformative role in India's digital cultural economy. It is designed to **democratise content creation**, giving smaller and independent creators access to the same resources and opportunities as established industry players. By enhancing India's presence in **international festivals, co-productions**, and digital marketplaces, the platform is key to positioning the country as a **global content hub**.
- Moreover, WAVES Bazaar goes beyond traditional cinema, actively encouraging innovation in **music, animation, gaming, and short-form content**, thereby attracting diverse investments and laying the groundwork for **sustainable, long-term collaborations**. It aligns with the government's broader strategic vision of strengthening India's **soft power** and boosting **creative exports**.

Challenges and Future Outlook

- Despite the strong foundation and promising advancements, the continued success of WAVES Bazaar will hinge on several critical factors. These include maintaining **robust data security** and **intellectual property protection** within the viewing rooms, expanding **digital access for regional creators** who often face infrastructural limitations, and nurturing **long-term international partnerships** beyond initial engagements.
- Looking ahead, WAVES Bazaar has the potential to evolve into a **centralised gateway for Indian creative exports**, offering a holistic ecosystem that combines **visibility, monetisation, mentorship**, and **global collaboration**. If its current trajectory is sustained, it could redefine how Indian content is developed, distributed, and consumed on the world stage.

Rising Public Debt of States – A Decadal Analysis by the Comptroller and Auditor General (CAG)

The Comptroller and Auditor General of India (CAG) has released a first-of-its-kind decadal report covering the fiscal years from 2013-14 to 2022-23. This comprehensive analysis evaluates the fiscal health of Indian states, revealing a steep and concerning rise in public debt. The report underscores the implications of this trend for the long-term sustainability of state finances.

Understanding Public Debt

- Public debt arises when a government's total expenditure surpasses its revenues generated through taxes and other sources, thereby necessitating borrowing from domestic and international financial markets. In the Indian context, public debt comprises all liabilities of the government that are financed through the Consolidated Fund of India or, in the case of state governments, the Consolidated Fund of the State.
- Public debt can be broadly classified into internal and external debt. Internal debt is further categorized into marketable and non-marketable securities. Marketable securities include instruments such as government securities (G-secs) and Treasury Bills (T-Bills), which are issued via auctions. Non-marketable securities consist of instruments like Treasury Bills issued specifically to state governments and special securities for funds such as the National Small Savings Fund.

Debt-to-GDP and Debt-to-GSDP Ratios

- The **Debt-to-Gross Domestic Product (GDP)** ratio and its state-level counterpart, the **Debt-to-Gross State**

Domestic Product (GSDP) ratio, are vital indicators used to assess a government's ability to service and repay its debt. A higher ratio signals elevated fiscal risk and potential instability, whereas a lower ratio suggests stronger financial resilience and a greater capacity to manage debt responsibly.

- These ratios are integral to maintaining prudent fiscal management. Evaluating the nature of fiscal deficits—whether they are used for creating capital assets or are directed toward non-asset generating expenditures such as subsidies—is crucial for assessing the long-term impact of debt.

The **N.K. Singh Committee**, constituted in 2016 to review the Fiscal Responsibility and Budget Management (FRBM) Act of 2003, recommended the following thresholds for debt sustainability:

- 40% of GDP for the central government
- 20% of GSDP for state governments These recommendations aim for a consolidated general government debt-to-GDP ratio of 60%.

Growth in States' Public Debt

- The total public debt of Indian states, comprising both internal debt and loans or advances from the central government, witnessed a significant increase over the last decade. It surged from ₹17.57 lakh crore in 2013-14 to ₹59.60 lakh crore by 2022-23—a rise of 3.39 times. Correspondingly, the **debt-to-GSDP ratio** rose from 16.66% in 2013-14 to 22.96% in 2022-23.
- In FY 2022-23, the total debt of states accounted for 22.17% of India's national GDP, indicating the considerable scale of sub-national borrowings and their impact on overall economic stability.

Inter-State Variations in Debt Burden

A wide disparity exists among Indian states regarding their debt-to-GSDP ratios. Punjab recorded the highest ratio at 40.35%, followed by Nagaland at 37.15% and West Bengal at 33.70%. On the lower end, Odisha maintained a notably low ratio of 8.45%, while Maharashtra and Gujarat reported 14.64% and 16.37%, respectively.

As of 31st March 2023:

- Eight states had public debt liabilities exceeding 30% of their GSDP.
- Six states maintained public debt levels below 20% of their GSDP.
- Fourteen states had debt liabilities ranging between 20% and 30% of their respective GSDP.

Primary Sources of States' Public Debt

States primarily finance their deficits through a variety of borrowing channels, which include:

- Market borrowings via government securities, treasury bills, and bonds.
- Loans from commercial banks such as the State Bank of India (SBI).
- Ways and Means Advances (WMA) provided by the Reserve Bank of India (RBI).
- Loans from financial institutions like the Life Insurance Corporation of India (LIC) and the National Bank for Agriculture and Rural Development (NABARD).
- Direct loans from the central government—for instance, back-to-back loans for compensating GST revenue shortfalls or special assistance extended during the COVID-19 crisis.

Debt Sustainability Indicators

The sustainability of state-level public debt is assessed through several financial indicators:

- **Debt as a percentage of revenue receipts** varied significantly, ranging from 128% in 2014-15 to a peak of 191% in 2020-21.
- **Debt as a percentage of non-debt receipts** was similarly elevated, fluctuating between 127% and 190% across the decade.

On average, the total public debt of states has amounted to nearly 150% of their revenue receipts and non-debt receipts. When assessed against GSDP, this debt has ranged between 17% and 25%, with 20% being a commonly observed figure. The sharp increase in the debt-to-GSDP ratio from 21% in FY 2019-20 to 25% in FY 2020-21 is largely attributed to the economic contraction during the COVID-19 pandemic, which caused a fall in GSDP while borrowing remained elevated.

Concerns in Fiscal Management

- A foundational principle of sound fiscal policy, often referred to as the **"Golden Rule of Borrowing,"** dictates that debt

should be used to finance capital (productive) expenditure rather than revenue (consumptive) expenditure.

- However, this rule has been frequently violated. Eleven states—including Andhra Pradesh, Punjab, West Bengal, and Kerala—used borrowed funds to meet routine, non-asset-generating expenses. For instance, Andhra Pradesh allocated merely 17% of its borrowings towards capital outlay, while Punjab allocated just 26%.
- Such practices introduce substantial fiscal risks. The structural shifts introduced by GST compensation loans and emergency borrowing during COVID-19 have significantly impacted the debt profiles of states. These unsustainable fiscal behaviors could lead to reduced investment in productive areas, potential debt traps, and may eventually jeopardize macroeconomic stability. They also risk increasing tensions in Centre-State fiscal relations.

Way Forward

To address rising concerns over debt sustainability, the report suggests a multipronged strategy:

- States must exercise fiscal discipline by ensuring that borrowings are directed towards productive capital formation rather than routine revenue spending. A more comprehensive debt management framework is essential. The establishment of a **Public Debt Management Agency (PDMA)**, as proposed in the 2015 Union Budget, would support this by improving transparency, enabling better monitoring, and facilitating structured debt restructuring.
- States should also aim to strengthen their financial positions by diversifying revenue streams, improving tax buoyancy, rationalizing subsidies, and reducing their overdependence on central transfers. Strict adherence to the principles and targets set out under the **FRBM Act** would also promote fiscal prudence.
- Finally, institutional oversight needs to be strengthened. Empowering state finance commissions and enhancing the role of the CAG would support the long-term objective of ensuring **sustainable fiscal federalism**.

CAG Deploys AI-Driven Audits to Uncover Fraud in State Schemes

- K Sanjay Murthy, the Comptroller and Auditor General (CAG) of India, recently announced that the use of Artificial Intelligence (AI) and Machine Learning (ML) in forensic audits has revealed numerous instances of fraud across state-level beneficiary schemes. These advanced digital tools are proving instrumental in curbing the misuse of public funds and can lead to significant cost savings for state governments.
- Addressing the second State Finance Secretaries Conference, the CAG emphasized that AI-powered remote audits offer a powerful mechanism not only for detecting financial irregularities but also for identifying tampering in electronic documentation. These capabilities mark a shift toward more proactive and technology-enabled public sector auditing.
- Remote audits have already been effectively deployed in areas such as Goods and Services Tax (GST), stamp duty and registration, electronic procurement (e-procurement), public works, and Direct Benefit Transfer (DBT) schemes. Building on this success, the CAG aims to extend remote auditing practices to all government departments with digitised records, thereby broadening the scope and impact of digital oversight.

Digitisation of Financial Management Systems in States

Several state governments have made notable progress in adopting digital tools for improved public financial management. Key digital platforms include:

- **Integrated Financial Management Information System (IFMIS)**: A web-based platform that automates various financial processes, including budgeting, accounting, payments, and reporting for government entities. IFMIS enhances coordination and accuracy in public finance operations.

- **Works and Accounts Management Information System (WAMIS)**: Developed by the Centre for Development of Advanced Computing (C-DAC), WAMIS is a comprehensive digital platform for overseeing the entire life cycle of government construction projects—from planning and execution to completion. It allows for real-time tracking of financial transactions linked to project milestones and physical progress.
- **Government e-Procurement System (GePNIC)**: Designed by the National Informatics Centre (NIC), GePNIC is used across government departments for managing the complete procurement process for goods, services, and infrastructure works in a transparent and standardized manner.
- **e-Voucher Systems**: These systems support digital documentation and validation of public expenditure, promoting greater accountability.
- **Digital India Land Records Modernisation Programme (DILRMP)**: A central government initiative to digitize and modernize land records and registration processes nationwide, thereby increasing transparency and reducing disputes.

While these digital platforms have enhanced financial operations and improved the finalisation of Monthly Civil Accounts, the maturity and implementation levels of these systems continue to vary significantly across different states.

Need for Deeper Audit Coverage and Urban Financial Governance

The CAG also highlighted the pressing need to audit Urban Local Bodies (ULBs) and Panchayati Raj Institutions (PRIs) more rigorously, especially in light of the significant economic contributions made by India's urban centers. About 15 major cities are responsible for more than half of the country's GDP. Cities such as Mumbai, Delhi, Bengaluru, Chennai, and Hyderabad alone account for 30% of India's GDP. By improving governance and operational efficiencies in these cities, India could potentially add an additional 1.5% to its annual GDP growth.

Strengthening Financial Infrastructure Through Digital Initiatives

To support efficient fund utilization and robust fiscal management, the government is promoting several IT-driven initiatives:

- **SNA SPARSH**: This is a modern cash management system built around the Single Nodal Account (SNA) framework for Centrally Sponsored Schemes (CSS). It ensures "just-in-time" fund releases by integrating the Public Financial Management System (PFMS), State IFMIS platforms, and the Reserve Bank of India's e-Kuber payment system. This integration promotes better transparency, real-time fund tracking, and greater accountability in the flow of public funds.
- **Special Assistance to States for Capital Investment**: This scheme aims to enhance states' capacity for infrastructure development by supporting the creation of IT-based financial management systems. It complements digitisation efforts by helping states build resilient financial infrastructure that aligns with national goals.

Registered Unrecognised Political Parties (RUPPs): Recent De-listing and Regulatory Framework

- In a recent move, the Election Commission of India (ECI) de-listed 474 Registered Unrecognised Political Parties (RUPPs) for non-compliance with election norms, including their failure to contest elections over the past six years.
- RUPPs are political parties that are either newly registered or have not yet garnered a sufficient percentage of votes in assembly or general elections to qualify as a recognised state party. Some have never even contested an election since their registration. Despite lacking formal recognition, these parties enjoy several benefits such as tax exemption under Section 13A of the Income Tax Act, 1961, eligibility to obtain common poll symbols upon providing an undertaking to field at least 5% of the total candidates in a state legislative assembly election, and the ability to nominate up to 20 star campaigners for election canvassing.
- However, RUPPs are obligated to periodically contest elections, file audited

annual accounts and contribution reports, disclose donations exceeding ₹20,000, and refrain from accepting cash donations above ₹2,000.

- Political parties in India register under Section 29A of the Representation of the People Act (RPA), 1951. Registered parties enjoy benefits such as voluntary contributions from individuals and companies (excluding government-owned firms), preferential allotment of election symbols to their candidates, and tax exemptions for donations under Section 13A of the Income Tax Act.
- According to the registration guidelines, if a party fails to contest elections for six consecutive years, it is liable to be removed from the list of registered parties. Over time, registered parties can gain recognition as state or national parties, subject to meeting criteria defined under the Election Symbols (Reservation and Allotment) Order, 1968.
- Recognised parties are entitled to reserve and exclusively use a symbol, while unrecognised parties must choose from a pool of free symbols. Recognition also provides additional privileges such as free broadcast time on Doordarshan and All India Radio, greater campaign expenditure allowances, and complimentary electoral rolls.
- To be recognised as a **state party**, a political party must either win 3% of seats in the Legislative Assembly, win one Lok Sabha seat for every 25 allocated in the state, or secure at least 6% of the vote share along with one Lok Sabha or two Assembly seats. Alternatively, obtaining 8% of the vote in the state also qualifies.
- To be recognised as a **national party**, a party must secure 6% of votes in at least four states and win at least four Lok Sabha seats, or hold at least 2% of all Lok Sabha seats with elected representatives from at least three states, or be recognised as a state party in at least four states. Both state and national parties must maintain their status in every subsequent general or assembly election, or risk losing recognition.

Kurmi Community: Renewed Agitation for ST Status and Linguistic Recognition

- Members of the **Kurmi community** in Jharkhand have launched a rail blockade, defying prohibitory orders, to demand **Scheduled Tribe (ST) status** and the inclusion of the **Kurmali language** in the **Eighth Schedule** of the Constitution.
- The Kurmis, also known as Kunbis in some regions, are traditionally a Hindu agrarian caste predominantly residing in the Indo-Gangetic plains, especially in southern Awadh, eastern Uttar Pradesh, and parts of Bihar. The name "Kurmi" is believed to originate from the Sanskrit word *Krishi*, meaning agriculture. Historical accounts suggest that the Kurmis descended from Kshatriya warriors who eventually turned to farming.
- The community is organised into various sub-groups or **gotras**, such as Chandel, Chauhan, Solanki, Tomar, Baghel, and Sengar. Known for their efficient agricultural techniques and gender-neutral social norms, the Kurmis earned high regard during Mughal and British colonial rule.
- Today, Kurmis are listed under the **Other Backward Class (OBC)** category in most Indian states. However, a section of the community strongly believes in its tribal roots and continues to push for ST recognition. Their demands also include constitutional acknowledgment of the **Kurmali language**, which is part of the Indo-Aryan linguistic family and widely spoken across Bihar, Jharkhand, and Odisha.

Supreme Court Ruling on Anand Marriage Act: Sikh Marriage Rights and the Broader Legal Debate

The Supreme Court of India has issued a directive to 17 states and eight Union Territories, mandating them to formulate rules within four months for the registration of Sikh marriages under the Anand Marriage Act, 1909. Until such rules are established, marriages solemnised through the Sikh religious ceremony, Anand Karaj, must continue to be registered under existing general marriage laws. The Court's order seeks to

create uniform legal recognition of Sikh marriages throughout the country. However, while the ruling addresses the procedural lapse of non-registration, it has also drawn criticism. Legal scholars and community advocates argue that the order fails to confront deeper inadequacies within the Act itself, leaving several substantive issues unaddressed.

Anand Marriage Act and the 2012 Amendment

- Anand Karaj, translated as "blissful union," is the traditional Sikh marriage ceremony performed in the presence of the Guru Granth Sahib. During the ceremony, the couple circles the Guru Granth Sahib four times while sacred hymns, or *laavan*, composed by Guru Ram Das—the fourth Sikh Guru—are recited. These verses spiritually outline the path of a married couple's life together. In recognition of this distinct ritual, the Anand Marriage Act was enacted in 1909 to legally validate Sikh marriages and differentiate them from Hindu customs.
- However, the original Act did not include any provisions for the registration of these marriages. This gap remained unaddressed for over a century, until the Anand Marriage (Amendment) Act, 2012 introduced Section 6, which obligates states to establish rules for registering marriages conducted under the Act. Once a marriage is registered under the Anand Marriage Act, the couple is exempt from registering under any other marriage law.

State Inaction and the Supreme Court's Directive

- Despite the 2012 Amendment, the majority of states and Union Territories failed to implement the necessary rules for registration, effectively depriving Sikh couples of legal documentation vital for civil purposes such as residence status, maintenance, inheritance, succession, and insurance. In response to this prolonged inaction, petitions were filed in the Supreme Court in 2022. Petitioners argued that the absence of registration rules resulted in unequal access to legal rights, thereby marginalising the Sikh community within the country's secular legal framework.
- Acknowledging the constitutional implications, the Court directed all states and Union Territories to create and notify workable rules within four months. It emphasised that Anand Karaj marriages, as legitimate religious ceremonies, must be given equal status in the civil domain. Importantly, the Court clarified that no marriage registration application under the Anand Act may be denied merely because the state has not yet framed the required rules, thereby placing an affirmative obligation on the states to comply.

The Continuing Debate on Sikh Marriage Law

- Although the Anand Marriage Act, along with its 2012 amendment, grants legal recognition to Sikh marriages, most Sikh couples in India continue to register their marriages under the Hindu Marriage Act, 1955. This law not only governs marriage registration but also regulates divorce, maintenance, and other matrimonial matters. In contrast, the Anand Marriage Act remains silent on these critical issues, offering no legal framework for dispute resolution or dissolution of marriage.
- As a result, Sikhs are compelled to rely on Hindu legal provisions, which many view as undermining their distinct religious identity. Community leaders, legal experts, and scholars have called for a more comprehensive personal law for Sikhs—on par with those available to Muslims and Christians—which would include provisions for divorce, maintenance, and succession. Critics argue that the Anand Marriage Act, which remains only about a page in length, serves more as a symbolic recognition of Sikh identity rather than a functional legal code. Its minimal content fails to ensure substantive legal rights or fully acknowledge the community's distinct status.

The Legal and Civic Importance of Marriage Registration

- In its ruling, the Supreme Court underscored the critical role that marriage registration plays in a modern, secular society. Registration provides essential legal documentation necessary for asserting rights related to residence, maintenance, inheritance, insurance claims, succession, and the enforcement of monogamy. It also serves to protect the rights of women and children within marital relationships.
- The Court highlighted the importance of ensuring that all marriages—including those

conducted through Anand Karaj—are registered with the same legal weight and procedural formality as other religious or civil ceremonies. Such parity, the Court noted, not only respects the religious sentiments of Sikhs but also promotes civic equality and uniformity in the legal system.

- In conclusion, while the Supreme Court's recent directive marks a necessary and overdue step towards procedural equity for Sikh marriages, it has reignited the broader debate on the inadequacy of the Anand Marriage Act itself. The demand for a more robust, inclusive, and fully functional Sikh personal law remains a pressing concern for those advocating for true legal recognition of the community's unique religious and cultural identity.

Mana Mitra: Andhra Pradesh's WhatsApp Governance Model – A Blueprint for Digital India

Context

- The state of Andhra Pradesh has significantly expanded its WhatsApp-based governance platform, *Mana Mitra*, from offering just over 200 services to now covering **738 citizen services across 36 departments**. Recognised as a best practice by the Centre, this model is now being considered for **nationwide replication** as part of India's broader push for digital governance.
- Launched in **January 2025**, Mana Mitra is India's **first WhatsApp-based governance platform**, designed to digitally deliver public services. It consolidates various services from **36 departments** into a single, mobile-accessible window, minimizing the need for physical visits to government offices and bringing governance directly to citizens through a familiar, user-friendly interface.

Objectives of Mana Mitra

Mana Mitra was developed with multiple strategic aims:

- **Ease of Access**: It simplifies citizen interaction with the state by offering services over WhatsApp—a platform already widely used—thus reducing the need to visit government offices.
- **Transparency and Trust**: All issued certificates come with **QR codes** linked to official websites, helping eliminate fraudulent documentation.
- **Inclusivity**: The platform is particularly beneficial for **rural and marginalized populations**, offering them easy and direct access to services without requiring complex apps or devices.
- **Single Number Access**: Citizens can begin using the service by messaging **9552300009** on WhatsApp.
- **Menu-Driven Interaction**: A WhatsApp chatbot guides users through a structured menu offering services in domains like **education, revenue, transportation (RTC), endowments, tourism, and tax payments**.
- **Instant Document Delivery**: Users receive documents such as **income certificates, caste certificates, hall tickets**, etc., digitally, verified via QR codes.
- **Real-Time Governance Dashboard**: The platform includes a live dashboard that tracks requests and delivery timelines, ensuring **transparency and administrative oversight**.
- **Next-Gen Tech Integration**: Planned upgrades include **AI-driven chatbots, voice-based interactions**, and **blockchain-backed authentication** for enhanced security and seamless digital service delivery.

Key Features

Mana Mitra brings together a range of functionalities and innovations:

- **Comprehensive Service Coverage**: With **738 services across 36 departments**, the platform is one of the most extensive digital governance systems in the country.
- **User-Friendly Interface**: Users initiate interaction by simply sending **"Hi"** via WhatsApp. Key services—such as certificate issuance and tax payment—are processed and delivered digitally within minutes.
- **Security and Verification**: All documents issued carry **QR codes** to verify authenticity. **Blockchain technology** is being integrated to further safeguard transactions and identities.
- **Global-Class Infrastructure**: A **Memorandum of Understanding (MoU)**

with **Meta** provides robust backend systems, security features, and scalability.
- **Futuristic Roadmap**: In its next phase, the platform will integrate **AI chatbots, voice-based services**, and more intelligent dashboard capabilities to elevate user experience and operational efficiency.

Significance and Impact

Mana Mitra has emerged as a flagship initiative in redefining governance in India:
- **Citizen-Centric Governance**: It brings government services directly to citizens' mobile phones, **eliminating middlemen, reducing bureaucracy**, and aligning with the central vision of **"Minimum Government, Maximum Governance."**
- **Time and Cost Efficiency**: The platform reduces the need for travel, physical paperwork, and delays, while also cutting down on government processing costs through automation.
- **Digital Inclusion**: With over **500 million WhatsApp users** in India, even those in **rural or low-income areas** can now access services without needing to navigate complex portals or download new apps.
- **Improved Administrative Efficiency**: Real-time dashboards enable quicker approvals, faster grievance redressal, and better policy monitoring—thereby enhancing trust in public institutions.
- **Model for Replication**: The **Department of Administrative Reforms and Public Grievances (DARPG)** has recognized Mana Mitra as a **national model**, making it a potential template for other states and central services.

Challenges to Address

Despite its success, Mana Mitra faces several implementation and policy challenges:
- **Digital Divide**: Many **tribal and remote areas** lack stable internet connectivity, potentially leaving out vulnerable populations who could benefit the most.
- **Cybersecurity Threats**: Risks like **phishing attacks** or **fake WhatsApp accounts** require the establishment of secure identity verification mechanisms and robust encryption.
- **Capacity Building**: Effective usage of the platform necessitates **training frontline government staff** to resolve digital queries and manage tech-based complaints.
- **Data Privacy Concerns**: The platform must comply with the **Digital Personal Data Protection Act (DPDPA) 2023** to prevent misuse of sensitive citizen data.
- **Scalability Issues**: The backend must be equipped to **handle high-volume, simultaneous service requests** without technical failures or downtime.

Way Forward

To realize its full potential and ensure successful replication, the following steps are essential:
- **AI Integration**: Deploy **predictive AI and multilingual voice bots** to personalise citizen services and increase accessibility across linguistic and literacy barriers.
- **Strengthen Cybersecurity**: Introduce **two-factor authentication**, end-to-end encryption, and **blockchain verification** for enhanced security and data integrity.
- **Promote Digital Literacy**: Conduct **awareness campaigns and training programs**, especially targeting **women, the elderly, and marginalized communities**, to increase usage and digital confidence.
- **Legislative Framework**: Enact legal provisions to formalize WhatsApp governance, define roles and responsibilities, and ensure **transparency and accountability**.
- **National Integration**: Expand Mana Mitra's scope by linking it with national platforms such as **DigiLocker, UPI, and CoWIN**, creating a **unified citizen services ecosystem** accessible from anywhere in India.

Conclusion

Mana Mitra is a **transformational innovation** in the realm of e-governance, offering a scalable, citizen-first solution that delivers speed, transparency, and inclusivity. By leveraging the ubiquity of WhatsApp, it bridges the digital divide and redefines how people interact with the state. If expanded nationally with strong institutional support and security frameworks, Mana Mitra could become a **foundational pillar** of *Viksit Bharat 2047's* Digital Governance Vision—

bringing the promise of efficient, inclusive, and tech-driven governance to every citizen's fingertips.

Project Vijayak: BRO's Strategic Connectivity Mission in Ladakh

- Project Vijayak, a flagship initiative of the Border Roads Organisation (BRO), recently marked its 15th Raising Day with a celebration in Kargil, Ladakh. Established in 2010, the project derives its name from Operation Vijay, symbolizing its alignment with both the historical battlefield and the modern-day operational area of responsibility.
- Project Vijayak was tasked with enhancing road connectivity across Kargil and Zanskar—regions that were earlier managed under Project Himank. Specifically, the project undertook the development of two critical lines of communication in the Western Indus Corridor: the Zojila-Kargil-Leh axis and the Nimmu-Padam-Darcha axis. These routes are vital for bolstering India's military logistics and strategic preparedness along the Line of Control (LC).
- Beyond infrastructure development, Project Vijayak has played a transformative role in socio-economic development within the region. The initiative has also prioritized the welfare of its Casual Paid Labourers by providing insulated shelters, improved sanitation facilities, advanced protective gear, winter clothing, and regular health camps to ensure their safety and well-being.

National Archives of India: Golden Jubilee of the National Committee of Archivists

- The National Archives of India (NAI) recently hosted the 50th Golden Jubilee Meeting of the National Committee of Archivists (NCA). The NAI serves as the primary custodian of India's government records deemed to have enduring value.
- Established originally as the Imperial Record Department in Kolkata on 11 March 1891, it was relocated to New Delhi in 1911. The Archives is now governed by the Public Records Act, 1993, and the Public Records Rules, 1997, and does not store classified documents. A considerable portion of its records are in languages such as Sanskrit, Persian, and Odia.
- Functioning under the Ministry of Culture and headed by the Director General of Archives, the NAI also coordinates the preservation and accessibility of public records. Its central office is located in New Delhi, with one regional office in Bhopal and three record centres in Bhubaneswar, Jaipur, and Puducherry.

Logistics Ease Across Different States (LEADS) 2025

- During the decade-long celebration of the Make in India initiative, the Union Minister of Commerce and Industry launched the LEADS 2025 report in New Delhi.
- LEADS (Logistics Ease Across Different States) is a national index and survey that evaluates the logistics ecosystems across India's states and union territories. Designed to identify gaps and promote best practices, it seeks to boost overall logistics performance and reduce associated costs.
- Published by the Department for Promotion of Industry and Internal Trade (DPIIT) under the Ministry of Commerce and Industry, the LEADS initiative aims to benchmark state-level logistics performance, guide policy reforms, and enhance infrastructure planning and capacity building.
- The evaluation parameters include infrastructure quality (such as roads, warehousing, and multimodal connectivity), logistics service availability and reliability, efficiency metrics like truck turnaround time and clearance ease, state-level policy support, and stakeholder perception on aspects such as cost and reliability.
- LEADS 2025 introduces several notable features, including performance tracking along major national corridors based on journey time and truck speed, API-based real-time data for analytics, and classification of states into Leaders,

Achievers, and Aspirers to encourage healthy competition. A digital dashboard has also been launched to allow states and union territories to track and improve their logistics performance continuously.

Mumbai–Ahmedabad High-Speed Rail (MAHSR) Corridor

- A crucial 4.88-kilometer tunnel breakthrough has been completed between Ghansoli and Shilphata, marking a major achievement in the ongoing development of the Mumbai–Ahmedabad High-Speed Rail (MAHSR) corridor.
- The MAHSR project represents India's inaugural bullet train initiative, spanning 508 kilometers between Mumbai in Maharashtra and Ahmedabad in Gujarat. Employing cutting-edge Japanese Shinkansen technology, the trains are designed to operate at 320 km/h, reducing travel time between the two cities to just over two hours.
- The project is being executed by the National High-Speed Rail Corporation Limited (NHSRCL) with both technical and financial support from Japan.
- Out of the total length, 348 kilometers lie in Gujarat, 156 kilometers in Maharashtra, and 4 kilometers in the Union Territory of Dadra and Nagar Haveli. The corridor will feature 12 stations, including major stops at Mumbai BKC, Thane, Surat, Vadodara, and Ahmedabad, enhancing regional connectivity and linking key economic hubs.
- The infrastructure includes a 21-kilometer tunnel (with a 7-kilometer undersea segment), 320 kilometers of viaducts, 17 river bridges, and 9 steel bridges, exemplifying world-class engineering standards. Trains will utilize the Japanese E5/E10 series, incorporating advanced signaling systems, automatic train control, and the highest safety protocols.
- The project is expected to generate substantial economic benefits, including employment creation and industrial stimulation. It will also facilitate the transfer of Japanese high-speed rail technology to India and support the development of skilled manpower. Most importantly, the corridor is anticipated to strengthen urbanization and regional integration between Maharashtra and Gujarat.

Supreme Court Signals the Need to Decriminalise Defamation

In a recent judicial observation, the Supreme Court of India noted that the time has arrived to reconsider and ultimately decriminalise defamation. This statement marks a significant development in the ongoing debate about the balance between the right to freedom of speech and the legal protection of individual reputation. The Court's remark suggests a shift in judicial thinking, hinting at the growing recognition of the potentially chilling effects that criminal defamation laws may have on free expression, dissent, and press freedom.

Understanding Defamation

Defamation refers to the act of disseminating false statements—whether spoken, written, or published—that cause damage to the reputation of an individual, a group, or even the relatives of the affected person. Legally, defamation is categorised into two forms: *libel*, which pertains to written, printed, or otherwise published defamatory content, and *slander*, which relates to defamatory statements that are spoken.

Legal Framework and Current Status in India

Under Indian jurisprudence, defamation can be pursued as both a civil and a criminal offence, depending on the preference of the complainant. A civil defamation suit typically results in monetary compensation if the plaintiff's claim is upheld. On the criminal side, the recently enacted **Section 356 of the Bharatiya Nyaya Sanhita** has taken over the role of criminalising defamation, replacing **Section 499 of the Indian Penal Code (IPC)**. The criminal provision allows for penal consequences, including imprisonment, for those found guilty of tarnishing another's reputation through false statements.

Arguments for Decriminalising Defamation

- A primary argument in favour of decriminalising defamation lies in its potential violation of **Article 19(1)(a)** of the Constitution, which guarantees the right to freedom of speech and expression. The existence of criminal sanctions may create a climate of fear, leading individuals

to self-censor rather than risk legal action for expressing dissenting or unpopular views. In this context, criminal defamation is often seen as a tool to suppress legitimate criticism, whether of individuals, corporations, or public authorities.

- Furthermore, critics argue that such provisions are frequently misused not just by political actors but also by private individuals to harass critics, stifle public debate, and silence voices of opposition. The implications extend to the media as well, where the threat of criminal prosecution may discourage investigative journalism and curtail press freedom. These concerns have increasingly led to demands for reform, including calls to remove the criminal liability associated with defamation and rely solely on civil remedies.

Judicial and Institutional Perspectives on Defamation

- The debate over defamation has been addressed in several legal and institutional forums. The **Law Commission of India**, in its **285th report**, acknowledged the importance of protecting one's reputation as part of **Article 21**, which guarantees the right to life and personal liberty. The report stated that while freedom of expression is crucial, it cannot come at the expense of another's dignity or emotional wellbeing.
- However, the judiciary has historically upheld the criminalisation of defamation. In the landmark case of **Subramanian Swamy v. Union of India (2016)**, the Supreme Court ruled that criminal defamation was constitutionally valid. The Court held that the right to freedom of speech must be balanced with the right to reputation, emphasising that both are fundamental rights and neither is absolute.
- Earlier, in **State of Gujarat v. Hon'ble High Court of Gujarat (1998)**, the Court recognised the irrevocable nature of lost honour or life, noting that certain damages—such as those to a person's reputation—may be impossible to restore fully, thus underlining the seriousness of reputational harm.

Conclusion

The Supreme Court's recent observation reignites the legal and ethical conversation around defamation laws in India. While criminal defamation currently remains part of the legal framework, the Court's remark could pave the way for legislative or judicial reconsideration in the future. The challenge lies in crafting a legal mechanism that adequately protects individual reputations without unduly restricting the constitutionally guaranteed freedom of speech. Decriminalising defamation may not eliminate accountability, but it could shift the emphasis towards civil redressal, ensuring that open expression is not penalised through the threat of imprisonment.

Direct Broadcast Network (DBNet)

- The National Centre for Medium Range Weather Forecasting (NCMRWF) has recently signed a Memorandum of Understanding (MoU) with New Space India Limited (NSIL) to establish two Direct Broadcast Network (DBNet) stations in Delhi/NCR and Chennai. These stations are part of a global operational framework that facilitates the real-time acquisition of satellite data from Low Earth Orbit (LEO) satellites.
- DBNet is critical to enhancing the accuracy and timeliness of Numerical Weather Prediction (NWP) models and serves applications such as weather forecasting, cyclone tracking, and climate analysis. The stations will receive direct broadcast data from a range of Earth Observation Satellites, including Indian missions like Oceansat and international missions like NOAA and MetOp.
- A key advantage of DBNet is its ability to reduce data latency by directly capturing satellite signals as the satellites pass overhead. NCMRWF aims to process this data within five minutes of satellite overpass, allowing immediate integration into the Ministry of Earth Sciences' forecasting models. This will significantly improve the responsiveness and precision of short- to medium-range forecasts.

Communication Security Certification Scheme

- The National Centre for Communication Security (NCCS) has designated M/s Compliance International Pvt. Ltd., Noida, as a Telecom Security Testing Laboratory (TSTL) under the Communication Security Certification (ComSec) Scheme. This certification pertains to the testing of IP routers and falls under the broader regulatory framework for telecom equipment.
- The ComSec Scheme ensures security certification of telecom equipment under the Mandatory Testing and Certification of Telecom Equipment (MTCTE) rules, which were originally notified in 2017 and have since been superseded by the Telecommunications (Framework to Notify Standards, Conformity Assessment and Certification) Rules, 2025.
- Under this scheme, every manufacturer, importer, or dealer intending to sell or operate telecom equipment in India must have their products tested and certified for security compliance. The scheme is applicable not only to traditional telecom devices but also to hardware, software, or systems notified by the Government.
- NCCS oversees three key activities under this scheme: the development of Indian Telecom Security Assurance Requirements (ITSAR) for each type of telecom equipment; designation of qualified TSTLs to carry out security testing; and final evaluation and certification of equipment by NCCS based on these standards.

SPARSH Pension System

- The Ministry of Defence has made notable progress under the System for Pension Administration – Raksha (SPARSH), having resolved nearly 5.60 lakh out of 6.43 lakh legacy discrepancy cases—representing an 87% resolution rate.
- SPARSH is a pioneering web-based platform developed to manage the entire defence pension lifecycle. Administered by the Defence Accounts Department via the Principal Controller of Defence Accounts (Pensions) in Prayagraj, it serves all three branches of the Armed Forces, as well as defence civilians.
- This centralized digital system eliminates the need for third-party intermediaries. It allows for direct processing of pension claims and the transfer of pension payments into beneficiaries' bank accounts. Pensioners can easily validate, rectify, and track their pension details through the system's self-verification feature. SPARSH also uses digital identification to eliminate the need for multiple in-person visits, ensuring a more efficient and user-friendly experience.
- The platform captures the entire history of a pensioner's entitlements, from the initiation of pension benefits to their eventual cessation or transfer to the last eligible beneficiary. SPARSH is designed to manage the full spectrum of pension-related activities — including initiation, sanction, disbursement, revision, and grievance management — under a single, transparent, and integrated framework.

Adoption of the Visakhapatnam Declaration to Advance e-Governance in India

- The Visakhapatnam Declaration was adopted during the 28th National Conference on e-Governance, emphasizing the necessity for a comprehensive whole-of-government approach. This approach aims to enhance civil services by equipping them with digital skills and fostering agile, data-driven frameworks.
- The Declaration outlines several key proposals. At the national level, it envisions governance that is inclusive, citizen-centric, and transparent, strongly advocating for the principle of "Minimum Government, Maximum Governance." In terms of technology, it stresses the adoption of cutting-edge tools such as Artificial Intelligence (AI), Machine Learning (ML), Blockchain, Geographic Information Systems (GIS), Internet of Things (IoT), and Data Analytics. These technologies are intended to deliver multilingual, real-time, and sector-specific citizen services, with a particular focus on ethical and transparent implementation. Illustrative examples

include initiatives like Digital India BHASHINI, Digi Yatra, and NADRES V2.

- The Declaration also calls for the replication and nationwide scaling of successful e-governance models, such as SAMPADA 2.0 from Madhya Pradesh, eKhata in Bengaluru, Rohini Gram Panchayat in Maharashtra, and the Drone Analytics Monitoring System (DAMS) developed by the National Highways Authority of India (NHAI). Additionally, it emphasizes grassroots and inclusive development by extending digital outreach to geographically challenging regions such as the North-East and Ladakh under the NeSDA framework. The expansion of successful digital Panchayat models and the launch of digital literacy programs targeting women, youth, and other groups form part of this inclusive agenda.
- Cybersecurity and resilience are highlighted as critical areas, with a focus on adopting Zero-Trust architecture, Post-quantum security measures, and AI-enabled monitoring in priority sectors such as transportation, defense, and citizen service platforms. In agriculture and sustainability, the Declaration advocates for the development of a National Agri Stack to facilitate better access to credit, advisories, and markets. Furthermore, it encourages collaboration between government and industry to develop scalable digital solutions, alongside the establishment of regional hubs like Visakhapatnam, envisioned as centers for IT and innovation.

Youth-led Ladakh Protests: Demands for Statehood, Sixth Schedule Inclusion, and Autonomy

The ongoing protests in Ladakh have intensified, with youth-led demonstrations turning violent in recent weeks. The unrest, which left four individuals dead and over 30 injured, triggered a sweeping shutdown in Leh town, spearheaded by the Leh Apex Body (LAB). Amid the turmoil, prominent climate activist Sonam Wangchuk concluded his 15-day hunger strike, urging the youth of Ladakh to continue their agitation peacefully. Wangchuk emphasized the importance of preserving the momentum of the five-year-long movement, which seeks urgent action from the central government on demands for statehood, autonomy, and constitutional safeguards.

Underlying Causes of the Ladakh Unrest

The roots of the current protests lie in the aftermath of the 2019 abrogation of Article 370 and the passage of the Jammu and Kashmir Reorganisation Act. This legislation divided the former state into two Union Territories—Jammu and Kashmir (with a legislature) and Ladakh (without one). Ladakh's placement under direct central administration, without an elected legislative body, has led to widespread dissatisfaction. The absence of political representation and administrative autonomy has deepened the sense of alienation, prompting persistent calls for statehood and constitutional protection under the Sixth Schedule.

The Sixth Schedule Demand: Constitutional Safeguards for Tribal Communities

Ladakh's demographic profile significantly strengthens the demand for inclusion under the Sixth Schedule. With over 90% of its population belonging to Scheduled Tribes, local leaders argue that the region is ideally suited for the protections this provision offers. Under Article 244 of the Constitution, the Sixth Schedule allows for the establishment of Autonomous District Councils (ADCs) with legislative powers over land use, forests, agriculture, local policing, and governance at the village level. Each ADC can comprise up to 30 elected members with a five-year term. There are currently ten such councils operating in the Northeast—in Assam, Meghalaya, Mizoram, and Tripura. Advocates believe that implementing a similar framework in Ladakh would secure tribal rights and promote genuine self-governance.

Immediate Triggers Behind the Protests in Leh

The recent escalation in Leh was driven by immediate grievances voiced by the Leh Apex Body, whose youth wing had organized the September 24 protest. Since September 10, LAB members had been on a hunger strike, demanding an urgent dialogue with the central government. In response, the Ministry of Home Affairs (MHA) scheduled the next round of talks for October 6, referencing the last discussion held in May. However, LAB leaders denounced the proposed timeline as a unilateral "dictation," arguing that

the urgency of their demands required immediate resolution. Their frustration was heightened by the prolonged fasting of members and growing public unrest, which ultimately culminated in violent clashes. LAB warned that although the protests began peacefully, rising impatience among the populace made further violence increasingly likely.

The Central Government's Position and Limitations

The central government has taken a cautious approach in its response to the demands. While the MHA has agreed to address issues related to establishing a separate public service commission and reviewing parliamentary representation, it has firmly opposed the inclusion of Ladakh under the Sixth Schedule and rejected the demand for statehood. According to the government, implementing the Sixth Schedule in Ladakh could have far-reaching implications for other regions, setting a precedent it is reluctant to entertain.

Core Demands of the Ladakh Protest Movement

Since Ladakh's transition to Union Territory status in 2019, public mobilization has crystallized around four primary demands:

- Granting full statehood to Ladakh to ensure meaningful self-governance.
- Inclusion of the region under the Sixth Schedule to constitutionally protect the rights of tribal communities.
- Establishment of a separate public service commission to address the region's high unemployment rate.
- Allocation of two Lok Sabha seats, instead of one, to enhance Ladakh's representation in the Indian Parliament.

Rising Unemployment and Youth Disillusionment

A major driver of youth participation in the protests is the region's alarming unemployment rate. Data shows that 26.5% of Ladakhi graduates are unemployed, a figure that significantly exceeds the national average of 13.4%. This has intensified calls for a dedicated service commission and a 95% reservation in government jobs for locals. These issues were reportedly discussed during meetings with the MHA in 2024, but concrete outcomes remain elusive.

Looking Ahead: Potential Compromises and Strategic Considerations

- While the call for full statehood remains central to the movement, a short-term resolution appears improbable. Given Ladakh's strategic location bordering China, the central government is wary of creating any administrative barriers that might hinder troop mobility or infrastructure development. In light of these geopolitical concerns, it is likely that protests will persist, with both the LAB and Kargil Democratic Alliance (KDA) intensifying their campaigns.
- A potential middle ground may involve expanding the powers of existing Hill Councils, along with implementing job and land ownership reservations for locals. In such a scenario, protest leaders may be compelled to temporarily set aside their statehood demand and accept Ladakh's Union Territory status. However, unless a substantive solution is reached, the current cycle of protest and unrest is expected to continue, driven by a population increasingly vocal about its demand for political empowerment, economic opportunity, and constitutional safeguards.

Personality Rights in India: Judicial Protection of Celebrities in the Digital Age

In a significant move towards strengthening the protection of personality rights in India, the Delhi High Court has recently extended judicial safeguards to Bollywood celebrities facing unauthorised exploitation of their image, voice, and likeness in the digital sphere. The court granted relief to Aishwarya Rai Bachchan and Abhishek Bachchan in cases concerning misuse through artificial intelligence. This follows similar legal victories for celebrities like Amitabh Bachchan, Anil Kapoor, and Jackie Shroff. Collectively, these rulings signal an evolving judicial commitment to recognising and enforcing personality rights in response to the challenges posed by digital media and emerging technologies.

Understanding Personality Rights in India

Personality rights refer to the right of an individual to protect their name, likeness, image, voice, signature, and other identifiable personal attributes from unauthorised commercial use. Although India does not currently codify these

rights under a single legislative statute, courts have extended protection through a combination of judicial precedents and principles drawn from common law doctrines of privacy, defamation, and publicity rights. Courts have increasingly issued injunctions, awarded damages, and ordered takedowns to curb the misuse of personal attributes across advertisements, merchandise, AI-generated content, and digital platforms.

Statutory Foundations and Legal Mechanisms

- While a comprehensive statute is absent, personality rights are safeguarded through a patchwork of intellectual property laws. Under the **Copyright Act, 1957**, performers are granted exclusive rights (Section 38A) and moral rights (Section 38B), allowing them to control how their performances are reproduced and to object to distortion. The **Trade Marks Act, 1999** enables celebrities to register their names, signatures, and catchphrases as trademarks — a legal strategy employed by Shah Rukh Khan, Priyanka Chopra, Ajay Devgn, and Amitabh Bachchan.
- In addition, the common law tort of "passing off" under **Section 27** of the Trade Marks Act protects against unauthorised commercial use that misrepresents or falsely endorses a product, although claimants must demonstrate reputation and goodwill before obtaining relief.

Constitutional Anchoring of Personality Rights

The foundation of personality rights is grounded in **Article 21 of the Indian Constitution**, which guarantees the right to life and personal liberty, including autonomy and privacy. While celebrities may voluntarily license their identity for commercial or creative use in films, advertisements, or campaigns, any unauthorised appropriation — such as through deepfakes or unapproved merchandise — compromises their dignity, control, and consent.

Evolving Jurisprudence on Personality Rights

- The jurisprudential journey of personality rights in India began with the landmark 1994 Supreme Court ruling in **R. Rajagopal v. State of Tamil Nadu**, which affirmed an individual's right to control their identity, framing it within the ambit of constitutional privacy.
- Further momentum came in 2015, when the **Madras High Court** expanded protections in a case involving actor **Rajinikanth**, holding that infringement occurs even in the absence of confusion or deception, provided the celebrity is identifiable. This decision marked a shift towards protecting celebrities against unauthorised commercial exploitation regardless of intent or consumer misunderstanding.
- The **Delhi High Court** has emerged as a crucial forum in addressing new-age threats, particularly from AI. In 2023, it granted actor **Anil Kapoor** sweeping protections over his name, image, and iconic catchphrase "*jhakaas*," prohibiting their misuse online. The Court emphasised that while free speech protects parody and criticism, it does not extend to commercial exploitation or reputational harm.
- In 2024, the Delhi High Court similarly upheld **Jackie Shroff's** personality rights, directing action against e-commerce platforms and AI chatbots misappropriating his persona. In another landmark 2023 decision, the **Bombay High Court** ruled in favour of **Arijit Singh**, condemning AI-generated voice cloning and reinforcing the dangers generative AI poses to artists' dignity and identity.

Balancing Personality Rights and Freedom of Expression

- Despite expanding protections, Indian courts remain mindful of the constitutional guarantee of free expression under **Article 19(1)(a)**. This right encompasses criticism, parody, and satire, particularly concerning public figures. In **DM Entertainment Pvt. Ltd. v. Baby Gift House (2010)**, the Delhi High Court granted relief to singer **Daler Mehndi** against unauthorised commercial exploitation of his image, but clarified that parodies and caricatures generally do not constitute violations of publicity rights.
- This balance was reiterated in **Digital Collectibles PTE Ltd. v. Galactus**

Funware Technology Pvt. Ltd. (2023), where the Delhi High Court addressed unauthorised use of sports personalities' likenesses. The ruling underscored that publicity rights cannot override constitutionally protected speech, particularly when the material is already in the public domain. The court clarified that legitimate uses — including those for satire, news, music, art, and scholarship — do not amount to infringement.

Contemporary Concerns and the Need for Legislative Reform

- Legal experts continue to stress the pressing need for a comprehensive statutory framework to govern personality rights in India. The current reliance on fragmented judicial decisions leads to inconsistent enforcement and fails to provide clear guidance, especially in distinguishing artistic freedom from infringement. There is a risk that, in the absence of clear exceptions, personality rights may be misused to suppress dissent or censor legitimate expression.
- Moreover, experts caution against viewing personality rights as the exclusive domain of celebrities. Ordinary citizens — particularly women — suffer deeply from deepfakes, impersonation, and revenge pornography. While courts have issued directives for content takedowns and government intervention, the sheer volume and speed of digital violations present formidable enforcement challenges.

Conclusion

India's legal landscape around personality rights is rapidly evolving in response to digital technologies, with courts increasingly recognising and safeguarding the identities of public figures against unauthorised commercial exploitation. However, the absence of a unified legal framework, coupled with growing threats from AI and other emerging technologies, underscores the urgent need for legislative clarity. At the same time, the judiciary continues to walk a fine line between protecting individual dignity and preserving the constitutional values of free speech and artistic expression.

Sixth Schedule

Ladakh has recently experienced one of its most intense outbreaks of civil unrest in decades, driven by demands for statehood and inclusion under the Sixth Schedule of the Indian Constitution.

Understanding the Sixth Schedule

- The Sixth Schedule is a constitutional provision tailored for the governance of tribal areas in India's Northeast. It was incorporated into the Constitution in 1950 based on the recommendations of the Bordoloi Committee, which was a sub-committee of the Constituent Assembly formed to address issues concerning the tribal and excluded areas of the North-East Frontier, particularly Assam.
- Recognising the unique cultural identity and socio-economic vulnerability of indigenous populations in these regions, the framers introduced an autonomous administrative structure to safeguard tribal interests. Unlike the Fifth Schedule, which applies to tribal areas elsewhere in India, the Sixth Schedule offers a more extensive framework of autonomy. It grants legislative, judicial, and financial powers to democratically elected Autonomous District Councils (ADCs).

Key Provisions

- Article 244(2) extends the Sixth Schedule to the tribal areas of Assam, Meghalaya, Tripura, and Mizoram. These tribal territories are organised into Autonomous Districts, which the Governor may further divide into Autonomous Regions to represent distinct tribal communities. The Governor holds the authority to alter boundaries, reorganise districts, and rename such areas.
- Each Autonomous District is administered by a District Council composed of up to 30 members—four nominated by the Governor and the remainder elected through adult suffrage. Regional Councils may be formed to cater to specific tribal groups. These councils can enact laws related to land management, forest use (excluding reserved forests), inheritance, customary practices, and regulation of money lending and trade by non-tribal

individuals. However, all legislation requires the Governor's approval.

- In terms of judicial functions, the Councils are empowered to set up Village and District Council Courts for handling disputes involving tribal parties, excluding serious criminal cases punishable by death or imprisonment exceeding five years. The Councils are also authorised to impose taxes, collect land revenue, manage mineral resources, and oversee local infrastructure and services, including primary schools, dispensaries, markets, roads, fisheries, transport, and inland waterways.
- Laws passed by Parliament or State Legislatures apply in these areas only with specific exceptions or adaptations. Furthermore, the Governor is permitted to appoint a Commission to periodically review the administrative performance and governance of these autonomous regions.

Central Board of Film Certification (CBFC): Recent Controversies and Structure

The **Central Board of Film Certification (CBFC)**, under the Ministry of Information and Broadcasting, has recently come under public scrutiny for censoring several films featuring themes around **caste, mythology, and political discourse**.

About CBFC

- The CBFC is a **statutory body** established under the **Cinematograph Act of 1952** and functions primarily as a **certification authority**, not a censor board, despite the popular moniker. It operates under the legal framework provided by the **Cinematograph (Certification) Rules, 1983**, and **guidelines issued by the central government**.
- The CBFC's mandate is to regulate the **public exhibition of films** across India. No film can be released theatrically or otherwise unless certified by the Board. The body is headed by a **Chairperson**, assisted by **12 to 25 members**, all appointed by the Central Government. To decentralize operations, the CBFC maintains **nine regional offices** in cities including **Mumbai, Kolkata, Chennai, Bangalore, Thiruvananthapuram, Hyderabad, New Delhi, Cuttack, and Guwahati**. The Board is further supported by **Advisory Panels**, whose members serve for a term of **two years** and assist in evaluating films.

Film Certification Categories

CBFC provides certification under multiple categories:

- **U (Universal)** – Suitable for all audiences
- **U/A** – Suitable for children under 12 with parental guidance
- **A (Adult)** – Restricted to adult audiences only
- **S (Special)** – Limited to specific professional groups (e.g., doctors, farmers)

The **2023 amendments** introduced new sub-categories to align with international standards, such as **UA 7+**, **UA 13+**, and **UA 16+**, offering more nuanced guidance based on age.

Karnataka High Court Upholds Legality of Sahyog Portal

The Karnataka High Court has upheld the legality of the Union government's **Sahyog portal**, dismissing the plea filed by X Corporation, which alleged that the platform amounts to "extra-legal censorship."

About the Sahyog Portal

The Sahyog portal is a regulatory online platform developed under Section 79(3)(b) of the Information Technology Act, 2000. It enables swift issuance of takedown notices for unlawful online content to internet intermediaries. Operated through the Indian Cyber Crime Coordination Centre (I4C) under the Union Home Ministry, the portal was launched in October 2024.

Its core purpose is to improve coordination between government agencies and digital intermediaries, ensuring that platforms respond promptly to requests for the removal of illegal content while maintaining their safe harbour protections.

Core Functions and Legal Framework

The Sahyog portal facilitates:

- Centralised communication between 65 intermediaries, state/UT nodal officers, and seven central agencies.
- Automated and traceable takedown notice transmission.

- Enforcement under Section 79(3)(b), wherein failure to comply can strip platforms of their legal immunity.
- Distinction from Section 69A of the IT Act, as Sahyog does not block content but mandates disabling unlawful posts by intermediaries.
- The court's ruling reinforces the portal's role as a lawful and essential tool for maintaining digital accountability and combating cybercrime.

₹69,725 Crore Maritime Sector Package: The 4-Pillar Approach

The **Union Cabinet** has approved a comprehensive **₹69,725 crore package** aimed at reviving India's shipbuilding and maritime sectors. Anchored in a **4-Pillar Approach**, the initiative targets critical improvements in **financing, domestic capacity, technology adoption, and regulatory reforms**, forming part of a long-term strategy extending to **2036**.

Objectives of the Scheme

The primary goal is to position **India as a global maritime hub**, significantly expanding domestic shipbuilding capacity to **4.5 million Gross Tonnage**, attracting **₹4.5 lakh crore in investments**, and generating **30 lakh jobs**. It also seeks to ensure secure and resilient **maritime supply chains**, essential for **energy, food, and national security**.

The Four Pillars of the Maritime Package

1. **Shipbuilding Financial Assistance Scheme (SBFAS)** – Extended till 2036 with an allocation of **₹24,736 crore**, this scheme supports Indian shipyards and includes a **₹4,001 crore Shipbreaking Credit Note** to promote recycling and modernization.
2. **Maritime Development Fund (MDF)** – A financial facility with a **₹25,000 crore corpus**, consisting of:
    - **Maritime Investment Fund**: ₹20,000 crore with 49% government participation
    - **Interest Incentivization Fund**: ₹5,000 crore to make financing more accessible.
3. **Shipbuilding Development Scheme (SbDS)** – With an outlay of **₹19,989 crore**, this scheme enhances shipbuilding capabilities, facilitates the creation of **mega clusters**, establishes the **India Ship Technology Centre**, and offers insurance and risk mitigation for maritime projects.
4. **National Shipbuilding Mission and Reforms** – This pillar emphasizes institutional coordination, **greenfield and brownfield shipyard development**, **taxation and legal reforms**, and **skill development**, with an overarching mission to streamline progress monitoring and policy execution.

Supreme Court Review of Hindu Succession Act, 1956

The **Supreme Court of India** has indicated a cautious approach as it deliberates on petitions challenging key provisions of the **Hindu Succession Act, 1956**, emphasizing the delicate balance between **protecting women's rights** and maintaining the **integrity of Hindu social structures**.

About the Hindu Succession Act, 1956

The Act was enacted to codify the laws governing **intestate succession** (inheritance without a will) among Hindus. It came into effect on **17 June 1956**, with jurisdiction across India except Jammu & Kashmir (at the time). Its core objective is to provide **uniformity, legal clarity, and gender justice** in matters of property inheritance.

Scope and Applicability

The Act applies to **Hindus, Buddhists, Jains, and Sikhs**, but **excludes Muslims, Christians, Parsis, and Jews**, unless they were previously governed by Hindu law. It also does not automatically apply to **Scheduled Tribes** unless formally notified by the Centre.

Key Provisions of the Act

1. **Coparcenary Rights (Section 6, amended in 2005)** – Grants daughters equal coparcenary rights from birth, placing them on par with sons in matters of ancestral property.
2. **Succession for Males (Sections 8–10)** – Prioritizes **Class I heirs** (children, widow, mother), followed by **Class II heirs**, **agnates**, and **cognates**.
3. **Women's Property (Section 14)** – Recognizes a Hindu woman's property as her **absolute ownership**, overturning the limited estate provisions of previous customs.

4. **Succession for Females (Sections 15–16)** – Specifies that, in the absence of a will, a woman's property passes first to her **children and husband**, then to **husband's heirs**, followed by **her parents**, and further down the hierarchy.
5. **General Principles (Sections 18–22)** – Enshrines key inheritance doctrines, such as **preferential rights of full-blood relatives**, inheritance rights of **unborn children**, and **exclusion of murderers and certain converts' descendants**. Also, introduces **preferential co-heir buying rights**.
6. **Escheat (Section 29)** – Provides for government acquisition of property where no legal heirs exist, along with responsibility for the attached obligations.

India's Urban Blind Spot: Why Outdated Census Definitions Must Change

As India approaches Census 2027, the Registrar General of India has proposed retaining the urban classification criteria used in the 2011 Census. While this decision is aimed at ensuring comparability and consistency in tracking urbanisation trends over time, it risks reinforcing an outdated framework that fails to reflect the dynamic reality of India's rapidly transforming settlements.

Criteria for Urban Classification: The 2011 Model

- Under the 2011 Census, urban areas in India were classified using two main categories. The first includes **Statutory Towns**, which are settlements officially notified by state governments and governed by urban local bodies such as municipal corporations, municipal councils, or nagar panchayats. The second category encompasses **Census Towns**, defined based on three rigid criteria: a minimum population of 5,000, at least 75% of the male main workforce engaged in non-agricultural occupations, and a population density of no less than 400 persons per square kilometre.
- By this strict definition, only 31.2% of India's population was classified as urban in 2011. However, many researchers argue that this significantly underrepresents the true extent of urbanisation, which is estimated to be far higher. Crucially, Census Towns, despite functioning as urban entities in terms of economy and population density, remain under rural administrative structures, exposing a mismatch between governance models and ground-level realities.

International Comparisons: India's Outlier Status

India's insistence on applying three simultaneous criteria for defining urban areas stands in stark contrast to the practices of most other countries, which often rely on one or two indicators — typically demographic density or infrastructure presence. The **World Bank's Agglomeration Index**, using broader spatial and occupational metrics, estimated that as early as 2010, approximately 55.3% of India's population was living in urban-like conditions. This phenomenon, often referred to as "hidden urbanisation," highlights how large portions of India's de facto urban population are overlooked due to outdated or overly narrow definitions.

DEGURBA: A Global Framework for Urban Classification

- To address inconsistencies in defining urban areas globally, six international agencies collaborated to develop the **Degree of Urbanisation (DEGURBA)** methodology, which was endorsed by the United Nations in 2020. This classification uses 1 km^2 population grids and satellite imagery to categorise human settlements into a spectrum ranging from urban centres and dense clusters to peri-urban areas and various rural classifications. By focusing on spatial form and functional characteristics rather than administrative designations, DEGURBA aims to better capture the actual extent of urbanisation.
- This method provides several advantages: it enables more precise detection of settlement patterns, improves the monitoring of service delivery, and allows better targeting of development finance. However, DEGURBA is not without limitations. Its lower density thresholds can misclassify agricultural land or fringe areas as urban, and its reliance on satellite algorithms introduces the possibility of both undercounting and overcounting

urban spaces. Still, its broader and more flexible approach is more in tune with today's complex urbanisation processes than India's rigid binary model.

India's Binary Definition: A Mismatch with Reality

- India's current classification system — dividing areas simply into 'urban' and 'rural' — fails to accommodate the spectrum of transitional settlements that now characterise much of the country. As villages evolve into towns with growing populations, increased engagement in non-agricultural work, and urban-style living conditions, many remain officially designated as rural. This results in governance gaps, as such areas fall under Panchayati Raj institutions that lack the administrative capabilities and financial resources of urban local bodies.
- Urban local bodies benefit from greater autonomy, funding, and infrastructure planning capacity, while rural administrations are ill-equipped to handle the demands of urbanising populations. The result is inadequate service delivery, mismatched development policies, and overlooked infrastructure needs. A striking example of this governance gap was revealed in the 2011 Census, where 251 towns that had already met urban criteria in 2001 continued to be classified and governed as rural. **West Bengal**, which recorded the highest increase in census towns, exemplifies this disconnect, as many of its newly urban settlements remained under rural governance without elected urban bodies or infrastructure support.

Consequences of Retaining an Outdated Urban Definition

- Persisting with the 2011 definition for Census 2027 would severely distort India's urbanisation data, misclassifying a growing number of urban-functioning areas as rural and thereby excluding millions from urban governance structures, infrastructure investments, and planning priorities. Various studies have suggested that India's actual urban population in 2011 was likely between **35% and 57%**, far higher than the officially reported 31.2%. Such a discrepancy carries real-world implications.
- The outdated criteria — such as requiring 75% of the male main workforce to be engaged in non-agricultural work — ignore important socio-economic changes. For instance, they do not account for women's participation in informal urban work, the rise of service industries, gig economy employment, and hybrid livelihoods that combine agricultural and urban work. Many settlements that operate as urban clusters fall outside municipal boundaries or are split administratively, making cohesive governance impossible. Seasonal migration further complicates classification, as workers often shuttle between urban and agricultural employment, eluding static definitions.

Urban Planning at Risk

The continued reliance on outdated, binary definitions risks leaving India's urban planning, infrastructure development, and service delivery mechanisms woefully unprepared for the country's evolving settlement landscape. As urbanisation accelerates — often in forms that blur the lines between rural and urban — the inability to capture this shift in official data hampers effective policymaking, resource allocation, and long-term planning. Without updating its urban classification system, India risks compounding its governance blind spots and stalling progress in managing one of the most significant urban transitions in the world.

Foreign Contribution Regulation Act (FCRA): Scrutiny and Amendments

- The **Union Home Ministry** recently revoked the **FCRA licence** of the **Students Educational and Cultural Movement of Ladakh (SECMOL)**, an organisation founded by environmental activist **Sonam Wangchuk**, citing regulatory concerns.
- The **Foreign Contribution (Regulation) Act (FCRA)** was originally enacted in **1976** during the Emergency era to restrict foreign financial influence on India's internal affairs. The current FCRA, passed in **2010**, regulates the **receipt and use of foreign funds** by individuals,

associations, and companies. Its core purpose is to ensure that foreign donations are not used in ways that compromise India's **sovereignty, integrity, or security**, and that such funds are directed only toward **legitimate developmental objectives**.

Key amendments to the Act include:

- The **2010 Amendment**, which consolidated the previous law and expanded its scope to include NGOs and private entities.
- The **2020 Amendment**, which introduced several stringent provisions:
    - Prohibition on the **transfer of foreign funds** between NGOs.
    - Mandatory **Aadhaar or passport/OCI verification** for all office bearers.
    - Requirement that all foreign contributions be routed through a **designated State Bank of India branch in New Delhi**.
    - Reduction of **administrative expense limits** from 50% to 20% of total funds.
    - Provisions for suspension of registration for up to **360 days**, and the option for organisations to **voluntarily surrender their licence**.
    - A blanket ban on **public servants** receiving foreign contributions.
- Further updates came in the **FCRA Rules (Amendment), 2022**, which increased the **annual limit for foreign remittances** from relatives abroad from ₹1 lakh to ₹10 lakh without prior notification, while simplifying compliance procedures for low-value transactions.
- Under FCRA, certain individuals and entities—such as **election candidates, media personnel, judges, public servants, political parties, and politically affiliated organisations**—are strictly **prohibited from receiving foreign funds**. However, NGOs and cultural, educational, and developmental associations are permitted to accept such contributions if they comply with all regulatory norms. FCRA registration remains valid for **five years**, with renewal subject to scrutiny and submission **six months before expiry**.

The World Para Athletics Championships 2025

- India is set to host its first-ever edition of the prestigious World Para Athletics Championships in 2025, marking a historic moment for the country. The event, inaugurated at New Delhi's iconic Jawaharlal Nehru Stadium, is a significant milestone in India's sporting journey.
- The World Para Athletics Championships is the premier global event for para-athletes, held biennially under the aegis of World Para Athletics, a branch of the International Paralympic Committee (IPC). It stands as the highest competitive platform for differently-abled track and field athletes, second only to the Paralympic Games. In 2025, New Delhi will become the host city for the first time, with the newly constructed, world-class Mondo track at the Jawaharlal Nehru Stadium serving as the competition venue.
- The championship's mascot, "Viraaj," is a young elephant featuring a blade prosthesis. Embodying the values of strength, resilience, inclusivity, courage, and optimism, Viraaj symbolizes the indomitable spirit of para-athletes.
- The history of para-athletics can be traced back to the Stoke Mandeville Games in 1952, later integrated into the Rome 1960 Paralympics. The World Para Athletics Championships formally began in 1994 in Berlin, Germany. The 2025 edition emphasizes inclusivity through events like mixed-gender relays and the active participation of high-support needs athletes.
- The event's logo and visual identity draw from Indian heritage and aim to reflect values of inclusivity, sporting excellence, and courage. The championship underscores India's growing ambitions on the global sports stage while reaffirming its commitment to diversity, equality, and accessible sports infrastructure.

Ek Din Ek Ghanta Ek Saath Initiative

Context:
Over five crore citizens across India took part in the *Ek Din Ek Ghanta Ek Saath* initiative, held under the Swachhata Hi Seva (SHS) 2025 campaign, demonstrating mass commitment to public hygiene and civic responsibility.

About the Initiative:

- This nationwide voluntary cleanliness campaign, launched under the SHS initiative, is spearheaded by the Ministry of Housing and Urban Affairs (MoHUA) in collaboration with the Department of Drinking Water and Sanitation under the Ministry of Jal Shakti. The essence of the campaign lies in mobilising citizens to contribute one hour of *shramdaan*—voluntary physical labour—for cleaning public spaces across cities, towns, and villages.
- The initiative aims to reinforce the objectives of the Swachh Bharat Mission (SBM) by transforming cleanliness into a true *jan andolan*, or people's movement. The focus is on eradicating garbage-vulnerable spots, maintaining cleaner surroundings, and cultivating plastic-free, sustainable practices.
- A key strength of the campaign is its scale and inclusivity. More than five crore individuals, including municipal workers, school and college students, NGOs, self-help groups, local officials, and community members, came together in a unified act of civic participation. The drive targeted seven lakh Community Toilet Units and three lakh other public areas nationwide. Its outreach extended to political leaders and gram panchayats, embracing India's demographic and geographic diversity. In alignment with environmental sustainability goals, the initiative also promoted zero-waste celebrations, encouraged eco-friendly decorations, and sought to eliminate single-use plastics.

Prayas Neuro Rehabilitation Centre

Context:
The Ministry of Ayush has inaugurated "Prayas," a pioneering Integrated Neuro-Rehabilitation Centre at the All India Institute of Ayurveda (AIIA), Goa. This marks a significant step in combining traditional Indian systems of medicine with modern therapeutic interventions in the domain of paediatric neuro-care.

About Prayas:

- Prayas is a first-of-its-kind centre that blends Ayurveda, Yoga, Physiotherapy, Speech Therapy, Occupational Therapy, and contemporary Paediatrics within a unified institutional framework. Situated at AIIA in Goa, it has been developed to deliver integrative, holistic, and patient-focused care, specifically for children suffering from neurological and developmental disorders.
- The centre aims to be more than just a treatment facility. It serves as a research and innovation hub, promoting evidence-based approaches that fuse India's rich traditional wisdom with modern rehabilitation sciences. Prayas will also play a pivotal role in training future healthcare providers and scaling Ayush-led innovations in neuro-care across India.
- The initiative aligns with India's National Health Policy and reflects a commitment to affordable, inclusive, and multi-disciplinary healthcare. It also provides emotional and therapeutic support to families, ensuring a comprehensive caregiving ecosystem for children in need of long-term rehabilitation.

The Armed Forces (Special Powers) Act, 1958

Context:
The Government of India has extended the Armed Forces (Special Powers) Act, 1958 (AFSPA) in select districts of Manipur, Nagaland, and Arunachal Pradesh for another six months, citing continued security concerns.

About AFSPA:

- The AFSPA, enacted in 1958, provides special powers to the armed forces in regions declared as "disturbed areas." Its main purpose is to facilitate swift and decisive action in areas facing insurgency, where normal law and order mechanisms are deemed inadequate.
- Under Section 3 of the Act, the Governor of a state, an Administrator of a Union Territory, or the Central Government can notify an area as disturbed, a status that

must be reviewed every six months. The official notification is published in the Gazette.

- Once in effect, the law empowers armed forces personnel to open fire (even fatally) on individuals violating prohibitory orders, arrest individuals without warrant on suspicion of cognisable offences, and search premises without warrant. It also authorises them to destroy arms caches and insurgent hideouts. However, any individual taken into custody must be handed over to the local police at the earliest opportunity.
- AFSPA also provides legal immunity to armed forces personnel, shielding them from prosecution unless prior approval is granted by the Central Government. The Act continues to be a contentious yet crucial legal instrument for maintaining internal security and supporting civil governance in conflict-prone areas.

Kokrajhar–Gelephu Special Railway Project (SRP)

The Kokrajhar–Gelephu railway line, stretching 69 kilometers, has been officially declared a **Special Railway Project (SRP)** by Indian Railways. This significant infrastructure initiative marks **India's first-ever rail link to Bhutan**, opening a new chapter in regional connectivity and diplomacy.

- The Kokrajhar–Gelephu rail line is a strategic **cross-border transportation project** that aims to link Kokrajhar in Assam, India, with Gelephu in Bhutan. This will be Bhutan's **first railway connection**, enhancing its transport infrastructure and promoting stronger bilateral relations with India.
- **Implementing Agencies and Policy Framework:** The project is being developed by the **Northeast Frontier Railway (NFR)** and falls under the legislative ambit of the **Railways Act, 1989**. It enjoys full backing from the **Government of India** as part of its broader **Act East Policy**, which seeks to bolster connectivity and cooperation in Northeast India and with neighbouring countries.
- **Primary Objectives:** The SRP has multiple aims. Strategically, it is designed to enhance **cross-border infrastructure** with Bhutan, thereby reinforcing India's northeastern frontiers. Economically, it is expected to **stimulate trade, tourism**, and **people-to-people contact** between the two nations. From a national security standpoint, the project aligns with India's interest in **fortifying border infrastructure** in the northeast.
- **Key Features of the Rail Line:** The total **project cost is estimated at ₹3,500 crore**. The route will include **six newly planned stations**: Balajan, Garubhasa, Runikhata, Shantipur, Dadgiri, and Gelephu. In terms of connectivity infrastructure, the line will feature **one Road Over Bridge** and **39 Road Under Bridges**, ensuring smooth vehicular movement and safety. To navigate difficult terrain, the project also includes the construction of **two viaducts**, each 11 meters in length.
- **Significance of the Project:** This railway line will be **Bhutan's first-ever access to rail transport**, marking a historic advancement in the Himalayan nation's infrastructure. It also strengthens India's **Act East Policy** by improving Northeast India's integration with South and Southeast Asia. The route has the potential to emerge as a **regional trade corridor**, expediting the movement of goods between India and Bhutan and fostering economic synergy in the region.

Financial Intelligence Unit-India and Its Role in Combating Illicit Financial Activities

- The Department of Telecommunications (DoT) has recently signed a Memorandum of Understanding (MoU) with the Financial Intelligence Unit-India (FIU-IND) to enhance data-sharing mechanisms and improve coordination between government agencies. This move is expected to bolster efforts to track and address financial crimes more efficiently.
- Established by the Government of India in 2004, FIU-IND serves as the central national agency for managing information related to suspect financial transactions.

It operates as an independent body reporting directly to the Economic Intelligence Council (EIC), which is chaired by the Finance Minister.

- The functions of FIU-IND encompass several key areas. It collects a wide range of financial transaction reports from regulated entities, including Cash Transaction Reports (CTRs), Cross Border Wire Transfer Reports (CBWTRs), Suspicious Transaction Reports (STRs), and reports relating to purchases or sales of immovable property (IPRs), as well as transactions involving non-profit organisations (NTRs).
- Once collected, this data is meticulously analyzed to detect suspicious patterns that may indicate money laundering or other financial crimes. Based on these findings, the FIU shares relevant intelligence with national enforcement and regulatory authorities, as well as with foreign Financial Intelligence Units, facilitating cross-border collaboration.
- Additionally, FIU-IND acts as a central repository, maintaining a comprehensive national database of financial transactions. It also plays a key role in coordinating national and international responses to financial crimes by strengthening networks for information exchange. Furthermore, the unit conducts strategic research to monitor trends in money laundering and identify emerging threats, which aids in formulating proactive policy responses.

Indian Navy's Port Call to Kenya

- The **First Training Squadron (1TS)** of the Indian Navy, comprising **INS Tir, INS Sujata, INS Shardul**, and **ICGS Sarathi**, recently made a **port call at Mombasa, Kenya**, as part of an extended deployment in the **South West Indian Ocean Region**. This deployment has previously included visits to Seychelles, Mauritius, La Réunion, and Mozambique.
- The visit involves multiple engagements including **joint training exercises**, **Maritime Partnership Exercise (MPX)**, **Passage Exercise (PASSEX)**, as well as **professional exchanges**, **yoga sessions**, **cultural performances**, and **community outreach** initiatives. These activities underscore India's growing diplomatic and maritime cooperation with African nations under the umbrella of **MAHASAGAR (Mutual and Holistic Advancement for Security and Growth Across Regions)**, reflecting India's commitment to regional maritime security and shared prosperity.

Kenya: Political and Geographical Profile:

- Located in **East Africa**, Kenya shares borders with Somalia to the northeast, Ethiopia to the north, South Sudan to the northwest, Uganda to the west, Tanzania to the south, and the Indian Ocean to the east. Politically, it holds significance as **Nairobi hosts the headquarters of UNEP** (United Nations Environment Programme) and **UN-HABITAT**.
- Geographically, Kenya is **almost bisected by the Equator** and is home to notable water bodies like **Lake Victoria** and **Lake Turkana**, and major rivers such as the **Athi/Galana**, **Tana**, and **Mara**. The **Aberdare** and **Mau Escarpment** are its major mountain ranges, and **Mount Kenya**, the country's highest peak, is Africa's second-highest after Kilimanjaro.

CAG Report on States' Macro-Fiscal Health – An In-Depth Analysis

Introduction

India's States collectively manage vast public finances, with individual budgets that often surpass those of entire nations. In this context, the decadal assessment of States' macro-fiscal health released by the Comptroller and Auditor General (CAG) offers critical insights into how reforms, economic growth, and disruptions like the COVID-19 pandemic have shaped their fiscal trajectories over the past decade. The report uncovers a landscape marked by wide disparities—while some States have maintained revenue surpluses, others grapple with escalating debt, exposing the uneven nature of fiscal sustainability and policy decision-making across the country.

The Macro-Fiscal Landscape of Indian States

- During the early 2000s, Indian States were plagued by persistent fiscal deficits. Over time, structural reforms in tax administration, the rollout of the Goods

and Services Tax (GST), and a period of robust economic growth during the 2010s allowed many States to stabilise their finances. Some even began posting surpluses. However, the pandemic significantly derailed this progress. As revenue collections collapsed and emergency spending surged, most States were once again pushed into fiscal stress.

- Presently, India's States exhibit a mixed fiscal profile. Wealthier States like Maharashtra finance a substantial portion of their budgets through internal revenues, whereas resource-constrained States such as Arunachal Pradesh remain heavily reliant on fiscal transfers from the Union government. This vertical imbalance—where States' expenditure responsibilities outpace their revenue-generating capabilities—continues to expose the structural weaknesses of India's federal fiscal system.

Dependence on Volatile Revenue Sources

- One of the CAG report's key observations is the growing reliance of States on unpredictable revenue streams. Kerala, for example, earned nearly ₹12,000 crore in 2022–23 from lottery proceeds. Odisha derived a staggering 90% of its non-tax revenue from mining royalties. Meanwhile, Telangana raised close to ₹9,800 crore by monetising public land assets. Although these inflows provide temporary relief, they are fundamentally unstable. Lottery income depends on public participation, mining revenues fluctuate with global commodity markets, and land sales are inherently non-recurring.
- Even States that report fiscal surpluses often remain dependent on central transfers. Uttar Pradesh, for instance, despite being among the larger States, generates only 42% of its total receipts internally. This overreliance on volatile and external sources of funding limits their capacity for sustainable, autonomous fiscal planning.

Debt Accumulation and Borrowing Trends

- Rising levels of public debt represent another worrying trend. The borrowing patterns of States have diverged significantly, with some showing restraint and others expanding their liabilities rapidly. Andhra Pradesh, for example, tripled its borrowings by 2022–23, touching ₹1.86 lakh crore and pushing its debt-to-GSDP ratio to 35%. Bihar's debt reached close to 39% of GSDP after it doubled its borrowings in the same period. Kerala's debt stood at 37% of GSDP, even after post-pandemic efforts to limit borrowing. Punjab remains under severe fiscal pressure, with total liabilities touching 45% of its GSDP.
- On the other hand, Odisha presents a rare case of fiscal prudence. By reducing its borrowings, the State has brought down its debt-to-GSDP ratio to just 15%, the lowest in the country. The pandemic served as a fiscal watershed. States such as Karnataka and Maharashtra scaled back borrowings after 2021, but others—including Andhra Pradesh, Rajasthan, and Telangana—continued to expand their fiscal footprint, revealing stark differences in strategic outlook.

The Paradox of Welfare Spending

- One of the most striking insights from the CAG report is the emergence of a welfare paradox. Even as some States report stable or surplus budgets, critical social sectors such as health, education, and rural infrastructure remain underfunded. This illusion of fiscal health is often sustained by off-budget borrowings, pending GST compensation, and increased central transfers.
- Populist political measures further compound the issue. Policies like free electricity, farm loan waivers, and cash disbursements frequently bypass standard budgetary channels and are instead financed through indirect means such as government guarantees and the use of special purpose vehicles (SPVs). These approaches obscure the true extent of fiscal obligations, creating the appearance of sustainability while deferring real financial liabilities to the future.

Structural Challenges in Fiscal Federalism

- The CAG's findings expose systemic issues embedded in the country's model of fiscal

federalism. First, the dependency on unstable revenue sources impairs the States' ability to plan for long-term developmental goals. Second, the rising debt burdens—especially among smaller and economically weaker States—risk leading to a debt overhang, where future borrowing becomes constrained due to existing liabilities. Third, the persistent vertical fiscal imbalance continues to erode the financial autonomy of States, as they are forced to rely on Union transfers to meet basic expenditure needs.

- Additionally, the growing trend of welfare populism undermines fiscal discipline. While these measures are politically attractive, they rarely yield long-term developmental gains and frequently divert funds from capital expenditure and public services that could provide broader economic benefits. The report stresses that unless States refocus on productive investments, diversify their revenue base, and institutionalise fiscal transparency, they risk maintaining one of the world's largest welfare regimes on an increasingly fragile fiscal foundation.

Conclusion

- The CAG's decade-long assessment of States' macro-fiscal health lays bare the complex challenges facing sub-national public finance in India. While States like Odisha demonstrate that careful fiscal management is possible even within existing constraints, others such as Punjab and Kerala remain exposed to structural vulnerabilities stemming from high debt and uncertain revenues. The welfare paradox—lavish spending amidst weak financial capacity—symbolises the tension between political imperatives and fiscal sustainability.
- To ensure that India's federal structure remains robust and resilient, States must adopt balanced fiscal strategies that simultaneously address the need for growth, social welfare, and long-term economic stability. Fiscal sustainability can no longer be deferred; it must be embedded into the very framework of governance at the State level.

Delhi's Loudspeaker Use Extended for Festivals: Legal Framework, Court Judgments, and Public Concerns

- Delhi Chief Minister Rekha Gupta recently declared that loudspeakers will be permitted until midnight during cultural events such as Ramlila and Durga Puja. This decision effectively extends the current 10 pm limit by two hours and comes within the scope of legal provisions that allow for relaxation of noise restrictions during religious and cultural festivities. However, it also reignites the ongoing debate between cultural freedom and public health concerns.
- Under the existing legal regime, the use of loudspeakers in India is governed by the **Noise Pollution (Regulation and Control) Rules, 2000**, framed under the **Environment (Protection) Act, 1986**. Rule 5(1) of these rules mandates that written permission must be obtained from competent authorities prior to using loudspeakers. Rule 5(2) strictly prohibits their use between 10 pm and 6 am, except within soundproof venues like auditoriums and conference halls.
- Noise limits under these rules vary by area type. In residential zones, noise should not exceed **55 decibels (dB)** during the day (6 am to 10 pm) and must remain below **45 dB** at night. For context, a whisper is around 30 dB, whereas normal human conversation reaches approximately 60 dB. Crucially, Rule 5(3) grants state governments the authority to relax time restrictions during festivals and public celebrations. This rule allows up to **15 days per year** where loudspeaker use is permitted until **midnight**, provided the exemptions apply to the entire state and do not infringe upon designated silence zones.
- Delhi's recent decision to extend the permissible hours for loudspeakers during festivals falls squarely within this exception. However, the broader legal and judicial interpretations surrounding noise pollution in India highlight a nuanced and often contentious balance between cultural practices and fundamental rights.

- Over the last two decades, **Indian courts have played a critical role** in shaping the legal discourse around loudspeaker usage, especially where religious freedoms intersect with the right to a peaceful living environment.
- The **Supreme Court of India** has issued several landmark rulings on this subject. In a 2000 judgment, it clarified that **no religion requires prayers or rituals to be performed through sound amplification that disturbs others**, rejecting the notion that loudspeakers are protected under **Article 25** (freedom of religion). Later, in 2005, the Court underscored that the **right to a noise-free environment** is embedded within **Article 21** (right to life), stating that **"aural aggression"** cannot be shielded under the banner of free speech. These rulings were pivotal in cementing the 10 pm to 6 am ban on loudspeaker use.
- Though Rule 5(3)'s exemption was upheld, the Supreme Court imposed stringent conditions for its implementation. It ruled that only **state governments** have the authority to invoke the exemption, it must apply **uniformly across the state**, and **silence zones must remain unaffected**.
- Subsequently, various **High Courts have echoed and reinforced** these principles. In 2016, the **Bombay High Court** ruled that loudspeakers are not integral to any religion and reprimanded the government for failing to implement noise control laws effectively. The **Karnataka High Court** in 2018 allowed indoor concerts during restricted hours, provided boundary noise did not breach legal limits. In 2019, the **Punjab & Haryana High Court** made it compulsory to obtain prior written approval for any religious loudspeaker use and initiated a grievance redressal mechanism. A notable ruling in 2020 by the **Allahabad High Court** stated that while **Azaan** is an essential religious practice, **loudspeakers are not a historical requirement** for its performance.
- Most recently, in 2025, the **Bombay High Court introduced a tiered penalty system** to address violations of loudspeaker norms. First-time offenders would receive a warning, repeated violations would result in fines, and continued breaches could lead to the seizure of the sound equipment. The court further recommended evaluating the **cumulative impact of multiple noise sources** and urged the deployment of **modern enforcement technologies**, such as **mobile-based decibel monitoring apps** and **auto-limiters in loudspeakers**, to maintain compliance.
- In light of this judicial backdrop, Delhi's extension of the loudspeaker deadline has sparked criticism from environmentalists and public health experts. They argue that the move represents a **regressive step**, undermining the very purpose of the **Noise Pollution Rules**, which are designed to protect vulnerable groups such as **children, patients**, and the **elderly** from excessive noise exposure. Activists have cautioned that public health is being compromised for the sake of short-term celebratory convenience.
- Data from 2024 underlines these concerns. The **Delhi Police received over 40,000 noise-related complaints**, with a significant **82% attributed to DJs and loudspeakers**. In response, new guidelines were issued in March, tightening the regulatory framework. These guidelines mandated that written permission must be secured for using loudspeakers, and violators would be booked under **Sections 270, 292, and 293 of the Bharatiya Nyaya Sanhita (BNS)**. Furthermore, the permissible deviation above ambient noise levels was reduced from **10 dBA to 5 dBA** for private sound systems, significantly narrowing the allowance for elevated sound levels.
- In sum, while Delhi's extension of loudspeaker timings for festivals is **legally permissible**, it also reignites longstanding concerns about the **adverse health and environmental impacts of noise pollution**. The debate continues to revolve around the challenge of **balancing cultural expression with constitutional rights to a peaceful**

environment, amidst rising urban noise levels and judicial insistence on strict compliance.

Sonam Wangchuk Detained Under NSA: Spotlight on India's Preventive Detention Framework

- Prominent climate activist Sonam Wangchuk, who has been at the forefront of the movement demanding statehood for Ladakh and the inclusion of the region under the Sixth Schedule of the Constitution, was recently detained under the National Security Act (NSA). Following his arrest, he was transferred to Jodhpur jail. The central government has accused Wangchuk of allegedly inciting violent protests in Leh, during which four individuals lost their lives in police firing and 50 others sustained injuries.
- The case has reignited national debate on the NSA, one of India's most stringent preventive detention laws. Originally designed to combat threats to national security, public order, and the availability of essential supplies and services, the law has often been invoked against separatists, gang leaders, radical preachers, and protestors. Its use in Wangchuk's case, however, has raised serious concerns about its potential for overreach and suppression of dissent.

Understanding Preventive Detention and Its Legal Foundation

- Preventive detention refers to the detention of a person not because they have committed a crime, but because authorities believe that their future actions could pose a threat to public order, national security, or the delivery of essential services. The core idea is anticipatory — to prevent harm before it occurs, as opposed to punishing someone for a past offence.
- This concept stands in contrast to punitive detention, where an individual is detained following a judicial trial and conviction for an established offence. Preventive detention is pre-emptive in nature, based on suspicion rather than evidence proven in a court of law.
- The legal basis for preventive detention in India is found in Article 22 of the Constitution. The article is divided into two parts — the first pertains to detention under ordinary criminal law and ensures safeguards like legal representation and speedy trial. The second part specifically relates to preventive detention laws, allowing detention without trial under certain conditions.
- Under Article 22, a person may be preventively detained for up to three months without the approval of an Advisory Board. Detention beyond three months requires review and approval from this Board, which consists of sitting judges of a High Court. The detained individual must be informed of the grounds for detention, although authorities are permitted to withhold certain details if disclosing them is deemed against the public interest.

Evolution and Scope of the National Security Act (NSA)

- Preventive detention laws in India have colonial roots and were continued after Independence through the Preventive Detention Act of 1950. During the Emergency period (1975–77), the Maintenance of Internal Security Act (MISA) was infamously used to suppress political opposition. MISA was repealed, but in 1980, the National Security Act (NSA) was introduced, institutionalising preventive detention with a fresh mandate.
- Under the NSA, the Central Government, state governments, District Magistrates, and specially empowered Police Commissioners can issue detention orders to prevent individuals from acting in ways that could be considered "prejudicial to the defence of India, public order, foreign relations, national security, or the maintenance of essential supplies and services."
- Unlike arrests under criminal law, which require formal charges, trials, and legal defence, NSA detentions can occur without any such process. However, the Act provides limited procedural safeguards: detainees must be informed

of the grounds for detention within 5 to 15 days, and they have the right to make a representation to the government. An Advisory Board composed of High Court judges must examine the case within three weeks and determine whether sufficient cause exists for continued detention.

- The maximum period of detention under the NSA is 12 months, although the government has the authority to revoke the order at any point. Still, the law places significant power in the hands of the executive: the detainee has no right to legal counsel before the Advisory Board, and authorities can withhold critical information from the detainee on grounds of public interest.

Legal Options Available to Sonam Wangchuk

- As per current legal provisions, Wangchuk can challenge his preventive detention in multiple ways. He may submit a representation to the government against the detention order, a step that must be considered by the authorities and the Advisory Board. If the Advisory Board finds that there is "no sufficient cause" for the detention, it must direct Wangchuk's release.
- Alternatively, Wangchuk can approach the High Court under Article 226 or the Supreme Court under Article 32 of the Constitution to question the legality and validity of the NSA order. These constitutional remedies are frequently used to seek relief from arbitrary or unlawful detentions. In addition, the government itself retains the authority to revoke the detention order at any stage, without the need for court intervention.
- Despite these options, Wangchuk remains in custody without formal charges or access to open-court proceedings — a reality permitted under the NSA and one that underscores the discretionary power the law confers upon authorities.

The NSA in Practice: Use and Patterns of Misuse

- Over the years, the NSA has been invoked in a range of high-profile and controversial cases. In 2023, radical Sikh preacher Amritpal Singh was detained under the NSA and moved to Dibrugarh jail. Earlier, in 2017, Bhim Army chief Chandrashekhar Azad was also detained under the Act — a move that was later quashed by the Supreme Court for being arbitrary.
- During the anti-Citizenship Amendment Act (CAA) protests in 2020, multiple protestors were detained under the NSA, particularly in Uttar Pradesh. Similarly, the law was invoked against Dr. Kafeel Khan in 2020, whose detention was later struck down by the Allahabad High Court for lacking adequate justification.
- States such as Uttar Pradesh and Madhya Pradesh have increasingly used the NSA in a wide array of cases including communal violence, alleged incidents of "Love Jihad," cow slaughter, and habitual offences. These actions have led to criticism that the definition of "national security" is being expanded beyond its original intent to silence dissent or target minority groups.
- Courts have at times intervened to curb misuse. In 2012, the Supreme Court ruled the preventive detention of a man accused of kerosene black-marketing as unjustified. Such rulings highlight the tension between state power and individual liberties, as well as the judiciary's role in upholding constitutional protections.

Conclusion: Balancing Security with Rights

- The detention of Sonam Wangchuk under the NSA once again brings attention to the delicate balance between national security and civil liberties. While preventive detention laws like the NSA are designed to protect the state from imminent threats, their opaque procedures and expansive scope make them prone to misuse. Wangchuk's case, particularly given his peaceful activism, raises important questions about the application of such laws in democratic societies.
- The ongoing legal proceedings and potential judicial scrutiny may provide an opportunity to re-examine the safeguards — or lack thereof — within the NSA, and whether current preventive detention

practices are compatible with constitutional values and human rights.

Agri-Stack Scheme

- The government of Uttar Pradesh has recently issued a stern directive to its district magistrates, warning of strict punitive measures against officials who fail to complete farmer registrations under the Agri-Stack scheme within the stipulated deadlines.
- The Agri-Stack is a foundational digital infrastructure being developed to enable the delivery of data-driven digital services aimed at empowering Indian farmers and enhancing agricultural productivity. This initiative integrates diverse datasets including farmer information, land records, and benefits from various government schemes into a unified digital platform.
- Implemented by the Ministry of Agriculture and Farmer Welfare in close cooperation with State revenue and agriculture departments, the Agri-Stack serves as a critical backbone allowing both government and private entities to provide farmers with tailored, timely, and validated services. Its goals include facilitating timely access to finance and agricultural inputs, delivering localized early warnings for disasters such as pest outbreaks, droughts, and floods, simplifying the lifecycle of government scheme benefits, and enabling private sector participation to expand farmers' choices.
- Additionally, it aims to improve governance efficiency by ensuring data availability for policy decisions, implementation, and feedback, thereby maximizing inclusion and reducing fraud.
- At the core of Agri-Stack is the Farmer Registry—a federated database compiled by States adhering to common standards and cached by the Centre. Each registered farmer receives a unique FarmerID, functionally linked to Aadhaar as per India's Electronic Authentication Framework (IndEA 2.0), along with a digitally verifiable credential. The registry is dynamically connected to farmland records, used exclusively for non-legal purposes such as planning, advisory services, and scheme delivery.
- Another critical component is the Unified Farmer Service Interface (UFSI), designed to enable seamless interoperability among stakeholders, including government agencies, banks, agritech firms, and other authorized private users. UFSI supports a federated data structure with consent-based access, facilitating standardised interactions and secure data exchange.
- The Crop Sown Registry represents a federated system tracking crops planted across India each season on individual farms. It replaces traditional paper-based surveys with advanced methods like smartphone data collection, drone imagery, and satellite monitoring, improving accuracy and reliability.
- An important element of Agri-Stack is the Agri Stack Sandbox, which offers a simulated environment where authorized stakeholders can safely test and validate their applications using sample data before gaining full production access.

Men's Cricket Asia Cup 2025

- India secured its record ninth Asia Cup title by defeating Pakistan in the final held in Dubai in 2025. The victory was anchored by Tilak Varma's unbeaten 69 runs, helping India chase down the target successfully.
- The Asia Cup is a continental men's cricket tournament conducted biennially to crown Asia's best team. Matches in the tournament hold official ODI or T20 International status as recognized by the International Cricket Council (ICC). The event is organized by the Asian Cricket Council (ACC), which was established in 1983 to promote goodwill and cooperation among Asian countries through cricket.
- The official mascot for the 2025 edition was "Sheru," symbolizing strength, courage, and the unity of Asian cricket. Since its inception in 1984, the Asia Cup has been the only continental cricket competition, hosted on a rotational basis

among member countries. Since 2016, the tournament alternates between ODI and T20I formats. Political tensions have occasionally caused boycotts or participation issues.

- The 17th edition in 2025 was held in the United Arab Emirates due to ongoing India-Pakistan tensions. The format featured eight teams, including all full ACC members, competing in T20 International matches. India defeated Pakistan by five wickets in the final. Tilak Varma was awarded Man of the Match for his unbeaten 69 runs off 53 balls, while Abhishek Sharma earned the Man of the Series accolade.
- India remains the most successful team in Asia Cup history, with nine titles to its name (seven in ODI and two in T20I formats). Sri Lanka follows with six titles and Pakistan with two. Notably, India maintained an undefeated record against Pakistan in the 2025 Asia Cup.

Study in India (SII) Portal

- The University Grants Commission (UGC) has mandated that all foreign nationals enrolled in Higher Education Institutions (HEIs) and universities across India must register through the newly launched Study In India (SII) portal. This portal is a flagship initiative of the Ministry of Education aimed at encouraging international students to explore educational opportunities within India's top universities.
- The SII portal functions as a single-window platform, streamlining the process of application submission, admission, and visa application for students pursuing regular, short-term, or long-term courses at Indian academic institutions. It provides a comprehensive overview of academic programs, including undergraduate, postgraduate, and doctoral courses. Additionally, the portal offers detailed information on courses rooted in the Indian Knowledge System, such as Yoga, Ayurveda, and classical arts, along with insights into academic facilities and research support.
- Registration on the portal is mandatory for all foreign students wishing to study in India, and upon successful registration, a unique Study In India ID (SII-ID) is generated. This SII-ID must be quoted during the student visa application process.

Crime in India 2023: NCRB Report Highlights Surge in Cybercrime

The National Crime Records Bureau (NCRB) has released the Crime in India 2023 report after a two-year hiatus, revealing a sharp increase in cybercrime cases across the country. The report underscores growing vulnerabilities within India's digital infrastructure, with fraud, extortion, and sexual exploitation emerging as the primary motives behind these cyber offenses.

Key Findings from the Report

- The overall crime statistics for 2023 indicate a 7.2% rise in recorded crimes, totaling approximately 6.24 million cases. On average, this translates to one crime being recorded every five seconds. While there has been a decline in certain traditional violent crimes, such as murder (down 2.8%) and rape (down 5.9%), other categories have seen notable increases. Economic offenses and cybercrime cases have surged, alongside miscellaneous crimes such as obstruction on public ways under Section 283 of the IPC, which increased by 62%, and violations of the Motor Vehicle Act, which more than doubled with a 103% rise.
- Crimes targeting vulnerable populations paint a concerning picture as well. Incidents against women rose marginally by 0.7%, totaling 448,211 cases. Crimes against Scheduled Castes (SCs) increased slightly by 0.4%, reaching 57,789 cases, while crimes against children witnessed a sharper rise of 9.2%. The most significant increase was observed in crimes against Scheduled Tribes (STs), which jumped by 28.8%.

Trends in Cybercrime

- Cybercrime cases surged dramatically by 31.2% in 2023, reaching 86,420 incidents compared to 65,893 in 2022. Correspondingly, the cybercrime rate increased from 4.8% to 6.2% during the

same period. This rise follows a consistent upward trajectory observed since 2018, when the NCRB reported 27,248 cases. The numbers grew steadily each year, with 44,735 in 2019, 50,035 in 2020, 52,974 in 2021, and 65,893 in 2022.

- Examining the motives behind cybercrime, fraud dominates, accounting for 68.9% of the total cases (59,526 incidents), making it the largest category. Sexual exploitation-related offenses comprised 4.9% (4,199 cases), while extortion accounted for 3.8% (3,326 cases).

State-Wise Distribution of Cybercrime

Karnataka reported the highest number of cybercrime cases in 2023, with 21,889 incidents, reflecting a steep increase from 8,136 cases in 2021 and 12,556 in 2022. Within Karnataka's cases, 18,166 were identified as cheating by personation, and 1,007 involved the transfer of obscene videos. Telangana followed with 18,236 cases in 2023, up from 15,297 in the previous year. Uttar Pradesh registered 10,794 cybercrime cases in 2023, marking a slight increase from 10,117 in 2022.

Economic Offenses

Economic crimes continued to rise steadily, with a total of 204,973 cases reported in 2023, representing a 6% increase from 193,385 cases in 2022. This broad category includes forgery, cheating, and fraud (FCF), which alone accounted for 181,553 cases. Other notable subcategories include criminal breach of trust with 22,759 cases and counterfeiting at 661 cases.

Analysis and Implications

- The NCRB report reveals a shifting pattern in India's crime landscape, moving away from traditional violent offenses toward economic and technology-driven crimes. This transformation is also reflected in changes to crime categorization and monitoring, as 2023 marked the final annual report under the Indian Penal Code (IPC) before the Bharatiya Nyaya Sanhita (BNS) came into effect in July 2024.
- Digital fraud emerges as the most pressing challenge within the cybercrime domain. The concentration of cases in states like Karnataka, Telangana, and Uttar Pradesh suggests that rapid urbanization, the proliferation of information technology, and increased digital adoption are significant contributing factors.
- The consistent rise in economic offenses highlights the urgent need for enhanced financial cybersecurity frameworks to safeguard economic interests and maintain public trust.

The Way Forward

- To address these evolving challenges, it is critical to strengthen India's cybersecurity infrastructure and promote widespread digital literacy programs. Law enforcement agencies must be equipped with advanced cyber forensic tools and receive specialized training to investigate and prosecute cyber offenses effectively.
- Enhancing public-private partnerships will also be vital for efficient monitoring, prevention, and swift response to cyber threats. A collaborative, multi-stakeholder approach involving the government, judiciary, technology companies, and citizens is essential to mitigate risks and foster a robust, resilient digital ecosystem in India.

Preponderance of Probability

- The decision in the case concerning the ownership of 1,500 square yards in Ayodhya was based on the **"test of preponderance of probabilities"**, as explained by former Chief Justice of India D.Y. Chandrachud. This principle was applied to determine who held possession of the inner and outer courtyards of the disputed site.
- This is a well-recognized standard of proof used in civil litigation. The concept revolves around the likelihood of one event or fact being more probable than another. A fact is considered proven if the available evidence shows that its occurrence is more likely than not. The emphasis is not on establishing absolute certainty or removing every doubt, but rather on assessing which party presents a more convincing and probable account.
- In civil legal proceedings, the party bearing the burden of proof must

establish that their version of events appears more plausible when compared to the opposing narrative. This civil law threshold differs significantly from the **"beyond a reasonable doubt"** standard used in criminal trials, where the prosecution must meet a much higher burden of proof to establish the guilt of the accused.

- The Supreme Court of India, in the landmark case of **Narayan Ganesh Dastane v. Sucheta Narayan Dastane (1975)**, clarified that under **Section 3 of the Indian Evidence Act**, a fact is considered proved when the court believes in its existence on the basis of the **preponderance of probability**. The judicial process involves evaluating conflicting scenarios and adopting the one that appears most probable.
- This standard of proof is primarily employed in civil matters, including disputes concerning contracts, property rights, torts, and other civil claims. The claimant must demonstrate that their assertions are more likely true than not. For instance, in a contractual dispute involving breach of contract, it must be shown that it is more probable than not that the breach occurred.

Swachh Shehar Jodi Initiative

- The **Ministry of Housing and Urban Affairs (MoHUA)** has recently launched the **Swachh Shehar Jodi (SSJ)** initiative to enhance urban sanitation practices under the **Swachh Bharat Mission – Urban (SBM-U)**.
- This initiative establishes a mentorship framework involving **72 high-performing cities (mentors)** and approximately **200 low-performing cities (mentees)**. The mentor cities have been selected based on their outstanding performance in the **Swachh Survekshan rankings**. The goal is to promote **knowledge-sharing**, **peer learning**, and **replication of successful sanitation and waste management models** across urban centres.

Objectives

The initiative is intended to assist low-ranking cities by drawing on the expertise and best practices of top performers, thereby enabling them to:

- Implement effective waste management systems
- Improve overall cleanliness standards
- Foster sustainable urban sanitation solutions

Implementation Criteria

Mentor cities are selected based on the following:

- Those ranked 1st, 2nd, or 3rd in **Swachh Survekshan (SS) 2022, 2023, and 2024**
- Top three cities across different population brackets in **SS 2024**
- Promising clean cities emerging from each State/UT in SS 2024

Mentee cities are chosen using these criteria:

- Listed among the bottom ranks in State-level cumulative **SS rankings**
- **Geographical proximity** to the corresponding mentor city

Funding Support

Mentor and mentee cities can utilize **Capacity Building (CB) Funds** allocated to States/UTs under **SBM-U 2.0**. Additionally, States/UTs are encouraged to provide supplementary funding as needed. Funds from external sources or partner organizations may also be leveraged to support implementation.

INTERNATIONAL RELATIONS AND SECURITY

PM Modi–Xi Jinping Tianjin Summit 2025: Strategic Realignments and Diplomatic Outcomes

Prime Minister Narendra Modi met Chinese President Xi Jinping on the sidelines of the Shanghai Cooperation Organisation (SCO) Summit held in Tianjin in 2025. The meeting marked a significant moment in India–China relations, particularly as both nations reaffirmed their shared identity as development partners rather than strategic rivals. Building upon the positive momentum from their October 2024 meeting in Kazan, both leaders stressed that bilateral differences must not be allowed to escalate into disputes and reiterated their commitment to fostering stable and constructive ties based on mutual interest, respect, and sensitivity.

Tianjin Meeting: A Landmark in India–China Engagement

This wide-ranging dialogue between PM Modi and President Xi was especially notable as it marked Modi's first visit to China in seven years. The context of the meeting was equally significant—occurring just weeks after the United States imposed a 50% tariff on Indian goods in retaliation for India's continued import of Russian oil. In this tense geopolitical climate, Modi and Xi undertook a comprehensive review of bilateral relations and regional challenges. Their discussions focused on expanding avenues for cooperation while simultaneously managing enduring strategic differences.

1. **Border Stability: A Precondition for Progress:** During the discussions, Prime Minister Modi reiterated India's position that peace and tranquillity along the Line of Actual Control (LAC) are essential for advancing the broader bilateral relationship. He metaphorically described border peace as an "insurance policy" for India–China ties. Modi also restated India's consistent and unaltered stance on Taiwan. Both sides took stock of the confidence-building measures that have been initiated since the deadly Galwan Valley clashes of 2020, with an eye towards gradually rebuilding trust and avoiding future escalations.
2. **Toward a Strategic Upgrade in Bilateral Relations:** President Xi laid out a set of proposals aimed at upgrading India–China ties to a more strategic level. These included intensifying strategic communication, fostering deeper mutual trust, expanding bilateral cooperation, promoting equitable benefits, and reinforcing collaboration in multilateral forums. Prime Minister Modi responded positively, indicating India's willingness to pursue an upgrade in strategic engagement, provided such interactions are anchored in mutual respect and reciprocal gains.
3. **Addressing Cross-Border Terrorism:** A major issue raised by Prime Minister Modi was cross-border terrorism—a threat that he described as affecting both nations. He called for stronger mutual coordination and support in tackling terrorism, underlining the shared security interests of India and China. The discussion reflected a growing recognition that terrorism, in all its forms, remains a common challenge that transcends bilateral issues and demands concerted regional responses.
4. **Economic Cooperation and Trade Realignment:** Modi and Xi acknowledged the important stabilising role that both Indian and Chinese economies play in global trade. The two leaders agreed to explore pathways to deepen bilateral investments and trade engagement, while addressing long-standing concerns such as the growing trade imbalance. Ongoing talks between government officials, businesses, and policy institutions were noted as crucial in finding common ground. The leaders also explored new ways to enhance people-to-people ties as a means of fostering long-term goodwill and cultural understanding between the two nations.
5. **Global Governance and Multilateral Coordination:** In a significant convergence of views, both leaders expressed concern over the inefficiencies and partialities that continue to plague international institutions such as the World Trade Organization (WTO) and the

United Nations (UN). Prime Minister Modi emphasized that India and China, as advocates of strategic autonomy, must resist external attempts to define their bilateral relations through the prism of a third country. President Xi, for his part, stressed the importance of cooperation between India and China as leading economies of the Global South, advocating for a stronger role in shaping a multipolar global order and defending multilateralism.

6. **Connectivity Initiatives and Regional Integration:** Connectivity also featured prominently in the dialogue. Prime Minister Modi underscored the importance of regional infrastructure projects involving Myanmar, positioning them as vital to India's Act East policy and ties with Southeast Asia. President Xi acknowledged India's perspective and expressed interest in exploring cooperative avenues. Modi extended a formal invitation to Xi to attend the 2026 BRICS Summit in India—a gesture Xi welcomed, affirming China's support for India's upcoming BRICS presidency.
7. **Shared Vision: Development Partners in an Asian Century:** A central theme of the discussion was the shared commitment to prioritising domestic development. Modi and Xi both agreed that cooperation—not rivalry—between India and China is vital not only for the well-being of their combined 2.8 billion citizens but also for ushering in an Asian century and contributing to a more balanced global power structure. The leaders concluded that peaceful coexistence, strategic maturity, and developmental alignment would be key to transforming the India–China equation from one of competition to constructive collaboration.
8. **India's Strategic Rebalancing in a Shifting Global Order:** The backdrop to Modi's China visit is India's larger diplomatic recalibration, prompted by the geopolitical disruptions created by US President Donald Trump. Recent months have seen India intensify efforts to diversify its great-power relationships, particularly in response to Washington's erratic policies. Modi's back-to-back engagements in Tokyo and Tianjin exemplify this strategic realignment—deepening India's ties with Japan while cautiously reopening avenues for engagement with China.

The Trump Factor and its Diplomatic Fallout

President Trump's recent tariff hikes on Indian goods and his reported personal criticisms of Modi—stemming from India's refusal to endorse his Nobel Peace Prize nomination—have severely strained India–US relations. Trump's unilateralism, marked by harsh demands and disregard for allies like Japan, South Korea, and Australia, has created unease across Asia. This turbulence has prompted many regional powers, including India, to re-evaluate their external alignments and pursue more balanced and independent foreign policies, including reduced tensions with China.

India's Strategic Autonomy: The Core Guiding Principle

While avoiding any overt public confrontation with the Trump administration, India has consistently signalled its unwillingness to yield to pressure. By quietly pushing back against Washington's demands and simultaneously enhancing ties with Beijing, Tokyo, Brussels, and Moscow, New Delhi has reaffirmed its commitment to strategic autonomy. The Indian Foreign Office has emphasised this principle as central to its foreign policy—ensuring that India is not seen as a passive actor aligning unquestioningly with either Washington or Beijing, but rather as a sovereign power pursuing its national interest in a complex multipolar world.

Conclusion: Parallel Paths in a Multipolar Era

While China, under intensifying pressure from the United States, is actively diversifying its foreign partnerships with Russia, Europe, and regional allies, India is charting a parallel path. Though shaped by different contexts, both countries are converging on the logic of strategic diversification. For India, this means avoiding excessive dependence on any single power, strengthening ties with multiple actors, and leveraging the emerging multipolarity to safeguard its long-term security, sovereignty, and prosperity.

Exercise Yudh Kaushal 3.0

- The Indian Army recently carried out **Exercise Yudh Kaushal 3.0** in the **Kameng region** of Arunachal Pradesh, a strategically important high-altitude area. This iteration of the exercise was significant in showcasing a seamless blend of **cutting-edge technology**, **tactical innovation**, and **professional military expertise**. Conducted under extreme conditions, the exercise tested the Army's preparedness in executing large-scale operations across multiple domains, reinforcing its ability to respond effectively in complex environments.
- The demonstration featured a wide range of modern capabilities, including **drone-based surveillance**, **real-time target tracking**, **precision strikes**, **air-littoral superiority**, and **coordinated battlefield execution**. A prominent highlight was the operational debut of the **ASHNI platoons**, recently raised to integrate next-generation technologies with battle-hardened tactical experience. Their deployment emphasized how technology-enabled tactics can serve as a game-changer in both present and future combat scenarios.
- What made Exercise Yudh Kaushal 3.0 especially unique was the active participation of the **Indian Civil Defence Industry**, aligning with the country's broader strategic vision known as the **"Decade of Transformation."** This collaboration underlined India's commitment to indigenization and the inclusion of private sector capabilities in defence preparedness.
- The exercise further validated the Indian Army's operational readiness in **harsh, high-altitude environments** and demonstrated its increasing reliance on **emerging technologies**, including **unmanned systems**, **precision-guided munitions**, and **multi-domain warfare strategies**. It reaffirmed the Army's capability to adapt swiftly to evolving threats through a blend of indigenous innovation and strategic foresight.

Ramon Magsaysay Award

- The **Ramon Magsaysay Award for 2025** has been awarded to **'Educate Girls'**, an Indian non-profit organization dedicated to improving education for underprivileged girls across the country. This recognition highlights the organization's commitment to addressing gender inequality in education through community mobilization and systemic reform.
- The **Ramon Magsaysay Award**, widely regarded as **Asia's highest honour**, was established in **1957** in memory of **Ramon Magsaysay**, the late **Philippine President**, whose values and public service ideals inspired the award's creation. Presented annually by the **Ramon Magsaysay Award Foundation (RMAF)**, the award celebrates **greatness of spirit** and **transformational leadership** in Asia.
- Each awardee receives a **certificate and a medallion** featuring the embossed profile of Ramon Magsaysay. From **1958 to 2008**, the awards were categorized into six areas: **Government Service**, **Public Service**, **Community Leadership**, **Journalism and Creative Communication**, **Peace and International Understanding**, and **Emergent Leadership**.
- In **2000**, the **Emergent Leadership category** was introduced with support from the **Ford Foundation**, aimed at recognizing individuals under **forty years of age** who are driving impactful social change at the grassroots level. From **2009 onwards**, fixed categories were discontinued, with the exception of **Emergent Leadership**.
- The awards are presented in a **formal ceremony in Manila** on **August 31st**, the birth anniversary of Ramon Magsaysay. Over the decades, the award has come to symbolize integrity, courage, and commitment in public service across Asia.

Bhairav Commando Battalions

- In a major step toward enhancing **operational agility**, the **Indian Army** has initiated the formation of the first five **Bhairav Commando Battalions** under a **"Save and Raise" model**. These elite light commando units are specifically intended to strengthen India's **swift strike capabilities** along its borders with **China and Pakistan**.
- Each **Bhairav Battalion** consists of **approximately 250 soldiers** and **7–8**

officers, making them smaller and more nimble than traditional infantry units or Para-SF teams. These units are being **formed by redeploying troops from existing infantry battalions**, rather than recruiting new personnel. The intent is to **free up the Para-Special Forces**, allowing them to concentrate on **deep-penetration and high-risk strategic missions** behind enemy lines.

- The training regimen for Bhairav commandos includes **2–3 months of intensive training** at regimental centres followed by **1 month of advanced training** alongside Special Forces. These battalions are equipped with the **latest in weaponry, drones, surveillance systems**, and other **tactical technologies**, optimized for **mobility, flexibility**, and rapid deployment.
- The initial five units are strategically distributed: **three** in the **Northern Command** (Leh, Srinagar, and Nagrota), **one** in the **western desert sector**, and **one** in the **eastern hilly terrain**. These units are tasked with **reconnaissance missions**, **enemy interdiction**, **tactical disruption**, and **cross-border support**, and they are capable of operating in **diverse terrains**—from mountains to deserts.
- The establishment of the Bhairav battalions is part of a **broader modernization strategy** undertaken by the Indian Army. Alongside Bhairav, new **Rudra Brigades**, **Shaktibaan Regiments**, and **Divyastra Batteries** are also being raised to **close the operational gap** between regular infantry and elite Special Forces and to prepare for **next-generation battlefield scenarios**, including **drone-dominated warfare**.

Nauru

- Australia recently entered into a $267 million deportation agreement with the island nation of **Nauru**, aiming to relocate individuals without valid visas. This deal has drawn criticism from refugee advocacy and human rights organizations, highlighting concerns over the treatment and rights of asylum seekers.
- Nauru, officially known as the **Republic of Nauru**, is a sovereign island country and one of the world's smallest microstates, located in the South Pacific Ocean. Historically referred to as **"Pleasant Island,"** it lies within the **Micronesia subregion of Oceania**, approximately 300 kilometers west of Banaba Island in Kiribati. Unlike most nations, Nauru does not have an official capital, but the **Yaren District** functions as its administrative center.
- Geographically, Nauru is surrounded entirely by the Pacific Ocean, with its nearest neighbor being Banaba (Kiribati). Other distant neighbors include the **Solomon Islands**, the **Marshall Islands**, and **Tuvalu**. Covering an area of only 21 square kilometers, Nauru ranks as the world's third smallest country by land area, after the Vatican and Monaco. Its population is around 10,800, making it also one of the smallest sovereign states by population.
- Nauru's economy once thrived on phosphate mining but has since suffered severe environmental degradation and now depends heavily on financial assistance from Australia. The country is a member of the United Nations, the Commonwealth of Nations, and the African, Caribbean, and Pacific (ACP) Group. Since 2001, Nauru has hosted Australia's offshore refugee processing center, which has been a focal point of international human rights debates.
- Under the 2025 **Australia-Nauru agreement**, Australia will provide A$408 million (approximately $267 million) upfront, along with annual payments of A$70 million, to facilitate the deportation and resettlement of non-visa holders. This agreement specifically targets individuals released following a 2023 High Court ruling in Australia that ended the policy of indefinite immigration detention. Critics argue that the deal undermines international refugee protections and poses serious humanitarian concerns.

25th SCO Summit 2025: Key Takeaways, Documents Signed, and India's Strategic Role

Prime Minister Narendra Modi participated in the **25th Summit of the Shanghai Cooperation Organization (SCO)** held in **Tianjin, China**, where leaders of the 10-member bloc engaged in discussions covering a wide spectrum of pressing global and regional issues. Topics included **reforming global governance**, **counter-**

terrorism, **regional security**, **economic cooperation**, and **sustainable development**. This summit marked a milestone not only in terms of strategic direction but also in institutional expansion and reform.

Overview of the SCO and India's Membership

The **Shanghai Cooperation Organization**, formed in **2001** by China, Russia, Kazakhstan, Kyrgyzstan, Tajikistan, and Uzbekistan, has evolved into a significant regional bloc that spans Asia, parts of Europe, and Africa. It now comprises:

- **10 full member states**, including India and Pakistan, who joined in **2017**.
- **2 observer states**.
- **15 dialogue partners**, with Laos being granted **partner status** during the 2025 summit—expanding the SCO to a **27-nation grouping**.

This summit also marked **PM Modi's first visit to China in seven years**, signalling a potential recalibration in **India-China relations** amid ongoing geopolitical flux.

Key Documents Signed at the SCO Summit 2025

A total of **20 significant documents** were adopted at the **Council of Heads of State meeting**, shaping the SCO's strategic roadmap for the coming decade.

- The **Tianjin Declaration** emerged as the central political document, reflecting the shared stance of member states on global and regional issues.
- The **Development Strategy (2026–2035)** was adopted, outlining long-term priorities in security, economy, connectivity, environment, and institutional development.
- A **Cooperation Programme (2026–2030)** was approved to counter extremist ideologies within SCO countries.
- A **Roadmap for SCO Energy Cooperation until 2030** was agreed upon, aimed at ensuring energy security and promoting clean energy transitions.
- The SCO was granted **observer status** in the **Commonwealth of Independent States (CIS)**, further expanding its geopolitical footprint.
- **Cholpon Ata** in Kyrgyzstan was designated as the **SCO tourist and cultural capital** for 2025–26, strengthening cultural diplomacy.

Institutional Strengthening and Infrastructure Expansion

In an effort to expand its capabilities, the SCO inaugurated **four new centres** to address critical transnational issues:

- A centre to **counter security threats and challenges**.
- A unit to combat **transnational organized crime**.
- An institute focused on **cybersecurity and information threats**.
- A coordination body for **anti-narcotics cooperation**.

Additionally, a decision was taken to establish an **SCO Development Bank** to finance infrastructure, promote social development, and deepen economic integration across member states.

Expanding SCO Platforms in Strategic Sectors

New platforms were proposed or launched across priority areas including:

- **Energy security** and **sustainable development**.
- **Green industry**, **climate action**, and **environmentally responsible growth**.
- **Digital economy** and enhanced **cybersecurity frameworks**.
- Advancement in **artificial intelligence**, **technological innovation**, and **higher education**.
- **Vocational and technical education** to build a future-ready workforce.

Structural Reforms and Membership Expansion

One of the summit's notable reforms was the **merging of observer states and dialogue partners into a unified category of SCO partners**, streamlining engagement mechanisms. The inclusion of **Laos** as a new partner expanded the SCO family to **27 nations**, reflecting its growing geopolitical relevance across continents.

Security Cooperation and the Pahalgam Terror Attack

The **Tianjin Declaration** made headlines for explicitly **condemning the April 2025 Pahalgam terror attack** in Jammu & Kashmir, which claimed **26 lives**. The document:

- Expressed **solidarity with India** and extended condolences to victims' families.
- Called for bringing **perpetrators and their sponsors to justice**.
- Also condemned other regional terror incidents, including the **Jaffer Express hijacking** (March) and the **Khuzdar school bus bombing** (May) in Pakistan.

This explicit condemnation was significant, particularly because the **Pahalgam attack** had earlier been **excluded from the June 2025 SCO Defence Ministers' statement** in Qingdao due to **Pakistan's objection**. India's Defence Minister **Rajnath Singh** had refused to sign the statement at that time, demanding clear language on terrorism. The leaders' summit in Tianjin ultimately **corrected the omission**, reinforcing India's stance on addressing cross-border terrorism within multilateral forums.

India-China Dynamics: Signs of Thaw Amid Strategic Caution

PM Modi's visit to China and his meeting with **President Xi Jinping** marked a symbolic thaw in otherwise tense bilateral relations. The inclusion of Pahalgam in the final declaration is seen by many as **a positive shift in China's diplomatic posture** towards India, possibly influenced by Beijing's need to counterbalance **Western economic pressures** and **US-led tariffs**.

However, **China's refusal to directly name Pakistan** in the context of terrorism continues to be a sticking point. For India, the inclusion of specific terror incidents is a partial diplomatic win, but **deeper trust-building** with China remains a complex, long-term process.

PM Modi's Address: India's Vision for the SCO

In his keynote address at the summit, Prime Minister Modi outlined **India's strategic vision** for the SCO through three central pillars: **Security, Connectivity, and Opportunity**.

Key themes from his speech included:

- Emphasis on **peace, stability, and prosperity** as prerequisites for regional development.
- A call for **firm, coordinated action** against terrorism, radicalisation, and terror financing.
- Rejection of **double standards** on terrorism, with an appeal for **collective accountability** for countries enabling cross-border terror networks.
- Appreciation for SCO member states' support following the **Pahalgam attack**, reiterating India's demand for justice.
- Reaffirmation of India's commitment to connectivity initiatives such as the **Chabahar Port** and the **International North-South Transport Corridor**, underlining their role in regional integration.
- Focus on promoting **startups, innovation, youth empowerment**, and **cultural exchange**, aligning economic development with people-to-people ties.
- Proposal to establish a **Civilizational Dialogue Forum** within the SCO to foster deeper intercultural understanding and cooperation.
- Support for SCO's **institutional reforms**, and a parallel call for the **restructuring of global institutions** like the **United Nations**, to make them **more inclusive, representative, and responsive** to the realities of the 21st century.

Conclusion: India's Expanding Influence within the SCO

The **25th SCO Summit in Tianjin** served as a pivotal moment in India's engagement with regional multilateralism. Through strategic assertiveness and diplomatic finesse, India succeeded in pushing for greater emphasis on **counter-terrorism**, promoting **connectivity frameworks**, and contributing to **institutional reforms** within the SCO.

The **explicit mention of the Pahalgam terror attack**, the **emergence of new cooperation platforms**, and the **inauguration of SCO's development and security-focused institutions** reflect India's growing role in shaping the organisation's agenda. As the SCO continues to evolve in a shifting global order, India's ability to balance security imperatives with economic and cultural outreach will determine its influence within this expanding regional bloc.

Yudh Abhyas Army Exercise

- Amid escalating trade tensions between India and the United States, both countries have commenced the **largest-ever edition of the Yudh Abhyas Army exercise** at **Fort Wainwright, Alaska**. This joint military drill is part of a longstanding defence cooperation

initiative and takes place in **subarctic climate conditions**, adding complexity to the training regimen.

- First conducted in **2004**, Yudh Abhyas is an **annual bilateral military exercise** between the Indian and U.S. Armies, aimed at improving defence collaboration, enhancing interoperability, and conducting joint training in areas such as **counter-terrorism**, **peacekeeping**, and **high-altitude warfare**. The exercise is hosted alternately by each country and has grown significantly in scope and scale over the years.
- In the 2025 edition, India is represented by personnel from the **Madras Regiment**, while the United States is represented by the **5th Infantry Regiment "Bobcats"** of the **Arctic Wolves Brigade Combat Team**, part of the **11th Airborne Division**. The primary objectives include **building mutual trust**, training for operations in extreme climates—relevant to both the **Himalayas** and the **Arctic**—and improving coordination for **joint humanitarian**, **counter-insurgency**, and **disaster relief operations**.
- The exercise spans **two weeks** and includes a diverse set of military drills, such as **heliborne operations**, **surveillance using UAVs**, **mountain warfare**, **casualty evacuation**, and the **integrated use of artillery, aviation, and electronic warfare systems**. Simultaneously, preparations are underway for the upcoming **Malabar Naval Exercise** (involving Quad nations) scheduled to be held **off Guam in November 2025.**

Anti-Immigration Protests in Australia and the Broader Sentiment in the Global North

Recent "March for Australia" protests, which explicitly targeted Indian immigrants, have sparked widespread condemnation from Australian Members of Parliament. These demonstrations represent a growing tide of anti-immigration sentiment that is increasingly visible across the Global North. Despite Indians forming a vital part of Australia's multicultural society—as the second-largest migrant group after the United Kingdom with approximately 840,000 Indian-born residents as of June 2023—they have become the focus of hostility in certain sections of the population.

Understanding Anti-Immigration Sentiment in the Global North

- The protests in Australia are symptomatic of a broader global trend in which migration is being increasingly framed as a threat to national security, economic stability, and cultural identity. This securitization of migration has led to the tightening of borders and implementation of more restrictive immigration policies. Political campaigns, such as those surrounding Brexit, have effectively stoked fears that large numbers of immigrants alter the social and cultural fabric of nations, leaving native populations feeling alienated in their own countries.
- Economic anxieties further fuel this sentiment. Migrants are often accused of accepting lower wages, thereby undercutting local labour markets and creating fears among native-born workers about job security and wage stagnation. In periods of economic downturn or uncertainty, such concerns tend to intensify, leading to calls for protectionist policies.
- These developments are closely linked to a larger wave of nationalism and deglobalization. The rising tide of right-wing populism across the Global North has created an environment in which migrants are depicted not just as economic competitors but as existential threats to national identity, security, and values. Populist political narratives often portray migration as a problem to be solved, rather than as a human phenomenon to be managed compassionately and strategically.
- This leads to the spread of xenophobia and cultural violence. The fear of "otherness" and the desire to preserve a perceived national identity are reinforced through media narratives and inflammatory political rhetoric. Migrants are frequently dehumanized, stereotyped, or scapegoated, which contributes to an atmosphere of suspicion and hostility.

The Importance of the Indian Diaspora

- For India, such trends are particularly concerning given the strategic and economic significance of its diaspora. India is currently the world's top recipient of remittances, with an inward flow of USD 118.7 billion in the financial year 2023–24. These remittances

play a critical role in supporting household incomes, regional development, and foreign exchange reserves.
- Beyond economic value, the Indian diaspora has substantial political and diplomatic influence. Diaspora communities have played a key role in lobbying for favourable bilateral agreements and shaping public opinion in host countries. A notable example includes their involvement in building support for the Indo-US Civil Nuclear Agreement.
- Culturally, the diaspora serves as a vehicle for India's soft power. Through Indian classical arts, festivals, cuisine, cinema, yoga, and spiritual traditions, the diaspora contributes to a positive global image of India and fosters deeper intercultural connections.

Government Initiatives to Support the Diaspora

Recognizing the diaspora's value and the challenges they sometimes face abroad, the Indian government has initiated several welfare schemes. The Indian Community Welfare Fund (ICWF) is designed to assist Indian nationals overseas during times of distress, whether related to legal issues, medical emergencies, or repatriation needs. Similarly, the Pravasi Bharatiya Bima Yojana (PBBY), relaunched in 2017, offers insurance coverage up to ₹10 lakhs in the event of accidental death, thereby providing financial security for workers and their families.

Conclusion

The anti-immigration protests in Australia and similar sentiments emerging across the Global North underscore the fragile position of migrant communities amid rising nationalism and economic anxiety. For India, these developments necessitate a dual strategy: reinforcing diplomatic efforts to safeguard its diaspora and enhancing internal policies to ensure their protection and empowerment. As global geopolitics continues to evolve, the Indian diaspora remains both a strategic asset and a soft-power bridge, but one that requires careful nurturing in the face of growing hostility abroad.

Seychelles and India's Maritime Cooperation

- The **Indian Navy's First Training Squadron**, consisting of **INS Tir, INS Shardul**, and **ICGS Sarathi**, recently arrived at **Port Victoria**, the capital of **Seychelles**, as part of a **long-range training deployment** aimed at strengthening maritime cooperation between India and the island nation.
- Seychelles is a **small island country** and **archipelagic state** in the **Indian Ocean**, recognised for its **multicultural society** and ranking among the highest in **human development indicators in Africa**.
- Geographically, Seychelles is located **northeast of Madagascar**, approximately **1,500 kilometres east of mainland Africa**, placing it in the **Southwest Indian Ocean Region**—a strategically significant zone due to its proximity to vital international sea lanes.
- The capital, **Victoria**, is notable for being one of the **world's smallest capitals**. Nearby countries and territories include **Maldives, Mauritius, Comoros, Madagascar**, and **French overseas territories** such as **Réunion and Mayotte**.
- Seychelles comprises an **archipelago of 115 islands**, though only a portion of them are inhabited. The nation's society reflects a **blending of cultures**, including **French, British, Indian, African, and Chinese** influences, visible in its **Creole language**, **festivals**, **cuisine**, and **architecture**.

For India, Seychelles holds great strategic importance:

- In terms of **maritime security**, it serves as a key partner in ensuring the **freedom of navigation** and **combating piracy** in the region.
- In the sphere of **defence cooperation**, India has been instrumental in **capacity-building**, offering **naval training**, and **providing equipment support** to the **Seychelles Defence Forces**.

The visit by the Indian naval squadron highlights the deepening of **India-Seychelles bilateral ties**, particularly in areas related to **regional security, defence training**, and **maritime domain awareness**.

Global Peace Index (GPI) 2025

- The **Global Peace Index (GPI) 2025** has been released, with **Iceland** retaining its position as the **most peaceful country** in the world. **India**, ranked **115th among 163**

nations, showed a **modest improvement** in its overall peace score.

- The **GPI** is an **annual assessment** that ranks countries based on their level of peacefulness. It covers **163 states and territories**, accounting for **99.7% of the global population**, and is published by the **Institute for Economics and Peace (IEP)**, a global think tank based in **Sydney, Australia**.

Countries are evaluated using **23 indicators** grouped into **three broad categories**:

1. **Societal Safety and Security**, which includes crime rates, political stability, and the impact of refugees;
2. **Ongoing Domestic and International Conflict**, including terrorism, civil unrest, and warfare;
3. **Militarisation**, which considers military expenditure, arms imports and exports, and size of armed forces.

- According to the 2025 rankings, the top ten most peaceful countries include Iceland, Ireland, New Zealand, Finland, Austria, Switzerland, Singapore, Portugal, Denmark, and Slovenia. Conversely, countries like Russia, Ukraine, Sudan, the Democratic Republic of Congo, and Yemen ranked lowest, reflecting severe conflict and instability.
- Europe continues to dominate the top ranks, while South America has shown incremental improvements in peace levels, particularly in countries like Argentina and Peru. However, Sub-Saharan Africa and the Middle East remain the least peaceful regions globally. Overall, global peacefulness has declined, driven by increasing internal conflicts, rising militarisation, and growing geopolitical divisions.
- India, with a score of 2.229, improved its ranking slightly due to a gradual decline in domestic violence and disputes, as well as an increase in societal stability. However, it continues to face significant challenges, including high militarisation levels, persistent cross-border tensions, and episodes of internal unrest, all of which impact its overall peace score.

Manipur Violence – Centre Signs Revised Pact for Peace

In a significant move aimed at restoring peace in the violence-hit state of Manipur, the Centre has signed a revised *Suspension of Operations* (SoO) agreement with insurgent groups from the Kuki-Zo community. This new arrangement, announced ahead of Prime Minister Narendra Modi's upcoming visit to the state, marks a major policy shift in the government's approach to ethnic unrest that has plagued Manipur since May 2023. The renewed pact introduces stricter mechanisms to monitor insurgent activity, mandates the relocation of militant camps, and reaffirms adherence to India's constitutional framework, while also opening the door to further political dialogue.

Context and Objective

Manipur has witnessed protracted violence between the Meitei and Kuki-Zo communities, resulting in a sharp deterioration in law and order. In response, the Centre has recalibrated its peace strategy by engaging directly with 24 Kuki-Zo insurgent groups under the banners of the Kuki National Organisation (KNO) and the United People's Front (UPF). The revised SoO pact, signed on September 4, 2025, by the Ministry of Home Affairs (MHA), the Manipur state government, and the aforementioned insurgent factions, aims to stabilize the situation by tightening operational norms and fostering an environment conducive to long-term peace.

Assurances on Free Movement and Symbolic Steps Towards Normalcy

As part of the broader confidence-building efforts, the Centre announced that Kuki civil society groups had agreed to allow unrestricted movement along National Highway-02—a critical artery for both civilian traffic and essential supplies. The government presented this as a breakthrough, suggesting a return to normalcy. However, the Kuki-Zo Council (KZC) issued a clarification, stressing that there had never been an official blockade on the highway, and that the group's earlier appeals pertained only to the Kangpokpi district. Moreover, Kuki groups emphasized that buffer zones separating Kuki and Meitei areas would still be respected, reflecting lingering mistrust and the tenuous nature of peace.

Key Provisions of the Revised Suspension of Operations Pact

- The revised pact introduces a more stringent framework for monitoring and engagement with insurgent groups. A Joint Monitoring Group (JMG), headed by the Principal

Secretary (Home) of Manipur, will oversee verification processes and ensure that all cadres present in the camps are accounted for. The agreement includes the following critical components:

- First, it mandates **physical verification** of cadres, preparation of detailed personnel lists, and removal of any foreign nationals suspected to be present in the camps.
- Second, it requires **relocation of designated camps**, reducing their number to six each for KNO and UPF. These camps must now be situated away from key highways, densely populated zones, and the border with Myanmar.
- Third, the pact enforces **financial transparency**, stipulating that cadre stipends must be disbursed solely through Aadhaar-linked bank accounts, ensuring payments are restricted to verified individuals physically present in camps.
- Fourth, it imposes **operational restrictions**, barring these groups from recruiting new members, carrying arms outside camps, maintaining contact with other armed organizations, or engaging in any offensive actions.
- Finally, the preamble to the pact underscores that all signatory groups must adhere to the **Constitution of India** and respect the **territorial integrity of Manipur**.

Reactions and Emerging Fault Lines

- Despite the government's attempt to present a unified front, the signing of the pact has sparked unease among various ethnic and civil society groups. The Zomi Council, based in Churachandpur, rejected the KZC's role in the negotiations, claiming that it does not represent the broader Zo population. This highlights internal fractures within the Kuki-Zo community and complicates the path toward a cohesive peace settlement.
- From the Meitei perspective, the relocation of insurgent camps away from valley-fringe areas satisfies a longstanding concern. These camps were previously alleged to have served as launchpads for attacks in Meitei-dominated regions. However, other ethnic groups have expressed discontent. The United Naga Council, for example, has voiced strong opposition to its exclusion from the talks and has even threatened to impose a trade blockade in protest over issues related to border fencing with Myanmar.

Toward a Broader Political Settlement

- The revised SoO pact is not an endpoint, but rather a foundational step toward a comprehensive political resolution. It sets the stage for future tripartite talks involving the Centre, the Manipur government, and Kuki groups, all within the bounds of the Indian Constitution. The broader aim is to create a structured framework that can accommodate the aspirations of various communities while maintaining peace and territorial integrity.
- Simultaneously, the Centre is extending its peace-building efforts to include other insurgent outfits, such as the United National Liberation Front (UNLF). Designated camps are being established for these groups as well, indicating a broader national strategy to bring diverse militant factions into the ambit of a unified peace process.
- In conclusion, while the revised Suspension of Operations pact represents a critical step toward ending ethnic strife in Manipur, the road to lasting peace remains fraught with challenges. Deep-seated mistrust among communities, competing claims to representation, and the exclusion of key stakeholders underscore the need for a more inclusive and nuanced approach going forward.

India–Singapore Comprehensive Strategic Partnership (CSP)

Context: The recent visit of the Singapore Prime Minister to India commemorated **60 years of diplomatic relations**. During the visit, both countries adopted a **forward-looking roadmap** to strengthen their **Comprehensive Strategic Partnership (CSP)** across **eight key sectors**.

The CSP represents the **highest level of bilateral engagement** between India and Singapore. Initially elevated from a Strategic Partnership in **2015**, the relationship was further deepened in **2025** with the launch of an updated roadmap.

The 2025 roadmap outlines cooperation in the following areas:

- **Economic Engagement**: Reviewing trade agreements such as **CECA and AITIGA**, expanding collaboration in

semiconductors, **capital markets**, and **space research**.

- **Skills Development**: Establishing a **National Centre of Excellence in Chennai** focused on **advanced manufacturing** and **TVET (Technical and Vocational Education and Training)**.
- **Digital Collaboration**: Scaling up the **UPI–PayNow** integration, advancing **fintech**, **cybersecurity**, and applying **AI** in healthcare and agriculture.
- **Sustainability**: Working together on **green hydrogen**, **civil nuclear energy**, **climate change mitigation**, and **food security**.
- **Connectivity**: Enhancing **maritime and aviation links**, developing **Green and Digital Shipping Corridors**, and promoting **sustainable aviation fuel**.
- **Healthcare and Medicine**: Joint research in **digital health**, **med-tech R&D**, **nursing skill exchange**, and **disease surveillance**.
- **People-to-People Ties**: Boosting **academic and professional exchanges**, as well as **cultural, parliamentary, and public service collaboration**.

Defence and Security: Deepening cooperation through **joint military exercises**, **maritime security**, **counter-terrorism**, and **defence technology partnerships**.

Mauritius: Strengthening Bilateral Ties with India

Mauritian Prime Minister Navinchandra Ramgoolam is scheduled to make his first overseas bilateral visit in his current term to India this September, marking a significant moment in Indo-Mauritian relations.

Geographical and Cultural Profile:
Mauritius is an island nation located in the Indian Ocean, approximately 800 km east of Madagascar. It forms part of the Mascarene Islands and comprises several outlying territories, including Rodrigues Island, Cargados Carajos Shoals, and the Agalega Islands. The capital city is Port Louis.

Natural and Demographic Features:

- Mauritius has a volcanic origin and is encircled by coral reefs. Its highest elevation is the Piton de la Petite Rivière Noire at 828 meters. Prominent rivers and lakes include the Grand River South East, Black River, and Lake Vacoas, the latter being a key water resource. The country experiences a maritime subtropical climate, with a hot season from December to April and a cooler one from June to September.
- The population stands at approximately 1.23 million (2025 estimate), with the majority being Indo-Mauritians—descendants of indentured labourers. Minority communities include Creoles, Franco-Mauritians, and individuals of Chinese origin.

Economic Landscape:
Sugarcane remains the dominant agricultural crop, supplemented by tea and vegetable cultivation. The economy benefits from a blend of agriculture, tourism, and financial services, underpinned by the country's multicultural society and strong historical ties to India.

India Joins HealthAI Global Regulatory Network

India has officially joined the HealthAI Global Regulatory Network (GRN), a strategic move to reinforce regulatory oversight over artificial intelligence applications in healthcare.

About the Network:

- Headquartered in Geneva, the HealthAI GRN is an independent, non-profit international organization that facilitates equitable access to AI-driven health solutions. It brings together health regulators from around the world to promote the safe, transparent, and effective integration of AI into healthcare systems.
- The GRN fosters collaboration through shared learning, the development of joint regulatory standards, and early alerts on emerging risks. Members benefit from access to a global registry of approved AI-based health tools, enhancing transparency and cooperative governance.

India's Involvement:

- India's participation is led by the Indian Council of Medical Research - National Institute for Research in Digital Health and Data Science (ICMR-NIRDHDS), in collaboration with IndiaAI.

What is IndiaAI?
IndiaAI is the Government of India's flagship program under the Ministry of Electronics &

Information Technology (MeitY) and is implemented via the Digital India Corporation. The initiative seeks to create a robust and inclusive AI ecosystem and aims to establish India as a global leader in AI innovation and development.

Strait of Malacca: Strategic Maritime Cooperation with Singapore

India has secured diplomatic support from Singapore for enhanced cooperation in the patrolling of the Strait of Malacca, a strategically vital maritime route.

Geographical and Historical Overview: The Strait connects the Andaman Sea (part of the Indian Ocean) to the South China Sea (Pacific Ocean). It lies between the Indonesian island of Sumatra to the west and Peninsular Malaysia and southern Thailand to the east. The waterway takes its name from the Malacca Sultanate, which ruled the region from 1400 to 1511.

Geostrategic Importance: As one of the busiest shipping corridors globally, the Strait of Malacca handles a significant volume of global maritime traffic. It is especially critical for India, with about 60% of its seaborne trade and nearly all LNG imports transiting through it. It also serves as a choke point for Chinese shipping, elevating its strategic sensitivity.

Malacca Straits Patrol (MSP): Launched in 2004, the MSP is a trilateral initiative by Indonesia, Malaysia, and Singapore, later joined by Thailand, to combat piracy, terrorism, and trafficking. It involves:

- **Malacca Straits Sea Patrols:** Regular joint naval exercises.
- **Eyes-in-the-Sky:** Coordinated aerial surveillance.

Intelligence Exchange Group: Real-time information sharing between member states.

Indo-China Border Dispute: Persistent Challenges in Defining the Line of Actual Control (LAC)

Despite over three decades of diplomatic efforts and multiple bilateral agreements since 1993, India and China have been unable to formally define the Line of Actual Control (LAC), keeping their border dispute unresolved and prone to recurring tensions. The failure to achieve a mutually accepted understanding of the LAC has allowed both countries to maintain overlapping territorial claims, leading to frequent stand-offs and military confrontations.

Introduction

The India-China border dispute remains one of Asia's most entrenched and complex territorial conflicts, deeply rooted in historical claims, evolving geopolitical interests, and sensitive national security considerations. Although both countries have engaged in long-standing diplomatic dialogues and confidence-building initiatives since the late 1980s, the lack of clarity around the LAC continues to fuel instability. Each side patrols up to what it considers the LAC, creating repeated flashpoints for military friction. This ongoing ambiguity has kept the dispute alive, despite formal mechanisms meant to preserve peace along the frontier.

Early Diplomatic Engagements and Initiatives

- The diplomatic thaw began with Prime Minister Rajiv Gandhi's 1988 visit to Beijing, which marked a significant shift in bilateral relations. However, subsequent political transitions in India caused delays in the negotiation process. By the early 1990s, both India and China acknowledged the need for peaceful engagement and resumed structured talks. Between 1988 and 1993, six rounds of the Joint Working Group (JWG) meetings laid the foundation for resuming border trade and initiating military-to-military dialogues.
- Further momentum was achieved in 1992 when India's Defence Minister Sharad Pawar visited China, leading to greater cooperation in academic, scientific, and military exchanges. These early years set the stage for the first formal agreement aimed at maintaining peace along the disputed border.

The 1993 Border Peace and Tranquillity Agreement (BPTA)

- A major milestone was reached in September 1993, when Prime Minister P.V. Narasimha Rao's visit to Beijing resulted in the signing of the Border Peace and Tranquillity Agreement (BPTA). This agreement, structured into nine articles, marked the first official reference to the LAC and committed both nations to non-aggression and peaceful consultation.
- Key provisions of the BPTA included mutual commitments to refrain from crossing the LAC, the withdrawal of troops if a violation was reported, and the maintenance of

minimal troop deployment along the frontier. The agreement also introduced the principle of reducing forces based on "mutual and equal security." Its overarching goal was to freeze the existing status quo, reduce military presence, and facilitate the expansion of cooperation in other spheres of the bilateral relationship.

Further Expansion Through the 1996 Agreement

- In 1996, during the visit of Chinese President Jiang Zemin to India, both sides signed another significant agreement that expanded upon the BPTA by incorporating more concrete military confidence-building measures (CBMs). This agreement imposed specific restrictions on the deployment of heavy weaponry and large-scale military exercises near the LAC, especially those directed toward the other side. It also included mutually agreed limits on troop presence in sensitive sectors along the frontier.
- Despite these efforts, the 1996 agreement acknowledged a critical limitation—the successful implementation of its provisions depended on a shared understanding of the LAC's alignment. However, both India and China continued to hold fundamentally different interpretations of the LAC, and this lack of consensus limited the agreement's effectiveness in preventing future tensions.

Attempts to Clarify the LAC and the Breakdown of Map Exchange

- Between 2000 and 2002, the two countries attempted to clarify the boundary by exchanging maps of the central and western sectors. However, these efforts quickly collapsed as both sides presented maximalist claims, refusing to compromise on key contested areas. This led to the rejection of each other's maps and brought the mapping initiative to an abrupt end.
- Disagreements remained unresolved in critical zones such as Depsang, Pangong Tso, Demchok, and Chumar. By 2005, the map exchange process was officially abandoned, institutionalising ambiguity over the LAC. This lack of clarity has contributed to repeated confrontations in the same disputed regions, including the deadly Galwan Valley clash in 2020.

Structural Barriers to Defining the LAC

- At the heart of the unresolved border issue lies a deeper structural problem—neither side is willing to cede ground in strategically vital areas. China's extensive infrastructure development in Tibet, including roads and logistics networks, gives it a tactical edge over India, which faces harsher terrain in Ladakh and Arunachal Pradesh. This disparity in infrastructure and mobility complicates any negotiation over realignment or definition of the LAC.
- The absence of a mutually recognised boundary leads both armies to patrol up to their own perceptions of the LAC. This practice significantly increases the risk of accidental encounters that can quickly escalate into physical clashes or broader military standoffs. The lack of clear demarcation serves as a structural trigger for persistent tensions.

Contemporary Implications and the Way Forward

- While the 1993 and 1996 agreements succeeded in temporarily easing tensions and introduced mechanisms for confidence-building, they failed to address the fundamental issue of defining the LAC. As a result, the border remains volatile. Although both sides have developed protocols to avoid escalation, such as flag meetings and hotline communications, these measures often prove inadequate in preventing skirmishes.
- The recurring standoffs underline the pressing need to either formally clarify the LAC through diplomatic means or to develop more robust, binding mechanisms to prevent confrontations from spiralling into full-scale conflict. The continued ambiguity around the LAC not only undermines peace-building efforts but also keeps India-China relations trapped in a cycle of tension, mistrust, and strategic competition.

India's Defence Theaterisation Plan: Complexities and Diverging Views

At the **Ran Samvad 2025** defence dialogue, differing perspectives emerged over India's ambitious theaterisation proposal, highlighting both the transformative potential and the contentious challenges of reshaping the country's military command structure. The plan

is regarded as one of the most significant military reforms in post-Independence India, yet its implementation continues to spark debate across strategic, operational, and institutional dimensions.

Understanding Theaterisation

- Theaterisation refers to the reorganisation of India's armed forces by integrating the operational resources of the **Army, Navy, and Air Force** under unified, **geographically defined theatre commands**. Rather than operating through the current 17 service-specific commands, the proposal seeks to establish joint commands for specific theatres, each led by a single commander who would exercise control over all three services in that region.
- This unified command structure aims to enhance inter-service synergy, reduce duplication of effort, and ensure more agile and coordinated responses during military operations. The reform is being spearheaded by the **Chief of Defence Staff (CDS)**, who heads the **Department of Military Affairs (DMA)** and is mandated to drive the transition toward joint or theatre commands.

Challenges and Concerns Surrounding Theaterisation

Despite the intended strategic benefits, several challenges and reservations have been raised by defence experts and stakeholders within the armed forces:

- The **Indian Air Force (IAF)** has voiced significant concerns, arguing that dividing its limited combat assets among multiple theatre commands may compromise its doctrinal emphasis on flexibility and centralised air power deployment. The IAF fears that rigid geographical allocation could impair its capacity for rapid and decisive operations across diverse fronts.
- Critics have warned against **replicating foreign models**—particularly the United States' theatre command system—without adapting them to India's unique geopolitical context and security challenges. India's threat matrix, terrain, and political realities require a customised approach rather than a one-size-fits-all template.
- The dismantling of long-standing **single-service command structures** is also seen as potentially **disruptive** to current combat readiness. The transition phase could introduce delays, miscommunication, or operational confusion, especially in times of crisis or conflict.
- Questions have been raised about the **domain expertise** of theatre commanders, especially when individuals from one service are expected to command joint assets from other branches. For instance, whether an Army officer can fully understand and utilise Air Force assets—or vice versa—remains a point of contention, particularly concerning the complexity and precision of air operations.
- Financial implications add another layer of concern. Critics argue that the costs associated with restructuring, establishing new infrastructure, and re-training personnel may be substantial, with **uncertain returns on investment**. These worries are exacerbated by India's relatively underdeveloped domestic **military-industrial base**, which limits self-reliance in defence manufacturing and technology.
- Despite these challenges, the government maintains that theaterisation is essential for transforming India's armed forces into a modern, integrated force capable of responding to 21st-century threats. However, successful implementation will require careful navigation of institutional resistance, operational gaps, and inter-service disagreements.

India Reaffirms Commitment to WTO-Centric Fair Trade System

In a separate but equally significant international development, India reiterated its commitment to a **fair, open, inclusive, and rules-based multilateral trading system** anchored by the **World Trade Organization (WTO)**. This reaffirmation was made during the **Shanghai Cooperation Organisation (SCO) Trade Ministers' Meeting**, where India called for preserving the integrity and centrality of the

WTO amid rising protectionism and geopolitical disruptions.

Overview of the WTO

- **Headquartered in Geneva, Switzerland**, the **World Trade Organization** was established in **1995** through the Marrakesh Agreement, succeeding the earlier **General Agreement on Tariffs and Trade (GATT)**.
- With **166 member nations**, the WTO plays a pivotal role in regulating international trade, ensuring trade flows as smoothly and predictably as possible.
- The foundational principles of the WTO include **non-discrimination**, **promotion of free trade through negotiation**, and **ensuring fair competition** among nations.

Major Issues Affecting the WTO's Functioning

- A longstanding issue is **Public Stockholding (PSH)** for food security. Programs like India's Minimum Support Price (MSP) regime are viewed by some members as **trade-distorting**, especially when governments procure food at fixed prices for distribution or buffer stocks. While India defends PSH as essential for food security, especially in developing economies, others argue it distorts global agricultural markets.
- The principle of **Special and Differential Treatment (S&DT)**, which grants developing and least-developed countries (LDCs) preferential treatment in trade negotiations and obligations, is under pressure. Developed countries are pushing for its **gradual removal**, asserting that some nations have become globally competitive and no longer require such exemptions.
- The **Dispute Settlement System**, once a hallmark of WTO legitimacy, has been paralysed since **2019** due to the **United States blocking the appointment and reappointment of judges** to the WTO's Appellate Body. This deadlock has significantly weakened the organisation's capacity to enforce trade rules and resolve disputes between member states.
- **Geopolitical tensions**, such as U.S. tariff measures, the **Russia-Ukraine conflict**, and retaliatory sanctions, have further complicated global trade dynamics, weakening the role of the WTO as a neutral arbiter.
- Emerging concerns around **data privacy, cross-border data flows, digital services taxation**, and **climate-related trade measures** such as the **European Union's Carbon Border Adjustment Mechanism (CBAM)** are increasingly influencing the WTO agenda, even though consensus remains elusive.
- India's support for a WTO-centred trade system reflects its commitment to **multilateralism and inclusive development**. However, navigating the evolving global trade environment will require balancing domestic policy priorities—such as food security and digital sovereignty—with global expectations for liberalisation and rule-based governance.

Conclusion

India's internal military restructuring and external trade diplomacy reflect its dual imperative: to modernise its national defence architecture while actively shaping a fair and equitable global order. The theaterisation debate underscores the complexity of balancing tradition with transformation in a sensitive security domain. Simultaneously, India's WTO advocacy signals a desire to uphold multilateralism amid rising economic nationalism. Both trajectories—military and trade—will play a critical role in shaping India's strategic future.

Papua New Guinea: Cultural Diplomacy and Geographic Overview

- In a notable gesture of cultural and diplomatic engagement, the Indian Navy Band recently participated in the grand Military Tattoo held in Port Moresby, the capital of Papua New Guinea, marking the country's 50th Independence Day celebrations.
- Papua New Guinea is an island nation situated in the Oceania region, lying in the southwestern part of the Pacific Ocean. It shares its western border with Indonesia, lies to the north of Australia, and is located northwest of the Solomon Islands. The

country is surrounded by several important water bodies, including the Pacific Ocean, the Bismarck Sea, the Solomon Sea, the Coral Sea, the Torres Strait, and the Gulf of Papua.

- Port Moresby, the nation's capital, serves as the administrative and economic hub. Geographically, Papua New Guinea is characterized by its rugged terrain, with much of its landscape dominated by mountainous regions cloaked in dense tropical rainforests. The country is seismically active, hosting numerous volcanoes and frequently experiencing earthquakes and tsunamis. Mount Wilhelm stands as its highest peak, reaching an elevation of 14,793 feet (4,509 meters). Among its significant rivers are the Sepik and the Fly, which flow through large swathes of the island. One of the most active volcanic sites is the Rabaul Caldera, known for its history of eruptions.
- Papua New Guinea's natural environment supports remarkable biodiversity, especially within its rainforest ecosystems. These habitats are home to unique and often endemic species such as birds of paradise, tree kangaroos, and the Queen Alexandra's birdwing butterfly, one of the largest butterflies in the world.
- The country operates as a constitutional monarchy within the Commonwealth. The British monarch is the ceremonial head of state and is represented by a governor-general in Papua New Guinea. The Prime Minister, however, holds executive powers and leads the government.

Missile Technology Control Regime (MTCR): Strategic Export Controls and U.S. Shifts

- According to recent reports, the U.S. administration under President Donald Trump is expected to unilaterally reinterpret its commitments under the Missile Technology Control Regime (MTCR) to allow the export of sophisticated unmanned aerial vehicles (UAVs), including "Reaper"-style drones, to foreign buyers. This move represents a significant shift in U.S. export policy and may impact global arms control efforts.
- The MTCR is an intergovernmental association formed to curtail the spread of missile technology that could be used to deliver nuclear, chemical, or biological weapons. The regime was established in 1987 by founding members Canada, France, Germany, Italy, Japan, the United Kingdom, and the United States. Initially focused on nuclear-capable delivery systems, the MTCR expanded its scope in 1993 to include missiles that can deliver chemical and biological weapons.
- As of now, the MTCR has 35 member states, with India joining as the 35th partner on June 27, 2016. Member nations agree to impose export restrictions on missile systems and UAVs, along with the technologies, software, and components essential for their manufacture.
- The MTCR categorizes restricted items into two groups. Category I includes missiles capable of delivering payloads of at least 500 kilograms to distances greater than 300 kilometers, along with their critical subsystems such as engines and re-entry vehicles. These items are subject to strict controls. Category II includes less sensitive components like propulsion units and missile launchers, which, while still restricted, are governed with more discretion.
- Despite being a widely observed framework, the MTCR is not a legally binding treaty and lacks formal enforcement mechanisms. In case of violations or disagreements, member states are expected to resolve issues through bilateral consultations or raise them during the annual plenary sessions. While the MTCR itself imposes no penalties, the U.S. has enacted domestic legislation authorizing sanctions against countries that violate the regime's export guidelines.
- Joining the MTCR provides countries with international credibility in the nonproliferation arena. Membership also reinforces the responsible use of long-range ballistic missile capabilities and opens doors to defense collaboration, technology transfer, and global acceptance of indigenous missile programs.

Operation Guddar: Counter-Terror Mission in South Kashmir

- An armed encounter erupted in the Guddar forest area of Kulgam district, Jammu and

Kashmir, after terrorists opened fire on security personnel during an ongoing search operation. This incident unfolded under the ambit of **Operation Guddar**, a coordinated anti-terror initiative launched by the Jammu & Kashmir Police, the Indian Army, and the Central Reserve Police Force (CRPF).

- Named after the dense Guddar forest, where militants were believed to be hiding, Operation Guddar was specifically designed to target active terrorist elements operating in South Kashmir. The operation aims to dismantle militant infrastructure hidden in forested areas and nearby villages, which have long served as strategic hideouts for insurgents. A key objective of the operation is to deepen coordination among the security forces through intelligence-driven tactics that emphasize both precision and minimal collateral damage.
- The operation is a joint effort involving the Indian Army's Chinar Corps, CRPF units, and the Special Operations Group (SOG) of the Jammu & Kashmir Police. The action was triggered by concrete intelligence regarding terrorist presence in the forested terrain. Given the high-risk nature of the operation, conducted in difficult topography, significant care was taken to avoid civilian casualties while decisively targeting terrorist threats.

Red Sea: Disrupted Connectivity and Strategic Tensions

- Recent damage to undersea internet cables in the **Red Sea** has disrupted internet connectivity across Asia and the Middle East, affecting key international systems like SMW4 and IMEWE and causing service slowdowns in India and surrounding countries.
- The Red Sea is a narrow inland waterway separating the **northeastern African** and **Arabian** peninsulas. It stretches over 1,930 kilometers from **Suez in Egypt** to the **Bab el-Mandeb Strait** in Yemen, where it connects to the Arabian Sea. Nations with coastlines along the Red Sea include Egypt, Sudan, Eritrea, Djibouti, Saudi Arabia, and Yemen, while Jordan and Israel lie along its northeastern extension, the Gulf of Aqaba.
- Geologically, the Red Sea is part of a rift valley and remains active with ongoing volcanic and seismic activity. Its waters are among the world's warmest and saltiest, supporting diverse coral reef ecosystems. Economically, the Red Sea is a crucial maritime corridor linking **Europe**, **Asia**, and **Africa** through the **Suez Canal**, making it one of the most trafficked sea routes globally.
- Undersea cables, which were affected in this incident, are critical infrastructure. These **fiber-optic cables**, laid across ocean beds, carry approximately 95% of the world's internet traffic. Composed of glass fibers protected by multiple layers, they transmit data through pulses of light, offering high-speed and low-latency communication. However, they are vulnerable to various threats such as anchor drags, natural disasters, and sabotage, highlighting the fragility of global connectivity.

MHA's Twin Decisions: Renewal of SoO and Partial Reopening of NH-02 in Manipur

In a significant political and security development ahead of Prime Minister Narendra Modi's upcoming visit to Manipur, the Ministry of Home Affairs (MHA) has undertaken two major initiatives aimed at stabilizing the conflict-hit state. The first involves the renewal of the Suspension of Operations (SoO) agreement with Kuki insurgent groups operating under the banners of the Kuki National Organisation (KNO) and the United People's Front (UPF). This renewal includes renegotiated terms intended to reinstate trust and structure to the fragile ceasefire. The second is an agreement reached with the Kuki-Zo Council to facilitate the reopening of National Highway-02 (NH-02), a critical lifeline for transport and the supply of essential goods across the state. These measures are widely interpreted as key efforts to reduce tensions and begin the process of restoring normalcy in a state beset by ethnic violence since May 2023.

Historical Context and Breakdown of the SoO Agreement

The Suspension of Operations (SoO) agreement, initially signed in 2008, was a tripartite ceasefire involving the Central Government, the Manipur state government, and Kuki militant groups under KNO and UPF. The arrangement was meant to create space for political dialogue and reduce armed conflict. For over a decade, it was

periodically renewed without major controversy. However, tensions escalated in March 2023 when the Manipur government, led by Chief Minister Biren Singh, withdrew from the pact with specific groups like the Zomi Revolutionary Army (ZRA) and Kuki National Army (KNA), accusing them of inciting unrest in Churachandpur following anti-encroachment operations. After the outbreak of ethnic violence between Meitei and Kuki communities in May 2023, armed insurgent activity increased on both sides, and the ceasefire arrangement effectively collapsed in 2024.

New Terms Under the Renewed SoO Agreement

- The MHA's renewed SoO framework introduces several revised conditions with the aim of restoring control and transparency. Militant groups under KNO and UPF are now expected to affirm their commitment to Manipur's territorial integrity and work toward a negotiated political resolution. A significant change involves the relocation of insurgent camps from sensitive fringe zones—especially those bordering Meitei-majority areas—to reduce the risk of cross-community attacks. Among the 14 recognized Kuki camps in the hills, seven are located near the valley, raising longstanding concerns among Meiteis who claim these camps are used as bases for attacks on their villages.
- Additional provisions include the consolidation of smaller camps into larger, more manageable units, and the mandatory deposition of weapons with central security forces such as the CRPF or BSF to curb misuse. Cadre verification will be tightened through physical checks, issuance of identity cards, and regulation of their movement via local police stations. Foreign nationals will be excluded from official lists, and payments to cadres will now be made directly to individual bank accounts to ensure accountability. A Joint Monitoring Group has been instituted to oversee compliance, with provisions for the suspension of the agreement in case of violations.

Central Government's Response to Kuki Political Demands

In response to longstanding grievances from the Kuki community, the Central Government has made several key concessions. A major point of contention was the leadership of Chief Minister Biren Singh, whom Kuki groups accused of being partisan during the ethnic crisis. His removal came through the imposition of President's Rule in February, after which militant groups resumed talks with the Centre. Another core issue was the perceived impunity of Meitei insurgent groups operating from the valley region. In a parallel peace initiative, the government signed a peace accord with the United National Liberation Front (UNLF) in November 2023. Implementation is already underway, with UNLF cadre camps being established and identity documentation nearing completion.

Divergent Reactions to the Renewed SoO Deal

The renewed agreement has triggered intense responses from both Meitei and Kuki-Zo quarters. On the Meitei side, a prominent civil society organisation denounced the deal, branding it as a move that legitimizes what they called "armed narco-terrorist groups." They also questioned the involvement of the Manipur government in the deal while the state is under President's Rule. Conversely, some Kuki-Zo factions expressed concern over the clause reaffirming Manipur's territorial integrity, interpreting it as a potential barrier to their primary demand for a separate administrative setup. However, others within the Kuki community interpreted the clause on pursuing a "negotiated political solution" as an opening that still allows space for their aspirations.

Dispute Over 'Free Movement' and the NH-02 Reopening

- The reopening of NH-02, while presented by the MHA as a breakthrough, has emerged as a contentious issue. The highway, which connects major regions of the state, has been largely unusable for free movement due to hardened inter-ethnic boundaries. Under President's Rule, the government has made restoring unrestricted passage a top priority. As part of this initiative, the MHA announced that the Kuki-Zo Council had agreed to facilitate the reopening of NH-02. However, this claim was swiftly contested by Kuki-Zo groups, who clarified that the movement of essential

goods had never stopped and that the phrase "free movement" was problematic. They argued that collaboration with security forces does not equate to endorsing unfettered access for Meiteis into Kuki-dominated areas, particularly in the absence of reciprocal agreements from Meitei groups.

- Within hours, the Kuki-Zo Council released a clarification stating that their agreement should not be misinterpreted as permission for unrestricted movement across buffer zones. This episode underscores the fragile and complex nature of negotiations, where even minor semantic differences can lead to major political disputes.

Conclusion

The MHA's twin decisions—reviving the SoO agreement under new terms and attempting to restore connectivity via NH-02—represent a concerted effort to stabilise Manipur ahead of high-level political engagement. While these moves may help reduce immediate tensions, deep mistrust remains between the communities, and the true impact of these measures will depend on their enforcement and the broader political roadmap to address core demands from all sides.

United Kingdom-India Infrastructure Financing Bridge (UKIIFB): Marking One Year of Strategic Collaboration

- The United Kingdom-India Infrastructure Financing Bridge (UKIIFB) recently commemorated its first anniversary with the launch of a report in London's financial district. Jointly developed by NITI Aayog and the City of London, UKIIFB is a flagship initiative designed to channel sustainable infrastructure investments into India by leveraging British expertise in project structuring and execution.
- The initiative, formalised under the UK-India Economic and Financial Dialogue (EFD), was operationalised through a high-level steering committee comprising officials from the UK Treasury, alongside leaders from the construction, engineering, and legal sectors of both nations. This committee is responsible for guiding the initiative's implementation and ensuring that large-scale infrastructure projects in India are investment-ready.
- The UKIIFB is focused on critical sectors such as national highways, regional rapid transport systems, and renewable energy. It aims to develop a stable and diverse investment ecosystem that is not only long-term and secure but also aligned with global environmental standards. The initiative distinctly prioritises projects consistent with the Sustainable Development Goals, with a strong emphasis on environmentally responsible growth.

India–Israel Bilateral Investment Agreement: A Strategic Economic Partnership

- In a high-level event held in New Delhi, India and Israel formalized a Bilateral Investment Agreement (BIA), witnessed by both nations' finance ministers, including Israel's Bezalel Smotrich. This agreement marks a significant step toward fostering deeper economic cooperation and cross-border investment.
- The BIA is a comprehensive investment protection and promotion treaty that outlines minimum standards for treatment of investors, aiming to establish a fair, secure, and transparent framework for bilateral investments. It includes a neutral dispute resolution mechanism through arbitration, ensuring that both domestic and foreign investors have legal safeguards outside of conventional court systems.
- The overarching goal of the agreement is to provide greater predictability and security for investors from both countries. It ensures protection against risks such as expropriation, abrupt regulatory changes, or arbitrary state actions. Moreover, the treaty promotes increased capital flows and bilateral trade, reinforcing the resilience of both nations' investment ecosystems. A notable feature is the balance struck between investor protection and the

sovereign regulatory rights of the governments.

- The agreement includes specific provisions such as fair compensation for expropriated assets, guarantees for the free transfer of profits and capital, and transparent legal procedures. Additionally, it outlines independent arbitration as the standard dispute resolution approach. Sectoral cooperation is expected to deepen in fields such as fintech, digital payments, infrastructure, cybersecurity, defence, and high-tech innovation—areas where both countries have shared strategic interests.

Nepal's Gen Z Protests: Social Media Ban, Youth Unrest, and Political Turmoil

On September 8, 2025, Nepal witnessed an eruption of unprecedented protests following the government's sudden ban on major social media platforms. What began as peaceful demonstrations quickly spiraled into widespread violence. At least 19 people lost their lives, while over 400 were injured. Protesters breached Parliament, attacked the homes of senior politicians, and set off chaos across major cities, including Kathmandu, where curfews were imposed. As the second day of unrest intensified, Prime Minister K.P. Sharma Oli announced his resignation, a move confirmed by his secretariat amid growing national and international pressure.

Youth on the Streets: The Rise of Gen Z Discontent

The driving force behind the protests is Nepal's Generation Z — youth born between 1996 and 2012, particularly those aged 16 to 25. This demographic accounts for 20.8% of Nepal's population and forms the core of the country's internet users, comprising over 90% of the 30 million population with access to online platforms. Disillusioned with Nepal's governance and political elite, these young people have turned their frustration into visible resistance.

Corruption, Nepotism, and Erosion of Trust

Central to Gen Z's anger is Nepal's chronic corruption and the impunity enjoyed by its political class since the transition to a republic in 2008. Online outrage intensified against the privileged children of politicians — labeled disparagingly as "Nepo Babies" and "Nepo Kids" — whose lavish lifestyles became symbolic of a deeply unequal society. The generational disconnect between the ruling elite and the digital-native youth has now translated into a full-blown societal fracture.

The Social Media Ban: Catalyst for Crisis

The immediate spark for the uprising came with the government's decision to block 26 major social media platforms, including Facebook, WhatsApp, Instagram, X (formerly Twitter), and YouTube. Officials claimed the ban was necessary due to the platforms' failure to register with Nepali authorities and their alleged role in spreading hate speech, misinformation, and fraudulent content. Notably, TikTok remained accessible, having complied with local regulations. For Gen Z, the ban represented more than a policy decision — it was an assault on their primary mode of expression, community-building, and activism. The move deepened their alienation and triggered mass mobilisation.

From Protest to Bloodshed

The tension reached a boiling point on the day of the ban, when thousands took to the streets in protest. Confrontations between demonstrators and security forces escalated quickly. Police opened fire, resulting in the death of 19 people and injuring hundreds more. The sheer scale and intensity of the protests marked the largest youth-led uprising in Nepal in recent memory. Though lacking a formal agenda, protesters demanded the immediate reversal of the social media ban — a demand that was eventually met. However, their grievances extended far beyond digital censorship, encompassing widespread anger over unemployment, inequality, and the perceived failure of Nepal's political system.

India's Watchful Eye on a Fragile Neighbour

India, a key regional player with longstanding strategic interests in Nepal, is closely monitoring the situation. Past missteps — such as supporting Maoists over traditional allies like the monarchy and Nepali Congress — have made India cautious about taking sides. Prime Minister Narendra Modi recently chaired a Cabinet Committee on Security meeting to assess the crisis, describing the violence as "heart-rending" and reiterating India's commitment to Nepal's peace, stability, and prosperity. New Delhi's response is shaped by its desire to avoid alienating any domestic

factions within Nepal, while safeguarding regional stability.

Beyond Oli's Resignation: Deeper Democratic Malaise

The resignation of Prime Minister Oli has done little to quell the unrest or address the underlying causes of the revolt. The protests have now evolved into a broader reckoning with the state of Nepal's democratic institutions. Demonstrators torched government buildings, ministerial residences, and media offices in Kathmandu, underscoring the intensity of their anger. What began as resistance to a digital policy has exposed deep-seated structural flaws in Nepal's political experiment.

A Systemic Revolt Without a Blueprint

The Gen Z uprising quickly shifted from opposition to the social media ban to a sweeping indictment of corruption, nepotism, and a failed economic model. The killings of 19 protesters on the first day intensified national outrage, triggering a wave of mobilisation across the country. Unlike previous democratic movements in Nepal, these protests are leaderless and unfocused, driven more by rage than by reformist agendas. The absence of structured leadership or clear political alternatives reflects a generation's nihilistic disillusionment with all state institutions.

Democracy in Peril: The Risk of Dangerous Precedents

Despite undergoing two people's movements, adopting a new constitution, and establishing republican institutions, Nepal remains plagued by elite dominance, patronage networks, and institutional decay. The political vacuum and popular discontent have created fertile ground for anti-democratic forces to gain traction. Pro-monarchy and Hindutva-affiliated groups are already seeking to capitalise on the unrest. The loosely organised and ideologically diverse nature of the Gen Z protests makes them vulnerable to such co-optation, particularly in the absence of a coherent democratic vision.

Echoes Across South Asia: Regional Context and Outsider Appeal

Nepal's turmoil is not unfolding in isolation. It echoes similar youth-driven protest movements across South Asia — from Bangladesh's student-led mobilisations to Sri Lanka's Aragalaya. The political rise of outsiders, including jailed media personality Rabi Lamichhane and Kathmandu's populist Mayor Balendra Shah, underscores young voters' rejection of traditional party politics. Shah's recent call for the dissolution of Parliament, however, raises alarms about the rise of anti-institutional rhetoric that could undermine fragile democratic norms.

Nepal at a Crossroads: Between Reform and Ruin

The Gen Z-led movement has laid bare the political bankruptcy and institutional failures of Nepal's democratic system. While the protests have successfully forced policy reversals and a prime minister's resignation, their shift toward violence and nihilism poses a serious threat to democratic stability. Without credible alternatives, constructive policies, and new institutions to channel this generational energy, the movement risks destabilising the nation further. The road ahead demands urgent political reform, inclusive leadership, and genuine systemic renewal. Absent that, Nepal risks descending into deeper chaos — a state more fractured than before, and with even fewer tools to rebuild.

Exercise ZAPAD 2025

- A contingent of the Indian Armed Forces has departed for Russia's Mulino Training Ground in Nizhniy to participate in **Exercise ZAPAD 2025**, a multilateral joint military exercise.
- India is represented by 65 personnel, comprising 57 from the Indian Army, seven from the Air Force, and one from the Navy. The primary objective of this exercise is to foster military cooperation and interoperability among participating countries. It also provides a platform for the exchange of military tactics, operational techniques, and best practices in conventional and counter-terrorism warfare.
- The exercise focuses on joint company-level operations in open and plain terrain. Participating forces will engage in missions involving joint planning, tactical manoeuvres, and specialized combat skills. The event serves as a vital opportunity to refine joint operational abilities, integrate advanced technologies, and train within a multinational combat setting.

Strategically, it bolsters India-Russia defence cooperation and deepens bilateral trust and camaraderie.

Innovations for Defence Excellence (iDEX)

- The **Innovations for Defence Excellence - Defence Innovation Organisation (iDEX-DIO)** recently signed a Memorandum of Understanding with EdCIL (India) Limited to drive the development of next-generation dual-use technologies through the **ASPIRE (Accelerating Strategic Progress in Research and Education)** initiative.
- Launched in 2018 by the Ministry of Defence, iDEX is the flagship program designed to create a robust innovation ecosystem in India's defence and aerospace sectors. It actively engages with start-ups, MSMEs, innovators, incubators, and academic institutions to foster cutting-edge research and development.
- Funded and managed by the **Defence Innovation Organisation (DIO)**—a not-for-profit company registered under the Companies Act 2013—iDEX operates as its executive arm. DIO itself was founded by two Defence Public Sector Undertakings: **Hindustan Aeronautics Limited (HAL)** and **Bharat Electronics Limited (BEL)**.
- iDEX provides grants and technological support for projects with strong potential for future defence adoption. As of now, it is working with over 650 start-ups and MSMEs, aiming to transform India into a hub for indigenous defence innovation.

Iskander-K Missile Strikes Ukrainian Cabinet Building: A Snapshot of Tactical Warfare

- In a recent escalation of hostilities, Russia launched an Iskander-K missile targeting Ukraine's Cabinet building, signalling continued reliance on advanced tactical weaponry in the ongoing conflict.
- The *Iskander-K* is a mobile, short-range cruise missile system developed by Russia. Mounted on an 8x8 military truck chassis, it resembles the Iskander-M, which is a ballistic missile system. Also referred to as *SSC-8*, the Iskander-K became operational in the Russian Armed Forces in February 2017 and is designed for tactical and operational strikes against key land targets.
- The missile system's launcher vehicle can accommodate between two and six container units. It boasts a maximum road speed of 70 km/h and can cover up to 1,000 km. The Iskander-K is capable of launching two types of cruise missiles: the *9M728* (also known as SSC-X-7 or R-500) with a maximum range of 500 km, and the *9M729* (SSC-X-8), which is a more advanced missile designed for precision targeting at extended ranges.
- The 9M729 missile is particularly difficult to intercept, as it flies at low altitudes to evade radar detection and complicate countermeasures. With its enhanced mobility and stealth capabilities, the Iskander-K system continues to serve as a crucial component of Russia's tactical missile arsenal.

Universal Postal Union (UPU)

- The 28th Universal Postal Congress, which serves as the highest decision-making body of the Universal Postal Union (UPU), recently commenced its proceedings. The UPU operates as a specialized agency under the United Nations and functions as the primary forum for international collaboration within the postal sector. Established under the Treaty of Bern in 1874, it ranks as the world's second oldest international organization and is headquartered in Bern, Switzerland.
- The Universal Postal Congress plays a critical role in harmonizing postal policies among its member countries, as well as managing the global postal system. It formulates regulations governing international mail exchanges and provides recommendations aimed at expanding volumes of mail, parcels, and financial services, while enhancing customer service quality.
- The governance structure of the UPU comprises several key bodies. The Congress, meeting every four years, holds the supreme authority. Between

Congress sessions, the Council of Administration oversees ongoing work, supervising activities and addressing regulatory, administrative, legislative, and legal matters. The Postal Operations Council acts as the technical and operational branch, consisting of 48 member countries elected during the Congress. Supporting all these bodies, the International Bureau serves as the secretariat, delivering logistical and technical assistance.

- Membership is open to all United Nations member states, and non-member states may join upon approval by at least two-thirds of existing members. Currently, the UPU has 192 member countries.

Réunion Island: Strategic Indian Ocean Territory Receives Indian Naval Visit

- Indian Navy ships **INS Tir** and **ICGS Sarathi** recently docked at **Réunion Island**, while **INS Shardul** arrived at **Port Louis, Mauritius**, as part of a training mission in the southwest Indian Ocean region.
- Réunion is a French overseas territory located approximately 680 km east of Madagascar and 180 km southwest of Mauritius. It spans 2,511 sq. km and, together with Mauritius and Rodrigues, forms the **Mascarene Archipelago**. Volcanic in origin, the island features rugged terrain dissected by fast-flowing rivers like the Marsouins and Galet, and is home to **Piton des Neiges**, the Indian Ocean's highest peak, and **Piton de la Fournaise**, one of the world's most active volcanoes.
- The capital, **Saint-Denis**, lies on the northern coast. The island lacks natural harbors but has strategic military importance for France. Settled in the 17th century, Réunion has a mixed population with African, European, and South Asian heritage. French is the official language, with **Reunion Creole** also widely spoken.
- The local economy revolves around **sugar exports**, with additional contributions from rum, vanilla, tobacco, milk, meat, and essential oils like geranium essence.

Samudra Pradakshina: World's First Tri-Service All-Women Sailing Expedition

Context:

- India's Defence Minister virtually flagged off 'Samudra Pradakshina' from the Gateway of India in Mumbai. This marks the beginning of the world's first tri-service, all-women circumnavigation sailing expedition.
- 'Samudra Pradakshina' is India's pioneering all-women sailing expedition involving personnel from all three military services—Army, Navy, and Air Force. The voyage entails a complete circumnavigation of the globe, fulfilling the stringent norms of the World Sailing Speed Record Council, including crossing all longitudes and major oceans.
- The initiative draws inspiration from India's legacy in global sailing expeditions. It follows milestones such as Capt. Dilip Donde's solo circumnavigation (2009–10), Cmde. Abhilash Tomy's non-stop voyage (2012–13), and two all-women Indian Navy expeditions aboard INSV Tarini—Navika Sagar Parikrama (2017–18) and Navika Sagar Parikrama-II (2024–25). Globally, it echoes the achievements of trailblazers like Sir Robin Knox-Johnston, who completed the first solo non-stop circumnavigation in 1969.

Aims and Objectives:

- The expedition serves as a powerful symbol of *Nari Shakti* (women's empowerment), showcasing the courage, resilience, and leadership of women in uniform. It aims to foster greater synergy among the three branches of the Indian Armed Forces and use international port calls for military diplomacy and cultural engagement. In collaboration with the National Institute of Oceanography (NIO), the expedition will also undertake scientific studies on microplastics, ocean biodiversity, and marine health.
- The crew will sail aboard *IASV Triveni*, a 50-foot indigenous Class A yacht built in Puducherry. The voyage will span approximately 26,000 nautical miles along an easterly route, crossing the

Equator twice and rounding the Capes of Leeuwin, Horn, and Good Hope. The team includes ten women officers, led jointly by Lt Col Anuja Varudkar (Army) and Sqn Ldr Shraddha P Raju (Air Force), and the mission will run from September 2025 to May 2026.

- This is a historic milestone for gender inclusion in the Indian Armed Forces. It also reflects India's *Aatmanirbhar Bharat* (self-reliant India) vision by showcasing indigenous shipbuilding capabilities. Strategically, it underlines India's growing maritime aspirations and global naval engagement.

UN Report Warns That Record Military Spending Threatens Global Peace and Development

- The United Nations Secretary-General released a report titled "The Security We Need: Rebalancing Military Spending for a Sustainable and Peaceful Future." This report calls for a fundamental recalibration of global approaches to security and development. It stresses the urgent need to reverse two concerning trends: the steady increase in military expenditures and the simultaneous widening of financing gaps for sustainable development.
- The report highlights that global military spending reached $2.7 trillion last year, according to the Stockholm International Peace Research Institute (SIPRI), and if current patterns continue, it is expected to surge to $6.6 trillion by 2035. Between 2022 and 2025, military expenditure's share of the world's GDP increased from 2.2% to 2.5%, while its proportion of government budgets rose from 6.6% to 7.1%. The bulk of this spending—over 70%—is concentrated among five major entities: China, India, Russia, the United States, and the European Union.
- In stark contrast, development financing has failed to keep pace with these rising military expenses, leaving a widening annual funding gap of $4 trillion to meet the Sustainable Development Goals (SDGs). The escalating military budgets exacerbate geopolitical tensions, drive arms races, and heighten the risk of conflict. They also divert resources from critical development areas such as poverty alleviation, education, and healthcare. Moreover, the increased expenditure is likely to contribute further to already high levels of public debt, disproportionately impacting fragile states and the world's poorest nations.
- To address these challenges, the report recommends prioritizing diplomacy, peaceful conflict resolution, and confidence-building measures to tackle the root causes driving military spending. It urges the integration of military expenditure discussions within disarmament dialogues and strengthening the link between arms control and development goals. Transparency and accountability regarding military budgets should be enhanced to build trust among nations. Furthermore, there is a call to reinvigorate multilateral financing for development and promote a human-centered approach that balances security with sustainable development.

Border Wing Home Guards (BWHGs): Expansion to India–China Border

Context:

- The Ministry of Home Affairs (MHA) is evaluating the deployment of Border Wing Home Guards along the India–China border, similar to their existing presence along the India–Pakistan front.
- Border Wing Home Guards are voluntary auxiliary forces composed of civilians residing in border areas. They act as support units to the Army and border security forces during emergencies, conflicts, and intelligence-gathering missions.
- Established under the Home Guards Act, 1962, BWHGs operate under the Ministry of Home Affairs in coordination with state governments. Currently authorised in seven states—Meghalaya, Tripura, Assam, West Bengal, Punjab, Rajasthan, and Gujarat—they are operational only in Rajasthan as of 2025.

Objectives and Functions:

- The BWHGs are intended to supplement regular security forces by providing local intelligence, aiding in patrol operations, maintaining law and order, and supporting disaster response and logistics during crises. They also mobilise local populations for community vigilance.
- These are voluntary posts with a service duration of 3–4 years. Members are paid ₹800–₹900 daily, with 25% of the cost borne by the Centre. Rajasthan alone has 2,279 active members. Their effectiveness was notably demonstrated during Operation Sindoor through their grassroots intelligence contributions.
- BWHGs act as a force multiplier for the Army and ITBP along the 3,488-km Line of Actual Control (LAC) with China. They strengthen civil-military trust, promote local engagement in security, and offer a cost-effective solution to bolster border infrastructure.

India-Pakistan Relations and the Indus Waters Treaty: Historical Context, Strategic Insecurities, and the Path Forward

India's decision to call for a review and eventual suspension of the 65-year-old *Indus Waters Treaty (IWT)* following the April terror attack in Pahalgam marks a significant shift in its approach to bilateral ties with Pakistan. Water sharing, once seen as a relatively stable domain of cooperation, now stands to become as divisive and politically charged as the issues of cross-border terrorism and Kashmir. The discourse around the Treaty, however, has often been dominated by emotion rather than grounded analysis, further complicating the already strained relationship.

Competing Narratives Around the Indus Waters Treaty

- The IWT, signed in 1960, allocated around 80% of the waters of the Indus river system to Pakistan, a decision that has long been a point of contention in India. Critics within India argue that the Treaty granted excessive water rights to Pakistan, but experts point out that the division was not based strictly on water volume. Instead, it reflected geographic and topographic realities, as well as the natural flow of the rivers. For then-Prime Minister Jawaharlal Nehru, the Treaty represented a generous gesture in pursuit of regional peace and stability—what he described as a form of "purchased peace."
- However, such idealism has since given way to scepticism. Figures like External Affairs Minister S. Jaishankar view the Treaty as a one-sided act of appeasement, one that failed to anticipate Pakistan's long-term strategic posture. Pakistan, despite receiving the lion's share of the waters, has never publicly celebrated the outcome. This reluctance is rooted in the fear that any triumphalist narrative could undermine Pakistan's carefully constructed image of victimhood, which is central to its domestic and diplomatic messaging. Consequently, both countries harbour deep dissatisfaction with the Treaty, albeit for reasons that diverge significantly.

Pakistan's Strategic Insecurity Over Water

- Although the Treaty grants India control over the eastern rivers and limited use of the western ones, Pakistan has repeatedly used the IWT's dispute resolution mechanisms to challenge and delay Indian infrastructure projects in Jammu and Kashmir. This behaviour, analysts argue, is not driven by a real need for additional water but by a fundamental insecurity about India's control as the upper riparian state. Pakistan's dependence on the western rivers leaves it vulnerable to potential disruptions—whether real or perceived—which feeds into its broader strategic anxieties, especially concerning Kashmir.
- This linkage between water security and territorial claims is not a recent phenomenon. As early as the 1960s, Pakistani military ruler General Ayub Khan explicitly connected the Kashmir dispute to Pakistan's water security, suggesting that control over the region was crucial to safeguarding river flows. Such statements underscore the deep intertwining of hydropolitics and

geopolitics in Pakistan's strategic calculus.

Endurance of the Indus Waters Treaty Amid Conflict

- Despite persistent hostilities—including four wars and decades of terrorism—the IWT has endured, frequently cited as a rare example of successful transboundary water cooperation. Much of this resilience is attributed to India's role as the upper riparian. The Treaty places the burden of compliance largely on India, requiring it to ensure minimum flows and to provide timely hydrological data to Pakistan. In contrast, Pakistan, as the downstream state, does not bear comparable obligations and has often used the Treaty's provisions to block or delay Indian projects that fall well within its legal rights.
- This upstream-downstream dynamic is crucial. Many analysts believe that if the roles were reversed—if Pakistan were the upper riparian—the Treaty might not have lasted this long. Nonetheless, even from its relatively passive position, Pakistan has found ways to strategically exploit the Treaty to its advantage, particularly in efforts to contest Indian infrastructure developments in Jammu and Kashmir.

Looking Ahead: Renegotiation, Resistance, and Regional Implications

- As India suspends the Treaty and reconsiders its long-term posture, Pakistan finds itself in a defensive position. Aware that the current terms of the IWT are highly favourable, Pakistan is likely to resist any attempts at renegotiation. In fact, some Pakistani analysts have proposed widening the scope of discussions by involving China and Afghanistan—countries that control 8% and 6% of the Indus basin, respectively. This multilateral approach, they argue, could dilute India's leverage and offer Pakistan greater diplomatic cover.
- India, however, remains firm in its stance that any revision of the Treaty must be a bilateral matter, excluding third parties, including the World Bank, which helped broker the original agreement. With its suspension of the Treaty, India is now moving to assertively pursue its full entitlements under the existing framework—particularly with regard to the use of western rivers for non-consumptive projects in Jammu and Kashmir. Although some cooperation may continue, such as the sharing of limited flow and weather data, the halt in meetings between the Permanent Indus Commissioners indicates a decline in formal, structured dialogue.
- This shift signals a broader strategic recalibration by India. By leveraging its geographical advantage as the upper riparian, India is sending a clear message: cooperation on water cannot be insulated from the larger context of bilateral relations, especially Pakistan's continued support for cross-border terrorism. Water, once considered a neutral ground for India-Pakistan engagement, may now become another theatre of strategic contestation—unless both sides find a way to reframe the Treaty within a new, more balanced and mutually accountable framework.

India–Mauritius Ties: Evolving from Strategic Partnership to Familial Bond

In a significant step to deepen bilateral relations, India has announced a special economic assistance package worth $680 million for Mauritius. This comprehensive support spans infrastructure development, healthcare enhancement, defence preparedness, and maritime security. The announcement came during a high-level meeting between the Indian Prime Minister and his Mauritian counterpart, Navinchandra Ramgoolam, in Varanasi. It reinforces the deepening relationship between the two nations—one that is steadily evolving from a strategic partnership to what both sides now term a familial bond.

Major Developments in Bilateral Cooperation

The India-Mauritius relationship has grown steadily, but recent initiatives have significantly accelerated the pace of engagement. The $680 million package underscores India's multidimensional approach, combining economic, cultural, strategic, and technological

elements. Key areas of collaboration now include defence and maritime security, soft power diplomacy, civil service capacity building, healthcare, financial connectivity, and academic exchange.

Soft Power Diplomacy and Developmental Partnership

- India's soft power is increasingly visible in its engagement with Mauritius. Academic collaborations have been formalised through agreements between IIT Madras, the Indian Institute of Plantation Management, and the University of Mauritius, signalling a new chapter in knowledge exchange and human capital development. Further, the introduction of *Mission Karmayogi* training modules in Mauritius aims to strengthen local governance by enhancing civil service capacity.
- In the healthcare sector, India's support includes the development of the 500-bed Sir Seewoosagur Ramgoolam National Hospital, an AYUSH Centre of Excellence, a veterinary school, and an animal hospital. Additionally, the inauguration of the first *Jan Aushadhi Kendra* outside India in Mauritius marks a milestone in the country's effort to expand access to affordable medicines globally.
- Financial connectivity has also witnessed a boost, building on the successful launch of UPI and RuPay services in Mauritius last year. Both nations are now working towards enabling trade in local currencies, which would reduce reliance on third-party currencies and promote greater economic independence.

Defence Cooperation and Maritime Security

- A significant dimension of India's support is its contribution to Mauritius' maritime domain awareness and security. Under a new hydrography agreement, both countries will jointly conduct surveys, prepare navigational charts, and gather hydrographic data for Mauritius' Exclusive Economic Zone (EEZ) over the next five years.
- India's role as a maritime partner extends to supporting Mauritius in surveillance operations, sustainable resource management, and capacity building in the Indian Ocean. Special attention has also been given to the Chagos Archipelago, where India has agreed to assist in the development and surveillance of the Chagos Marine Protected Area and the extended EEZ, following Mauritius' recent sovereignty agreement with the UK.
- India's unequivocal support for Mauritius' claim over the Chagos Islands reinforces its longstanding anti-colonial stance. While the UK continues to control Diego Garcia for military operations in collaboration with the US, India's involvement ensures a strategic foothold in this critical region of the Indian Ocean.

Symbolic and Cultural Ties: From Partnership to Family

- Beyond political and economic dimensions, the India-Mauritius relationship is deeply rooted in historical and cultural connections. Prime Minister Modi's remark that India and Mauritius are "not just partners but a family" captures the spirit of this bond. The Mauritian PM's participation in the Ganga Aarti at Varanasi and his planned visits to Shri Kashi Vishwanath Dham and Ayodhya underscore the spiritual and cultural resonance that links the two nations.
- Indian traditions have been a part of Mauritian daily life for centuries, and this symbolic engagement reflects not just shared heritage but also India's use of cultural diplomacy as a tool to deepen regional influence.

Strategic Context and India's Expanding Influence

- Mauritius views India as a trusted partner and a key stakeholder in regional security. As a result, India is increasingly recognised as a net security provider in the Indian Ocean, a champion of South-South cooperation, and a promoter of a free, open, stable, and prosperous Indo-Pacific.
- India's support to Mauritius comes at a time of intensifying geopolitical competition in the western Indian Ocean. Countries such as China, Russia, Iran, Turkey, and various Gulf nations are expanding their presence in the region. At the same time, European powers are attempting to reassert influence. Despite these developments, Mauritius has skillfully balanced its external engagements while maintaining strategic autonomy—a position that aligns well with India's own vision of multipolar cooperation and regional stability.

Economic and Diaspora Linkages

- Mauritius continues to play a vital role in India's economic landscape. It is the second-largest source of Foreign Direct Investment (FDI) into India after Singapore. The signing of the *Comprehensive Economic Cooperation and Partnership Agreement (CECPA)* in 2021, India's first trade pact with an African nation, marked a milestone in bilateral economic engagement.
- Over the past decade, India has extended nearly $1.1 billion in development assistance to Mauritius, including $729 million in lines of credit and $427 million in grants. This financial assistance has supported infrastructure, education, health, and renewable energy projects.
- The cultural and people-to-people ties are further strengthened by the presence of a large Indian diaspora in Mauritius, with nearly 70% of the island's 1.3 million population tracing their ancestry to India. This demographic connection continues to serve as a powerful force for cooperation and mutual understanding.

India–Mauritius Relations in a Shifting Regional Landscape

- India's role as a first responder to crises in Mauritius has further cemented its status as a dependable partner. Whether during the COVID-19 pandemic or the Wakashio oil spill in 2020, India responded swiftly with aid and technical support. These actions have helped build trust and affirm India's commitment to the welfare of smaller Indian Ocean states.
- With China's growing footprint in the region, India's deepening engagement with Mauritius allows it to safeguard its strategic interests while promoting a rules-based maritime order. Strengthening Mauritius' EEZ surveillance and infrastructure not only protects its national resources but also enhances India's influence across the Indian Ocean.

Conclusion: A Strategic-Familial Convergence

- India's latest economic and strategic outreach to Mauritius represents a seamless blend of hard and soft power diplomacy. By assisting Mauritius in developing its maritime infrastructure, boosting its healthcare systems, and supporting its sovereignty over Chagos, India is fostering a relationship that transcends transactional diplomacy.
- This evolving relationship reinforces India's *Neighbourhood First* and *Vision Mahasagar* policies and strengthens its role as a maritime power in the Indo-Pacific. As the geopolitical contours of the western Indian Ocean continue to shift, India's ties with Mauritius stand as a model of deep-rooted, multidimensional cooperation—one that combines strategic interest with cultural kinship.

First Overseas Atal Innovation Centre

Context:

India's Union Education Minister inaugurated the country's first overseas Atal Innovation Centre (AIC) during his visit to the UAE. This landmark centre is housed at the IIT Delhi–Abu Dhabi campus.

About the Centre:

- The Atal Innovation Centre in Abu Dhabi marks the first instance of such a hub being established outside India, under the aegis of the Atal Innovation Mission (AIM). Launched in September 2025, this facility aims to foster a global culture of innovation and entrepreneurship among students and professionals.
- Its primary objectives include nurturing a vibrant ecosystem for research, innovation, and start-up incubation while deepening India–UAE cooperation in sectors such as education, sustainability, and advanced technologies. The centre is equipped to provide mentorship for innovators, incubation support for startups, and cutting-edge laboratories to enable advanced research. It will also facilitate academic exchange programmes, skill-building workshops, and teacher training initiatives, serving as a bridge for international knowledge-sharing and innovation collaboration.

Atal Innovation Mission (AIM):

- AIM is a flagship initiative by the Indian government, implemented by NITI Aayog, to cultivate a culture of innovation and entrepreneurship. It aims to

establish a robust innovation ecosystem across schools, universities, and industries.

- Key initiatives under AIM include Atal Tinkering Labs (ATLs) that promote hands-on learning in robotics, IoT, and 3D printing in schools; and Atal Incubation Centres (AICs) which support startups with mentorship, infrastructure, and funding. Currently, over 10,000 ATLs and 72 AICs are functional across India, supporting thousands of start-ups and job creation, particularly in sectors like HealthTech, FinTech, AgriTech, and more. AIM also emphasizes inclusion, with support extended to over 1,000 women-led startups.

Power of Siberia 2 Pipeline

Context:

Gazprom, Russia's state-owned energy company, has signed a deal with China National Petroleum Corporation (CNPC) to construct the Power of Siberia 2 pipeline.

About the Project:

- The Power of Siberia 2 is a major proposed natural gas pipeline that will stretch approximately 6,700 km, transporting gas from Western Siberia in Russia to China via Mongolia. This new pipeline is an extension of the earlier Power of Siberia 1, operational since 2019.
- The project is strategically significant as it aims to compensate for Russia's lost gas revenues following European Union sanctions and the subsequent gas cutoff due to the Ukraine conflict. It seeks to solidify the Russia–China energy alliance and diversify Russia's energy markets away from the West.
- The pipeline originates from Russia's Yamal Peninsula, travels past Lake Baikal, through Mongolia, and ends in China. It is designed to carry around 50 billion cubic metres of natural gas annually. While this capacity is substantial, it remains smaller than the 180 billion cubic metres of gas Russia previously supplied to Europe. For comparison, Power of Siberia 1 carries about 38 billion cubic metres per year.

Huangyan Island (Scarborough Shoal)

Context:

China has declared the establishment of a national nature reserve on Huangyan Island, internationally known as Scarborough Shoal, escalating tensions in the South China Sea.

About the Island:

- Scarborough Shoal, also called Huangyan Island by China and Panatag Shoal by the Philippines, is a disputed coral atoll in the South China Sea. Located around 220 km west of the Philippine island of Luzon near the Manila Trench, this feature has been a flashpoint for territorial disputes.
- Historically, the shoal appeared on the 1734 Velarde Map under Spanish rule and was later part of U.S.-Philippines arrangements through the Treaty of Washington (1900). It was named after the British ship "Scarborough," which ran aground there in 1748. A major incident occurred in 2012, leading to a standoff between China and the Philippines.
- In 2016, the Permanent Court of Arbitration (PCA) ruled under UNCLOS that China's expansive "nine-dash line" had no legal basis. However, it refrained from adjudicating sovereignty over the shoal, which remains contested between China, Taiwan, and the Philippines due to its strategic location for fishing, military, and energy interests.

About the South China Sea:

This marginal sea of the western Pacific Ocean is bordered by Taiwan, the Philippines, Borneo, the Gulf of Thailand, and mainland China and Vietnam. The region is home to numerous contested features like the Spratly and Paracel Islands. It is also one of the world's busiest trade routes, with nearly a third of global shipping passing through. Rich in oil, natural gas, and fisheries, the region includes strategic chokepoints like the Luzon Strait and Malacca Strait.

Nepal's Political Unrest: A Crucial Test for India's 'Neighbourhood First' Policy

The unfolding political crisis in Nepal poses a significant diplomatic and strategic challenge for India. Triggered by the resignation of former Prime Minister K.P. Sharma Oli, ongoing violent protests, and the appointment of **former Chief**

Justice Sushila Karki as interim Prime Minister, the situation reflects deep-rooted political instability. For India, this moment is a critical test of its **'Neighbourhood First' policy**, which seeks to prioritise stable and cooperative relations with bordering countries. India must now balance its strategic interests with the risk of being perceived as intrusive, especially as **China intensifies its presence in Nepal**.

India–Nepal Relations: A Deep but Fragile Tiescape

- India shares a long-standing and multidimensional relationship with Nepal, defined by **geography, culture, and economic interdependence**. The two countries share a **1,770–2,000 km open border**, which permits free movement of people and goods. While this border fosters deep people-to-people ties, particularly among the **Madhesi population** and communities with kinship links, it also makes political instability in Nepal a **direct security concern** for India.
- India and Nepal enjoy strong **civilisational ties**, shaped by shared Hindu-Buddhist heritage and mutual religious tourism. The presence of **Gorkha regiments** in the Indian Army, consisting of Nepali citizens, is another unique facet of this bilateral bond.
- On the economic front, India is Nepal's largest trading partner, accounting for over **60% of its trade volume**, and remains a key source of **foreign direct investment, fuel, electricity, and medicines**. Additionally, India has been investing heavily in **hydropower diplomacy**, including large projects like **Upper Karnali and Arun-III**, and has entered cross-border power trade agreements that help both nations meet energy needs.

Growing Chinese Influence in Nepal

- Meanwhile, **China has made significant inroads into Nepal**, leveraging economic investments, diplomatic influence, and soft power to expand its footprint. Under the **Belt and Road Initiative (BRI)**, China is funding major infrastructure projects such as highways, airports, and even a railway link between Tibet and Kathmandu.
- Politically, Beijing has cultivated close ties across Nepal's party spectrum and has even played a role in mediating **intra-party disputes within the Communist Party of Nepal (CPN)**. At the same time, China's **soft power strategy**—through Confucius Institutes, language scholarships, and media outreach—has enhanced its appeal among Nepal's younger generations.
- From India's security standpoint, the growing Chinese presence close to the **Siliguri Corridor (Chicken's Neck)** — a narrow and critical land link between India's mainland and the Northeast — poses strategic concerns.

Strategic and Diplomatic Concerns for India

- Nepal's chronic political instability — with **14 governments in the past 17 years** — creates obstacles to sustained bilateral cooperation. Frequent coalition collapses have derailed previously agreed initiatives and fuel uncertainty about future engagement.
- There is also a persistent strain of **anti-India sentiment** among segments of Nepal's population, exacerbated by the **2015 border blockade**, which left a lasting impression on Nepalese youth who often view India with suspicion.
- China's expanding influence risks eroding **India's traditional strategic depth** in the Himalayan region. Simultaneously, the **open border**, while facilitating cultural and economic exchange, is also vulnerable to **arms smuggling, illegal migration, and potential cross-border terrorism**.
- Furthermore, ongoing instability may delay or derail **India-funded infrastructure and connectivity projects**, including integrated check posts (ICPs), railway links, and cross-border power lines.

Key Challenges for India

- India must tread carefully between **non-interference and active engagement**. Over-involvement could reinforce the narrative of India as a domineering power, while under-engagement risks

creating a vacuum that China will readily fill.

- One of the more pressing diplomatic hurdles is a growing **disconnect with Nepal's younger generation**, many of whom came of age after the fall of the monarchy and have been influenced by **anti-India narratives** prevalent in media and political rhetoric.
- Nepal's shift toward **federalism** also means that India must now diversify its diplomatic outreach beyond Kathmandu to include **provincial leaders, Madhesi politicians, and new political entrants**. Political instability also brings economic vulnerabilities, such as potential disruption in **remittances, border trade, and power projects**.
- Lastly, a prolonged crisis could result in a **refugee influx into India** and increased activity by **Chinese intelligence** close to India's northeastern frontier.

The Way Forward for India

- India must adopt a nuanced and **multi-pronged approach** that preserves strategic interests while strengthening mutual trust. Enhancing diplomatic engagement with emerging political actors across Nepal's provinces and expanding **Track 1.5 and Track 2 dialogues** can help rebuild relationships.
- Economically, India should **fast-track key infrastructure projects** — particularly rail lines like **Jaynagar–Bardibas** and **Raxaul–Kathmandu** — and accelerate the development of **border infrastructure and ICPs**. Increasing **hydropower collaboration** and facilitating **trilateral electricity trade between India, Nepal, and Bangladesh** could deepen economic ties.
- Cultural diplomacy and **people-to-people exchanges** should also be scaled up. Expanding educational scholarships, boosting tourism via religious circuits such as the **Ramayana Circuit**, and investing in cultural collaboration can counterbalance anti-India narratives.
- Above all, India must exercise **strategic patience** — avoiding overt political alignment with any one party and focusing instead on **institution-building and long-term partnerships** rooted in shared democratic values and regional stability.

Conclusion

Nepal's political turmoil presents a critical moment for India's foreign policy in South Asia. A **calibrated, inclusive, and youth-centric strategy** — anchored in economic cooperation, cultural affinity, and respectful diplomacy — will be essential for India to navigate this crisis. A **stable, democratic, and economically integrated Nepal** is not only in Nepal's interest but remains the **best guarantee of India's long-term strategic and regional equilibrium**, especially amid increasing Chinese assertiveness in the Himalayas.

Defence Indigenisation Takes Centre Stage in New Defence Procurement Manual (DPM) 2025

- India's Defence Minister recently unveiled the Defence Procurement Manual (DPM) 2025, an updated framework that replaces the previous manual introduced in 2009. The DPM serves as the guideline for acquiring goods and services essential for the routine operations, maintenance, and operational readiness of all Defence Services and Ministry of Defence establishments. It is distinct from the Defence Acquisition Procedure (DAP), which governs capital acquisitions.
- The DPM 2025 places a strong emphasis on achieving self-reliance by promoting defence indigenisation. It encourages the jointness of the Armed Forces under the Revenue Head (Operations & Sustenance Segment), streamlining and simplifying procurement processes for revenue expenditures, which are expected to be worth approximately Rs 1 lakh crore in the current financial year. The aim is to foster domestic capability in supplying defence requirements more efficiently and cost-effectively.
- Despite these ambitions, several challenges hinder the full realisation of defence indigenisation. Technologically, India remains dependent on technology transfers and licensed production arrangements due to limited domestic

research and development (R&D) capabilities and a shortage of skilled workforce. From an industry perspective, the private sector's participation in defence manufacturing remains low, with entities like Hindustan Aeronautics Limited (HAL) maintaining a near-monopoly. Supply chain vulnerabilities further complicate the scenario, as many critical components, subsystems, and technologies continue to be imported, sometimes delayed by export control restrictions—as illustrated by recent delays in jet engine deliveries from the United States. Additionally, indigenisation efforts tend to increase procurement costs in the short term, imposing financial burdens on end-users.

- To address these issues, the government has introduced several initiatives aimed at bolstering defence indigenisation. Liberalisation of Foreign Direct Investment (FDI) rules now permits up to 74% FDI under the automatic route, encouraging greater foreign participation in the defence sector. The Innovations for Defence Excellence (iDEX) scheme, launched in 2018, actively engages start-ups and Micro, Small, and Medium Enterprises (MSMEs) to drive innovation and technology development. The Sudarshan Chakra Mission aims to ensure that the entire defence ecosystem, including research, development, and manufacturing, is rooted in India. Complementing these efforts is the SRIJAN Portal, which facilitates the indigenisation process by connecting Indian industry players, including MSMEs, with defence requirements.
- Through these combined efforts, the government seeks to transform India's defence procurement landscape, prioritising self-sufficiency, technological advancement, and economic growth within the sector.

WTO Agreement on Fisheries Subsidies: A Step Toward Ocean Sustainability

Agreement Comes into Force with Global Ratification

The World Trade Organization's Agreement on Fisheries Subsidies has officially come into force after surpassing the required two-thirds ratification threshold, recently joined by Brazil, Kenya, Vietnam, and Tonga.

A Landmark Environmental Trade Agreement

Adopted at the 12th Ministerial Conference in Geneva in June 2022, this is the first WTO agreement to focus explicitly on environmental sustainability. It addresses harmful government subsidies that contribute to overfishing, aiming to safeguard marine resources and protect the livelihoods of small-scale fishers.

Core Objectives and Provisions

- The agreement prohibits subsidies that support illegal, unreported, and unregulated (IUU) fishing, overfished stocks, and unregulated high seas fishing. It mandates transparency, requiring member states to report on subsidies and fishing activities. An implementation fund of over $18 million has been established to support developing countries and least-developed countries (LDCs).
- A permanent Committee on Fisheries Subsidies will facilitate technical assistance, compliance review, and policy dialogue. This agreement is significant not only for ocean governance but also for global economic equity, as it curbs the advantage of heavily subsidised fleets from large fishing nations.
- Given that over 35% of the world's fish stocks are overexploited, this agreement is a critical step in ensuring marine biodiversity, sustainable fishing practices, and the protection of communities reliant on fisheries for their livelihoods.

INS Nistar Participates in Exercise Pacific Reach 2025

- The Indian Navy's indigenously designed and constructed Diving Support Vessel (DSV), **INS Nistar**, is currently participating in **Exercise Pacific Reach 2025** in Singapore. This biennial multinational naval exercise brings together more than 40 countries and is conducted in two distinct phases — harbour and sea.
- During the **harbour phase**, participating navies engage in discussions centred around submarine rescue systems. The agenda includes Subject Matter Expert Exchanges

(SMEE), a medical symposium, and cross-deck visits between ships of different nations. The **sea phase** involves active submarine intervention and rescue operations in the South China Sea, where INS Nistar and the Submarine Rescue Unit (East) are playing a critical role.

- Commissioned on July 18, 2025, INS Nistar was developed by Hindustan Shipyard Limited (HSL), Visakhapatnam, as part of the Ministry of Defence's *Aatmanirbhar Bharat* initiative. The vessel functions as the *mothership* (MoSHIP) for Deep Submergence Rescue Vehicles (DSRV), equipped with advanced systems like Side Scan Sonar and remotely operated vehicles (ROVs). These tools are crucial for deep-sea diving, rescue missions, and locating submerged vessels.
- The ship's **Integrated Saturation Diving System (ISDS)** enables deployment of divers at depths up to 300 metres for underwater repairs and salvage. The **ROVs** and the **Integrated Platform Management System (IPMS)** support underwater surveillance and efficient onboard operations. Its submarine rescue system is particularly vital during emergencies, ensuring the timely recovery of personnel from disabled submarines.

India to Host 5th Coast Guard Global Summit (CGGS) in 2027

- India will host the 5th edition of the Coast Guard Global Summit in Chennai in 2027. This global gathering aligns with the Indian Coast Guard's Golden Jubilee and is positioned as a premier forum for international maritime cooperation.
- The summit will convene Coast Guard forces, maritime security agencies, and global organisations to deliberate on maritime challenges, foster trust, promote information sharing, and enhance coordinated responses to threats at sea.
- A notable feature will be the International Coast Guard Fleet Review, designed to showcase maritime strength and underscore India's commitment to the SAGAR (Security and Growth for All in the Region) initiative.

About the Indian Coast Guard (ICG)

- Operating under the Ministry of Defence, the Indian Coast Guard is India's fourth armed force and its primary maritime law enforcement and search-and-rescue entity. Its inception was influenced by the recommendations of the Nag Committee (1970) and the K.F. Rustamji Committee (1974). Formally established on 1 February 1977 with an initial fleet of two frigates and five patrol boats transferred from the Navy, it was inaugurated on 19 August 1978 by then Prime Minister Morarji Desai. Its first Director General was Vice Admiral V.A. Kamath.
- Key responsibilities of the ICG include enforcing maritime laws, combating smuggling and poaching, conducting search and rescue operations, protecting marine environments, securing offshore installations like Mumbai High, and patrolling India's vast Exclusive Economic Zone (2.01 million sq km) in coordination with the Navy and other security agencies.

International Labour Organisation (ILO)

- In a recent development, India's Union Minister for Labour and Employment signed a Memorandum of Understanding with the International Labour Organisation to jointly develop the 'International Reference Classification of Occupations'.
- The International Labour Organisation is a specialized United Nations agency dedicated to promoting improved labour conditions and living standards globally. Established in 1919 as part of the Treaty of Versailles and later becoming a specialized UN agency in 1946, the ILO is headquartered in Geneva, Switzerland.
- With 187 member states—including all UN member countries except seven, plus the Cook Islands—the ILO is the only tripartite UN agency. It brings together governments, employer organizations, and worker representatives in the formulation of labour policies. For its work, the ILO was awarded the Nobel Peace Prize in 1969.
- The ILO creates international labour standards and monitors their implementation through a unique supervisory system. It also undertakes technical cooperation projects in collaboration with member states and

provides education, training, and research to support its global initiatives. As a member of the UN Development Group, it actively contributes to achieving Sustainable Development Goals (SDGs).

Major U.S.-Led Military Exercises Around India

Context:

In 2025, Bangladesh and the United States will jointly conduct three military exercises — Tiger Lightning, Tiger Shark, and Pacific Angel — and officially launch the RQ-21 Unmanned Aerial System (UAS) program. These developments aim to enhance regional security and interoperability.

Details of U.S.-Led Exercises:

- **Exercise Tiger Lightning 2025** will be hosted by Bangladesh, with participation from its Army and the U.S. Army Pacific. It will focus on counter-terrorism, peacekeeping, jungle warfare, and medical evacuation. Training includes practical simulations to prepare soldiers for real-world scenarios.
- **Exercise Tiger Shark 2025**, part of the Flash Bengal Series, involves elite units from both countries such as the Bangladesh Special Warfare Diving and Salvage Unit, Para Commando Brigade, and U.S. Special Forces. This drill focuses on maritime security and special operations preparedness, featuring hands-on training in patrol boat operations and small-arms use with U.S. gear.
- **Exercise Pacific Angel 2025** will be held in Bangladesh (its fourth iteration) and Sri Lanka (the largest regional host). It involves the U.S. Pacific Air Forces, Bangladesh and Sri Lankan Air Forces, and counterparts from Australia, Japan, and the Maldives. The focus will be on humanitarian assistance, disaster response, and aeromedical evacuation, with drills including airdrops, search and rescue, jungle survival, and mass casualty management.
- **The RQ-21 Blackjack UAS Program** will be jointly implemented by the U.S. Army and Navy alongside Bangladesh's armed forces. A joint Army-Navy regiment will operate the surveillance drones to enhance maritime domain awareness, border surveillance, and support for UN peacekeeping deployments.
- The U.S. is strategically increasing its military cooperation with India's neighbouring countries, such as Bangladesh and Sri Lanka. This move reflects Washington's broader objective of expanding its regional footprint and could signal the foundation of a more permanent military presence near India's borders — a development with considerable geopolitical significance.

Qatar and India's Diplomatic Stand

- **Context:** At the UN Human Rights Council, India strongly condemned the recent attacks in Doha, asserting that they violated Qatar's sovereignty. Although it did not explicitly name Israel, which has claimed responsibility, India reaffirmed its commitment to Qatar's security and regional peace.
- **About Qatar:** Qatar, officially the State of Qatar, is a sovereign Gulf country ruled by the House of Thani since 1868. It became independent in 1971. Situated on a flat, desert peninsula, Qatar shares a land border with Saudi Arabia and is surrounded by the Persian Gulf. Its capital, Doha, houses over 80% of the population.
- **Economic and Strategic Profile:** Qatar boasts one of the world's highest per capita GDPs, thanks to its vast reserves of natural gas and oil, making it one of the largest LNG exporters globally. The Emir holds significant executive, legislative, and judicial authority, while the partially elected Consultative Assembly has limited powers. Qatar is a member of the Gulf Cooperation Council and a major non-NATO ally of the U.S., hosting the critical Al Udeid military base. The country also plays a strategic media and diplomatic role through the Al Jazeera network.

Jungle Warfare School in Karreguta Hills: Enhancing Counter-Insurgency Capabilities

The government has announced the establishment of a Jungle Warfare School in

Karreguta Hills, located in Bijapur, Chhattisgarh—a region previously dominated by Maoist activities. This move aims to strengthen the preparedness and operational capabilities of security forces deployed in Left-Wing Extremism (LWE)-affected zones.

Purpose and Scope of the Institution

Jungle Warfare Schools are specialized military and police training centres designed to equip personnel with the skills required for survival, movement, and combat in dense forest and hilly environments. They offer training in counter-insurgency and counter-terrorism tactics, particularly those suited for asymmetric warfare scenarios.

Training Objectives and Features

- The new school will focus on enhancing the operational effectiveness of units such as the Central Reserve Police Force (CRPF), District Reserve Guard (DRG), Commando Battalion for Resolute Action (CoBRA), Special Task Force (STF), and state police. Training modules will include jungle navigation, survival techniques, counter-ambush procedures, cave-clearing operations, night combat, intelligence gathering, and IED detection.
- Built within an actual operational setting in Karreguta Hills, the school will offer a realistic training environment, including caves, narrow valleys, and waterfalls, to simulate real combat conditions. This facility aims to foster inter-force coordination and readiness for anti-insurgency missions in challenging terrain.

Saudi Arabia–Pakistan Defence Pact: Strategic Shift in Regional Security Dynamics

- Pakistan and Saudi Arabia have formalised a historic mutual defence pact, solidifying a security partnership that dates back to the 1960s. The agreement explicitly states that "any aggression against either country shall be considered aggression against both," reflecting a significant escalation in defence collaboration. This pact is not only designed to deepen military cooperation but also to reinforce joint deterrence mechanisms across the region.
- This landmark defence agreement, signed amid increasing regional volatility—highlighted by Israel's recent strike in Qatar and a perceptible decline in U.S. security commitments—marks the first such pact between an Arab nation and a nuclear-armed country. Despite Saudi Arabia's established and growing relationship with India, the deal signals a notable realignment in the regional security architecture.

Saudi-Pakistan Defence Pact: Historical Context and Strategic Intent

- The pact was signed during Prime Minister Shehbaz Sharif's recent visit to Riyadh and is grounded in nearly eight decades of bilateral engagement built on religious, strategic, and political solidarity. It is an extension of the long-standing defence cooperation between the two nations, aimed at fortifying deterrence capabilities and contributing to regional and global stability.
- Strategically, the agreement marks a turning point in Saudi Arabia's regional posture, suggesting a recalibration as the kingdom continues to manage its ties with both India and Pakistan. The move highlights the evolving security and diplomatic calculus in South Asia and the broader Middle East.

India's Cautious Response to the Pact

India has responded with measured caution to the Saudi-Pakistan defence agreement. A spokesperson from the Ministry of External Affairs (MEA) acknowledged awareness of the long-standing security collaboration between the two nations. While not issuing any direct criticism, the MEA stated it would closely assess the implications of the agreement for India's national security and regional stability. India reaffirmed its intention to safeguard its strategic interests while continuing to monitor the shifting alliances in the region.

Historical and Institutional Military Cooperation Between Pakistan and Saudi Arabia

- Military cooperation between Pakistan and Saudi Arabia is not new. It began in the 1960s with the deployment of Pakistani troops to the kingdom and was further strengthened when Pakistani

special forces assisted during the 1979 Grand Mosque siege in Mecca. These foundational ties were institutionalised through the Bilateral Security Cooperation Agreement of 1982, enabling ongoing military training, advisory missions, and arms transactions.

- Pakistan has played a crucial role in training the Saudi Air Force, and Saudi Arabia remains a major buyer of Pakistani weaponry. In recent years, bilateral military engagement has intensified through renewed commitments to training and personnel exchanges. The current pact is Pakistan's most comprehensive formal security engagement with Saudi Arabia in decades. It also comes at a critical economic juncture for Pakistan, securing Saudi investments and reinforcing its role as a prominent security actor within the Islamic world. Analysts suggest that the pact could enable Pakistan to access advanced U.S. weaponry through Saudi financial backing.
- For Saudi Arabia, the agreement bolsters its strategic defence against regional adversaries, particularly Iran and its proxy forces such as the Houthi militia, as well as growing threats linked to Israeli military actions.

Saudi Arabia's Parallel Strategic Relationship with India

- Despite its new defence pact with Pakistan, Saudi Arabia maintains robust strategic and economic relations with India. Bilateral trade between the two countries reached USD 42.98 billion in FY 2023–24, with India exporting goods worth USD 11.56 billion and importing USD 31.42 billion. Saudi Arabia stands as India's fifth-largest trading partner, while India ranks as the kingdom's second-largest.
- Politically, the relationship has been strengthened through high-level engagements. The 2006 visit by King Abdullah to India resulted in the Delhi Declaration, while the Riyadh Declaration of 2010 formally elevated ties to a Strategic Partnership. During Prime Minister Narendra Modi's 2016 visit to Saudi Arabia, he was conferred the kingdom's highest civilian honour, the 'King Abdulaziz Sash,' underscoring the depth of bilateral goodwill.
- In more recent developments, Saudi Arabia has played a key role in crisis diplomacy. During Modi's April 2025 visit, the kingdom swiftly condemned the Pahalgam terror attack. Additionally, the Saudi Minister of State for Foreign Affairs conducted a diplomatic visit during India's Operation Sindoor, reflecting Riyadh's support in sensitive times.
- Saudi Arabia's approach to Indo-Pakistan tensions has remained largely balanced. While it has consistently condemned terror attacks such as Pulwama, it has avoided direct criticism of India's abrogation of Article 370 or the Balakot airstrikes. Instead, Saudi Arabia has positioned itself as a diplomatic interlocutor, maintaining strategic engagement with both New Delhi and Islamabad.

Conclusion: Strategic Balancing in a Volatile Region

- The Saudi Arabia–Pakistan mutual defence pact represents a significant strategic development, reshaping the regional security landscape. While it strengthens the defence posture of both nations and formalises long-standing military cooperation, it also introduces a new layer of complexity in South Asia's geopolitical environment.
- At the same time, Saudi Arabia's ongoing strategic and economic engagements with India indicate that Riyadh is striving for a nuanced balancing act. The kingdom appears to be recalibrating its foreign policy to maintain strong ties with both South Asian powers, while enhancing its own security architecture in an increasingly unpredictable regional context.

UN Chief Releases Reform Blueprint: "Shifting Paradigms: United to Deliver"

- In the lead-up to the 80th anniversary of the United Nations, the Secretary-General has released a landmark report

titled *"Shifting Paradigms: United to Deliver"*, which outlines a vision for structural and programmatic realignments across the UN system. Part of Workstream 3 under the broader UN80 Initiative, the report is aimed at reducing silos, eliminating duplication, and fostering more effective and rules-based collaboration within the organization. All proposed reforms are to be implemented in adherence to the Charter of the United Nations and other governing protocols.

- The report identifies four principal areas for transformation. In the area of Peace and Security, it calls for a consolidation of field offices and leadership roles and the establishment of dedicated centres of excellence for peacebuilding and women's leadership. In the domain of Sustainable Development, the report recommends a reevaluation of institutional structures—including potential mergers of agencies such as UNDP with UNOPS, and UNFPA with UN Women—as well as the phased closure of UNAIDS by 2026. It also proposes the establishment of Joint Knowledge Hubs to harness pooled expertise.
- For Human Rights, a system-wide Human Rights Group under the leadership of the High Commissioner is proposed, aiming to embed human rights across all UN operations. In the humanitarian sector, the report advocates for the creation of a New Humanitarian Compact to streamline bureaucratic processes and improve responsiveness.
- Several paradigm shifts are also proposed to increase the organization's impact. In the realm of Technology and Data, a UN System Data Commons and a Technology Accelerator Platform are envisioned to modernize internal systems and integrate currently fragmented datasets. On the financial front, there is a call for reforming pooled and core funding models to enhance their alignment with collective strategic goals and make them more attractive to donors.
- The UN80 Initiative, of which this report is a central part, is a comprehensive, system-wide campaign to make the UN more efficient and effective. It comprises three workstreams: the first focuses on internal performance and efficiency; the second reviews the extensive mandates that guide the UN Secretariat's work; and the third, as demonstrated by this report, investigates whether deep structural and programmatic changes are required to meet the needs of a rapidly evolving world.

Trump Administration's $100,000 H-1B Visa Fee: Implications for India

- In a significant immigration policy shift, **US President Donald Trump** has signed a proclamation that mandates a **$100,000 fee** for sponsoring **H-1B visas**, drastically increasing costs for American companies hiring skilled foreign workers.
- Under this new directive, **employers must pay $100,000 per H-1B applicant**, a sharp rise from the previous fee structure, which was just a few thousand dollars. The stated aim is to curb misuse of the visa system, ensure that only **highly skilled professionals** are employed, and **protect American workers** from wage suppression.
- For India, which accounts for **71% of H-1B visa holders**, the implications are considerable. Major Indian IT firms like **Infosys, TCS, and Wipro**—the top H-1B sponsors—will experience increased compliance costs, potentially **reducing recruitment** of Indian talent. The higher fee may also deter **mid-level professionals** from seeking US-based roles and impact the broader **Indian IT services export industry**, valued at over **$150 billion**.
- The policy may prompt US companies to **shift operations offshore**—either back to India or to alternative hubs like **Canada and Mexico**—to avoid inflated hiring costs. In the long term, such economic pressure could also **accelerate investment** in automation and AI-driven solutions, reducing dependency on skilled foreign labour.

- The **H-1B visa** is a **non-immigrant visa** that allows US employers to hire foreign workers in **specialized occupations**, primarily across **STEM fields**, finance, and medicine. Eligibility requires at least a **bachelor's degree**, and the visa is **valid for three years**, extendable to **six years**, or beyond if the **green card process** has been initiated. Each year, **65,000 H-1B visas** are issued, with an **additional 20,000 for US Master's degree holders**.
- Major US tech companies—including **Amazon (with 12,000+ approvals in 2025)**, Microsoft, Meta, and Google—are heavily reliant on Indian talent. However, Indian applicants continue to face **long green card backlogs**, with wait times often exceeding a decade.

Chabahar Port and the Withdrawal of U.S. Sanctions Waiver

Context:

The United States has revoked the sanctions waiver previously granted to India for its involvement in developing Iran's Chabahar Port. This waiver, initially provided in 2018 under the Iran Freedom and Counter-Proliferation Act (IFCA), had allowed limited cooperation despite broader sanctions on Iran.

- **About the Port:** Chabahar Port is Iran's only deepwater oceanic port and represents a strategic collaboration between India and Iran. It serves as a critical link intended to bypass Pakistan, facilitating India's access to Afghanistan, Central Asia, and Russia.
- **Location and Structure:** Positioned on the Gulf of Oman in Iran's southeastern Sistan-Baluchestan province, Chabahar lies about 170 kilometers west of Pakistan's Gwadar Port, which is being developed by China under the China-Pakistan Economic Corridor (CPEC). The port has two key components: Shahid Beheshti (where Indian investment is focused) and Shahid Kalantari.
- **Historical Timeline:** Originally proposed in 1973 by the Shah of Iran, the port's initial phase was launched in 1983 during the Iran-Iraq War to reduce dependency on Persian Gulf ports. In 2003, India and Iran signed an agreement for its development. A landmark trilateral agreement between India, Iran, and Afghanistan was signed in 2016 to operationalize the port. The first phase of Shahid Beheshti was inaugurated in 2017, and India sent its first wheat shipment to Afghanistan the same year. In 2018, India Ports Global Limited (IPGL) took partial operational control.
- **Strategic and Economic Objectives:** The primary aim is to give India a direct access route to Afghanistan and Central Asia while avoiding Pakistan. Chabahar also anchors the International North-South Transport Corridor (INSTC), connecting the Indian Ocean to Russia and Europe. For Iran, the port is a means to boost trade connectivity despite facing Western sanctions.
- **Key Features:** The port is planned to be developed in four phases, ultimately reaching a capacity of 82 million tonnes annually and housing 32 jetties, including facilities for multipurpose, container, oil, and dry bulk cargo. Currently, the first phase handles 5.8 million tonnes. Its strategic location near the Strait of Hormuz enhances its relevance for global energy and trade routes.
- **Significance:** Chabahar Port strengthens India's strategic presence in the Indian Ocean and serves as a counterweight to the China-Pakistan alliance around Gwadar. Economically, it reduces transportation time and costs for goods heading to Central Asia, Russia, and Europe through INSTC. Geopolitically, it deepens India-Iran relations and enhances India's role in Afghanistan's post-conflict development.

UK-France 'One-In, One-Out' Deportation Scheme: India's Involvement

- An Indian national has become the **first person deported from the UK to France** under the recently launched **'One-In, One-Out' scheme**, a bilateral migration and deportation mechanism agreed upon by the **United Kingdom and France**.
- The scheme allows the UK to **return illegal migrants** who enter via the

English Channel back to France. In exchange, the UK agrees to **accept a legal asylum seeker** from France for each individual it deports, establishing a **reciprocal arrangement**.

- Set to operate from **August 2025 to June 2026**, the pilot initiative aims to **deter illegal crossings**, break human smuggling networks, and promote **safe and regulated migration**. The scheme provides a **fast-track legal process** for deportation, offers **voluntary return options** with financial aid, and allows **limited court oversight** in the UK for appeals.
- Strategically, the scheme enhances **border security**, improves **bilateral cooperation**, and sends a strong **deterrent signal** to human traffickers and unauthorized migrants. It also contributes to a broader **political narrative** of tougher immigration control and organized humanitarian migration.

High Seas Treaty Set to Enter into Force After 60th Ratification

Context:

The High Seas Treaty, officially adopted in 2023 by the Intergovernmental Conference on Marine Biodiversity of Areas Beyond National Jurisdiction, is now on track for enforcement following its 60th ratification. As per the mandate, the treaty becomes effective 120 days after reaching this threshold.

- **Overview of the Treaty:** Formally titled the Agreement on the Conservation and Sustainable Use of Marine Biological Diversity of Areas Beyond National Jurisdiction (BBNJ Agreement), the High Seas Treaty is a legally binding instrument developed under the framework of the United Nations Convention on the Law of the Sea (UNCLOS).
- **UNCLOS Implementation History:** This is the third implementing agreement under UNCLOS, following the 1994 Agreement on its implementation and the 1995 UN Fish Stocks Agreement.
- **Definition of High Seas:** High seas are areas of the ocean that lie beyond national jurisdictions. These global commons are accessible to all nations for lawful purposes such as navigation, overflight, laying of submarine cables, and scientific exploration.
- **India's Involvement:** In 2024, the Union Cabinet approved India's decision to sign the High Seas Treaty. The Ministry of Earth Sciences has been designated as the implementing authority.

Yuan Wang 5: China's Surveillance Ship Returns Near India

- The Chinese surveillance vessel *Yuan Wang 5* has once again entered waters close to India, marking its return three years after it last docked at Sri Lanka's Hambantota Port. Originally launched in 2007, Yuan Wang 5 belongs to a series of advanced tracking ships developed by China to support strategic space missions and missile testing operations. It is operated by the Strategic Support Force of China's People's Liberation Army (PLA).
- Yuan Wang 5 serves as a vital node in China's military surveillance network, offering near-real-time situational awareness to the PLA's Rocket Force and Navy. Its core function includes the validation of China's newest generations of intercontinental ballistic missiles and hypersonic weapons, primarily by collecting telemetry data that ensures the accuracy, performance, and readiness of these strategic systems.
- Structurally, the ship displaces around 25,000 tons and stretches over 222 metres in length with a beam exceeding 25 metres. It has the capacity to house up to 400 personnel. Driven by diesel engines, the ship generates sufficient electricity to power a small town of approximately 300,000 residents. With the endurance to remain on station for weeks, it can monitor critical missile test windows or support naval exercises without requiring external support.
- The ship is equipped with a sophisticated suite of phased-array radar systems capable of detecting ballistic missile launches from distances greater than

3,000 kilometers. These radars track missile trajectories through all stages of flight—boost, midcourse, and reentry—while simultaneously gathering telemetry data related to propulsion efficiency, warhead separation, and guidance systems.

- In addition to missile tracking, the vessel includes satellite-tracking antennas that are capable of following satellites across low-Earth, geostationary, and deep-space orbits. These antennas function across multiple frequency bands, allowing the ship to monitor both civilian and military launches. Furthermore, the vessel is fitted with electronic support measures (ESM) that enable it to intercept radar and communication signals from foreign naval vessels and aircraft in its vicinity.

Bagram Air Base: US Efforts Rebuffed by Taliban

- Four years after the United States' chaotic withdrawal from Afghanistan, the Taliban administration has declined a recent effort by former US President Donald Trump to regain control of Bagram Air Base. Located north of Kabul, Bagram is Afghanistan's largest air base and occupies a pivotal geostrategic position at the intersection of Iran, Pakistan, China's Xinjiang province, and Central Asia.
- Originally constructed during the Cold War by the Soviet Union, the air base supported Soviet operations for decades until their withdrawal in the late 1980s. Later, the United States refurbished and expanded the base, making it a central command hub during its two-decade-long military presence in Afghanistan.
- Bagram was critical to US operations against the Taliban and Al Qaeda since 2001. At its operational peak in 2012, the base saw over 100,000 American troops pass through its sprawling compound. Its infrastructure included long runways, hardened aircraft shelters, hospitals, fuel depots, and even fast-food outlets and retail stores catering to American forces. Additionally, it housed a vast prison complex.
- Following the Taliban's return to power in 2021, the base came under their control after US forces vacated it in July 2021. This withdrawal was seen as a symbolic end to America's 20-year military involvement in the region.

Recognition of Palestinian Statehood Gains Momentum

- The governments of the United Kingdom, Canada, Portugal, and Australia have formally recognised the State of Palestine, joining over 140 United Nations member states in extending such recognition. This international development highlights growing support for Palestinian statehood on the global stage.
- India recognised Palestine as a sovereign state in 1988 and has recently reinforced its stance by voting in favour of a resolution at the UN General Assembly that supports the 'New York Declaration' advocating a peaceful settlement and the implementation of the Two-State Solution.
- Recognition of a state is the formal process through which an existing state acknowledges the sovereignty of a new entity. This process is governed by principles outlined in Article 1 of the 1933 Montevideo Convention on the Rights and Duties of States. According to this convention, the criteria for statehood include a permanent population, a clearly defined territory, an established government, and the ability to engage in diplomatic relations with other states.
- When a state is recognised, it acquires the ability to establish diplomatic relations and enter into treaties with other nations. Furthermore, recognition allows the state to enjoy the rights and privileges of international statehood, including the potential for UN membership. However, while Palestine is currently recognised as a UN "Permanent Observer State," it has not attained full member status.
- It is important to note that the recognition of states or governments is a sovereign act carried out exclusively by

other states. The United Nations itself, being neither a state nor a government, lacks the authority to grant such recognition. Nevertheless, the UN does have the capacity to admit a new state into its membership or acknowledge the credentials of a new government's representatives.

Baltic Sea: Strategic Significance and Recent Airspace Incident

- Germany's air force recently scrambled two Eurofighter jets to monitor a Russian IL-20M military aircraft that entered neutral airspace over the Baltic Sea. The operation ended with NATO partners in Sweden assuming escort duties.
- The Baltic Sea, a semi-enclosed arm of the Atlantic Ocean in Northern Europe, extends from southern Denmark toward the Arctic Circle, separating the Scandinavian Peninsula from mainland Europe. The sea includes distinct geographic zones such as the Gulf of Bothnia, Gulf of Finland, Gulf of Riga, and the Baltic Proper. It connects to the North Sea through the Danish straits—Kattegat and Skagerrak—and via the Kiel Canal.
- Formed 10,000 to 15,000 years ago after the last Ice Age, the Baltic Sea spans approximately 1,600 km in length and 193 km in width, covering an area of about 377,000 sq km. Its waters are lower in salinity compared to oceans due to limited exchange with the Atlantic and a high influx of freshwater. The Neva is its largest contributing river.
- The Baltic coastline is shared by Sweden, Poland, Lithuania, Latvia, Finland, Estonia, Germany, Denmark, and Russia, encompassing around 8,000 km. It contains over 20 islands and archipelagos, including Gotland, the largest island, located off Sweden's coast. The White Sea-Baltic Canal (opened in 1993) connects the sea to the Arctic Ocean, while the Kiel Canal (since 1895) links it to the North Sea, enhancing its strategic and commercial value.

International Criminal Court (ICC)

- Burkina Faso, Mali, and Niger—three military-led West African nations—recently announced their decision to withdraw from the International Criminal Court (ICC), citing discontent with its operations and perceived biases. This move reflects a growing disillusionment among some states regarding the Court's relevance and fairness.
- The ICC was established through the **Rome Statute**, adopted on **17 July 1998**, and came into force on **1 July 2002**. As the **world's only permanent international criminal tribunal**, it is mandated to investigate and, where justified, prosecute individuals for the most serious crimes that concern the global community—namely, **genocide, war crimes, crimes against humanity**, and **the crime of aggression**.
- The Court currently has **125 member states**, but major powers such as **China, India, Israel, Russia**, and the **United States** are not party to the Rome Statute. The ICC operates on a mixed funding model—receiving budgetary support from its member states as well as voluntary contributions from governments, organisations, corporations, and individuals.

Its institutional structure consists of:

- **Judges**: Eighteen in number, each from a different state party, elected for non-renewable nine-year terms.
- **The Presidency**: Comprised of a President and two Vice-Presidents, responsible for representing the Court and managing judicial operations.
- **Office of the Prosecutor (OTP)**: Charged with receiving referrals, conducting investigations, and prosecuting offenders.
- **Registry**: Provides the administrative and logistical support necessary for the OTP and judicial functions.

The ICC's jurisdiction is notably different from the **International Court of Justice (ICJ)**, which resolves disputes between states. The ICC prosecutes **individuals** and can only exercise its mandate if:

1. The alleged crime occurred in a state that is party to the Rome Statute, or
2. The accused is a national of such a state.

Additionally, the ICC can only intervene when **national courts are unwilling or unable** to prosecute, and it holds authority only over crimes committed after **1 July 2002**.

France Recognises Palestine: Global Shift and Gaza War Implications

At the United Nations General Assembly, France aligned with the United Kingdom, Canada, Australia, and several other European nations in formally recognising the statehood of Palestine. This decision was met with strong condemnation from Israel, which interpreted the move as a reward for terrorism, underscoring the deep geopolitical divides surrounding the issue.

Impact of Palestine Recognition on the Gaza War

- Although Palestine enjoys widespread international recognition, has established diplomatic missions, and participates in global forums and sporting events, it still lacks key elements of statehood: clearly defined borders, a recognized capital, and full sovereignty. These deficiencies are primarily due to Israel's enduring military occupation of the West Bank and Gaza. As such, the international recognition of Palestinian statehood remains largely symbolic. It represents moral and political solidarity but does not directly alter the realities on the ground.
- The increasing global acknowledgment of Palestine's statehood adds a layer of diplomatic pressure on Israel but has not significantly influenced the trajectory of the ongoing war in Gaza. Israeli military operations persist, with Prime Minister Benjamin Netanyahu affirming that the campaign will continue regardless of any hostage exchanges. While some European nations have started to curtail military exports to Israel, the United States continues its unwavering support, recently authorizing $6.4 billion in arms sales. Alongside Washington, Germany remains a central defence partner for Israel. Together, the US and Germany account for over 90% of Israel's defence imports. Therefore, despite growing diplomatic momentum, recognition alone has not translated into a tangible halt in the conflict.

The Question of Palestinian Statehood

- Statehood, as defined by the 1933 Montevideo Convention, requires a defined territory, a permanent population, an established government, and the capacity to engage in international relations. In Palestine's case, each of these criteria remains contested due to Israeli control and ongoing conflict.
- Palestinian territory—comprising the West Bank, East Jerusalem, and Gaza—is effectively under Israeli authority. Continuous settlement expansion and annexation efforts further erode any prospect of achieving territorial sovereignty.
- The humanitarian crisis in Gaza has reached catastrophic levels. The war has resulted in over 65,000 estimated deaths, with famine spreading rapidly. These conditions not only devastate the civilian population but also pose an existential threat to the survival of Palestinians as a distinct people.
- Governance remains fragmented. The Palestinian Authority (PA) has limited control over parts of the West Bank, while Hamas governs Gaza under a severe blockade. Ongoing calls for reform within the PA and demands for Hamas' disarmament highlight the structural challenges to forming a unified and functional government, thereby weakening claims to full sovereignty.
- While these issues persist, international recognition continues to bolster Palestine's diplomatic profile. Recognition enhances Palestine's ability to engage with global institutions, apply international legal pressure, and amplify its political claims, even if practical sovereignty remains largely out of reach. Thus, the impact of recognition is more political and symbolic than immediate or material.

Israel's Response to Growing Recognition of Palestine

- In reaction to the expanding global recognition of Palestinian statehood, Israel has intensified its military activities and expanded its presence in the occupied territories. Following the United Kingdom's recognition, Netanyahu declared unequivocally that a Palestinian state "will never be established" and took credit for obstructing such developments despite mounting global advocacy. Similar rhetoric accompanied Israel's response to the United Nations General Assembly's endorsement of a two-state solution. On the ground, every new escalation in Gaza and the West Bank seems to entrench Israeli control further, reducing the practical viability of an independent Palestinian state.

India's Position on Palestine

- India has historically supported the Palestinian cause, integrating it into its broader foreign policy strategy. In 1974, India became the first non-Arab nation to recognize the Palestine Liberation Organization (PLO). This early diplomatic engagement continued with India's recognition of the State of Palestine in 1988. In 1996, India established a Representative Office in Gaza, which was later relocated to Ramallah in 2003.
- India has consistently supported Palestine at multilateral forums. It has backed United Nations resolutions affirming the Palestinian right to self-determination and has called on Israel to comply with international legal norms. India also supported the UN resolution granting Palestine non-member observer state status and voted in favour of Palestine's full membership in UNESCO in 2011.
- India's official policy continues to advocate for a negotiated two-state solution. This vision involves the establishment of a sovereign, independent, and viable Palestinian state, coexisting peacefully alongside Israel. The proposed solution is rooted in pre-1967 borders and envisions East Jerusalem as the capital of Palestine. India emphasizes the importance of diplomacy, dialogue, de-escalation, and the urgent need to resume peace negotiations.

India-US Trade Deal Enters Final Phase Amid Tariff Disputes and Visa Tensions

Following significant delays and a series of setbacks, the long-awaited India-US trade agreement is once again gaining traction. A high-level Indian delegation, led by Commerce Minister Piyush Goyal, has arrived in Washington to revive discussions. The talks now appear to be progressing toward a final resolution, signaling renewed momentum in a deal that has seen multiple breakdowns in the past.

Negotiations Resume With Strategic Framing

- Commerce Minister Goyal is spearheading India's trade team during this pivotal round of talks. Previous efforts had faltered when the White House unexpectedly demanded additional concessions, despite both countries having previously approved a draft agreement. In this renewed effort, India is expected to enhance its offer by incorporating broader strategic elements, such as significant defence acquisitions and deeper nuclear cooperation, to anchor the trade pact within the larger framework of the India-US strategic relationship.
- These developments come in the wake of recent high-level exchanges between trade officials from both countries. The urgency of the current negotiations was intensified after President Trump imposed a tariff hike on Indian exports, citing India's continued import of Russian crude oil as a trigger.

India's Firm Approach to Tariffs

- Indian negotiators have conveyed a clear message that India will not succumb to tariff pressure, unlike other US allies such as Japan, South Korea, or the European Union. New Delhi has held a consistent position throughout, drawing firm red lines and indicating its readiness to walk away from a deal rather than accept unfavorable terms.
- India's core expectation remains the removal of reciprocal and punitive tariffs

in a single phase, ideally replaced by a uniform and consolidated tariff regime. The previously agreed-upon draft deal is expected to serve as the foundation for the current negotiations, albeit with some added concessions from the Indian side to move the process forward.

H-1B Visa Fees as a Pressure Tactic

Another contentious point in the negotiations is the Trump administration's recent decision to raise H-1B visa fees—a move that disproportionately affects Indian nationals. Trade analysts interpret the timing of this policy as a calculated attempt to exert additional leverage in trade discussions, echoing the pattern of secondary pressures seen with tariffs linked to Russian oil imports.

Balancing Tariffs and Broader Issues

India's immediate challenge lies in ensuring that the removal of tariff barriers is addressed without allowing issues like visa policy or other non-tariff barriers to derail the central objectives of the trade pact. The delicate balance between trade liberalization and sovereignty over key policy areas remains a central concern for New Delhi.

Signs of Optimism Mixed With Strategic Pressure

- Despite the challenges, there are signs of quiet progress. Chief Economic Adviser V. Anantha Nageswaran suggested that the additional 25% tariffs imposed on Indian goods due to Russian oil imports would likely lapse by November 30, pointing to positive developments behind the scenes.
- On the diplomatic front, both leaders have expressed optimism. President Trump recently declared his confidence that a trade agreement with India would materialize soon. Prime Minister Modi responded affirmatively, describing the two nations as "natural partners" united in the pursuit of a more prosperous future.
- However, complications persist. Shortly after these optimistic exchanges, Washington encouraged the G7 to increase pressure on countries importing Russian oil, specifically naming India and China. This move introduces a new layer of complexity into the already sensitive trade negotiations.

India's Unyielding Position on Russian Oil

India continues to defend its energy imports from Russia on both economic and strategic grounds. Finance Minister Nirmala Sitharaman reiterated that these purchases are essential for national needs, while Prime Minister Modi underscored that India would not compromise the livelihoods of its farmers, fisherfolk, or cattle keepers for the sake of external pressure.

As the India-US trade deal edges closer to completion, both countries must navigate a landscape of mutual interests, strategic calculations, and unresolved tensions—each seeking to secure long-term benefits without conceding on critical national priorities.

Combined Operational Review and Evaluation (CORE) Programme: Civil-Military Synergy on National Security

- The Headquarters Integrated Defence Staff (HQ IDS) has initiated the Combined Operational Review and Evaluation (CORE) Programme in New Delhi, creating a platform for strategic dialogue between senior military leadership and civilian agencies involved in national security.
- This unique forum brings together officers from the Indian Armed Forces alongside officials from the Ministries of Defence, External Affairs, and Home Affairs. It seeks to address key challenges in regional and global security by focusing on technological disruptions in warfare, the importance of strategic communication, and the pressing need for coordinated responses to complex, multidimensional threats.
- The CORE Programme is designed to provide participants with comprehensive insights into contemporary national and regional security issues through interaction with distinguished experts. It enhances strategic awareness and helps equip officers with the perspectives required to make informed, balanced decisions in future leadership roles. The programme is a vital step toward fostering greater civil-military synergy in India's evolving security landscape.

India–Morocco Defence Cooperation: Strengthening Strategic Ties

- India and Morocco recently signed a **Memorandum of Understanding (MoU)** on defence cooperation during a visit by India's Defence Minister to Rabat, marking a key step in expanding bilateral strategic engagement.
- Morocco, located in the Maghreb region of North and West Africa, shares borders with Algeria to the east and Western Sahara to the south, and boasts coastlines along both the Atlantic Ocean and the Mediterranean Sea. Its unique geography includes Spanish enclaves Ceuta and Melilla, and the country experiences a Mediterranean climate with the Mououya River as a vital freshwater source.
- Morocco's highest peak, *Jebel Toubkal*, is also the tallest in the Atlas Mountains. The country functions as a constitutional monarchy with two legislative houses and maintains an economy largely reliant on raw material exports. Arabic and Tamazight (Berber) are its official languages, with Rabat serving as the capital.
- The recent defence agreement reflects India's broader strategy of deepening security partnerships across Africa and affirms Morocco's growing role as a regional partner in counterterrorism and maritime security.

Antifa: Anti-Fascism and Global Political Debates

- Following the killing of conservative activist Charlie Kirk, former U.S. President Donald Trump announced plans to label **Antifa** as a terrorist organisation—bringing renewed global attention to the controversial movement.
- Antifa, short for *anti-fascist*, is not a formal organisation but a decentralised network of activists dedicated to combating fascism, white supremacy, and far-right extremism. Originating from 1930s Europe, including events like *Antifaschistische Aktion* in Germany and the *Battle of Cable Street* in the UK, it has evolved into a modern resistance movement rooted in anarchist and anti-authoritarian ideologies.
- Antifa activists engage in both peaceful protests and direct confrontational tactics such as doxxing and disrupting rallies. Its decentralised nature complicates legal classification and raises complex questions about freedom of expression, democratic rights, and internal security.

Exercise Cold Start: India's Largest Drone Warfare Drill

- India is set to conduct a **mega tri-service exercise titled "Cold Start"** in Madhya Pradesh in October 2025, focusing on drone and counter-drone warfare. The drill, expected to be the largest since *Operation Sindoor*, will simulate modern aerial threats using UAVs, GPS jamming, and electronic warfare systems.
- The Indian Army, Navy, and Air Force will jointly participate, alongside industry partners, research agencies, and academic collaborators. The exercise aims to assess operational readiness, identify strategic gaps, and test indigenous defence technologies, many of which are developed through military–academic partnerships.
- Inspired by the *Sudarshan Chakra* model, Cold Start seeks to establish integrated defensive strategies against drones, hypersonic missiles, and next-generation threats. Beyond testing equipment, it will enhance interoperability among armed forces and showcase India's preparedness in a rapidly evolving technological warfare environment.

World Food India (WFI) 2025

- The **4th edition of World Food India (WFI) 2025** is scheduled to be inaugurated by the Prime Minister of India on **25th September 2025** at **Bharat Mandapam, New Delhi**.
- **World Food India (WFI)** is the flagship international event organised by the **Ministry of Food Processing Industries (MoFPI)**. It functions as a premier global platform to promote **innovation, investment, advanced technologies,**

and sustainability within India's expansive food ecosystem.

- Conceptualised by MoFPI, the event was launched to position India as a central hub in food processing. The first edition took place in 2017, followed by the second in 2023, the third in 2024, and now the fourth in 2025. It is structured to strengthen India's global image as the **"Food Basket of the World."**
- The core objective of WFI 2025 is to encourage both foreign and domestic investment in India's food processing sector. It also aims to fortify farm-to-fork linkages, promote value addition, encourage the development of sustainable and future-ready food systems, and celebrate the diversity of India's food culture before a global audience.
- WFI 2025 includes major parallel events such as the **3rd Global Food Regulators Summit** (hosted by FSSAI), the **24th India International Seafood Show** (conducted by SEAI), and a **Reverse Buyer-Seller Meet** organised by APEDA.
- The event is structured around five core thematic pillars: **Sustainability & Net Zero Food Processing**, **India as a Global Food Hub**, **Frontiers in Processing & Packaging Technologies**, **Food for Nutrition, Health & Wellness**, and **Livestock & Marine Products as Drivers of the Rural Economy**.
- In terms of its larger impact, WFI 2025 holds economic significance by bolstering investments in research and development, cold chains, food startups, logistics, and retail infrastructure. On a global scale, it strengthens India's position as a leader in food innovation and hub for sustainable systems. Strategically, it aligns with and promotes the **UN Sustainable Development Goals (SDGs)** through a focus on resilient and inclusive food systems.

India's First Overseas Defence Manufacturing Facility

- India has inaugurated its **first overseas defence manufacturing plant** in **Berrechid, Morocco**, in a ceremony led by the Indian Defence Minister alongside his Moroccan counterpart, **Abdelatif Loudyi**.
- Established by **Tata Advanced Systems Limited (TASL)**, in collaboration with the **Defence Research and Development Organisation (DRDO)**, the 20,000 sq. metre facility will manufacture the indigenously designed **Wheeled Armoured Platform (WhAP)** for the **Royal Moroccan Army**. This is the first time an Indian private defence company has established a manufacturing unit overseas, particularly in Africa.
- The initiative supports the larger vision of **Aatmanirbhar Bharat** transitioning into a global defence manufacturing strategy—**"Make with Friends" and "Make for the World."** It aims to enhance India–Morocco defence cooperation, promote defence exports, and contribute to regional security.
- The plant will produce various configurations of the **WhAP 8×8 Modular Combat Platform**, jointly developed by DRDO and TASL. These include the **Infantry Fighting Vehicle**, **Armoured Personnel Carrier**, **Reconnaissance Vehicle**, **Command Post**, **Mortar Carrier**, and **Ambulance**. The platforms are equipped with high mobility, superior protection, remote weapon stations, and anti-tank guided missile (ATGM) systems.
- Local sourcing is a key feature of this project, with one-third of the components currently being sourced from Morocco—a figure projected to rise to 50% in future production cycles.
- Strategically, the plant positions **Morocco as a hub for defence exports** across Africa and Europe. Diplomatically, it deepens bilateral ties and highlights India's growing defence diplomacy. Economically, it fosters local employment, supports supplier ecosystems, and significantly boosts India's defence export potential.

Estonia

- In recent geopolitical developments, **NATO strongly condemned Russia** for violating Estonia's airspace using three MiG-31 fighter jets. In response, Estonia invoked **Article 4 of the NATO treaty**, requesting urgent consultations with alliance members to discuss threats to its territorial security.
- Estonia is located in **northeastern Europe**, and it is the northernmost country among the Baltic States. Its capital city is **Tallinn**. Estonia shares borders with **Russia** (along the Narva River and Lake Peipus), **Latvia**, and it has a coastline along the **Baltic Sea**.
- The country's topography predominantly consists of low-lying glacial plains, with an average elevation of about 50 meters. The highest point in Estonia is **Suur Munamägi**, which reaches an elevation of 318 meters. Several significant rivers traverse Estonia, including the **Narva, Pärnu, Pedja,** and **Kasari** rivers. The climate is temperate and humid, moderated by North Atlantic air masses that keep the coastal regions mild, while the inland areas experience colder conditions.
- Estonia's natural environment is characterized by extensive forests covering approximately 50 percent of its land area. These forests are composed mainly of pine, birch, and fir trees. The country supports rich biodiversity, with common wildlife including elk, deer, lynx, bears, and numerous species of migratory birds.
- Regarding NATO, **Article 4** of the treaty obligates member countries to consult one another whenever a member's territorial integrity, political independence, or security is threatened. Article 5, the collective defense clause, considers an armed attack against one member as an attack against all, though it has only been invoked once—following the September 11 attacks in the United States. Estonia became a member of both NATO and the European Union in 2004, which provides the country with a security umbrella to defend against external threats.

India Successfully Test-Fires Agni-Prime Missile from Rail-Based Mobile Launcher

In a landmark achievement, India has successfully conducted the first-ever test of the Agni-Prime intermediate-range ballistic missile using a rail-based mobile launcher. This innovative launch method significantly enhances both the stealth and mobility of India's strategic deterrence capabilities, marking a technological advancement in the country's missile delivery systems.

Overview of Agni-Prime Missile and Its Strategic Role

- The Agni-Prime, also known as Agni-P, is a next-generation ballistic missile equipped with nuclear capabilities and falls within the intermediate-range category. It is part of the broader Agni missile series, developed to bolster India's strategic deterrence, particularly under the command and control of the Strategic Forces Command (SFC). The missile was designed and developed by the Defence Research and Development Organisation (DRDO) in partnership with the SFC.
- This missile is intended to enhance the flexibility, survivability, and rapid response capacity of India's nuclear doctrine. One of its core goals is to diversify the country's missile launch platforms beyond road-based systems, ensuring greater resilience and survivability in the event of a first strike.

Key Characteristics and Capabilities

- The Agni-Prime has a maximum range of approximately 2,000 kilometres, placing it in the intermediate-range category. Its rail-based mobility allows it to traverse the national railway network, significantly reducing the predictability of launch locations and improving strategic ambiguity. With its canisterised design, the missile benefits from safer storage, quicker deployment, and extended shelf life.
- Furthermore, the missile is equipped with advanced guidance technologies, incorporating sophisticated communication, navigation, and autonomous launch systems. Its low

detectability enhances survivability against potential pre-emptive strikes, solidifying its role in India's deterrence framework.

Strategic and Geopolitical Importance

This successful test elevates India into an elite group of nations possessing rail-based, canisterised launch systems. It strengthens India's nuclear triad by complementing existing road-mobile and silo-based launch options, thereby complicating adversarial targeting strategies. This operational flexibility provides a considerable geopolitical edge in an increasingly volatile regional security environment.

China Shifts Trade Strategy by Renouncing Special and Differential Treatment (S&DT) at WTO

In a significant policy shift, China has announced that it will no longer seek additional benefits under the World Trade Organization's Special and Differential Treatment (S&DT) framework during future trade negotiations. This development signals a change in its global trade posture.

Understanding S&DT and Its Role in Global Trade

- S&DT provisions in WTO agreements grant developing and least-developed countries (LDCs) certain flexibilities, recognising their structural disadvantages. These provisions include longer timelines to implement commitments, softer obligations, and increased policy space compared to developed members.
- Originally introduced during the General Agreement on Tariffs and Trade (GATT) negotiations in the 1960s, these measures were formalised through the 1979 "Enabling Clause" and later incorporated into the WTO framework in 1995. They were further reinforced during the Doha Development Round in 2001.

Objectives and Key Provisions

The goal of S&DT is to ensure that trade liberalisation does not adversely affect developing economies. Key features include:

- Extended timelines for compliance with WTO rules.
- Preferential market access through mechanisms like the Generalised System of Preferences (GSP).
- Consideration of developing countries' trade interests during policy formation by developed members.
- Capacity building through technical support and dispute resolution assistance.
- Special exemptions for LDCs, including duty-free market access and lenient compliance requirements.

WTO Classification and Challenges

- The WTO does not maintain a formal definition of "developed" or "developing" countries. Members self-identify their status during accession or negotiations. While any member may declare itself as developing to access S&DT benefits, such declarations can be challenged by others if perceived as misused.
- LDC status, however, is not self-determined. It is defined by the United Nations using metrics such as per capita income, human development indicators, and economic vulnerability. Once recognised, LDCs are automatically granted enhanced flexibilities under WTO rules.

Central American Integration System (SICA)

- During the India–SICA Foreign Ministers' Meeting, External Affairs Minister S. Jaishankar addressed issues of cooperation with the Central American Integration System (SICA).
- The Central American Integration System, or SICA, is the institutional framework designed to drive regional integration across Central America. Its secretariat is based in El Salvador. The organisation traces its roots to the Tegucigalpa Protocol, signed on December 13, 1991, which updated the earlier ODECA Charter. It became fully operational on February 1, 1993, and was formally recognised by the United Nations General Assembly through Resolution A/48 L in 1993.
- SICA's founding members include Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua, and Panama. Later, Belize and

the Dominican Republic joined as additional full members. The organisation also hosts extra-regional observer states, among which India is designated as a partner, along with the European Union, United Kingdom, Spain, Germany, Japan, and South Korea.

- SICA seeks to promote stability, democracy, human rights, and development within the region. Its goals encompass the evolution from a Free Trade Area to a full Customs Union, harmonising policies on trade, energy, food security, and climate cooperation, and developing shared infrastructure and harmonised visa systems. The organisation convenes biannual Summits, with the presidency rotating every six months, to guide collective action and regional diplomacy.
- For India, its partnership with SICA offers a strategic channel for South–South cooperation on shared challenges such as poverty alleviation, climate change, and development. It also opens economic opportunities in areas where India has demonstrated expertise, such as agriculture, renewable energy, pharmaceuticals, information technology, and digital payments systems (for instance, applying the UPI model in Central American contexts).

Forum for India-Pacific Islands Cooperation (FIPIC): Strengthening Regional Ties

- The **External Affairs Ministry of India** recently hosted a meeting of foreign ministers of the **Forum for India-Pacific Islands Cooperation (FIPIC)** in **New York**, reaffirming India's commitment to deepening its engagement with the Pacific Island nations.
- FIPIC was established in **2014** during the Indian Prime Minister's visit to **Fiji**, aligning with India's broader **"Act East" policy**. It serves as a **multilateral platform** for cooperation between India and **14 Pacific Island countries**: Cook Islands, Fiji, Kiribati, Marshall Islands, Micronesia, Nauru, Niue, Palau, Papua New Guinea, Samoa, Solomon Islands, Tonga, Tuvalu, and Vanuatu.
- India's cooperation with these nations spans various domains. Currently, annual trade between India and Pacific Island countries stands at approximately **$300 million**, with Indian exports at **$200 million** and imports at **$100 million**. Since 2014, three FIPIC summits have been held: in **Suva (2014)**, **Jaipur (2015)**, and **Port Moresby (2023)**.
- Key initiatives launched under FIPIC include the establishment of a **special $1 million climate adaptation fund**, creation of a **dedicated trade office in India**, rollout of the **Pan Pacific Islands e-network** to improve digital connectivity, provision of **visa-on-arrival** for citizens of all 14 member countries, collaboration in **space technology**, and the **training of Pacific Island diplomats**.

BRICS: Expansion and Agricultural Cooperation

- In a recent diplomatic engagement, the **Prime Minister of India** met with the **Russian Deputy Prime Minister** to discuss the formation of a **BRICS Grain Exchange**. This initiative aims to enhance **agricultural trade** and food security cooperation among BRICS members.
- Originally coined in 2001 by economist **Jim O'Neill**, the acronym **BRIC** referred to the emerging economies of **Brazil, Russia, India, and China**. The group held its first official meeting in 2006 during the **G8 Outreach Summit**, with a standalone summit following in 2009 in Russia. The inclusion of **South Africa in 2010** transformed BRIC into **BRICS**.
- The grouping has expanded further in recent years. In **2024**, **Iran, Egypt, the UAE, and Ethiopia** joined the coalition. In **2025**, **Indonesia** also became a full member. While **Saudi Arabia** has not yet formalised its membership, **Argentina**, despite early commitments, has chosen to opt out.
- As of 2025, BRICS comprises **10 core members**: Brazil, Russia, India, China, South Africa, Iran, Egypt, UAE, Ethiopia, and Indonesia. Additionally, **11 partner**

countries—Belarus, Bolivia, Kazakhstan, Cuba, Nigeria, Malaysia, Thailand, Vietnam, Uganda, and Uzbekistan—maintain close engagement with the group.

Indian Air Force Restructures Fighter Fleet Following MiG-21 Retirement

On September 26, the Indian Air Force (IAF) formally decommissioned its iconic MiG-21 fighter jets, marking a significant shift in the force's composition and capability. The retirement of the last two squadrons — No. 23 "Panthers" and No. 3 "Cobras" — operating a total of 36 jets from Chandigarh, not only closes the chapter on a pivotal Soviet-era platform but also underscores a critical moment of transition for the IAF. With this move, the Air Force grapples with a visible reduction in its squadron strength and growing concerns over its ability to modernise at the pace required by regional security demands.

MiG-21: A Legacy of Strength and Controversy

Initially inducted in 1963 as state-of-the-art interceptors, MiG-21s quickly became the backbone of the IAF, playing vital roles in the 1965 and 1971 Indo-Pak wars, as well as in the 1999 Kargil conflict. India acquired more than 700 aircraft across different variants, and many were later upgraded to the Bison standard — which featured modern avionics, advanced radar systems, and air-to-air missile capabilities. However, the MiG-21's single-engine configuration proved problematic, leading to persistent engine issues and over 500 recorded crashes over six decades. These incidents resulted in the deaths of approximately 170 pilots, with more than 20 fatalities reported since 2010 alone. Despite its controversial safety record, many IAF veterans maintain that the aircraft's long service life and successful combat performance have often been undervalued in public discourse.

Shrinking Squadron Strength and Strategic Vulnerabilities

The retirement of the MiG-21 has left the IAF with only 29 active fighter squadrons — far below the government-sanctioned target of 42. This shortfall is not a new development but has become increasingly concerning in the context of potential two-front conflict scenarios involving both Pakistan and China. While Pakistan reportedly fields 20–25 squadrons, China's inventory exceeds 60 squadrons, granting both countries a significant numerical advantage over India. Given that each squadron comprises between 16 and 18 aircraft, the deficit is substantial and increasingly difficult to overlook. Compounding the challenge is the scheduled retirement of several legacy platforms by 2035, including MiG-29s, Jaguars, and Mirage 2000s. Without timely induction of replacements, the IAF could see its already stretched air power diminish further, compromising operational readiness and regional deterrence.

Enhanced Focus on Air Defence Capabilities

In light of the shrinking fighter fleet, Indian military planners are placing greater emphasis on strengthening air defence infrastructure as a compensatory measure. This includes the deployment of advanced surface-to-air missile (SAM) systems such as the Russian-made S-400, which have entered service despite geopolitical friction with the United States. Additionally, India has deployed its indigenous Akashteer system, developed to provide real-time, automated command and control of air defence operations. These platforms demonstrated their operational effectiveness during Operation Sindoor, serving as vital interim solutions to protect Indian airspace while the fighter shortfall is addressed.

Rebuilding the Fighter Fleet: Indigenous Efforts Gain Momentum

To counter the reduction in squadron numbers, the IAF is placing significant emphasis on domestic aircraft production. At present, it operates two squadrons of the indigenous Tejas Mk1 fighter, with plans to induct 180 Tejas Mk1A variants from Hindustan Aeronautics Limited (HAL). The upgraded Mk1A model offers a host of modern capabilities, including an Active Electronically Scanned Array (AESA) radar, a state-of-the-art electronic warfare suite, and beyond-visual-range (BVR) missile systems such as the Derby and the indigenously developed ASTRA.

HAL is concurrently developing the Tejas Mk2 and the fifth-generation Advanced Medium Combat Aircraft (AMCA), both of which are expected to significantly enhance IAF's capabilities in the coming decade. These programs aim to provide a long-term, indigenous solution to India's air power deficit.

Global Fighter Acquisition and Strategic Partnerships

In addition to domestic initiatives, the IAF is actively pursuing international procurement to rapidly bolster its capabilities. A major acquisition plan for 114 fighter aircraft is underway, with France's Dassault Rafale currently seen as the leading contender. The plan includes acquiring a portion of these jets in flyaway condition to ensure immediate deployment, while the remaining aircraft would be manufactured in India under a proposed collaboration between Dassault and local defence firms. This arrangement is expected to contribute to the growth of India's domestic defence ecosystem while accelerating fleet replenishment.

Modernising Existing Assets: Su-30MKI Super-30 Program

As part of its broader strategy, India also intends to upgrade its existing fleet of 84 Su-30MKI fighters through the "Super-30" program. This modernization effort aims to enhance combat effectiveness and extend the service life of these aircraft, ensuring they continue to serve as a central pillar of the IAF until next-generation platforms are fully inducted.

Persistent Delays Undermining Modernisation

Despite these efforts, persistent delays in aircraft development and procurement continue to hamper the IAF's modernisation trajectory. The MiG-21 remained in service far beyond its intended operational lifespan due to a lack of viable replacements — a situation emblematic of the broader issues facing India's defence procurement apparatus.

Setbacks in Tejas Mk1A and LCA Program

The Light Combat Aircraft (LCA) program, conceptualised in the 1980s, has suffered multiple setbacks over the decades. Of the 40 Tejas Mk1 jets ordered in 2006 and 2010, only 38 have been delivered to date. The upgraded Tejas Mk1A variant, originally scheduled for earlier induction, has faced a two-year delay primarily due to late delivery of F404 engines from GE Aerospace and complications with radar and weapons integration. HAL now aims to produce 16 Mk1A jets annually, but this pace may push full delivery into the mid-2030s, well beyond the original 2030 target.

Delays in Engine Development and Technology Transfer

Progress on the Tejas Mk2 program has also been hampered by stalled negotiations between HAL and GE over the co-production of F414 engines. Although an agreement promising 80% technology transfer was signed two years ago, the slow pace of implementation continues to hinder advancement. These delays not only affect timelines but also impede the development of critical engineering and manufacturing capabilities within India.

AMCA and Foreign Fighter Deal: No Clear Timeline

The AMCA, India's ambitious fifth-generation stealth fighter project, remains in its developmental phase, with a prototype still several years from completion. Meanwhile, the much-anticipated deal to acquire 114 foreign fighters remains unsigned, leaving a significant gap in the IAF's reinforcement plans. The absence of definitive timelines for either program casts further uncertainty over the future readiness of India's air power.

Conclusion: A Fleet in Transition Amid Strategic Pressures

The retirement of the MiG-21 marks a pivotal moment in the Indian Air Force's evolution. As legacy platforms are phased out, the IAF finds itself in a critical period of transition, striving to rebuild its fleet through a combination of indigenous development, global procurement, and interim reliance on advanced air defence systems. However, unless delays in aircraft induction are urgently addressed and procurement timelines are streamlined, the IAF risks falling behind its regional adversaries, both in terms of numbers and technological edge.

India–EU Strategic Agenda: Deepening Ties in Trade, Technology, Defence, and Connectivity

Amid shifting global alliances and growing uncertainty in U.S. foreign policy under President Trump, Europe is positioning itself as a stable and dependable partner for India. This recalibration of strategic alignments is set to gain further momentum at the upcoming India–EU leaders' summit scheduled for February 2026, building upon European Commission President Ursula von der Leyen's previous visit to India. In anticipation of this, the European Union has released a strategic agenda that outlines its

comprehensive vision for EU–India relations. Anchored in five core pillars, the framework signals Europe's intent to emerge as India's "all-weather" partner, offering a steady counterbalance to the volatility seen in transatlantic relations.

A Comprehensive Five-Pillar Framework

The new India–EU Strategic Agenda is structured around five key pillars that together reflect a holistic approach to long-term bilateral engagement. These include:

- **Prosperity and Sustainability**, covering trade, investment, supply chain resilience, and sustainable development;
- **Technology and Innovation**, with a focus on emerging technologies, digital infrastructure, and research collaboration;
- **Security and Defence**, addressing regional stability, hybrid threats, and institutional partnerships;
- **Connectivity and Global Issues**, aimed at enhancing cooperation in third countries and reforming global governance structures;
- **Cross-Cutting Enablers**, which include skill mobility, cultural exchange, stronger institutional ties, and business collaboration mechanisms that support the first four pillars.

Economic Integration: Enhancing Trade, Investment, and Sustainable Growth

- The EU remains India's largest trading partner, while India ranks as the EU's top partner in the Global South. In 2024, bilateral trade in goods surged to €120 billion — a 90% increase over the past decade — complemented by an additional €60 billion in services. Nearly 6,000 European companies currently operate in India, directly employing 3 million people and indirectly sustaining millions more. Moreover, EU foreign direct investment in India reached €140 billion in 2023, nearly double the figure from five years prior.
- However, despite this progress, India still accounts for less than 2.5% of the EU's total trade volume, and Indian investment in the EU remains modest at around €10 billion. To unlock greater economic potential, both sides are accelerating efforts to conclude a Free Trade Agreement (FTA) by 2025. This would reduce tariff and non-tariff barriers and provide a framework for smoother market access. Parallel negotiations are also underway for an Investment Protection Agreement, a bilateral macroeconomic dialogue, a Geographical Indications agreement, and a comprehensive air transport accord — all aimed at creating a more seamless and mutually beneficial economic partnership.

Collaborating on Critical Technologies and Innovation

- India and the EU are drawing on their respective strengths to drive technological innovation. While Europe brings regulatory expertise, cutting-edge research capabilities, and leadership in green and digital transformation, India contributes a robust tech workforce, expansive datasets, a vibrant startup ecosystem, and cost-effective innovation models.
- Joint initiatives include the planned creation of EU-India Innovation Hubs focused on key emerging technologies, as well as an EU-India Startup Partnership involving the European Innovation Council and Start-up India. The collaboration will place particular emphasis on artificial intelligence (AI), with shared priorities including large language models, multilingual datasets, and AI applications across sectors such as healthcare, agriculture, and climate change mitigation.
- At the same time, both partners are working to establish safeguards to prevent the misuse or unauthorised transfer of sensitive technologies, aligning these efforts with broader commitments to democratic values and global security. A notable development in the science and technology domain is the expansion of cooperation under the Euratom-India agreement, which covers peaceful uses of nuclear energy — including safety protocols, waste disposal, nuclear security, and advanced research in nuclear fusion.

Strategic Connectivity: Building Global Corridors and Infrastructure

- India and the EU are intensifying their connectivity initiatives under the EU's Global Gateway programme (€300 billion) and India's MAHASAGAR initiative. Their 2021 Connectivity Partnership has provided a structured approach to joint work in energy, transport, and digital infrastructure, reflecting a shared commitment to transparent and sustainable development models.
- One of the most ambitious projects under this framework is the India-Middle East-Europe Economic Corridor (IMEC), which aims to revive ancient Eurasian trade routes by integrating maritime, rail, digital, and energy networks — including clean hydrogen infrastructure. Within this broader vision, the EU-Africa-India Digital Corridor is making tangible progress through the development of the 11,700-km Blue Raman submarine cable system. This high-capacity network will connect Europe and India via the Mediterranean, the Middle East, and East Africa, providing fast, secure, and resilient data transfer channels.
- India and the EU are also collaborating on the development of Green Shipping Corridors, designed to decarbonise maritime trade routes. These sustainable corridors will reduce dependence on fossil fuel-intensive transport and open new commercial opportunities while enhancing environmental and strategic outcomes.

Security and Defence Cooperation: Institutionalising Strategic Convergence

- Security and defence cooperation between India and the EU is entering a more structured and formalised phase. The two sides are deepening engagement through the Strategic Dialogue on Foreign and Security Policy, scheduled for 2025, with thematic discussions covering maritime security, cybersecurity, counterterrorism, and the proliferation of weapons of mass destruction.
- A formal EU–India Security and Defence Partnership is under active consideration, and both parties are negotiating a Security of Information Agreement to enable the secure exchange of classified intelligence. Regional collaboration in the Indo-Pacific is also expected to increase, with proposals for operational coordination between the EU Naval Force and the Indian Navy in the western Indian Ocean.
- Joint initiatives are expanding to tackle terrorism, illicit financing, propaganda dissemination, drug trafficking, and the misuse of emerging technologies. On the industrial front, India and the EU are fostering collaboration between their respective defence sectors to enhance supply chain resilience, stimulate innovation, and scale up production capabilities. Plans are underway to establish an EU–India Defence Industry Forum to facilitate industry linkages, share best practices, and explore future cooperation avenues.

Deepening Societal Ties: Mobility, Education, and Cultural Exchange

- Beyond economic and strategic realms, the India–EU partnership is also advancing people-to-people connections. As of 2023, over 825,000 Indian nationals resided in the EU, making them the largest group of recipients for both Blue Cards and intra-corporate transfer permits within the bloc. Travel has become increasingly accessible, with nearly one million Schengen visas issued in 2024 — many of which were for multiple entries.
- The educational landscape is also evolving. Programmes such as Erasmus and the Union of Skills are facilitating greater academic and vocational exchange, making the EU a more attractive destination for Indian students. This appeal has grown particularly strong amid heightened immigration restrictions in the United States under the Trump administration. Cultural diplomacy, skills partnerships, and youth exchange programmes continue to bolster mutual

understanding, complementing the broader strategic agenda.

Conclusion: A Forward-Looking, Multi-Dimensional Partnership

The India–EU Strategic Agenda represents a comprehensive and future-oriented framework for bilateral relations in a rapidly evolving global order. Built on shared democratic values, mutual economic interests, and a commitment to sustainable development, the agenda outlines a multi-pronged engagement strategy encompassing trade, technology, security, connectivity, and social ties. As the geopolitical landscape continues to shift, this partnership holds the potential to emerge as a cornerstone of global stability and cooperation — one that transcends traditional alliances and prioritises resilience, inclusivity, and shared growth.

Jal Prahar 2025

- The Indian Navy recently completed the 'Jal Prahar 2025' joint exercise in collaboration with the Indian Army, aimed at bolstering amphibious operations along India's eastern coastline. This biannual joint exercise serves as a platform for enhancing the interoperability, coordination, and synergy between the Indian Navy and the Indian Army, ultimately boosting operational preparedness, maritime security, and the country's defence capabilities.
- The exercise unfolded in two distinct phases. The first, known as the Harbour Phase, took place in Visakhapatnam and concentrated on the induction and integration of army personnel aboard the naval vessel INS Gharial. This phase involved extensive onboard training, safety briefings, and an orientation designed to familiarize the soldiers with life at sea. Additionally, sessions focused on sports and interpersonal interactions were conducted to build camaraderie among participants.
- The second phase, the Sea Phase, involved the execution of amphibious operations, including hard beaching at Kakinada, deployment of Landing Craft Assault (LCA) and BMP infantry fighting vehicles, and the validation of Standard Operating Procedures (SOPs) and joint training protocols. The successful conduct of these operations demonstrated enhanced coordination between the two forces, reinforcing their readiness for joint amphibious missions.

Trump's Gaza Peace Plan

The Prime Minister of India recently welcomed Donald Trump's 20-point peace proposal for Gaza, describing it as a potential pathway toward lasting peace in West Asia. The plan, which has garnered backing from Arab nations as well as Western leaders, focuses on achieving an immediate ceasefire, facilitating the release of hostages, and enabling the reconstruction of Gaza.

Overview of Trump's Gaza Peace Plan

This proposal is a diplomatic framework aimed at ending the ongoing Israel–Hamas conflict that has persisted from 2023 to 2025. It emphasizes ceasefire, disarmament, and rebuilding efforts. Central to the plan is the vision of transforming Gaza into a "New Gaza," a special economic zone that would be internationally supervised until significant governance reforms take place within the Palestinian administration.

Core Components of the Plan

- The plan outlines several key measures to stabilize the region. First, it calls for an immediate ceasefire where Israel would halt military actions as soon as Hamas agrees, effectively freezing battle lines to ensure stability. Secondly, it proposes a hostage and prisoner exchange where Hamas is expected to release all hostages, alive or deceased, within 72 hours, while Israel would release over 2,000 Palestinian detainees.
- Importantly, the plan guarantees that there will be no forced displacement of Palestinians from Gaza, thereby safeguarding demographic and human rights. Hamas is explicitly excluded from any role in future governance. However, members of Hamas who choose to disarm would be granted amnesty or safe passage abroad.
- To oversee Gaza's governance and reconstruction, the plan proposes the establishment of a "Board of Peace," an international body led by Donald Trump

and Tony Blair. Additionally, an international stabilization force involving multiple countries, including Arab states, would maintain peace and assist in training Palestinian police forces.

- The economic revival of Gaza is envisioned through the creation of a special economic zone, aimed at attracting preferential trade and channeling aid for reconstruction. The plan also links conditional Palestinian statehood to reforms within the Palestinian Authority (PA) and the assurance of security guarantees, offering a "political horizon" for eventual sovereignty.

Positive Aspects of the Proposal

- The ceasefire mechanism offers immediate relief by halting ongoing violence and preventing further civilian casualties and destruction. Addressing the release of hostages first is a critical humanitarian step that could build trust among the parties involved. The plan's endorsement by Arab nations, the European Union, and India lends it significant multilateral credibility.
- The focus on reconstruction prioritizes the rebuilding of homes, infrastructure, and the economy in Gaza, which has suffered extensive damage. International oversight by monitors is intended to reduce mistrust between Israel and Palestine, promoting greater accountability and transparency throughout the process.

Challenges Facing the Plan

- One of the primary obstacles is securing Hamas's acceptance of the plan, as radical elements within the group may refuse to disarm or relinquish political power. Israel remains skeptical, concerned about potential security gaps and questioning the Palestinian Authority's capacity to govern effectively.
- The practicalities of implementing the plan—such as coordinating prisoner exchanges, distributing aid fairly, and ensuring adherence to a ceasefire—are complex and prone to difficulties. Additionally, deep political divisions between Hamas and the Palestinian Authority threaten to derail any unified governance arrangement.
- The ambiguity surrounding the timeline and conditions for Palestinian statehood may also lead to long-term dissatisfaction and unrest, as the plan stops short of providing a clear path to sovereignty.

The Way Forward

- For the peace plan to succeed, broad consensus-building is essential. The United States, United Nations, and Arab countries must collectively exert pressure on both Israel and Palestinian factions to fulfill their commitments. Enhanced oversight by UN agencies and Arab monitors is necessary to guarantee transparency in aid delivery and monitor ceasefire compliance.
- Strengthening the Palestinian Authority through inclusive reforms and the involvement of civil society will be crucial in establishing legitimate governance. Furthermore, Gaza's redevelopment must be integrated with progress toward a viable two-state solution, ensuring that the peace efforts contribute to a durable resolution of the Israeli-Palestinian conflict.

Conclusion

Trump's Gaza peace plan represents a rare diplomatic opportunity amid ongoing turmoil but remains fragile without the cooperation of Hamas and security assurances from Israel. For it to lead to lasting peace, the plan must evolve into a just and balanced framework that combines humanitarian relief, reconstruction, and political reform. Only such an approach offers a sustainable path forward for peace and stability in West Asia.

South-South and Triangular Cooperation (SSTC)

Context:

On September 12, 2025, designated as the United Nations Day for South-South and Triangular Cooperation (SSTC), renewed calls were made to reform and enhance this cooperation framework as a critical mechanism for achieving the 2030 Sustainable Development Agenda.

Understanding South-South and Triangular Cooperation:

- South-South Cooperation (SSC) refers to the collaboration among developing countries aimed at sharing knowledge, skills, technologies, and resources to promote mutual growth and development. Triangular Cooperation (TrC), on the other hand, involves partnerships where developing countries collaborate with the support of developed nations or multilateral organizations. It is important to recognize SSTC as a complement to traditional North-South cooperation, not as a replacement.
- The origins of SSTC trace back to the Buenos Aires Plan of Action (BAPA) established in 1978, which formalized the framework for South-South Cooperation. The United Nations commemorates this legacy by observing September 12 as the International Day for SSTC, marking the anniversary of BAPA.
- The fundamental objectives of SSTC include fostering self-reliance and collective resilience among developing countries. It aims to enhance their capacity to develop solutions that are context-specific and locally relevant. SSTC also promotes principles of mutual benefit, solidarity, and equality within the realm of development cooperation.

Core Functions of SSTC:

- SSTC plays several vital roles, such as capacity-building, knowledge exchange, and technology transfer. These efforts enable developing nations to enhance their skills, adopt best practices, and gain access to affordable technologies to address local development challenges. Additionally, SSTC strengthens the collective voice of the Global South in international governance, boosting their influence in shaping global policies and institutions.
- Furthermore, SSTC encourages both regional and interregional collaboration, motivating countries to pool resources and work together to confront shared challenges like climate change, health emergencies, and trade barriers. Serving as an alternative to conventional aid, SSTC provides mutual support without imposing conditionalities, thereby reinforcing resilience and self-sufficiency.

Significance of SSTC:

- The impact of SSTC on development is profound, as it promotes low-cost, innovative, and scalable models directly aligned with the Sustainable Development Goals (SDGs). It fosters solidarity within the Global South by encouraging collective ownership and reducing dependency on developed countries, empowering Southern nations to lead in designing solutions.
- SSTC also enhances resilience by offering practical approaches to pressing issues such as food security, disaster preparedness, climate adaptation, and strengthening public health systems. Importantly, it promotes equity by counteracting the unequal conditions often tied to traditional aid, ensuring fairness, sovereignty, and respect for domestic development priorities.

India's Contribution to SSTC:

- India's approach to SSTC is deeply rooted in the philosophy of *Vasudhaiva Kutumbakam*—the idea of the world as one family—emphasizing solidarity and inclusiveness in global cooperation. The Indian Technical and Economic Cooperation (ITEC) program has been pivotal, training professionals from over 160 countries and enhancing capacities in governance, information technology, agriculture, and health sectors.
- Since 2017, the India-UN Development Partnership Fund has supported more than 75 projects across 56 developing countries, focusing particularly on Least Developed Countries (LDCs) and small island developing states. India has also demonstrated digital diplomacy by exporting innovations such as Aadhaar (unique ID system), Unified Payments Interface (UPI), and other digital governance platforms, providing scalable solutions globally.
- India's active participation in the Voice of the Global South Summits and the African Union's engagement in the G20 has

amplified the concerns of Southern nations while advocating for Africa's greater inclusion in global decision-making. Furthermore, India's partnership with the World Food Programme (WFP) has pioneered innovations like Grain ATMs, fortified rice, and optimized ration distribution, positioning India as a development model for other emerging economies.

Challenges Facing SSTC:

- Despite its promise, SSTC faces significant obstacles. Funding constraints, caused by shrinking humanitarian and development budgets, limit the scope and scalability of projects. Many developing countries grapple with capacity gaps, lacking the necessary infrastructure, institutional frameworks, or skilled manpower to fully absorb and implement innovations.
- Another challenge is the lack of a common global framework, which hinders effective monitoring, evaluation, and accountability of SSTC initiatives. Additionally, geopolitical pressures, including persistent North-South power imbalances and the politicization of aid, undermine the neutrality and effectiveness of SSTC. Practical difficulties in adapting successful local projects to diverse regional contexts also restrict replication and broader impact.

The Way Forward:

- Looking ahead, there is a need to broaden the focus of SSTC to include emerging sectors such as the digital economy, artificial intelligence regulation, and climate finance. Strengthening institutional frameworks through dedicated SSTC platforms and secretariats can facilitate better knowledge exchange and project coordination.
- To address funding challenges, innovative financing mechanisms should be explored, including mobilizing resources from the private sector, diaspora bonds, and pooled funds from Southern countries themselves. Triangular Cooperation remains crucial, where developed nations and multilateral agencies provide expertise and support while ensuring that developing countries maintain leadership roles.
- Finally, establishing transparent, SDG-aligned monitoring and reporting systems is essential to improve accountability and track progress more effectively.

Conclusion:

South-South and Triangular Cooperation has evolved from a mere diplomatic concept to a vital development lifeline for billions worldwide. India's leadership role offers a unique opportunity to shape fair and inclusive global partnerships. With strengthened institutions and innovation-driven approaches, SSTC can become a foundational pillar in realizing the ambitions of the 2030 Sustainable Development Agenda.

Gulf of Aden and Maritime Security

A recent incident involving a suspected missile attack—believed to have been launched by Yemen's Houthi rebels—ignited a fire aboard a vessel in the Gulf of Aden, raising fresh concerns about maritime security in this strategically vital region.

Geography and Importance of the Gulf of Aden

- The Gulf of Aden is a key extension of the Indian Ocean, nestled between the Arabian Peninsula and the Horn of Africa. It connects the Red Sea with the Arabian Sea through the Bab el-Mandeb Strait. Named after the port city of Aden in Yemen, it spans an area of about 410,000 square kilometers, stretching roughly 900 km in length and 500 km in width.
- Geographically, the gulf is bordered by Somalia and the Socotra Islands to the south, Yemen to the north, Djibouti to the west, and the Arabian Sea to the east. It connects to the Somali Sea via the Guardafui Channel and narrows into the Gulf of Tadjoura near Djibouti.
- The Sheba Ridge, an extension of the Indian Ocean ridge system, runs along the gulf's floor and plays a vital role in shaping its seabed. The region is influenced by seasonal upwelling driven by the southwest and northeast

monsoons, resulting in nutrient-rich, cooler waters.
- Compared to the Red Sea, the Gulf of Aden has lower salinity. The region is home to diverse marine life, including coral reefs, seabirds, and various invertebrate species. Major ports include Aden (Yemen), and Berbera and Bosaso (Somalia). Cities such as Mukalla, Balhaf, Ahnwar, Bosaso, and Djibouti City are located along its coast.
- This gulf is a key conduit for global shipping—particularly oil—forming part of the Suez Canal route. Nearly 11% of the world's seaborne petroleum cargoes traverse this waterway, linking the Mediterranean with the Indian Ocean.

The Wassenaar Arrangement: Reform Demands in the Digital Age

- Amid growing concerns over unchecked digital surveillance and cyber technologies, the Wassenaar Arrangement is facing pressure to evolve its framework to effectively regulate emerging digital threats and cloud-based services.
- Established in 1996 in Wassenaar, Netherlands, the Wassenaar Arrangement is a voluntary multilateral export control regime focused on conventional arms and dual-use technologies. It replaced the Cold War-era Coordinating Committee for Multilateral Export Controls (CoCom) and is headquartered in Vienna, Austria.

Membership and Objectives

The arrangement currently includes 42 participating states, such as the US, UK, France, Russia, Germany, Japan, India, South Africa, Mexico, and South Korea. It aims to:

- Promote transparency and accountability in the export of arms and sensitive technologies.
- Prevent the diversion of such items to terrorists or rogue regimes.
- Balance national security with the promotion of legitimate trade and technological advancement.

Key Features

- Two control lists: Dual-Use Goods & Technologies and the Munitions List.
- Semi-annual information exchange on transfer approvals and denials.
- Consensus-based decision-making, with significant national discretion.
- In 2013, the scope was expanded to include cyber-surveillance and intrusion software.

India's Role

India joined the Wassenaar Arrangement in 2017 and integrated its control lists into the SCOMET framework (Special Chemicals, Organisms, Materials, Equipment and Technologies).

Current Challenges

The arrangement's framework, designed for the physical export era of the 1990s, struggles to address the complexities of cloud computing, SaaS platforms, AI-driven surveillance tools, and other digital technologies. These gaps have created regulatory loopholes that undermine global non-proliferation efforts and call for urgent modernization of the export control system.

The National Security Council Secretariat (NSCS)

- India's inaugural **National Security Strategy (NSS)** is currently in its final drafting stage and is anticipated to be completed by **December 2025**. The strategy aims to consolidate various aspects of national security, including defence, cyber resilience, and internal stability. The task of formulating this comprehensive document is being undertaken by the **National Security Council Secretariat (NSCS)**.
- The **National Security Council Secretariat (NSCS)** functions as the secretariat to the **National Security Council (NSC)**—India's apex advisory body responsible for addressing internal and external security challenges. The NSCS serves as the **core strategic planning agency** for all matters concerning national security.
- The NSCS was established in the **late 1990s**, following recommendations made during post-Kargil conflict security assessments. It is **headed by the National Security Advisor (NSA)**, who holds the rank of a **Cabinet Minister**. The NSA simultaneously serves as the **Secretary of the NSC** and the **Chief of the NSCS**.

- The primary mandate of the NSCS is to formulate strategic direction, coordinate inter-agency efforts, and articulate a long-term vision for India's national security preparedness. It plays a pivotal role in aligning the actions of various ministries and security agencies under a unified national security doctrine.

Organizational Structure

The NSCS consists of a diverse team of senior security experts and administrative officials:

- **Three Deputy National Security Advisors (NSAs)**, representing the Indian Foreign Service (IFS), Indian Police Service (IPS), and the Armed Forces.
- A **Military Adviser**, who acts as a liaison with the Ministry of Defence and oversees the induction of new technologies into the armed forces.
- A **National Maritime Security Coordinator (NMSC)**, responsible for coordination with coastal states, the Indian Coast Guard, and other maritime security entities.
- An **Additional NSA (ANSA)**, a newly activated position created to enhance operational efficiency within the NSCS.

Functions and Strategic Role

The NSCS plays a central role in India's national security infrastructure through a range of critical functions:

- Drafting and periodically updating the **National Security Strategy** and related policy doctrines.
- Providing expert advice to the NSC on matters including **internal security**, **external threats**, **cybersecurity**, **economic security**, and **hybrid warfare**.
- Facilitating the integration of intelligence, defence, and diplomatic inputs into cohesive national strategies.
- Holding administrative authority to access **Cabinet papers**, generate **Cabinet notes**, and actively participate in **policy formulation** processes.
- As the nerve centre of India's strategic decision-making ecosystem, the NSCS ensures that the country's national security framework remains agile, forward-looking, and capable of responding to evolving threats.

Venezuela: Geopolitical Flashpoint

- Tensions are escalating in northern South America as the **President of Venezuela** prepares to declare a **state of emergency** in response to perceived U.S. "aggression." This follows the destruction of suspected Venezuelan drug trafficking boats by American forces and the deployment of U.S. warships in the vicinity of the Venezuelan coast.
- **Venezuela** is located at the **northern tip of South America**, occupying a vast triangular landmass that is larger in area than the combined size of **France and Germany**. Its **capital** is **Caracas**.

Bordering Nations and Bodies of Water

Venezuela shares its borders with:

- **Colombia** to the west,
- **Brazil** to the south,
- **Guyana** to the east,
- And opens to the **Caribbean Sea** and the **Atlantic Ocean** to the north and northeast.

Physiographic Features

The country is marked by a highly diverse landscape that includes:

- The **Andes Mountains**, home to **Pico Bolívar** (4,978 meters), Venezuela's highest peak.
- The expansive **Orinoco River Basin** and **Llanos grasslands**, which are central to agriculture, cattle ranching, and hydropower production.
- **Lake Maracaibo**, the **largest lake in South America**, functioning as a major hub for Venezuela's oil industry.
- The **Guiana Highlands**, known for rich mineral deposits and iconic natural wonders like **Angel Falls**, the **tallest waterfall in the world** at 979 meters.

Natural Resources and Economic Importance

Venezuela possesses the **world's largest proven oil reserves**, forming the backbone of its economy. In addition to petroleum, it is also rich in:

- **Iron ore**
- **Gold**
- **Diamonds**

- **Hydroelectric potential**, largely untapped due to political instability.

Strategic Maritime Location

The nation enjoys an extensive **Caribbean coastline** and controls key islands such as **Margarita**, **Los Roques**, and **La Tortuga**. Its maritime territory provides Venezuela with a **strategic gateway** between South America and the broader **Caribbean and North American regions**, enhancing its geopolitical significance.

SOCIETY & SOCIAL JUSTICE

Koya Tribe

The **Supreme Court of India** has recently issued a notice in response to a petition filed by members of the **Koya tribe**, challenging the **Telangana High Court's order** that upheld the **Scheduled Tribe (ST) status** of the **Lambadi, Sugali, and Banjara communities**. The Koya petitioners argue that extending ST recognition to these communities adversely affects the reservation benefits and opportunities meant for indigenous tribal groups like themselves.

The **Koya tribe** is one of India's rare **multi-racial and multi-lingual tribal communities**, residing predominantly along the **banks of the Godavari River**. They are spread across the states of **Andhra Pradesh, Telangana, Chhattisgarh, and Odisha**. According to the **2011 Census**, the total Koya population in India is **7,38,629**. The Koyas refer to themselves as **"Koithur"** and are believed to have **migrated from their ancestral homeland in Bastar**, a region in northern India, to central India.

Language and Communication

The Koya people speak their own language known as **Koya basha**, which is part of the **Dravidian language family**. Linguistically, it is closely related to **Gondi**, while also being heavily influenced by **Telugu**. In addition to their mother tongue, most Koyas are also fluent in **Gondi or Telugu**, showcasing their multilingual adaptability.

Occupation and Livelihood

Traditionally, the Koyas were **pastoralists** and practiced **shifting cultivation**. However, in contemporary times, they have transitioned to **settled agriculture**, which is often supplemented with **animal husbandry** and **seasonal forest-based activities**. The primary crops cultivated by them include **jowar, ragi, bajra**, and various **millets**, all of which are well-suited to the semi-arid conditions they inhabit.

Social and Cultural Life

- The **Koya society** is organized into five primary **sub-divisions** or **gotrams**, with each individual being born into a particular clan. These clan identities are lifelong and immutable. Koya families are **patrilineal and patrilocal**, with the nuclear family unit, called **"Kutum,"** being the most prevalent. **Monogamy** is the common marital norm among them.
- Koya villages are typically established near **reliable water sources**, and their size can range from **just three to over sixty houses**. The **head of a village** is known as the **"Peda"** and holds both administrative and social authority. The Koyas follow a unique **ethnic religion**, although they also **worship Hindu gods and goddesses**. A notable feature of their religious life is the **dominance of female deities**, particularly **"mother earth,"** who is considered the most sacred.
- To promote social welfare, Koya communities maintain **village-level grain banks** and **community funds** to support families in need and ensure **food security** during hard times. Upon death, Koyas either **bury or cremate** the deceased, and often **erect menhirs** in their memory as a form of ancestral reverence.
- Major festivals include **Vijji Pandum**, a celebration linked to seed sowing, and **Kondala Kolupu**, which is performed to appease **hill deities**. Koyas also perform a vibrant and energetic dance known as **Permakok**, or the **Bison Horn Dance**, which is integral to festive occasions and marriage ceremonies.

India's Cancer Map 2025: Regional Patterns, Risk Factors, and Public Health Response

A comprehensive analysis of cancer data from 43 population-based registries across India has revealed that the nation's lifetime risk of developing cancer stands at 11%. In 2024 alone, 15.6 lakh new cases were recorded, alongside 8.74 lakh deaths. These registries—covering between 10% and 18% of the population across 23 states and Union Territories—monitor trends in cancer incidence, mortality, and regional disparities. The findings, based on data from 2015 to 2019 (excluding 2020 due to the impact of the COVID-19 pandemic), offer critical insights for shaping national health policies.

Key Trends in India's Cancer Burden

Between 2015 and 2019, researchers documented 7.08 lakh cancer cases and 2.06 lakh cancer-related deaths. The study was conducted by experts from premier institutions such as AIIMS Delhi, Tata Memorial Hospital, and the Adyar Cancer Institute. Their work has shed light

on the shifting dynamics of cancer incidence and mortality across regions and demographics.

Gender Disparities in Incidence and Outcomes

The data reveal a gendered pattern in cancer occurrence and survivability. Women accounted for 51.1% of all cancer cases but only 45% of deaths. This discrepancy is primarily due to the dominance of breast and cervical cancers among women—conditions that are relatively easier to detect and treat at early stages. In contrast, the most common cancers among men, such as lung and gastric cancers, are more difficult to diagnose early and are associated with significantly worse prognoses.

Alarming Rise in Oral Cancer

One of the most notable developments is the rise of oral cancer, which has now surpassed lung cancer as the most prevalent cancer among Indian men. This trend persists despite a documented decline in tobacco use—from 34.6% in 2009–10 to 28.6% in 2016–17. The increase is attributed to the long latency of tobacco-related effects and the compounding impact of other risk factors like alcohol consumption, which is known to increase the likelihood of multiple types of cancer.

Northeast India: The Epicentre of India's Cancer Crisis

The Northeast region of India has emerged as the country's cancer hotspot. Mizoram, in particular, reports the highest lifetime risk of cancer: 21.1% for men and 18.9% for women. This elevated risk is linked to a combination of high tobacco consumption, unique dietary patterns (including fermented pork fat, smoked meats, spicy foods, and hot beverages), and a higher prevalence of infections known to cause cancer—such as HPV, Helicobacter pylori, and hepatitis.

Regional Variation in Cancer Types

Cancer prevalence in India varies significantly across geographies:

- **Breast cancer** reaches its highest rates in Hyderabad (54 cases per 100,000 women).
- **Cervical cancer** is most prevalent in Aizawl, with 27.1 cases per 100,000 women.
- **Lung cancer** among men peaks in Srinagar (39.5 per 100,000), while among women, it is most common in Aizawl (33.7), with high numbers also reported in metro cities such as Chennai, Delhi, Bengaluru, and Visakhapatnam.
- **Oral cancer** affects men most in Ahmedabad (33.6 per 100,000) and women most in East Khasi Hills (13.6), with a broad spread across northern, central, and western India.
- **Prostate cancer** shows its highest incidence in Srinagar, at 12.7 per 100,000 men.

Policy Implications and Healthcare Needs

The report underscores the urgent need for region-specific cancer control strategies. From the Northeast's unique dietary and lifestyle challenges to urban areas facing higher incidences of breast and lung cancer, tailored interventions are essential. Strengthening screening, awareness campaigns, and early detection programmes must become central pillars of India's healthcare planning.

In high-burden regions like the Northeast, the approach must be multifaceted—improving healthcare infrastructure, mobilising community awareness, and promoting healthier lifestyle choices through sustained engagement.

The Role of Prevention and Early Detection

Preventive strategies remain a critical lever in managing India's growing cancer burden. Breast cancer alone constitutes 30% of all cancer cases in women, underscoring the necessity for widespread screening and awareness. Additionally, cervical cancer—highly preventable through HPV vaccination and routine screening—remains prevalent, especially in underserved regions.

According to the World Health Organization, between 30% and 50% of all cancers can be prevented through lifestyle modifications and early detection. This reinforces the need for robust public health campaigns, especially targeting high-risk populations.

National Programmes and Initiatives Combating Cancer

India has developed an integrated approach to tackle cancer by combining policy measures, infrastructural development, financial support, and medical research:

- **National Programme for Prevention and Control of Cancer, Diabetes, Cardiovascular Diseases and Stroke (NPCDCS):** Focuses on screening, awareness, early detection, and treatment, particularly for oral, breast, and cervical cancers.

- **Strengthening of Tertiary Care for Cancer Scheme:** Involves the establishment of 19 State Cancer Institutes (SCIs) and 20 Tertiary Cancer Care Centres (TCCCs) to decentralise access to advanced treatment facilities.
- **Ayushman Bharat – Pradhan Mantri Jan Arogya Yojana (PM-JAY):** Covers the cost of chemotherapy, radiotherapy, and surgery for underprivileged patients, benefiting over 90% of cancer patients registered under the scheme.
- **Health Minister's Cancer Patient Fund (HMCPF):** Offers financial assistance up to ₹15 lakh per patient, supporting affordable care at 27 Regional Cancer Centres across the country.
- **National Cancer Grid (NCG):** The world's largest coordinated cancer care network, consisting of 287 centres, provides standardised treatment and manages care for over 7.5 lakh new cancer patients each year.

Infrastructure and Budgetary Support

The Union Budget 2025–26 reflects a significant commitment to healthcare, with an allocation of nearly ₹1 lakh crore. Key announcements include the establishment of Day Care Cancer Centres in all districts and customs duty exemptions on 36 essential lifesaving cancer drugs. These measures aim to expand accessibility and affordability of cancer treatment across the nation.

Research, Innovation, and Global Collaboration

India's fight against cancer is also being advanced through pioneering research and international partnerships:

- **NexCAR19 (2024):** The country's first indigenously developed CAR-T cell therapy for blood cancers, a collaborative effort by IIT Bombay, Tata Memorial Hospital, and ImmunoACT.
- **Quad Cancer Moonshot (2024):** A multilateral initiative involving India, the US, Japan, and Australia aimed at eliminating cervical cancer through widespread HPV vaccination and screening programmes.
- **ACTREC Expansion (2025):** Aimed at scaling up cancer research, education, and treatment infrastructure, this initiative strengthens India's capacity to develop and deliver cutting-edge therapies.

Public Awareness and Lifestyle Campaigns

Prevention remains a core pillar of India's strategy against cancer. Public campaigns such as **Eat Right India**, the **Fit India Movement**, and various **yoga-based wellness programmes** promote healthier living to reduce cancer risk.

Annual observances such as **National Cancer Awareness Day** and **World Cancer Day** are leveraged to mobilise mass awareness and engagement across all sections of society.

Conclusion

India's Cancer Map 2025 reveals a complex and evolving landscape shaped by regional disparities, lifestyle factors, and socio-economic dynamics. With over 15 lakh new cases and nearly 9 lakh deaths annually, the disease represents a major public health challenge.

The need for early detection, lifestyle interventions, regional strategies, and equitable access to treatment has never been more urgent. While national programmes and innovations signal progress, the battle against cancer must remain a top health priority, driven by data, policy, public awareness, and global collaboration.

The Rise and Risks of Health Insurance in India

Context:

As India's commitment to **Universal Health Care (UHC)** gains attention, the growing reliance on **insurance-driven models**—particularly the **Pradhan Mantri Jan Arogya Yojana (PMJAY)** and various **State Health Insurance Programmes (SHIPs)**—has sparked concerns. While budgets for these schemes are rising, critics warn that such models may deepen **privatisation in healthcare**, **neglect the public health system**, and compromise the goal of equitable and accessible healthcare for all.

Introduction: A Long-Delayed Vision for UHC

India's ambition for UHC, first proposed by the **Bhore Committee in 1946**, remains unrealised even after nearly eight decades. Although PMJAY and SHIPs now claim to cover over **80% of the population**, they have introduced new challenges around **equity**, **effectiveness**, and the **sustainability** of public health in the country.

The Growth of Health Insurance in India

India has seen a significant expansion in formal health insurance coverage over the last decade:

- **PMJAY**, launched in 2018, provides **₹5 lakh annual coverage per household** for hospitalisation, reaching **58.8 crore individuals** by 2023–24.
- Parallel **State Health Insurance Programmes** offer similar coverage, collectively covering another large population segment.
- Together, these schemes incur a combined annual expenditure of **₹28,000 crore**, growing at a rate of **8–25%** (2018–2024).
- However, utilisation remains low—only **35%** of insured hospital patients were able to use their coverage according to the **2022–23 Health Consumption Expenditure Survey (HCES)**.

Fault Lines in the Expansion of Health Insurance

Despite ambitious coverage targets, India's insurance-led model is marred by deep structural issues:

1. **For-Profit Healthcare Dominance:** Nearly **two-thirds of PMJAY reimbursements** go to **private hospitals**, fostering a profit-first health ecosystem. In the absence of robust regulation, this model often results in **overcharging**, **unnecessary procedures**, and **compromised medical ethics**.
2. **Neglect of Primary and Preventive Care:** Insurance policies disproportionately focus on **hospital-based care**, diverting attention and funding from **primary healthcare**, **outpatient services**, and **preventive care.** As India's population ages, escalating costs of tertiary care risk **crowding out investments** in **rural Primary Health Centres (PHCs)** and essential diagnostic services.
3. **Limited Utilisation Due to Systemic Barriers: Awareness gaps** persist, with many beneficiaries unaware of how to avail their benefits. **Private hospitals** often disincentivise insured patients due to **low reimbursement rates**, while **marginalised communities** face additional access hurdles.
4. **Discrimination in Access and Treatment:** In **public hospitals**, preference is given to insured patients who bring in additional revenue. Conversely, **private hospitals** often favour uninsured patients due to the **possibility of charging more**, leading to systemic **inequity**.
5. **Financial Fragility and Provider Disengagement:** PMJAY faces **₹12,161 crore in pending dues**, exceeding its budget allocations. More than **600 hospitals** have exited the programme, citing **delayed reimbursements** and **operational bottlenecks**.
6. **Fraud and Corruption:** The **National Health Authority (NHA)** has flagged **3,200 hospitals** for fraudulent practices such as billing for ghost patients, inflating charges, and conducting unnecessary surgeries. These issues are compounded by **weak auditing mechanisms** and **limited transparency** in scheme management.

Structural Risks Undermining UHC Goals

India's current health insurance trajectory reveals several systemic vulnerabilities:

- **Underfunded Public Health:** Public health expenditure stands at just **1.3% of GDP (2022)**—far below the **global average of 6.1%**.
- **Privatised Service Delivery:** The insurance-centric model consolidates the **dominance of the private sector**, without addressing issues of **quality**, **accountability**, or **accessibility**.
- **Continued Out-of-Pocket Spending:** Despite wide coverage, **out-of-pocket health expenditure** in India remains **among the highest globally**, indicating insurance is not protecting citizens effectively from financial hardship.

Global Comparisons: Where India Diverges

Countries like **Thailand and Canada** successfully integrate **social health insurance** within UHC frameworks. Their models are built on: **Non-profit service delivery, Universal coverage, Strict regulation of providers**

In contrast, India's model is: **Targeted rather than universal, Largely dependent on profit-seeking providers and Loosely regulated**, allowing inconsistencies in service quality and equity

Policy Way Forward: Realigning with UHC Principles

To steer India toward authentic UHC, the following strategic shifts are essential:

1. **Strengthen Public Health Infrastructure:** Expand **primary health centres**, diagnostic labs, and **outpatient services**. Focus on **preventive care**, reducing dependence on costly hospitalisation.
2. **Regulate the Private Sector:** Enforce **standard treatment protocols** and **price caps**. Implement **strict monitoring** and accountability frameworks for empanelled private hospitals.
3. **Improve Scheme Utilisation and Awareness:** Conduct **community outreach** and enhance **digital literacy** to help beneficiaries access their entitlements. **Simplify claims** processes and strengthen **grievance redressal mechanisms**.
4. **Ensure Financial Sustainability:** Resolve reimbursement delays by exploring **direct budgetary allocations** to public and not-for-profit providers. Streamline fund flow systems to prevent provider exit.
5. **Shift Toward a Comprehensive UHC Model:** Increase public health spending to **2.5% of GDP**, as proposed in the **National Health Policy 2017**. Transition from a fragmented, insurance-dependent model to a **publicly financed, universally accessible health system**.

Conclusion: Insurance Is Not a Substitute for Public Healthcare

While schemes like **PMJAY and SHIPs** have brought short-term benefits, their current structure may institutionalise a **profit-driven, hospital-centric** health system that does little to address the root causes of health inequity. For India to achieve **true Universal Health Care**, policy must prioritise **primary healthcare investment**, **regulation of private providers**, and **inclusive, equitable access**. Without these fundamental shifts, health insurance will remain a **temporary painkiller**, not the **long-term cure** India's public health system urgently needs.

UDISE+ 2024–25 Report: A Snapshot of India's School Education System

Context:

The **UDISE+ 2024–25** report, released by the **Ministry of Education**, provides a comprehensive overview of school education in India, revealing persistent inequalities in **digital access**, **infrastructure**, **teacher availability**, and **health support**. Despite improvements in basic facilities, the data highlights stark regional disparities and systemic shortcomings that undermine the goals of inclusive and quality education.

What is UDISE+?

The **Unified District Information System for Education Plus (UDISE+)** is India's **annual national data system** for school education (Classes I–XII), covering **government, aided, and private schools**.

It captures granular data on a range of indicators, including: **Infrastructure** (electricity, water, sanitation, etc.), **Enrolment and dropouts, Teacher strength and training, Digital readiness, Health and safety provisions and Learning environment and equity dimensions.**

As a key policy tool, UDISE+ guides planning, resource allocation, and monitoring under the **Samagra Shiksha scheme** and National Education Policy (NEP) objectives.

Key Trends and Findings (2024–25)

Digital Divide Remains Stark

- Despite growing emphasis on digital education, access remains limited and unequal.
  Only **65% of schools** report having computers, and of these, **just 58% are functional**.
  Internet availability stands at **63% overall**, but significant disparity exists between school types: Government schools: **58.6% versus** Private schools: **77.1%**
- These gaps hinder equitable access to digital learning tools, particularly for children in government-run institutions and rural areas.

Basic Infrastructure: Progress with Gaps

- India has achieved **near-universal access** to basic facilities: **Toilets:** 98.6% of schools, **Hand-washing facilities:** 95.9% and **Drinking water:** 99%
- However, **over 25,000 schools still lack working electricity**, raising serious concerns for digital learning and overall school functioning.

Enrolment Challenges and Low-Attendance Schools

The data highlights serious underutilisation in some areas:

- **5.1% of schools** have **fewer than 10 students**, raising questions about viability.
- **Zero-enrolment schools** are alarmingly high in: **Ladakh:** 32.2%, **Arunachal Pradesh and Uttarakhand:** ~22%

These patterns point to migration, demographic shifts, and inefficiencies in school network planning, particularly in hilly and remote regions.

Teacher Shortages in Upper Classes

- While the national **Pupil-Teacher Ratio (PTR)** is satisfactory at the **primary level (20:1)**, it deteriorates sharply in higher classes: **Jharkhand:** 47:1, **Maharashtra and Odisha:** 37:1
- These figures exceed the **RTE Act norm of 30:1**, and fall far short of the **NEP's recommended 20–25:1 ratio**, suggesting critical learning losses in upper grades due to lack of faculty.
- Nationally, around **91% of teachers** are trained. However, the situation is not uniform: **Meghalaya** reports the **lowest training levels**, with 72% trained at **primary** level and 80% at **upper-primary.** The quality of classroom delivery is deeply affected by the preparedness of educators, making targeted capacity-building essential.

Sharp Regional Variations

The report underscores **geographical inequities** in school resources:

- **Southern states** like **Kerala** and **Tamil Nadu** approach near-universal access to **toilets and internet**.
- **Eastern and North-Eastern states** significantly lag: **West Bengal:** Only 18.6% schools with internet access and **Meghalaya:** 26.4%

Such disparities hinder national-level equity goals and pose challenges for implementing uniform digital learning strategies.

Inadequate Health Support

- Despite post-COVID emphasis on school health, only **75.5% of schools** conduct **regular medical check-ups**. The shortfall is particularly acute in: **Bihar:** 32.7% and **Nagaland:** 44.9%
- Health services in schools are vital for ensuring holistic child development and reducing absenteeism due to preventable illnesses.

Conclusion

The **UDISE+ 2024–25** report paints a mixed picture of India's school education landscape. While core infrastructure like **toilets** and **drinking water** has seen commendable coverage, persistent gaps in **electricity**, **digital access**, **teacher availability**, and **health services** reflect deeper structural issues. The regional imbalance between states like **Kerala** and **West Bengal**, or **Tamil Nadu** and **Meghalaya**, illustrates the need for **state-specific interventions** aligned with **NEP 2020** goals. Bridging these gaps is crucial not just for equitable education delivery but also for transforming schools into inclusive and resilient learning spaces.

One in 100 Deaths by Suicide: WHO Report on Global Mental Health

According to the latest data from the World Health Organization (WHO), suicide accounted for one in every 100 deaths globally in 2021, resulting in the loss of 727,000 lives. Moreover, for each suicide death, there were over 20 suicide attempts. These findings are part of two major WHO publications — *World Mental Health Today* and the *Mental Health Atlas 2024* — which also reveal that over one billion people worldwide are currently living with mental health disorders. Country-specific profiles, including data on the impact of the COVID-19 pandemic, will soon be released through the updated *Mental Health Atlas*.

Understanding Mental Health: WHO's Key Findings

WHO emphasizes that mental health is a fundamental aspect of overall health — not merely the absence of mental illness, but a foundation for emotional well-being, social functioning, and productive living. It encompasses the promotion of mental wellness, prevention of disorders, and access to treatment and rehabilitation services.

Most Prevalent Mental Health Disorders

Anxiety and depressive disorders remain the most widespread mental health conditions, jointly accounting for more than two-thirds of all cases in 2021. Over the decade from 2011 to 2021, the global burden of mental disorders increased more rapidly than population growth, leading to a rise in the global age-standardized prevalence of mental disorders from 12.7% to 13.6%.

Age-Related Patterns in Mental Health

The prevalence of mental health disorders varies significantly by age group. Young adults aged 20 to 29 years have experienced the largest increase in prevalence since 2011, with a rise of 1.8%. Among children under the age of 10, depressive disorders are rare. In contrast, among adults aged 40 to 69, depressive disorders surpass anxiety and peak between the ages of 50 and 69.

Gender Disparities in Mental Health Conditions

Mental health issues manifest differently across genders. Males are more likely to be diagnosed with attention-deficit/hyperactivity disorder (ADHD), autism spectrum disorders, and intellectual developmental disorders. Females, on the other hand, are more commonly affected by anxiety disorders, depression, and eating disorders.

Suicide: A Persistent Global Challenge

- Suicide remains the leading cause of death among young people worldwide. However, progress towards reducing suicide rates remains inadequate. The current trajectory suggests that only a 12% reduction in suicide rates will be achieved by 2030 — far short of the United Nations' goal of a one-third reduction. To close this gap, experts call for sustained funding, robust political leadership, and the widespread implementation of evidence-based suicide prevention strategies.
- Suicide is influenced by a complex interplay of factors including family history, personal vulnerability, early-life trauma, chronic stress, social isolation, stigma, and the lack of accessible mental health services. Addressing these drivers in an integrated and systemic manner is essential for any meaningful progress in reducing suicide rates.

Mental Health Burden in India: An Overview

In India, the mental health burden is significant. According to WHO estimates, the country bears a mental health burden of 2,443 disability-adjusted life years (DALYs) per 10,000 people. The age-adjusted suicide rate in India stands at 21.1 per 100,000 people. From 2012 to 2030, India is projected to suffer an economic loss of USD 1.03 trillion due to untreated mental health conditions.

Policy and Legal Framework for Mental Health in India

India has taken several steps to institutionalize mental health care through progressive legislation and policy. The **National Mental Health Policy, 2014**, promotes a participatory and rights-based approach to mental health services. The **Mental Healthcare Act, 2017**, provides legal protections and aligns with the principles of the UN Convention on the Rights of Persons with Disabilities (UNCRPD).

Government Initiatives for Mental Health Support

- The Indian government has implemented several initiatives aimed at improving access to mental health care. The **National Mental Health Programme** and **Health and Wellness Centres** focus on delivering primary-level care. The **National Tele Mental Health Programme (Tele MANAS)** offers 24/7 free mental health support through a toll-free helpline in multiple Indian languages.
- The **District Mental Health Programme (DMHP)**, a component of the National Mental Health Programme, provides decentralized and community-based mental health services. In addition, the country has established de-addiction centres and rehabilitation services to support recovery and long-term treatment.

Challenges to Expanding Mental Health Care in India

- Despite these efforts, India faces considerable challenges in delivering comprehensive mental health care.
- One major issue is the **limited infrastructure and custodial approach** to care. India's few mental health institutions are insufficient, and there is an urgent need to expand psychiatric services into general and tertiary hospitals, with multidisciplinary teams delivering care. Experts advocate moving from custodial care models to therapeutic approaches, with larger hospitals also functioning as training centres for future mental health professionals.
- **Underfunding and Poor Conditions** in psychiatric hospitals further hinder service delivery. Many facilities suffer from neglect and substandard living conditions due to inadequate financial resources.
- The **scarcity of trained mental health professionals** is another pressing concern. India faces a critical shortage of psychiatrists, psychologists, psychiatric nurses, and social workers. Rural and interior regions are particularly affected, with families often

unable to access professionals or necessary medications due to geographical and financial constraints.
- Economic barriers further limit access to care. For many families, the cost of treatment — including travel expenses and lost wages — is unaffordable. With an estimated 30 million Indians suffering from severe mental illnesses, the economic burden is compounded when patients become financially dependent on caregivers.

The Need for a Robust Chain of Care

Effective mental health care in India requires a continuous and reliable system of treatment, including uninterrupted access to medication and institutional support. Building a resilient, inclusive, and well-resourced chain of care across both urban and rural areas is vital for addressing India's growing mental health needs.

Guidelines for Co-location of Anganwadi Centres (AWCs) with Schools

Context:

The Ministry of Education, in collaboration with the Ministry of Women & Child Development, has issued guidelines for the co-location of Anganwadi Centres (AWCs) with schools. This aligns with the vision of the National Education Policy (NEP) 2020, which highlights Early Childhood Care and Education (ECCE) as the foundational stage in a child's learning journey.

Objectives of Co-location:

The co-location strategy is designed to prepare children for formal schooling and ensure a smooth transition from AWCs to Grade 1. It enables better use of existing infrastructure, strengthens collaboration between the education and nutrition sectors, and enhances learning and developmental outcomes.

Current Scenario:

Out of more than 14 lakh AWCs and 9.16 lakh schools with Grade 1, approximately 2.9 lakh AWCs are already co-located with schools.

Key Recommendations:

In urban areas, the distance between co-located schools and AWCs should not exceed 500 meters, while in rural areas the limit is set at 1 kilometer. Priority should be given to co-locating AWCs serving children from marginalized backgrounds, such as economically weaker sections, tribal communities, and migrant families. Preference should be given to schools with Grade 1 that do not yet have a *Balvatika* (pre-primary class). Co-located AWCs should also feature separate entry and exit points for safety and accessibility.

ECCE Initiatives:

- Anganwadi services are delivered under *Mission Saksham Anganwadi and Poshan 2.0*, offering six core services: Supplementary Nutrition, Pre-school Non-formal Education, Nutrition and Health Education, Immunization, Health Check-ups, and Referral Services.
- The *Samagra Shiksha* framework has made specific budgetary provisions to establish pre-school education facilities in government schools and to enhance the quality of AWCs situated within school premises.

Niveshak Didi Initiative

- The Investor Education and Protection Fund Authority (IEPFA) has recently inaugurated Phase II of its flagship financial literacy initiative, *Niveshak Didi*, in Hyderabad.
- The objective of *Niveshak Didi* is to enhance financial awareness and empower rural populations, with a special focus on women. The initiative operates on a "women for women" approach, recognizing that rural women are more comfortable engaging with female educators when discussing financial matters.
- Launched by the Ministry of Corporate Affairs through IEPFA, the initiative plays a crucial role in addressing knowledge gaps and fostering financial confidence at the grassroots level.
- The IEPFA was established in 2016 under the Companies Act, 2013. It is responsible for managing the Investor Education and Protection Fund, promoting financial literacy, and facilitating the return of unclaimed shares, dividends, and matured financial instruments.
- In addition to *Niveshak Didi*, IEPFA undertakes various outreach programmes, including *Niveshak Panchayat* and *Niveshak Shivir*, all aimed at equipping individuals with the knowledge required to make informed financial decisions and protect their investments.

Understanding PVTGs in India: Importance in Census, Demographic Insights, and Policy Challenges

The **Ministry of Tribal Affairs (MoTA)** has formally urged the **Registrar General and Census Commissioner of India (RGI)** to ensure the **separate enumeration of Particularly Vulnerable Tribal Groups (PVTGs)** in the upcoming Census. The ministry has recommended that detailed information be collected at the level of **households and individuals**, along with documentation of the **demographic, cultural, and socio-economic characteristics** unique to these groups. Such targeted data collection is expected to significantly enhance the planning and execution of welfare schemes such as the **Pradhan Mantri Janjati Adivasi Nyay Maha Abhiyan (PM JANMAN)**, which focuses specifically on uplifting PVTG communities.

Who Are PVTGs? Historical Background and Classification

- PVTGs are a specific sub-group within the broader category of **Scheduled Tribes (STs)**. They are distinguished by certain critical characteristics, including **stagnant or declining population trends**, **geographical isolation**, **pre-agrarian subsistence practices**, **economic backwardness**, and **extremely low literacy levels**. The classification was born out of the **Dhebar Commission (1960–61)**, which highlighted the internal disparities within tribal communities and recommended special attention to those who were demonstrably more vulnerable.
- The initial identification of PVTGs—then termed **Primitive Tribal Groups**—was carried out during the **Fifth Five-Year Plan (1974–79)**, with 52 groups being included. An additional 23 groups were added in **2006**, bringing the total to **75 recognised PVTGs** across **18 states and the Andaman & Nicobar Islands**. However, concerns have been raised by scholars and policy experts regarding the **criteria used for inclusion**, especially the heavy reliance on geographical isolation. These experts argue that the parameters should be **re-evaluated and updated**, especially in light of the planned enumeration, to ensure that current realities—whether improved or deteriorated—are accurately reflected.

The Absence of Separate Census Enumeration for PVTGs

- To date, **no Census has ever recorded PVTGs separately**. As these groups are officially considered a subset of Scheduled Tribes, they are generally enumerated under the broader ST category. This practice has led to significant **data invisibility**. Many PVTGs are not individually named in Census records but are grouped under collective or umbrella terms, making it difficult to extract specific insights about them.
- According to the Ministry of Tribal Affairs, **40 of the 75 PVTGs** appear as a **single entry** in the Scheduled Tribes list notified under **Article 342 of the Constitution**. This further complicates efforts at targeted enumeration. For instance, in the **2011 Census**, while the **Baigas of Madhya Pradesh** were counted as a distinct group, others like the **Abujh Marias, Bharias, Hill Korbas**, and **Kamars** were not recorded separately. Subsequent developments, such as the **2013 legislation** adding **Abujh Maria and Hill Korba** to **Chhattisgarh's ST list**, have attempted to correct some of these omissions.
- The RGI has historically published data only for major Scheduled Tribe groups, automatically including sub-groups and synonyms without differentiation. This approach has, until now, hindered the **focused collection of data** specific to PVTGs.

Estimated Population and Distribution of PVTGs

- In **November 2023**, the Indian government launched the **₹24,104 crore PM JANMAN scheme**, aimed at improving **health, education, livelihoods, and infrastructure** in **over 200 districts** inhabited by PVTGs. As part of the preparatory work for this initiative, MoTA and various state governments conducted **habitation-level surveys**, estimating the total PVTG population at approximately **47.5 lakh**.
- **Madhya Pradesh** emerged as the state with the **highest estimated PVTG population**, numbering **13.22 lakh**, followed by **Maharashtra** with **6.7 lakh**, and **Andhra Pradesh** with **5.18 lakh**.

The **2011 Census**, though lacking comprehensive separate enumeration, showed that certain PVTG communities had **populations of fewer than 1,000 individuals**. These included:

- **Jarawas, Onges, Sentinelese**, and **Shompens** from the Andaman and Nicobar Islands
- **Raji** from Uttarakhand
- **Kota** from Tamil Nadu
- **Birhor** from Odisha
- **Kamar** from Madhya Pradesh
- Several **small tribal groups in Bihar**

The **Sentinelese**, known for their isolation, were recorded as the smallest group with only **15 individuals**, while the **Baiga community of Madhya Pradesh** was the largest among PVTGs, numbering **4,14,526**.

Need for Accurate Enumeration and Policy Implications

- Government officials and tribal welfare experts have stressed that **separate and accurate enumeration** of PVTGs is not merely a statistical exercise but a necessary step for **closing welfare gaps**, particularly in critical areas such as **healthcare and education**. Accurate data will enable better **targeting of interventions**, **efficient resource allocation**, and more **context-sensitive policymaking**.
- Additionally, this exercise offers an opportunity to **review the existing criteria** for PVTG classification, which many argue have become outdated. A revised framework could help determine which groups still meet the criteria and whether others need to be added or removed based on present-day challenges and development indicators.

Ageing and Health Burden in India

Context

The *India Ageing Report 2023* highlights the growing healthcare challenges faced by India's senior citizens. Amid rising non-communicable diseases (NCDs), poor insurance coverage, and inadequate financial preparedness, the elderly population is increasingly vulnerable to both health-related and economic distress.

Background

India's demographic landscape is undergoing a major transformation, with the elderly population (aged 60 and above) reaching approximately 149 million in 2022. Projections suggest this number will rise to 347 million—about 20.8% of the total population—by 2050. This shift brings a "double burden" on the elderly:

- **Health Burden**: The elderly commonly suffer from multiple comorbidities, including diabetes, hypertension, cardiovascular conditions, arthritis, and stroke.
- **Financial Burden**: With advancing age comes reduced income, increased dependency, and insufficient social security, leading to heightened financial stress.

Out-of-pocket expenditure (OOPE) on healthcare remains a major concern, accounting for nearly 48% of total health spending (National Health Accounts, 2021–22). This often results in distress financing, pushing elderly households into debt.

Major Health Challenges Faced by the Elderly

The ageing population in India contends with complex and long-term health issues that strain both personal and systemic resources:

- **Out-Patient Care**: Seniors frequently require care for chronic pain, fever, hypertension, diabetes, and respiratory or cardiac issues—highlighting the increasing burden of NCDs.
- **In-Patient Care**: Hospitalisation becomes necessary in cases of heart disease, strokes, diabetic complications, infections, and surgeries. This not only increases physical suffering but also contributes to escalating costs.
- **Recovery and Rehabilitation**: Prolonged hospital stays, the need for intensive care, repeated infections, and poor medication adherence—often due to cost—make recovery prolonged and difficult.

Insurance Coverage: Current Status and Limitations

While various health insurance schemes exist, a significant portion of the elderly population remains uninsured or inadequately covered.

- Public schemes such as **PM-JAY**, **CMCHIS** (in Tamil Nadu), **CGHS**, and **ESIC**, along with private health insurance options, offer partial support.
- However, only about **20% of elderly individuals are covered** under any form of health insurance, with men and urban residents enjoying greater access than women and rural counterparts.

- Barriers to insurance uptake include **low awareness (52.9%)**, **high premiums**, and **complex enrolment processes**.
- Furthermore, essential services like **palliative care**, **physiotherapy**, **rehabilitation**, and **home oxygen support** are often excluded, leading to continued OOPE.

Why Healthcare Costs Rise with Age

The financial strain of healthcare grows exponentially as people age, due to several compounding factors:

- Chronic NCDs require lifelong treatment, monitoring, and medication, adding to cumulative costs over time.
- Elderly patients often require ICU admissions and ventilatory support due to multiple comorbidities, increasing the cost of critical care.
- Private health insurance premiums surge with age, and reimbursements are generally partial—averaging only about 75% of actual costs.
- Post-treatment expenses such as physiotherapy, rehabilitation, and home care are typically not covered by insurance and remain costly.
- End-of-life care lacks any structured national policy, leaving families to bear the full economic burden of terminal or palliative care.

Government Initiatives

In response to these challenges, several initiatives have been introduced at both central and state levels:

- **PM-JAY Expansion (2024)**: Universal health coverage extended to all citizens aged 70 and above, regardless of income.
- **State-Level Integration**: States like Tamil Nadu have aligned their local schemes (e.g., CMCHIS) with PM-JAY to expand coverage and access.
- **National Programme for Health Care of the Elderly (NPHCE)**: Focuses on establishing geriatric clinics and regional centres tailored to the healthcare needs of the elderly.
- **Health Insurance Reforms**: Simplified enrolment processes and broader coverage under public schemes aim to increase participation among senior citizens.
- **Strengthening Public Infrastructure**: Kerala and Tamil Nadu have led efforts to enhance public geriatric healthcare facilities, setting models for other states.

Persistent Challenges

Despite these efforts, several systemic gaps remain:

- **High OOPE** continues to devastate elderly households, particularly those without a stable income source.
- The **rural–urban divide** leaves rural elderly at a disadvantage, as urban counterparts have better access to private healthcare and insurance schemes.
- **Insurance remains inaccessible** to many due to high premiums, service exclusions, and low awareness, especially among rural and female populations.
- India faces an acute **shortage of geriatric specialists**, with only around 6,000 trained professionals available—far too few to serve a rapidly growing ageing population.
- **Preventive and palliative care** are underdeveloped and underfunded, leaving elderly individuals vulnerable to avoidable suffering.
- **Gender disparities** are pronounced, with elderly women far less likely to be insured or financially secure, increasing their health and social vulnerability.

Way Forward

Addressing India's ageing health crisis demands coordinated, inclusive, and long-term reforms.

Financial Protection

- Expand Ayushman Bharat to include **palliative**, **rehabilitative**, and **home-based care** services.
- Introduce **regulations to cap private insurance premiums** for the elderly.
- Promote **incentivised health savings** from middle age through mechanisms such as **tax deductions** and **health bonds**.

Improving Accessibility

- Enhance the capacity of public hospitals for **geriatric care**, building on successful models from Tamil Nadu and Kerala.
- Expand **rural healthcare outreach** through Health & Wellness Centres under Ayushman Bharat.

Preventive Health Measures

- Introduce a **national vaccination policy** targeting elderly-specific diseases like influenza, pneumonia, and shingles.
- Strengthen early screening for chronic diseases such as diabetes, hypertension, and cancers at **Primary Health Centres (PHCs)**.

Awareness and Literacy

- Launch **nationwide awareness campaigns** focusing on health insurance literacy for senior citizens.
- Simplify enrolment systems and deploy **mobile enrolment units** to reach rural and remote elderly populations.

Strengthening Human Resources

- Establish **geriatric departments** in all government and private medical colleges to train the next generation of specialists.
- Equip **ASHA workers** and **primary health personnel** with specialised training in elderly care.

Conclusion

India is steadily transitioning into an ageing society, making the health and wellbeing of its elderly population a critical pillar of inclusive development. The *India Ageing Report 2023* calls for urgent reforms in health financing, infrastructure, and awareness to address the growing burden. Upholding the constitutional promise of equality and dignity, the focus must shift toward ensuring that the elderly live not only longer but also healthier and more secure lives—free from poverty, suffering, and neglect.

Acanthamoeba: An Emerging Public Health Concern in Kerala

The Health Department of Kerala has recently expressed alarm over new findings that reveal Acanthamoeba is far more prevalent in the State's water bodies than previously estimated. This protozoan parasite, typically found in natural environments, is gaining attention due to its ability to cause severe human infections.

Nature and Habitat: Acanthamoeba is a free-living protozoan parasite commonly found in soil and freshwater sources. It has now been identified in an increasing number of household wells, ponds, water storage tanks, and similar environments across Kerala. The organism thrives particularly in waters with high coliform content, especially those contaminated with *E. coli*.

Pathogenicity and Forms: The parasite exists in two biological forms: the active trophozoite stage and the cyst stage, which is dormant and highly resistant. It is considered an opportunistic pathogen that can infect both healthy individuals and those with compromised immunity. It typically gains entry through minor abrasions in the eye, often via contaminated contact lenses, or through open wounds.

Diseases and Symptoms: Acanthamoeba is known to cause two major infections:

- **Acanthamoeba Keratitis** (ocular infection): Characterized by intense eye pain, redness, blurred vision, photophobia, and corneal ulcers.
- **Granulomatous Amoebic Encephalitis (GAE)** (neurological infection): Manifests through headaches, fever, seizures, and neurological deficits, and is often fatal if not treated promptly.

Treatment and Prevention: Keratitis requires early diagnosis and is treated using antimicrobial eye drops, particularly biguanides and diamidines. In severe cases, corneal transplantation may be necessary. Encephalitis, on the other hand, remains difficult to treat and typically involves a combination of antifungals, antibiotics, and supportive care—though survival rates remain low. Preventive measures include proper chlorination of wells, maintaining safe water hygiene practices, and ensuring strict contact lens hygiene.

Notifiable Diseases: Monitoring Cancer in India

- A prominent oncologist based in New York has welcomed the recent recommendation made by an Indian parliamentary committee to declare **cancer** as a **notifiable disease**, a move that could significantly improve national disease surveillance and response.
- A notifiable disease is one which, by law, must be reported to public health authorities. Such reporting ensures the timely monitoring of individual cases and enables early detection of potential outbreaks. Making a disease notifiable typically implies that consistent and up-to-date information is required for effective prevention and control.
- Several criteria can influence whether a disease is classified as notifiable. These

include the disease's alignment with national or international public health concerns, its incidence rate at national or subnational levels, its potential for severe outcomes or rapid mortality, ease of transmission, risk of international spread, socioeconomic impact, ability to be prevented, and any changing patterns in prevalence.

- Diseases considered major public health threats are typically included on a notifiable list, which varies not only between countries but also within them, depending on regional urban-rural dynamics and specific state-level needs.
- In India, both medical professionals and diagnostic laboratories are legally obliged to report cases of notifiable diseases to local health departments. The state governments determine which diseases are to be reported to the medical officer in each area. This list, maintained by governmental and regional health bodies, is flexible and may be revised as necessary to include emerging health concerns or remove less relevant conditions.
- Some of the diseases currently on India's notifiable list include cholera, tuberculosis, HIV/AIDS, dengue, hepatitis, leprosy, meningitis, plague, and measles. The **World Health Organization's International Health Regulations (1969)** also require countries to report specific diseases for global monitoring and international advisories.

CoWIN Portal: Technical Glitch Halts Access to Vaccination Records

- Since early August 2025, the **CoWIN** portal—India's primary digital platform for managing COVID-19 vaccination—has remained inaccessible, leaving users unable to download vaccination certificates or verify immunization records.
- Launched in January 2021 by the **Union Ministry of Health and Family Welfare**, CoWIN, or the COVID Vaccine Intelligence Network, was introduced to streamline the national vaccination effort. It functions as an integrated platform for scheduling appointments, tracking vaccination progress, managing vaccine logistics, and issuing digital certificates. It plays a critical role from the highest administrative level down to individual vaccinators.
- The portal comprises five key modules: orchestration for overall program management, cold-chain logistics to monitor vaccine storage and distribution, citizen registration for self or group entries, session management for vaccinators, and a feedback/reporting module for certificates and adverse events. CoWIN is accessible through its website, the Aarogya Setu app, UMANG, and DigiLocker.
- It supports multiple authentication methods, including OTP-based, biometric, and demographic verification. The system allows real-time tracking of vaccine coverage, wastage, and beneficiary data at national, state, district, and sub-district levels.
- CoWIN played a vital role in the administration of over 2 billion vaccine doses, offering verifiable proof of immunization that served not only public health but also travel and employment needs. Its success led to international recognition and digital export as a model for other countries.

Mpox (Monkeypox): End of Global Emergency, Not the End of Risk

- The World Health Organization (WHO) recently declared that **Mpox**—formerly known as monkeypox—is no longer a **Public Health Emergency of International Concern (PHEIC)**, following a steady decline in global case numbers and fatalities.
- Mpox is a viral **zoonotic** disease caused by the **monkeypox virus (MPXV)**, which belongs to the Orthopoxvirus genus of the Poxviridae family. This group also includes the viruses responsible for smallpox, cowpox, and vaccinia. First identified in laboratory monkeys in Denmark in 1958, the first human case was recorded in 1970 in the Democratic Republic of Congo. Though the precise natural reservoir is unknown, it is believed that small mammals such as squirrels, rodents, and monkeys are likely hosts.
- Transmission of the disease typically occurs from animals to humans through bites, scratches, hunting, or consumption of infected meat. It is endemic in Central and West Africa, with periodic outbreaks reported globally. Human-to-human transmission primarily occurs via close skin contact, respiratory droplets, or sexual contact, and also through

shared items such as bedding or clothing. Pregnant women may transmit the virus to their unborn child.

- After an incubation period of 5 to 21 days, symptoms begin with fever, headaches, muscle and back pain, fatigue, and swollen lymph nodes. A distinctive rash then develops, often beginning on the face or genital area and spreading to other parts of the body, including the palms and soles. Lesions evolve through stages from flat spots to blisters and eventually scabs. Vulnerable groups such as children, pregnant women, and immunocompromised individuals, especially those with HIV, are at greater risk of severe illness.

There is no specific antiviral treatment for mpox; supportive care remains the cornerstone of management. This includes adequate hydration, nutritional support, pain relief, skin care, and infection control to prevent complications.

Apatani Tribe: Tradition, Identity, and Ecological Harmony in Arunachal Pradesh

- The Apatani people, also referred to as Tanw or Apa Tani, are an indigenous tribal group residing in the Ziro Valley of Arunachal Pradesh. Known for their distinct cultural practices, the Apatani women, particularly the older generation, are recognised for their facial tattoos and wooden nose plugs—a tradition that has now been banned since the 1970s but remains emblematic of their identity.
- The tribe speaks the Tani language and follows an indigenous belief system centred around the worship of the Sun and Moon. Their cultural calendar is rich with festivals such as Dree, celebrated for agricultural abundance and human prosperity, and Myoko, which fosters community bonding and friendship.
- Historically, the tattooing of girls—known as *Tippei*—was performed by elder women when the girls were around ten years old, while the wooden nose plugs, or *Yaping Hullo*, served as protective adornments against abduction. These cultural markers have become symbolic of the tribe's resilience and heritage.
- In agriculture, the Apatanis are pioneers of integrated rice-fish farming on mountain terraces. Since the 1960s, they have cultivated rice varieties such as Emeo, Pyape, and Mypia in ecologically sustainable ways. This traditional knowledge demonstrates their harmonious coexistence with nature and highlights their contribution to agroecological practices in the region.

Indian Healthcare League: Where Sports Meet Social Advocacy

- The Indian Healthcare League (IHL), an innovative wellness initiative recently launched by renowned cricketer Cheteshwar Pujara, combines sport with public health awareness, bringing doctors onto the cricket field to champion cancer prevention.
- Inspired by the format of the Indian Premier League (IPL), the IHL brings together healthcare professionals from prestigious institutions such as AIIMS, Fortis, and Max Hospitals. Teams representing six regional franchises—Delhi, Gujarat, Rajasthan, Maharashtra, Haryana, and Uttar Pradesh—compete in cricket matches, creating a unique platform for advocacy through sport.
- The primary objective of the IHL is to spread awareness about cancer across India. In parallel, the league seeks to promote mental well-being and physical fitness among medical professionals who often work in high-stress environments. The initiative also aims to build a sense of camaraderie and teamwork among healthcare workers, helping them find a better balance between professional responsibilities and personal wellness.
- The significance of the IHL lies in its ability to link preventive healthcare with sport, using cricket—the nation's most beloved game—as a vehicle for social messaging. It highlights the importance of doctors prioritizing their own health and aims to reduce burnout within the profession. By positioning healthcare as a community-driven movement, the IHL enhances the visibility of medical issues and encourages public participation in health-oriented dialogues.

Adaptive Learning in Andhra Pradesh Demonstrates Remarkable Academic Gains

The state of Andhra Pradesh has recently gained national attention for its pioneering use of technology in education, particularly through its implementation of the Personalised Adaptive Learning (PAL) programme. This initiative, developed in collaboration with ConveGenius AI, has been validated by a rigorous evaluation led by Nobel laureate Michael Kremer, which revealed substantial improvements in students' mathematics learning outcomes.

Introduction

India's education sector has increasingly embraced digital innovation to address systemic learning gaps, especially in government schools. Among these efforts, the Personalised Adaptive Learning (PAL) model has emerged as a leading intervention, offering tailored educational content that adapts to each student's unique learning level. Andhra Pradesh stands out as a frontrunner in deploying this approach at scale. The latest independent evaluation of PAL, conducted through a large-scale study involving thousands of students, affirms its potential to transform foundational learning outcomes, particularly in mathematics.

Understanding Personalised Adaptive Learning

Personalised Adaptive Learning represents a significant shift from traditional classroom instruction. Through smart software, the system continuously monitors a student's performance and dynamically adjusts the learning content and difficulty level. This ensures that every student receives instruction suited to their learning pace—providing remedial support for struggling learners and advanced content for those ahead.

Key features of the PAL system include gamified content designed to maintain student engagement, real-time assessments that adapt to individual progress, the use of tablets and laptops for content delivery, and a focus on mastering concepts rather than rote memorisation. The Andhra Pradesh government introduced PAL in government schools to address foundational numeracy challenges and improve overall mathematics achievement among students, particularly in underserved communities.

The Andhra Pradesh Implementation

The state began rolling out PAL in 2018, initially piloting the programme in a limited number of schools before expanding it to 500 institutions. To rigorously assess its impact, a Randomised Control Trial (RCT) was carried out between 2023 and 2025. This study involved 120 government schools and approximately 6,800 students from Grades 6 to 9.

Within the study, 30 schools were designated as the treatment group and equipped with PAL labs containing 30 tablets, while another 30 schools served as the control group without access to PAL. The intervention period lasted for 17 months, during which students in the treatment group engaged with the PAL software for an average of 35.3 hours. Each school provided two math sessions per week, each lasting 40 minutes, using the PAL system in dedicated digital learning labs.

Key Results from the Evaluation

- The findings from the Nobel laureate-led study highlight the powerful impact of PAL on learning outcomes:
- Students exposed to PAL showed learning gains equivalent to 1.9 additional years of schooling when compared to peers in the control group. The rate of learning in the PAL group was nearly double that of those not using the system. The most pronounced gains were observed in younger students (Grades 6 and 7), likely due to their increased access to devices and greater flexibility in adapting to digital tools.
- A noteworthy gender dynamic emerged, with girls benefiting more than boys from the intervention—primarily attributed to higher usage rates among female students. From a cost perspective, the PAL programme proved highly efficient, with an estimated annual per-student cost of just $20 to $25. The credibility of these findings is bolstered by the fact that the evaluation included independent assessments of math proficiency, ensuring objectivity and transparency.

Wider Implications for India's Education System

- The success of the Andhra Pradesh PAL experiment is being recognized as a model for technology-led education reform in India. Although scaling the programme across the state's 45,000 government schools presents logistical challenges, the potential impact is enormous. The model

offers a feasible path to address persistent issues such as low math and reading scores reported in the Annual Status of Education Report (ASER), and meets the rising demand for EdTech solutions that complement existing classroom instruction.

- Moreover, the affordability and scalability of PAL make it particularly appealing for policymakers seeking cost-effective strategies to enhance the quality of public education. Its data-driven, adaptive structure positions it as a robust tool to support differentiated instruction in classrooms that often lack individualised attention.

Looking Ahead

- The Andhra Pradesh government has already announced its intention to expand the PAL initiative to 1,224 additional schools, including PM-SHRI schools and residential institutions. If this phase proves as successful as the initial rollout, PAL could set a precedent for national-level adoption. Experts suggest that, when integrated with teacher training programmes and infrastructure upgrades, PAL can significantly enhance learning outcomes and equip students with critical thinking and problem-solving skills essential for the 21st century.
- In sum, Andhra Pradesh's innovative use of Personalised Adaptive Learning not only marks a major step forward in educational equity but also presents a replicable model that could redefine digital learning across India.

Loneliness and India's Working Young: An Emerging Urban Crisis

A recent column has drawn attention to what it terms the greatest "corporate disease" affecting India's young working population, particularly those aged between 25 and 35 years. This phenomenon, increasingly visible in the country's rapidly urbanising centres, reflects how urban migration, coupled with a work–party lifestyle, is eroding the depth and authenticity of personal relationships. Beneath the surface of professional success and bustling social scenes lies a growing crisis of loneliness among India's working youth.

Understanding Loneliness Among Urban Youth

- Loneliness, in this context, is not simply a lack of company, but a condition marked by emotional detachment and social isolation—even while being constantly surrounded by people in offices, co-living spaces, or cafes. It is becoming especially prevalent in fast-growing metropolitan cities such as Bengaluru, Gurugram, Pune, Hyderabad, and Chennai. These hubs of employment and aspiration are also becoming epicentres of emotional disconnection.
- A recent survey conducted across 14 firms reveals that 56% of respondents openly admitted to experiencing loneliness, while another 23% reported feeling lonely but were reluctant to admit it publicly. Only 21% claimed not to feel lonely at all. The gender divide is particularly stark—64% of women reported feeling lonely compared to 36% of men. Interestingly, men were found to be more active on dating apps (19%) than women (4%), suggesting different coping mechanisms for isolation. The problem is most acute among urban migrants in the 25–35 age bracket, who often find themselves cut off from their roots and social support systems.

Root Causes of the Loneliness Epidemic

- The causes of this emotional malaise are complex and interlinked. Urban migration plays a central role: young professionals often move away from their hometowns, families, and cultural environments in pursuit of better career prospects. In doing so, they are uprooted from familiar social ties and find themselves navigating unfamiliar cities alone.
- The dominant work–sleep–party cycle prevalent in many urban settings further compounds the problem. Long working hours, weekend recovery routines, and late-night socialising often substitute for meaningful interactions, leaving little room for emotional depth. At the same time, traditional social bonds—whether through extended family, neighbourhood ties, or local community groups—are steadily weakening in big cities.
- Technology has provided temporary and often superficial solutions. Dating apps,

speed-dating events, and social mixers offer quick companionship, but they rarely lead to lasting relationships. In many cases, they function more as distractions than solutions. A growing culture of individualism and relentless pursuit of personal ambition has led many young people to prioritise income, status, and self-image over sustained social connections.

Consequences of Loneliness on Individuals and Society

- The emotional and psychological toll of loneliness is profound. Mental health issues such as anxiety, depression, and chronic emotional emptiness are on the rise among young urban professionals. Without strong personal bonds, many lack the emotional resilience to cope with the high-pressure environments of modern workplaces.
- Socially, the consequences are equally concerning. As more individuals withdraw from community engagement, there is a noticeable weakening of social capital. Trust, cooperation, and neighbourhood solidarity—once the fabric of Indian community life—are diminishing in urban settings. This detachment not only reduces the quality of life but also erodes the foundations of civic engagement.
- Family formation is another area affected by this growing isolation. Many young professionals delay marriage and parenthood simply because they are unable to form meaningful romantic relationships. This has larger demographic and cultural implications, potentially disrupting the balance of kinship networks and traditional family structures. Interestingly, the instability of self-made relationships is pushing some back towards arranged marriages, where families and kinship networks once again play a central role in matchmaking and long-term commitment.
- Workplace productivity is also under strain. Loneliness contributes to burnout, increased absenteeism, and high attrition rates. The absence of camaraderie among colleagues undermines collaboration, creativity, and the overall efficiency of organisations. In a work culture that often prizes competition over community, this is becoming an unsustainable model.

A Way Forward: Rebuilding Connection in a Disconnected Age

- Addressing loneliness among India's working youth requires a multi-pronged approach that combines sociological, cultural, technological, and policy-based interventions. Reinvigorating local community networks through neighbourhood associations and urban collectives can create spaces for organic social interaction. Within workplaces, human resources policies need to evolve to include initiatives that foster social bonding, promote mental health awareness, and ensure a better work–life balance.
- On the digital front, there is a growing need to moderate the overdependence on dating apps and instead encourage platforms that enable meaningful connections. Technology should be a facilitator, not a substitute, for human relationships. Simultaneously, re-emphasising cultural practices—such as celebrating festivals, participating in shared rituals, or joining ethnic and regional associations—can help preserve a sense of collective identity and belonging.
- From a policy standpoint, urban planning must prioritise recreational spaces, community centres, and youth clubs. Migrant support systems, mentorship programmes, and accessible mental health services are essential to create an inclusive and emotionally supportive urban environment.

Conclusion

Loneliness among India's working youth is not a private affliction but a broader sociological issue, deeply rooted in the dynamics of urbanisation, migration, and the evolving nature of work and relationships. To combat it, there must be a conscious effort to restore the social fabric—through community, culture, and connection. Only by balancing the aspirations of modern life with the enduring need for meaningful relationships can India ensure the holistic well-being of its

young workforce. In doing so, the country not only nurtures its youth but also safeguards the emotional health of its future.

Reimagining the Domestic Sphere in India: A Public Issue of Justice, Equality, and Recognition

Recent national debates on gender roles, dowry-related deaths, domestic violence, and the persistent undervaluation of women's unpaid labour have brought renewed focus to the domestic sphere in India. Far from being a private, apolitical space, the domestic realm is deeply entwined with structural inequalities and systemic neglect—raising pressing questions about rights, recognition, and reforms.

Contemporary Realities of India's Domestic Sphere

- Violence, inequality, and the invisibility of labour continue to shape the domestic experience for millions of Indian women. The National Family Health Survey (NFHS-5) reports that 30% of women experience intimate partner violence, yet only 14% lodge formal complaints—highlighting the silence, stigma, and barriers to justice that surround domestic abuse. Moreover, nearly 7,000 dowry-related deaths each year between 2017 and 2022 serve as grim evidence of enduring structural violence against women within households.
- The findings from the 2024 Time Use Survey further underscore the gendered division of domestic labour. While 93% of women report spending nearly seven hours daily on unpaid household services, and 41% devote an additional two-and-a-half hours to caregiving duties, men contribute only an average of 26 minutes to domestic tasks and 16 minutes to caregiving. This stark disparity reveals the disproportionate and often invisible workload carried by women within families.
- In economic terms, this unpaid labour constitutes a massive, unrecognised contribution. The State Bank of India (SBI), in its 2023 report, estimated that if monetised, women's domestic work would account for nearly 7% of India's GDP—approximately ₹22.5 lakh crore. Despite this, women working in critical community-facing roles such as Anganwadi workers, ASHA health workers, and those involved in mid-day meal schemes remain labelled as "volunteers," lacking formal recognition, employment benefits, or adequate compensation.

Ethical and Constitutional Dimensions

- The systemic neglect of women's rights within the domestic sphere represents a direct contradiction of constitutional values. Article 14, which guarantees equality before the law, and Article 15, which prohibits discrimination on the basis of sex, are routinely violated in domestic settings where women face unequal treatment, abuse, and legal marginalisation.
- Furthermore, the ongoing debates around marital rape, the lack of accountability for domestic violence, and the systemic undervaluation of unpaid labour challenge Article 21—the right to life with dignity. The vision of a just and humane working environment, enshrined in Directive Principles like Article 39(d) (equal pay for equal work) and Article 42 (just and humane conditions of work), remains largely aspirational.
- The 2nd Administrative Reforms Commission (ARC), in its report on *Ethics in Governance*, warned that entrenched patriarchy in social institutions is one of the greatest barriers to ethical governance and justice in India. This insight rings especially true when examining the persistent inequalities within the home.

Socio-Economic Implications of the Domestic Sphere

- Beyond ethics and legality, the domestic sphere has deep socio-economic relevance. Unpaid labour performed by women effectively subsidises the broader economy by keeping household and subsistence wages low, thereby increasing profit margins for capital. Caregiving tasks, often performed silently and without recognition, also play a pivotal role in the intergenerational transmission of human capital—shaping childhood

development, health outcomes, and educational attainment.

- However, when violence and inequality permeate domestic life, their effects ripple outward, corroding trust within communities, reducing social cohesion, and weakening democratic participation. The home, therefore, is not insulated from public life—it is foundational to the functioning of society and economy alike.

Persistent Challenges

- A set of interrelated structural, cultural, and institutional challenges hinder progress in reimagining the domestic sphere. Patriarchal cultural norms continue to glorify women's sacrifices and socialise them into "adjustment" within marriage, reinforcing their secondary status. Meanwhile, policy inertia on key issues—such as criminalising marital rape or fully implementing domestic violence protections—signals a resistance to addressing deep-rooted gender injustice.
- The economic undervaluation of care work also persists, as informalisation and lack of formal recognition push caregiving roles to the margins of labour policies. The gendered division of labour within households cuts across class and caste lines, creating a universal yet differentiated burden on women. Moreover, institutional silence—whether in terms of political will or systemic redressal mechanisms—continues to deprive women of both protection and recognition in their own homes.

Charting a Way Forward

To address the entrenched inequalities within the domestic sphere, India must embark on a comprehensive reform agenda encompassing legal, economic, cultural, and policy dimensions. Legal reforms must begin with the criminalisation of marital rape and robust implementation of the Domestic Violence Act. Equally vital is the formal recognition of community-based workers such as Anganwadi, ASHA, and mid-day meal workers through fixed wages, benefits, and employment rights.

- From an economic perspective, India needs to explore mechanisms to account for unpaid domestic work in national income accounting. Social security and pension schemes for full-time caregivers must be introduced to acknowledge their lifelong contributions.
- Cultural transformation is essential to challenge deep-seated gender roles. Campaigns promoting shared domestic responsibilities between men and women must be encouraged, while school curricula should include modules on gender equality and social responsibility from an early age.
- Policy interventions should also prioritise the expansion of universal childcare and eldercare infrastructure, alongside the provision of both maternity and paternity benefits—measures that will help redistribute the burden of care. Time Use Surveys must be conducted regularly to provide data-driven insights for gender-responsive policy-making and track shifts in domestic labour patterns.

Conclusion

The domestic sphere in India is not merely a private concern—it is a public, political, and socio-economic issue that affects millions of lives, particularly those of women. Addressing it is integral to India's constitutional promise of justice, equality, and dignity for all. Recognising the value of unpaid labour, enforcing protections against domestic violence, and encouraging a more equitable distribution of responsibilities are vital steps towards realising a "nari-shakti-led" democracy. Only by confronting the invisibility and inequality rooted within the home can India build a society that upholds constitutional morality and fosters true social justice.

UNICEF's Child Nutrition Report 2025: Global Surge in Childhood Obesity and Unhealthy Diets

- UNICEF's *Child Nutrition Report 2025* raises alarm over a global spike in unhealthy dietary patterns and rising childhood obesity, driven predominantly by the widespread availability and aggressive marketing of ultra-processed foods (UPFs) and sugary beverages. The report underlines that these trends are shaping the health outcomes of children worldwide, and pose a significant threat to public health and future generations.

- According to the findings, childhood overweight and obesity have seen dramatic increases since the year 2000. Currently, 5% of children under the age of five, and 20% of those aged between 5 and 19, are classified as overweight. Among school-aged children and adolescents in 2025, the prevalence of obesity stood at 9.4%, slightly exceeding the prevalence of underweight, which was 9.2%. These figures highlight a dual burden of malnutrition, where both overnutrition and undernutrition coexist, reflecting deep structural issues in global food systems and public health responses.
- The report identifies a regional concentration of the crisis, with more than half of all overweight or obese children residing in just three regions: East Asia and the Pacific, Latin America and the Caribbean, and South Asia. In South Asia alone, the prevalence of overweight among individuals aged 5–19 has increased nearly fivefold since 2000, underscoring the rapid pace of change and the urgency of intervention.
- Several key drivers are contributing to this troubling trend. Ultra-processed foods, often cheaper than fresh and nutritious alternatives, have become increasingly accessible, particularly for low-income households. This affordability is largely a result of agricultural subsidies for staple ingredients such as corn, soy, and wheat, combined with the long shelf-lives of such products, making them more convenient and economically viable for many families.
- Compounding the issue is aggressive and largely unregulated marketing. Digital platforms have enabled targeted advertisements that frequently bypass traditional regulatory scrutiny. Surrogate marketing through social media influencers has blurred the line between content and advertisement, often exploiting children's impressionability to promote unhealthy choices.
- The report also points to significant policy gaps. Only 7% of countries have implemented mandatory front-of-pack nutrition labelling, a critical tool for informed consumer choice. Meanwhile, just 8% have adopted food subsidy programs to make healthy foods more affordable, leaving a vast majority of children vulnerable to unhealthy dietary environments.
- To address this crisis, UNICEF calls for a multi-pronged approach. One of the central recommendations is the protection of breastfeeding, through rigorous enforcement of the International Code of Marketing of Breast-milk Substitutes, especially to regulate digital platforms. The report also stresses the urgent need to transform food environments through legally binding measures. These include restrictions on the sale and marketing of unhealthy foods, introduction of taxes on sugary and ultra-processed products, and implementation of mandatory nutrition labelling.
- Promoting access to nutritious foods is another key priority. UNICEF advocates for the redirection of agricultural subsidies to support the production and distribution of healthy food, along with efforts to strengthen local food systems that can sustain dietary diversity. In addition, the report calls for the reinforcement of social protection systems to ensure that economically disadvantaged families can access nutritious diets. Behavioural and social change communication strategies must also be deployed to build greater public demand for healthy food environments, reinforcing both institutional and cultural support for better child nutrition.

Centre Seeks Clarification on Tribal Rights Issues in Great Nicobar Island Project (GNIP)

- In a separate development, the Indian government has sought a report addressing concerns about tribal rights in connection with the Great Nicobar Island Project (GNIP). These concerns were raised by local Tribal Councils, focusing specifically on the identification and legal recognition of tribal land and habitat rights under the Forest Rights Act (FRA) of 2006.
- The GNIP was granted in-principle forest clearance and environmental approval in

2022, as part of the broader *Holistic Development of Islands Program (HDIP)*. The initiative is spearheaded by NITI Aayog and is being implemented through the Andaman and Nicobar Islands Integrated Development Corporation (ANIIDCO). The project involves the diversion of 130.75 square kilometres of forest land, half of which has been designated for "green development" — meaning it will be left untouched by tree felling or construction.

- Key infrastructure developments under the GNIP include the establishment of an International Container Transshipment Terminal (ICTT) at Galathea Bay, a greenfield international airport, a new township, and a 450 MVA gas and solar-powered energy plant. However, the project has sparked major concerns, particularly with regard to its impact on the indigenous communities and the fragile biodiversity of the region.
- Great Nicobar Island is home to two particularly vulnerable tribal groups (PVTGs) — the Shompens and the Nicobarese. These communities depend on their traditional forest habitats for social, cultural, spiritual, and economic sustenance. Galathea Bay, the focal site of the proposed terminal, is also one of the world's most important nesting grounds for the endangered Leatherback Turtle and the Nicobar Megapode, both listed under Schedule I of India's Wildlife Protection Act, 1972.
- At the heart of the issue is the implementation of the Forest Rights Act, 2006 — officially known as the *Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act*. The legislation was enacted to correct historical injustices suffered by forest-dwelling communities and to recognise both individual and collective rights over forest land. It mandates the recognition of community tenures, encompassing not only residential areas but also traditional territories used for spiritual, economic, social, and religious activities.
- Under the FRA, Forest Rights Committees — especially the District Level Committees — are tasked with verifying and approving claims. However, tribal representatives allege that this legal process has not been fully honoured in the case of GNIP. They argue that the project's development roadmap was approved without adequate consultation with local communities or proper identification and settlement of their customary rights.
- In light of these allegations, the central government has initiated a formal request for a comprehensive report to assess the validity of these claims. The report is expected to review whether the development conforms with the FRA and to what extent tribal rights have been safeguarded in the planning and execution of the GNIP. As the situation develops, it raises broader questions about the balance between economic development and indigenous rights, especially in ecologically and culturally sensitive zones such as Great Nicobar Island.

Himachal Pradesh Declared Fully Literate: Significance, ULLAS Programme, and Literacy Trends in India

Himachal Pradesh has recently been declared a 'fully literate' state, joining the ranks of Goa, Ladakh, Mizoram, and Tripura. However, this designation does not equate to achieving 100% literacy. Instead, it indicates that the state has surpassed the 95% literacy threshold, with Himachal Pradesh specifically recording a literacy rate of 99.3%. While several other states also fall under this category, none have yet attained universal literacy in the absolute sense.

Understanding Literacy and the Concept of 'Full Literacy' in India

According to the Ministry of Education, literacy encompasses the ability to read, write, and perform basic arithmetic with understanding. It also includes functional competencies such as digital and financial literacy. A State or Union Territory is designated 'fully literate' when it achieves a literacy rate of 95% or higher. These definitions were formalized in August 2023 in the context of the ULLAS programme, an adult education initiative introduced in 2022. The broader goal of ULLAS is to drive India towards complete literacy by 2030, aligning with both the

United Nations Sustainable Development Goals (SDGs) and the objectives outlined in India's National Education Policy (NEP) 2020.

The ULLAS Programme: A Nationwide Adult Literacy Drive

Launched in 2022 by the Ministry of Education, ULLAS (Understanding Lifelong Learning for All in Society) is a nationwide initiative aimed at promoting adult literacy. It targets individuals aged 15 and above who missed out on formal education. The programme is designed to impart foundational skills in reading, writing, and numeracy, while also addressing practical capabilities such as digital proficiency and financial literacy. In keeping with the NEP 2020 and the UN's 2030 literacy target, ULLAS seeks to empower adult learners and bridge long-standing educational gaps.

How Literacy is Achieved Through ULLAS

Under the ULLAS framework, learners are provided with foundational education equivalent to a Class 3 level. Instruction covers essential reading, writing, and arithmetic, as well as day-to-day skills such as reading clocks, using calendars, managing money, writing cheques, and conducting secure digital transactions. Educational content is delivered either through a mobile application or offline by trained student volunteers and community educators. Upon completion, participants take the Functional Literacy Numeracy Assessment Test (FLNAT), a 150-mark exam administered in the language of their choice. Those who pass the assessment are officially certified by the National Institute of Open Schooling (NIOS) as having achieved foundational literacy and numeracy.

Becoming a 'Fully Literate' State: The Process

The pathway to attaining the status of 'fully literate' involves first identifying illiterate adults through door-to-door surveys or existing government data. These individuals are then enrolled in the ULLAS programme, where they undergo training and subsequently take the FLNAT. States with already high literacy levels or smaller populations are able to reach the 95% threshold more swiftly. For instance, the 2011 Census revealed that states like Goa, Himachal Pradesh, Mizoram, and Tripura already had literacy rates well above the national average of 74%, making their transition to 'fully literate' status comparatively quicker.

Assessing Literacy in India: Trends and Data

- The definition of literacy in the 2011 Census was the ability to read and write with understanding in any language for individuals aged seven and above. At that time, the overall literacy rate was 80.9% for men and 64.6% for women, with adult literacy (age 15 and above) at 69.3%. Subsequent surveys have charted ongoing progress. According to the National Sample Survey (NSS) 71st round in 2014, adult literacy had reached 71% nationally. Individual state figures were notably higher in Mizoram (96%), Goa (90%), Himachal Pradesh (83%), and Tripura (86%).
- More recently, the Periodic Labour Force Survey (PLFS) 2023–24 estimated a national literacy rate of 77.5%. Mizoram led with 98.2%, followed by Tripura at 93.7%, Goa at 93.6%, and Himachal Pradesh at 88.8%. Despite these gains, a significant proportion—22.3%—of Indians aged 15 and above still remain illiterate. The highest rates of adult illiteracy were recorded in Bihar (33.1%), Andhra Pradesh (31.5%), and Madhya Pradesh (28.9%).
- The declaration of Himachal Pradesh as a 'fully literate' state reflects both the progress and the challenges India faces in its journey toward universal literacy. Through initiatives like ULLAS and consistent monitoring of literacy trends, the country aims to close remaining gaps and ensure that literacy becomes a universal right for all citizens by 2030.

Bonda Tribe: Ancient Indigenous Group in Need of Urgent Support

- The Governor of Odisha has called for the holistic development of **Bondaghati**, the homeland of the Bonda tribe—an ancient and isolated tribal community classified as a Particularly Vulnerable Tribal Group (PVTG).
- The **Bondas**, also referred to as Bondo, Bonda Paraja, or Bhonda, reside primarily in the Khairaput block of Malkangiri district in Odisha. Believed to be among India's earliest settlers, they are of Austroasiatic origin and speak **Remo**, a language unrelated to mainstream Indian

languages, posing a significant communication barrier with outsiders.

- They are divided into **Lower Bondas**, residing near the borders of Andhra Pradesh and Chhattisgarh, and **Upper Bondas**, who live in more remote, hilly areas. Their social structure is governed by a council of elders, which ensures the preservation of customs and traditions. Villages are organized around communal areas, and their architecture—comprising mud and thatch houses—is well adapted to the mountainous terrain.
- The Bondas express their artistic identity through handcrafted tools, jewelry, and textiles. Women typically wear minimal clothing and adorn themselves with distinctive ornaments, while men are known for carrying weapons. Their religious beliefs are animistic, centering on the worship of nature and ancestral spirits.
- Economically, the community depends on subsistence farming, hunting, and foraging. The tribe faces alarming developmental challenges, with only 6% literacy and low life expectancy threatening their very survival.

America's Gun Obsession: History, Culture, and the Toll of Violence

The fatal shooting of 31-year-old conservative leader Charlie Kirk by a sniper in Utah has reopened deep national wounds around America's enduring gun culture. Known for staunchly defending the right to bear arms despite rising annual death tolls, Kirk's death is both a tragic irony and a stark reflection of the nation's unresolved obsession with firearms. His killing has reignited the polarizing debate over guns—a conflict many believe is contributing to the unraveling of American civil society.

America's Gun Epidemic in a Global Context

- Nowhere else in the world do guns permeate civilian life as they do in the United States. With a staggering average of 1.2 firearms per person, the country holds the world's highest per-capita gun ownership rate—by a wide margin. Although the U.S. accounts for less than 5% of the global population, it possesses nearly 45% of all civilian-held firearms worldwide. This unprecedented level of access is directly linked to devastating consequences: in 2023 alone, there were 46,728 gun-related deaths in the U.S., averaging 128 per day. Over half of these fatalities were suicides.
- The homicide rate driven by guns further reveals America's outlier status. With 4.38 gun-related deaths per 100,000 people, the U.S. rate is more than 26 times higher than that of other affluent nations. By comparison, the gun homicide rate in the United Kingdom is under 0.05, and in Japan, it is almost zero. These statistics underline how America's gun crisis is not simply a domestic issue—it stands apart from global norms.

Guns, Liberty, and the Myth of American Freedom

- The roots of America's gun culture lie not only in law but also in national mythology. Firearms have long been associated with ideas of liberty and resistance. From the Revolutionary War to the Wild West, guns have been romanticized as tools of freedom and survival. This sentiment was codified in 1791 through the Second Amendment, which guarantees the right to bear arms as a safeguard against tyranny. Founding Father James Madison even argued that an armed citizenry could rise against oppressive governments—a notion absent in monarchic Europe.
- This historical framing helped cultivate a national identity tied to the idea of self-defense and democratic vigilance. As political historian Richard Hofstadter noted in 1970, many Americans held an almost sacred belief that gun ownership was fundamental to preserving democracy. That conviction persisted into the 21st century—exemplified by Charlie Kirk's public declarations in 2023, defending gun rights as a necessary check on government power.

The Evolution of America's Gun Culture

- The entrenchment of guns in American life accelerated dramatically during the 20th century. A 1969 report from the U.S. Justice Department revealed that civilian firearms had nearly doubled from 45 million in 1945 to around 90 million by

the end of the 1960s—despite the population increasing by less than 50% during the same period. By 2018, the number of guns had multiplied tenfold from 1945 levels, while the population had grown by only 2.5 times.

- Historians link this escalation to deeper racial and socio-political anxieties. During slavery, firearms were essential tools for White landowners to control enslaved Black populations. In the post-Civil War era, fear of uprisings contributed to the emergence of violent vigilante groups like the Ku Klux Klan. The 20th century brought new waves of insecurity—urban crime, rising immigration, and Cold War paranoia—all of which drove gun demand higher. After World War II, surplus European weapons flooded the U.S. market, creating a booming gun economy that further entrenched firearms into everyday American life.

The Allure of Guns as Cultural Symbols

- In the United States, guns are not merely tools or commodities—they are icons, imbued with symbolic value far beyond their functional use. This transformation was orchestrated in part by aggressive lobbying from groups like the National Rifle Association (NRA) and the rise of gun capitalism, which promoted firearms as emblems of personal identity, masculinity, and patriotism. Historian Andrew McKevitt describes this as a case of "commodity fetishism"—a process where an object is infused with almost mythical significance, divorced from its practical origins.
- For instance, instead of seeing a gun as a factory-made assemblage of metal and mechanics, many Americans perceive it as a symbol of freedom, strength, or even moral virtue. This cultural elevation complicates policy efforts, making rational debate around regulation more difficult. Unlike countries such as Australia—which drastically reduced gun deaths from 2.9 per 100,000 in 1996 to 0.88 in 2018 through sweeping reforms—the U.S. has moved in the opposite direction.
- A pivotal moment came in 2008 with the Supreme Court's decision in *District of Columbia v. Heller*, which interpreted the Second Amendment as guaranteeing an individual's right to own firearms for personal use. This ruling significantly strengthened resistance to gun control and reinforced the ideological framing of guns as central to American identity.

The Everyday Reality of Gun Violence

- While NRA slogans frequently invoke the idea that "a good guy with a gun" is the solution to gun violence, real-world evidence tells a more troubling story. Historian Dominic Erdozain points out that even well-intentioned individuals can act impulsively or violently under stress or emotional strain. This undermines the simplistic good-versus-evil narrative often promoted in gun rights discourse.
- Data shows that most gun homicides in the U.S. do not involve criminals or strangers, but rather occur during domestic disputes, often between friends, relatives, or intimate partners. Alcohol is frequently a contributing factor. Studies have consistently found that simply keeping a firearm at home substantially increases the likelihood of homicide. Experts have warned since at least 2008 that the greatest danger is not from intruders but from individuals who "already have a key to the house."

Conclusion

- America's gun culture is not just a policy challenge—it is a cultural and historical phenomenon deeply woven into the nation's identity. The tragic death of Charlie Kirk, a vocal defender of gun rights, reflects the paradox at the heart of this national obsession. Guns are seen not just as weapons, but as sacred symbols of freedom and self-reliance. Yet the consequences of this reverence are measurable in lives lost and communities fractured.

While other nations have reformed their gun laws in response to mass shootings or rising violence, the United States continues to deepen its relationship with firearms, driven by a mixture of myth, fear, and political inertia. The enduring influence of advocacy groups, historical memory,

and cultural fetishism makes any change a formidable task. But as gun deaths continue to rise, the question becomes ever more urgent: How long can a society survive when the very instruments of its freedom also become its most prolific source of harm?

Kolhan's Manki-Munda Governance System: A Historical Framework Facing Contemporary Struggles

Recent Unrest and Adivasi Concerns

In West Singhbhum, Jharkhand, members of the Ho tribe recently staged protests against the Deputy Commissioner, accusing the state of interfering in their age-old Manki-Munda system of self-governance following the removal of certain village heads (Mundas). Though the district administration clarified that Mankis and Mundas continue to play an integral role in the region's revenue framework and attributed the unrest to misinformation on social media, the tribal community remains apprehensive. Their concerns revolve around a perceived erosion of autonomy, posing a threat to the delicate, long-standing balance between indigenous governance and formal state authority in Jharkhand's Kolhan region.

Traditional Structure of the Manki-Munda System

- The Manki-Munda governance system, rooted in the customs of the Ho tribe in Kolhan, has functioned for centuries as a decentralised model of local administration. Each village is traditionally led by a hereditary head known as the Munda, tasked with resolving internal disputes and maintaining order. A group of villages—usually between eight and fifteen—forms a pidh, which is overseen by a Manki. The Manki addresses cases unresolved at the village level, creating a tiered judicial structure grounded in community consensus.
- This system historically dealt exclusively with internal governance and social regulation. It had no involvement in land revenue collection or external taxation and operated independently of any outside sovereign authority. However, this changed with the arrival of British colonial forces, who introduced taxation and restructured existing administrative frameworks.

Colonial Interference and the Integration of Tribal Governance

- Following British victories at Plassey in 1757 and Buxar in 1764, the East India Company acquired *diwani* rights in 1765, allowing them to collect revenue in Bengal, Bihar, Odisha, and Jharkhand. The introduction of the Permanent Settlement Act in 1793 granted zamindars formal land ownership with fixed revenue targets—targets that were often unattainable. To meet their obligations, these landlords began seizing tribal land in the Kolhan region, triggering a series of uprisings, including the Ho revolt (1821–22) and the more widespread Kol rebellion (1831).
- Faced with sustained resistance and repeated military setbacks, the British shifted to a policy of strategic compromise. They began formally acknowledging the authority of the Manki-Munda system and incorporated it into the colonial administrative apparatus, effectively co-opting indigenous leaders as intermediaries.

Wilkinson's Rules: A Turning Point in Kolhan's Governance

- In 1837, Captain Thomas Wilkinson was appointed Political Agent in the Kolhan Government Estate (KGE), tasked with managing the Ho-dominated area. Recognising the effectiveness of local governance, he drafted 31 rules—known as "Wilkinson's Rules"—in 1833, codifying the Manki-Munda system for the first time. Although these rules appeared to safeguard tribal autonomy and limit the entry of outsiders (dikkus), they effectively made community leaders subordinate to British control by integrating them into the formal colonial framework.
- The implications of this were profound. The demographic landscape of Kolhan changed dramatically, with the population of outsiders increasing from 1,579 in 1867 to 15,755 by 1897, a shift accelerated by the advent of the railway system. Another significant

transformation was the introduction of private land ownership. Mankis and Mundas, previously seen as custodians of collectively held land, were redesignated as *raiyats* (tenants) and issued *pattas* (land deeds), thereby weakening traditional communal landholding practices and altering the structure of Ho society.

Survival of Wilkinson's Rules After Independence

- Despite the formal dissolution of the Kolhan Government Estate after India's independence in 1947, Wilkinson's Rules remained in force. Kolhan was exempted from the general civil procedure codes applicable to the rest of the country. Indian courts upheld the rules for decades, maintaining their legal validity until the year 2000, when the Patna High Court ruled in *Mora Ho vs State of Bihar* that Wilkinson's Rules constituted old customs rather than formal law. Nevertheless, the court permitted their continued use in the absence of any statutory alternatives.
- Over the years, attempts to modernise or replace the system have been limited. One such initiative, the proposed *Nyay Manch* in 2021, aimed to introduce a new framework for justice delivery but was never implemented. Consequently, Wilkinson's Rules remain operational in Kolhan, continuing to shape local governance.

Root Causes of the Current Conflict

- The latest unrest in West Singhbhum originates from grievances raised by Scheduled Castes and Other Backward Classes (OBCs) in predominantly Ho villages. Complaints included incidents where Mundas were accused of preventing the Gope community from pursuing livelihoods outside their traditional roles, as well as the prolonged absence of some village heads, which obstructed access to critical documentation and public services.
- In an attempt to address these issues, the district administration issued a nine-point directive reminding Mundas of their responsibilities as outlined in Wilkinson's 1837 *Hukuknama*. This was intended to improve transparency and accountability within the Manki-Munda system. However, the directive was widely misunderstood as an act of state interference. Misinterpretations rapidly spread via social media, igniting fears that the government was moving to dismantle or marginalise the traditional leadership. Despite official clarifications that there is no intention to override tribal customs, the situation remains tense.

Structural Challenges Facing the Manki-Munda Framework

- Presently, West Singhbhum has around 1,850 sanctioned posts under the Manki-Munda system, of which 200 remain vacant. While 50 of these positions were recently filled through Gram Sabha deliberations, controversy persists. Allegations have surfaced that some roles were allotted to non-tribal *raiyats*, bypassing traditional mechanisms of community consensus, which has further fuelled dissatisfaction within the Ho population.
- There is also a growing call for reform from within the Ho community, particularly among younger generations. Key demands include ending the hereditary nature of Munda appointments and creating space for non-tribal *raiyats* to participate in local governance. Critics argue that hereditary succession often leads to the appointment of individuals who may lack formal education, making it difficult for them to function effectively within today's documentation-heavy administrative framework.
- Due to these limitations, unresolved disputes and local governance issues are frequently escalated to the district administration. Although the role of the Deputy Commissioner is meant to be minimal in traditional matters, it becomes essential when clarifying legal ambiguities in Wilkinson's *Hukuknama* or resolving disputes and succession questions. This often results in a paradox: while the Manki-Munda system is intended to operate autonomously, it

increasingly relies on external intervention to function effectively.

Conclusion: Between Preservation and Reform

The Manki-Munda system stands at a critical juncture. While many within the Ho community and beyond view it as a vital institution of tribal identity and self-governance, it also faces significant structural and functional challenges in adapting to the demands of a modern democratic society. The current conflict in Kolhan highlights the urgent need for thoughtful reform — not to dismantle the system, but to modernise it in a way that retains its core values while addressing present-day realities. Without such reform, the balance between state administration and tribal autonomy that has lasted for over a century may continue to erode.

Swasth Nari, Sashakt Parivar Abhiyaan and Poshan Maah 2025

National Health Campaign for Women and Children

The Prime Minister is set to inaugurate the 'Swasth Nari, Sashakt Parivar Abhiyaan', India's most extensive health mobilisation drive focused on women and children, in conjunction with the launch of the 8th Poshan Maah.

Comprehensive Campaign Structure

- This initiative is a unified government and societal effort that integrates healthcare, nutrition, and awareness under a single umbrella. Jointly led by the Ministry of Health and Family Welfare (MoHFW) and the Ministry of Women and Child Development (MoWCD), it is closely aligned with the objectives of Poshan Maah 2025.
- The campaign aims to ensure the early detection and timely treatment of a range of health conditions, including non-communicable diseases (NCDs), various cancers, tuberculosis, anaemia, and sickle cell disease. It also seeks to promote awareness on nutrition, menstrual hygiene, mental health, and the adoption of healthier lifestyles.
- From 17 September to 2 October 2025, over one lakh health camps will be organised nationwide, spanning community health centres, district hospitals, and Ayushman Arogya Mandirs. These camps will offer specialised services in fields such as gynaecology, paediatrics, ophthalmology, ENT, dentistry, dermatology, and psychiatry.

Screenings will cover blood pressure, blood sugar, BMI, and oral cavity checks, alongside breast and cervical cancer detection. Anaemia testing, iron-folic acid supplementation, deworming, and dietary education through recipe demonstrations and the FSSAI Eat Right campaign will be included.

Frontier 50 Initiative: Accelerating Tech in Underserved Regions

- NITI Aayog has launched the Frontier 50 Initiative to deploy cutting-edge technologies in 50 Aspirational Districts or Blocks, reinforcing its vision for a developed India by 2047.
- This flagship initiative, under NITI Aayog's Frontier Tech Hub, aims to fast-track the adoption of technologies such as artificial intelligence (AI), Internet of Things (IoT), drones, and blockchain in underserved regions. The goal is to improve service delivery, productivity, and overall citizen well-being by 2047.
- The selected districts and blocks will implement proven use-cases from the Frontier Tech Repository in priority sectors like agriculture, education, healthcare, and livelihoods. Local administrations will receive capacity-building support to ensure successful integration and scale-up.
- The initiative also emphasises public-private partnerships, inviting collaboration from startups, academic institutions, and industries to co-create and deploy solutions. A performance monitoring framework with defined Key Performance Indicators (KPIs) will track service saturation and measurable impact

Birhor Tribe

- Residents of Fulwariya hamlet in Koderma district, mostly from the Birhor tribe, are soon expected to receive electricity for the first time in nearly 80 years, marking a major milestone for the community.
- The Birhor are a forest-dwelling, semi-nomadic tribal group predominantly found in Jharkhand, with smaller

populations in Odisha, Chhattisgarh, and West Bengal. Recognized as one of the Particularly Vulnerable Tribal Groups (PVTGs) in Jharkhand, the name "Birhor" derives from "Bi" meaning forest and "hor" meaning man—thus translating to "people of the forest."

- The Birhor language belongs to the Munda branch of the Austroasiatic language family and shares similarities with Santali, Mundari, and Ho languages. Due to cultural assimilation, many Birhors are bilingual or trilingual, also speaking Hindi, Bengali, or other regional languages. Ethnologically related to the Santals, Mundas, and Hos, the Birhors are of short stature, with long heads, wavy hair, and broad noses. They trace their lineage to the Sun and consider the Kharwars their kin.
- Birhor society is organized into small, kinship-based communities led by clan heads. They reside in forest settlements known as tandas or bands, which typically consist of cone-shaped huts made of leaves and branches. Traditionally, their subsistence economy revolved around hunting—especially monkeys—and rope-making from specific forest vines, which they sold in nearby markets.
- Some Birhors have transitioned to settled agriculture. Socially, the tribe is divided into two categories: the nomadic Uthlus and the settled Janghis. The community also retains deep knowledge of traditional medicine, using forest plants to treat ailments.

WHO Model List of Essential Medicines (EML)

- **Context:** The World Health Organization has added GLP-1 receptor agonists to its Model List of Essential Medicines, recognizing their effectiveness in managing type-2 diabetes with related conditions such as obesity, cardiovascular issues, and kidney disease.
- **About GLP-1 Drugs:** GLP-1 (Glucagon-Like Peptide-1) receptor agonists are a class of drugs that mimic the natural GLP-1 hormone. They primarily lower blood glucose levels in patients with type-2 diabetes and also promote weight loss, improve insulin function, slow digestion, and suppress appetite. Most of these drugs are injectable, although some oral versions exist. Their benefits extend to managing obesity and overall metabolic health.
- **About the WHO Model List:** First introduced in 1977 and updated biennially, the WHO's EML identifies medicines that are essential, safe, effective, and cost-efficient. It serves as a global benchmark, guiding over 150 countries in building their National Essential Medicines Lists (NEMLs). The EML supports universal health coverage by prioritizing affordability and access. By encouraging generic production and bulk procurement, it also helps bring down medicine prices globally.

De-notified, Nomadic and Semi-Nomadic Tribes (DNTs/NTs/SNTs): A Call for Structural Reform

Members of the Development and Welfare Board for De-notified, Nomadic and Semi-Nomadic Communities (DWBDNC) have written to the Prime Minister, requesting permanent commission status along with dedicated staff, funding, and financial autonomy.

Who Are These Communities?

- De-notified Tribes (DNTs) are communities that were once labelled as "criminal tribes" under the British-era Criminal Tribes Act of 1871. The law was repealed in 1952, and the communities were officially de-notified. Nomadic Tribes (NTs) engage in continuous or seasonal migration for their livelihood—such as salt trading, animal rearing, and traditional folk entertainment. Semi-Nomadic Tribes (SNTs) follow more infrequent or shorter patterns of migration compared to NTs.
- Between 1871 and 1947, nearly 200 communities were notified as "born criminals." Although de-notified post-Independence, they continue to suffer from social stigma and marginalisation. The 2008 Renke Commission highlighted their deprivation, and the 2017 Idate Commission identified nearly 1,200 such groups across India—some included in

Scheduled Castes (SC), Scheduled Tribes (ST), or Other Backward Classes (OBC), while 269 remain unclassified.

- These communities comprise nearly 10% of India's population, with over 13 crore individuals spread across approximately 150 de-notified groups and 500 nomadic communities. They possess rich cultural traditions, including unique oral literature, indigenous deities, seasonal festivals, and community-based conflict resolution systems. Traditionally, they travel in clusters of 5 to 20 families, convening at annual camps for social and economic exchanges.

About DWBDNC and Its Role

- Established on 21 February 2019 under the Ministry of Social Justice and Empowerment, the Development and Welfare Board for DNTs/NTs/SNTs functions as an advisory and facilitating body. It was conceived as an alternative to a permanent commission, to prevent overlap with existing SC/ST/OBC bodies.
- The Board includes the Ministry Secretary as Chairperson (ex-officio), two nominated members, and officials from related ministries and departments. Its responsibilities include recommending legal recognition of communities, implementing schemes such as the SEED programme and educational scholarships, addressing grievances, facilitating data collection for evidence-based policymaking, and coordinating with state governments on land rights, housing, and education access.

Adi Karmayogi Abhiyan: Empowering Tribal Grassroots Governance

Context:

- Launched from **Madhya Pradesh** by the Prime Minister, the **Adi Karmayogi Abhiyan** marks a transformative initiative to **decentralize tribal leadership** and foster responsive governance in tribal areas.
- This **flagship mission** of the **Ministry of Tribal Affairs** aims to build the **world's largest tribal grassroots leadership ecosystem**, directly impacting **11 crore tribal citizens** across **1 lakh villages**. The initiative is designed to empower **20 lakh officials, SHG women, and tribal youth** to serve as **Adi Karmayogis**—local leaders driving last-mile governance and service delivery.

Three Pillars of Leadership:

1. **Adi Karmayogi (Government Officers):** These include state, district, block, and panchayat-level officials ensuring institutional convergence and efficient scheme delivery.
2. **Adi Sahyogi (Educated Tribal Youth & Professionals):** Teachers, doctors, and youth volunteers bridge critical service gaps in health, education, awareness, and innovation.
3. **Adi Saathi (Community Members):** SHG members, tribal elders, and villagers serve as anchors of cultural wisdom and local mobilization.

Implementation Mechanism:

The program will foster a **Tribal Village Action Plan**, enabling co-creation of a **"Tribal Village Vision 2030"** aligned with national priorities and **Sustainable Development Goals**. It integrates major tribal welfare programs, including **PM JANMAN** and **DAJGUA 2.0**, under a unified convergence framework.

Tech and Outreach Tools: Key digital enablers include:

- **Adi Vaani App:** An AI-driven language interface to facilitate communication in native dialects between government personnel and tribal communities.
- **Adi Karmayogi Portal:** A real-time platform for registration, dashboard monitoring, and role-based tracking of leadership participants. **Adi Sewa Kendras** will serve as single-window grievance redressal centers.

Progress on Gender Equality: UN Women's Gender Snapshot 2025

Context:

The **"Gender Snapshot 2025"**, jointly published by **UN Women** and the **UN Department of Economic and Social Affairs (UN DESA)**, provides a sweeping overview of global gender equality across all **17 Sustainable Development Goals (SDGs)**.

Key Findings:

- Globally, **376 million women** live in extreme poverty (9.2%), and **anaemia**

prevalence is projected to reach **33% by 2030**. Despite a **39% reduction in maternal mortality** between 2000 and 2023, women continue to experience **three additional years of poor health** compared to men.

- While girls often outperform boys in enrollment rates, they continue to **lag in secondary school completion** in regions like Africa and Asia, and are rarely found in leadership roles within education systems.
- In leadership and the workforce, women occupy **27% of parliamentary seats** and **30% of management roles**. **12.5% of women** suffer from intimate partner violence, and **19% of girls** are married before the age of 18. The **digital divide persists**, with only **65% of women online** compared to **70% of men**, and women's jobs remain disproportionately **vulnerable to AI-related automation**.
- Climate impacts are also gendered: **158 million women** may fall into poverty due to climate change, and **896 million women lack access to clean cooking fuels**. In terms of security, **676 million women** lived near conflict zones in 2024. Women with disabilities face compounded exclusion from **reproductive rights**, **internet access**, and **political participation**.

Beijing+30 Priority Actions:

The report urges immediate global action in six core areas:

1. **Close the gender digital divide** through inclusive tech policies.
2. **Eradicate poverty** by investing in health, education, social protection, and care systems.
3. **Eliminate gender-based violence** through enforceable laws and robust services.
4. **Ensure equal decision-making power** in politics and governance.
5. **Fully implement the Women, Peace, and Security agenda**, ensuring funding and participation.
6. **Integrate gender into climate justice** and resource access frameworks.

United Nations Human Rights Council (UNHRC): Promoting Global Rights

- India recently defended **Qatar's sovereignty** during a session of the **United Nations Human Rights Council (UNHRC)**, underscoring its support for non-interference in internal affairs.
- The UNHRC was established on **15 March 2006**, replacing the Commission on Human Rights. It is an **inter-governmental body** within the **UN system**, tasked with **promoting and protecting human rights and fundamental freedoms globally**.
- The Council seeks to uphold **universal respect for human rights** and investigates **systematic violations**. It is composed of **47 member states**, elected by the **UN General Assembly** via secret ballot, with equitable geographical representation. Members serve **three-year terms** and are not eligible for immediate re-election after two consecutive terms.

Core Functions

The UNHRC:

- Investigates **human rights violations** in member states
- Addresses issues such as **freedom of expression**, **gender equality**, **LGBTQ+ rights**, and **minority rights**
- Collaborates with the **Office of the High Commissioner for Human Rights (OHCHR)**

Bima Sugam Portal: A Unified Digital Insurance Marketplace

- The **Insurance Regulatory and Development Authority of India (IRDAI)** has officially launched the **Bima Sugam portal**, a comprehensive digital platform aimed at simplifying and expanding access to insurance products.
- **Bima Sugam** is a **centralized online marketplace** that connects **insurers, intermediaries, and customers** on a single digital interface. It is supported by the **Life Insurance Council** and the **General Insurance Council**.

Key Features and Services

The platform allows users to:

- Buy, sell, renew, and manage insurance policies

- Access transparent and centralized insurance-related information
- File and track claims digitally
- Navigate and compare various **life and health insurance products**, including **term plans, annuities, pensions, ULIPs**, and **comprehensive medical coverage**

Bima Sugam is designed to **support innovation**, including **sandbox products**, and will be flexible enough to accommodate **future insurance offerings**. It leverages **advanced digital technologies** to automate workflows and enhance operational efficiency across stakeholders.

Surajpur: A Model District in the Fight Against Child Marriage

- In a significant milestone in the campaign against child marriage, Surajpur district in Chhattisgarh has officially declared 75 village panchayats as "Child Marriage-Free." This achievement positions Surajpur as a leading example in the broader state and national effort to eradicate this social practice.
- Surajpur's approach is a district-level social reform program focused on eliminating child marriage through a combination of awareness, grassroots participation, and strict local monitoring. Its success has earned it recognition as a replicable model for other districts and states across India that aim to combat child marriage effectively.
- The initiative's primary goal is to eliminate child marriage by fostering education, spreading awareness, and enforcing relevant legal provisions. Beyond legal and social reform, it also aims to improve maternal and child health indicators by reducing incidences of early pregnancy and associated health complications.

Key Features of the Model:

- A central element of Surajpur's success is the strong involvement of local communities. Village panchayats, Anganwadi workers, non-governmental organizations (NGOs), and parents all play an active role in identifying risks and spreading awareness. Awareness campaigns have been central to the initiative, including regular dialogues on child rights, the importance of education, and the health risks linked to early marriage.
- Health and nutrition are also integral components of the program. The anti-child marriage campaign is aligned with broader public health efforts, such as National Nutrition Month and various maternal and child health programs, creating a more comprehensive intervention framework.
- The success of Surajpur is already influencing change beyond its borders. The strategies implemented in the district are now being adopted by other regions in Chhattisgarh, with the broader aim of eventually making the entire state "Child Marriage-Free."

New Report Details Public Health Emergency from Fossil Fuels

- The Global Climate and Health Alliance (GCHA) has released a comprehensive report titled *"Cradle to Grave: The Health Toll of Fossil Fuels and the Imperative for a Just Transition,"* which emphasises that the threat posed by fossil fuels is not merely environmental but also constitutes a significant public health emergency.
- The report outlines how fossil fuel-related pollution affects individuals across all stages of life, from fetal development to old age. Health impacts include a wide range of conditions such as asthma, cancer, and cardiovascular diseases. Every stage in the fossil fuel lifecycle—including extraction, refining, transport, combustion, and disposal—releases toxic pollutants that persist in the environment and cause lasting harm to ecosystems and human populations.
- For instance, the extraction process can release hazardous substances like benzene, heavy metals, and radioactive materials. Similarly, refining operations emit chemicals such as toluene and various volatile organic compounds (VOCs). Even long after operations have ceased, legacy pollution from abandoned sites continues to pose risks, with

persistent chemicals like lead, mercury, and PFAS ("forever chemicals") lingering in soil and water. These substances tend to accumulate in the food chain through a process known as biomagnification, thereby intensifying health risks over time.

- The report also underscores that marginalized communities, including indigenous peoples and racial minorities, are disproportionately affected. These groups are more likely to live near mines and refineries and often face systemic barriers to accessing healthcare.
- To address these issues, the GCHA advocates for a comprehensive and just transition away from fossil fuels. Key policy recommendations include ending the exploration and development of new fossil fuel projects, eliminating subsidies, and reallocating financial resources toward public health initiatives and clean energy solutions. Additional proposals involve enforcing stringent regulations, implementing real-time pollution monitoring, and undertaking the remediation of contaminated sites. The report also calls for the internalization of health costs using the "Polluter Pays" principle and encourages the alignment of international financial institutions and health systems with broader climate and public health objectives.

From Promises to Participation: Reimagining Transgender Rights in India

Context

A prominent transgender rights activist recently called for a shift in India's approach to transgender inclusion — from symbolic welfare measures to meaningful political participation. Despite legal recognition since the landmark *NALSA v. Union of India* judgment in 2014, the lived realities of most transgender individuals continue to be shaped by marginalisation, discrimination, and systemic exclusion. This disconnect between constitutional rights and everyday experiences highlights the urgent need to reimagine transgender rights not as charity but as democratic inclusion.

Understanding the Issue

1. **Legal Recognition vs. Lived Reality:** Although *NALSA (2014)* recognised transgender persons as a "third gender" under Articles 14, 15, 19, and 21 of the Constitution, daily life remains rife with discrimination, social exclusion, and institutional neglect. Rights exist on paper, but dignity remains elusive in practice.
2. **Tokenism in Welfare Schemes:** Government announcements of quotas in employment, education, and housing have been largely symbolic. Trans individuals often face corruption, intrusive and dehumanising verification procedures, and bureaucratic red tape that render these benefits inaccessible.
3. **Absence of Political Representation:** There is a glaring lack of transgender representation in formal politics. India has yet to elect a transgender Member of Parliament or appoint one as a Union minister. Their exclusion extends to statutory bodies — such as the censor board — where policies affecting transgender people are made *about* them, not *with* them.
4. **Daily Discrimination and Social Stigma:** Transgender persons are routinely denied rental housing, ridiculed in public spaces, and marginalised in workplaces. These experiences are not isolated incidents but form part of a broader societal hostility that undermines their basic right to live with dignity.
5. **Economic Precarity and Health Barriers:** The cost of gender transition surgery ranges between ₹2–5 lakh in private hospitals — an expense beyond reach for many, especially after familial rejection. This pushes many into informal or unsafe livelihoods, compounding their vulnerability.

Broader Implications

- **Democratic Deficit:** The exclusion of transgender persons from political structures weakens Indian democracy. While women and SC/ST communities benefit from reservations in local governance, no equivalent mechanism exists for trans inclusion. As long as political participation is structurally

denied, democracy reproduces privilege rather than dismantling it.

- **Human Capital Loss:** The systemic denial of opportunities to transgender persons undermines national potential. As activist Apsara Reddy poignantly notes, "Every time a trans person is denied education, a scientist is lost; every time housing is denied, an artist is displaced."
- **Persistent Poverty:** The 2017 NHRC survey found that 92% of trans persons are denied employment opportunities, while nearly half report workplace harassment. This not only reinforces a cycle of poverty but also erodes self-worth and economic independence.
- **Disproportionate Violence and Mental Health Risks:** Data from the NCRB reveal higher incidences of violence against transgender individuals, while WHO studies indicate elevated suicide rates, especially among transgender youth — a direct consequence of social rejection and lack of support systems.
- **Developmental Setback:** The exclusion of transgender persons from mainstream institutions robs society of diverse voices that can challenge norms and drive reform. Historical parallels — such as the entry of women into medical education or Dalits into legislatures — underscore the transformative impact of inclusive policies.

Progress So Far

1. **Judicial Advancements:** The *NALSA* judgment of 2014 was a landmark moment, affirming the right of transgender persons to self-identify and directing governments to extend reservation benefits.
2. **Legislative Developments:** The Transgender Persons (Protection of Rights) Act, 2019 prohibits discrimination. However, it has faced criticism for requiring transgender individuals to obtain certification from a District Magistrate, undermining the principle of self-identification.
3. **Institutional Mechanisms:** The formation of the National Council for Transgender Persons (2020) is a step toward policy engagement, though its effectiveness remains under scrutiny.
4. **State-Level Innovations**
   - **Tamil Nadu** established the Aravanis Welfare Board in 2008 and provides monthly pensions.
   - **Karnataka** introduced a 1% reservation for transgender persons in jobs and education in 2021.
   - **Kerala** offers financial support for gender reassignment surgeries through public healthcare funding.
5. **Symbolic Representation:** Trailblazers such as Shabnam Mausi (first transgender MLA, 1998), Joyita Mondal (first transgender judge, 2017), and Madhu Bai Kinnar (Mayor, 2015) have broken ground, but they remain exceptions rather than the norm.

What Needs to Change

- **Transforming Education Access:** Scholarships, inclusive curricula, gender-sensitive hostels, and strict anti-bullying protocols must be institutionalised across schools and universities. *Example*: NCERT's 2021 step to include gender identity in textbooks should be adopted nationwide.
- **Affordable and Inclusive Healthcare:** The government must subsidise gender transition procedures, integrate them under Ayushman Bharat, and provide targeted mental health support. *Example*: Kerala's policy funding gender affirmation surgeries can serve as a national model.
- **Equal Opportunities in Employment and Housing:** Enforcement of anti-discrimination laws must be rigorous, with penalties for violations. Skilling initiatives under Skill India and rental protection laws are needed to ensure economic inclusion. *Example*: Karnataka's 1% reservation demonstrates that affirmative action is both feasible and impactful.
- **Ensuring Political Representation:** Reserved seats in local bodies, nominations to legislative councils, and appointments to statutory boards are essential for genuine participation. *Example*: Despite repeated negative portrayals of transgender people in film,

no trans person has ever been appointed to the censor board — an exclusion that perpetuates stereotyping.

- **Changing Social Attitudes:** Widespread sensitisation campaigns should aim to challenge public biases and foster acceptance. *Example*: Just as *Swachh Bharat Abhiyan* reshaped attitudes around sanitation, similar initiatives could normalise gender diversity and affirm transgender identities.

Conclusion

India must move beyond symbolic gestures toward structural inclusion of transgender persons. Ensuring access to quality education, affordable healthcare, dignified employment, safe housing, and robust political representation is not just about welfare — it is about realising constitutional promises of dignity, equality, and justice. Only when transgender persons are recognised as equal participants in India's democratic processes will the nation truly reflect the values it claims to uphold.

Women's Unpaid Care Work – Calls for Better Data

Introduction

Unpaid care work constitutes the often-invisible foundation of economies across the globe. Despite its critical role, it remains systematically undervalued and poorly recorded in national statistics. In India, women carry a disproportionate share of this burden, devoting extensive hours each day to tasks such as household maintenance, caregiving, and community services—none of which are reflected in formal economic indicators like Gross Domestic Product (GDP). While India does conduct a Time Use Survey (TUS) aimed at tracking these patterns, experts contend that it falls short in capturing the underlying reasons for women's engagement in unpaid labour. There is a growing consensus that more detailed and nuanced data is urgently needed, particularly in light of India's persistently low female labour force participation rates (FLFPR), which have raised pressing concerns about gender inequality in both economic opportunity and social development.

The Reality of Women's Unpaid Care Work in India

Across the world, women perform roughly three times more unpaid care work than men. In India, this imbalance is even more severe. The 2019 TUS reports that Indian women spend approximately 4.5 hours each day on unpaid domestic and caregiving responsibilities, in contrast to men who spend only 1.5 hours. These tasks encompass a range of essential but unpaid activities, including cooking, cleaning, household upkeep, caring for children, the elderly, and ill family members, as well as community-oriented work such as water collection. Despite their significance, these efforts are excluded from GDP calculations, thereby rendering women's substantial contributions to the economy invisible. Moreover, the time and energy required for unpaid care work limit women's ability to pursue education, vocational training, or formal employment, reinforcing a cycle of dependency and economic marginalisation.

Impact on Female Labour Force Participation

India's FLFPR remains alarmingly low at around 23% as per the 2022-23 Periodic Labour Force Survey (PLFS), significantly trailing behind global figures and countries like China (61%) and Bangladesh (38%). One of the primary reasons for this disparity is the excessive unpaid care responsibilities borne by women. The lack of systemic support mechanisms—such as accessible childcare services, eldercare infrastructure, and flexible employment options—exacerbates the challenge, making it even more difficult for women to engage in paid work. These structural deficits not only hinder women's economic participation but also entrench long-standing gender inequalities.

Gaps in the Current Time Use Survey

- India's TUS, conducted first in 1998-99 and again in 2019 by the National Sample Survey Office (NSSO), has provided valuable insights into how time is allocated between paid and unpaid activities by gender. However, experts argue that the survey fails to address critical dimensions of unpaid labour. It lacks depth in distinguishing whether women's engagement in care work stems from personal choice or from societal and economic pressures that offer little alternative. It also overlooks how unpaid care responsibilities affect women's physical and mental health, limit their aspirations, and constrain their potential to enter or remain in paid employment.

- Furthermore, there is inadequate integration of the findings into policy design, limiting the survey's utility in shaping effective childcare schemes, employment strategies, and social security initiatives. Without addressing these deficiencies, the TUS risks normalising unpaid care work as a voluntary lifestyle decision rather than recognising it as a structural issue rooted in deeply ingrained gender roles.

Expert Recommendations for Reform

- Labour economists, gender advocates, and social policy experts are urging significant reforms in the way India measures and interprets unpaid care work. They recommend a more refined survey methodology that includes qualitative questions to better understand whether women view unpaid care responsibilities as voluntary or obligatory. Experts also advocate for the inclusion of intergenerational perspectives, acknowledging that younger women may have different attitudes towards unpaid labour than older generations. There is a strong call for integrating TUS data with the PLFS to explore how unpaid care work influences labour market trends more holistically.
- Additionally, experts stress the need for the data to inform policy in a more targeted manner, supporting the enhancement of schemes like the Pradhan Mantri Matru Vandana Yojana (PMMVY) and Anganwadi services, which could provide institutional backing for care work. Finally, there is growing support for recognising unpaid care work within economic frameworks, possibly through satellite accounts or alternative GDP models that assign it a tangible economic value.

By strengthening data collection and interpretation, India can take meaningful steps toward recognising, valuing, and ultimately reducing the disproportionate unpaid care burden on women—an essential move toward achieving greater gender equality and inclusive economic growth.

Union Cabinet Approves Expansion of Undergraduate and Postgraduate Medical Education Capacity

- In a significant move to enhance India's healthcare and education infrastructure, the Union Cabinet has approved Phase-III of the Centrally Sponsored Scheme aimed at strengthening and upgrading existing government medical colleges and institutions across the country. This latest expansion initiative seeks to address longstanding gaps in medical education and healthcare delivery by scaling up both undergraduate (MBBS) and postgraduate (PG) capacities through optimal use of existing resources.
- India currently holds the distinction of having the largest number of medical colleges in the world, with a total of 808 institutions and an intake capacity of 1,23,700 MBBS seats. The decision to further expand medical education infrastructure is expected to play a transformative role in several critical areas.
- The expansion is projected to help bridge persistent healthcare accessibility gaps, particularly in underserved rural and remote regions where medical services remain scarce. It is also expected to bolster the overall resilience of India's health system, enhancing its ability to respond to future public health challenges. In addition, this initiative supports the country's broader socio-economic development by creating new educational and employment opportunities in the healthcare sector.
- Improving the quality of medical education is another key focus. The scheme aims to bring Indian medical training closer to global standards by leveraging the infrastructure of existing government hospitals and medical colleges. This cost-effective strategy not only promotes efficient use of resources but also enables the delivery of more comprehensive tertiary healthcare services to the public.

Structural Challenges in India's Medical Education System

- Despite the country's large number of medical institutions, significant structural issues continue to plague the medical education ecosystem. One of the most pressing concerns is the stark regional imbalance. Nearly one-third of India's medical colleges are concentrated in the southern states, creating disparities in access for students and patients in northern, northeastern, and central regions.
- There is also a notable accessibility gap in rural healthcare services. According to data from the Union Ministry of Health and Family Welfare (2024), rural India suffers from a 70% shortage of specialist doctors. This shortage is exacerbated by an urban-centric distribution of medical professionals—approximately 81% of all registered allopathic doctors practice in urban areas, which are home to only 31% of the country's population.
- Furthermore, many government colleges, despite having well-equipped hospitals with substantial bed capacities, continue to operate with relatively low MBBS seat allocations, resulting in under-utilization of valuable infrastructure.

Complementary Initiatives to Expand Medical Education

- To address these challenges holistically, the government has rolled out a set of complementary initiatives aimed at systematically expanding the nation's medical education capacity.
- A central component of this strategy is the targeted addition of 5,000 postgraduate and 5,023 undergraduate (MBBS) seats in government institutions by the year 2028–29. This expansion will primarily utilize the infrastructure already available in existing colleges and hospitals, making it a cost-effective and scalable approach.
- Infrastructure development remains another cornerstone of this effort. The establishment of 22 new All India Institutes of Medical Sciences (AIIMS) under the Pradhan Mantri Swasthya Suraksha Yojana (PMSSY) seeks to provide high-quality tertiary care and professional training. These institutes are expected to serve as centres of excellence, enhancing both clinical services and academic standards in medical education.
- To ensure the sustainability of these reforms, the government has also introduced the new Medical Institution (Qualifications of Faculty) Regulations, 2025. These regulations are designed to make faculty recruitment more inclusive and competency-based, thereby expanding the pool of qualified educators needed to support the growing number of medical students. By reinforcing the teaching infrastructure, the government aims to maintain quality while scaling up quantity.
- In summary, the Union Cabinet's approval of Phase-III of the medical education expansion scheme marks a critical step forward in addressing regional disparities, specialist shortages, and infrastructure underutilization. Combined with regulatory reforms and major investments in faculty and institutional development, this initiative is poised to reshape India's medical education landscape and improve healthcare access across the country.

MoSPI Comprehensive Modular Survey: Education 2025

- The MoSPI Comprehensive Modular Survey: Education 2025 was undertaken by the Ministry of Statistics & Programme Implementation (MoSPI) from April to June 2025, as a component of the 80th round of the National Sample Survey (NSS). It highlights critical trends in Indian education, notably the sharp decline in school dropout rates over just two years.
- Dropout rates have fallen significantly across various levels: at the secondary stage, the rate dropped to 8.2% in 2024–25 from 13.8% in 2022–23; at the middle level, it declined to 3.5% from 8.1%; and at the preparatory level, from 8.7% to 2.3%. Experts attribute this turnaround to early interventions such as the Samagra Shiksha Abhiyan, mid-day meal programmes, scholarship schemes, and greater flexibility under the National Education Policy 2020.

- However, the survey also underscores challenges related to affordability. Average household expenditure on schooling in government institutions is Rs 2,639 in rural areas and Rs 4,128 in urban locales, whereas in private unaided schools, the figures are much higher: Rs 19,554 in rural regions and Rs 31,782 in urban zones.
- The findings also flag fragility at the secondary level, where adolescents are vulnerable to pressures from income needs, early entry into work, and limited availability of higher-secondary institutions. If access and affordability are addressed effectively, the country may achieve universal school completion within the next decade.

Children in India 2025 Report

- The Ministry of Statistics and Programme Implementation (MoSPI) has released the fourth edition of the *Children in India 2025* report. This publication provides comprehensive data on education, health, nutrition, protection, and welfare to guide evidence-based policymaking for children.
- The Infant Mortality Rate (IMR) declined from 44 in 2011 to 25 in 2023. The Under-Five Mortality Rate (U5MR) also saw improvement, dropping from 30 in 2022 to 29 in 2023. The birth rate fell to 18.4 per 1,000 population in 2023, with rural areas at 20.3 and urban areas at 14.9.
- Significant progress was made in reducing school dropout rates between 2022-23 and 2024-25. The preparatory stage rate declined from 8.7% to 2.3%, the middle level from 8.1% to 3.5%, and the secondary level from 13.8% to 8.2%.
- Child marriage among women aged 20–24 reduced from 26.8% (2015–16) to 23.3% (2019–21). Adoption figures also improved, with total adoptions increasing from 3,927 in 2017-18 to 4,515 in 2024-25. In-country adoptions reached 4,155, while inter-country adoptions ranged between 360 and 653 annually. The Gender Parity Index (GPI) achieved parity across all educational stages by 2024-25.

National Initiative on Water Security

- The government has launched a National Initiative on Water Security by amending Schedule I of the Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA), 2005. The amendment reorients the scheme's focus to water conservation as a national development priority.
- To date, MGNREGA has facilitated the creation of over 1.25 crore water-related assets, such as farm ponds, check dams, and community tanks. The initiative aims to boost groundwater levels, rejuvenate rivers, and promote sustainable water management.

Fund allocation under MGNREGA will now be prioritized as follows:

1. Critical blocks (90–100% groundwater extraction): 65% of funds.
2. Semi-critical blocks (70–90% extraction): 40%.
3. Safe blocks (≤70% extraction): 30%.

- According to the Dynamic Ground Water Resources Assessment Report (2024) by the Central Ground Water Board (CGWB), 3.05% of blocks are critical, 10.54% semi-critical, 11.13% over-exploited, 73.39% safe, and 1.88% saline.
- The initiative marks a shift from reactive to preventive water management, ensuring targeted use of MGNREGA funds for critical areas and enhancing water sustainability, rural development, and agricultural resilience.
- Complementary initiatives include *Mission Amrit Sarovar* (construction/rejuvenation of 75 water bodies per district), the *Atal Bhujal Yojana* (community-based groundwater management), and the *National Aquifer Mapping (NAQUIM) Project*, which has completed mapping 25 lakh sq. km of aquifers across the country.

Maternity Reintegration in India: A Critical Test of Workplace Inclusion

A recent article draws attention to a pressing but often overlooked issue in India's gender-inclusion landscape — that **maternity reintegration**, not

merely maternity leave, is the true litmus test of inclusive workplace practices. As women increasingly join India's organised workforce, their seamless return after maternity leave remains a fragile and under-addressed process. Reintegration encompasses not only legal entitlements but also the broader ecosystem — policies, workplace culture, managerial support, and long-term career planning — that determines whether women remain and thrive in their careers post-childbirth.

Understanding Maternity Reintegration

Maternity reintegration refers to the **smooth transition** of women employees from maternity leave back into active roles in the workforce. It is far more than a matter of returning to work — it involves **supportive organisational policies**, flexible job roles, access to childcare, empathetic leadership, and a culture that values the dual roles women play. This reintegration process is pivotal in ensuring that maternity does not become a career roadblock.

Pressures Faced by New Mothers in India

- The challenges that new mothers face are complex and multifaceted, rooted in societal expectations, institutional gaps, and psychological strains. At the family level, caregiving continues to be viewed as the **primary responsibility of women**, reinforcing gender norms that discourage professional ambition. For instance, NSSO data from 2019 reveals that Indian women spend approximately **seven hours a day on unpaid care work**, compared to **just 2.5 hours for men**.
- Societal pressures add to this burden. Across urban and rural settings, the dominant narrative suggests that a "good mother" must prioritise her family over her career, triggering guilt and self-doubt among women who wish to return to work. Cultural attitudes often equate career-oriented mothers with being neglectful, leading to internalised guilt and emotional stress. This internal pressure is compounded by psychological challenges such as **fatigue, anxiety**, and the growing phenomenon of **post-maternity imposter syndrome**, as reported in recent corporate surveys.
- Organisational structures are frequently unsupportive, further complicating the return. Many companies continue to offer **inflexible job roles**, lack on-site childcare, and display a general indifference toward the unique needs of returning mothers. As a result, many women **exit the workforce permanently** after maternity leave. Deloitte's 2022 survey confirmed that **post-maternity attrition rates** are highest among Indian corporates, reflecting a systemic failure to accommodate motherhood within professional life.

Ripple Effects of Maternity-Related Dropouts

- The consequences of losing women post-maternity extend far beyond the individual. At the organisational level, there is a **significant talent loss**, as women who leave take with them years of experience and institutional knowledge. Deloitte estimates that **mid-level attrition costs companies 150–200% of the employee's annual salary**. Furthermore, when capable women exit before reaching leadership positions, the **pipeline to senior management weakens**, undermining diversity goals and strategic decision-making. According to the **Marching Sheep Inclusion Index (2025)**, **63% of listed Indian firms** lack even a single woman in Key Managerial Positions (KMPs).
- Culturally, the repeated exit of new mothers fosters a perception that workplaces are inherently **hostile to women's life choices**, harming employee morale and creating barriers for future female talent. The **NASSCOM 2023 survey** confirms that inclusivity remains a key retention driver in the Indian tech sector, making reintegration practices crucial to competitiveness.
- The economic repercussions are even more profound. India's **female labour force participation** stands at just **~37%** (PLFS 2024), placing it among the lowest in the G20 and trailing behind countries like **Bangladesh (~41%)** and **China (~61%)**. McKinsey Global Institute estimates that **equal participation by women could raise India's GDP by 27%**, or approximately **$770 billion**. Japan's "womenomics" policy has demonstrated

the strong correlation between **gender participation and economic growth**, a lesson India cannot afford to ignore.

- Innovation is also compromised. The loss of women from sectors such as R&D, STEM, and corporate leadership reduces **diversity of thought**, limiting creativity and problem-solving. A **World Bank (2022)** report found that firms with gender-diverse management teams had **20% higher innovation revenues**, underscoring the economic cost of talent loss through poor reintegration.
- Socially, the exit of women after maternity perpetuates **damaging stereotypes**. Each dropout strengthens the perception that women cannot balance work and family, a bias already held by a majority in India. The **Pew Research Center (2021)** found that **70% of Indians** believe men are better suited for paid work. This mindset delays progress on **gender parity goals**, particularly **SDG-5 (Gender Equality)**. India's **127th ranking out of 146 countries** in the **Global Gender Gap Index 2024** reflects the urgency of addressing these systemic exclusions.
- The absence of women in visible leadership roles also deprives younger generations of **role models**. As of 2023, only **18% of board directors in NIFTY-500 companies** are women (SEBI), limiting aspirational pathways for emerging female talent. A cycle of underrepresentation and discouragement ensues, stalling progress on both economic and social fronts.

Pathways to Effective Reintegration

- To bridge this gap, **policy reforms and cultural shifts** are essential. The **Maternity Benefit Act, 1961**, though progressive in offering extended leave, must now be **expanded to include reintegration norms**, ensuring that return-to-work is as structured and protected as the leave itself.
- Workplace policies must include **mandatory crèches**, **subsidised childcare**, and **paternity leave**, to redistribute caregiving responsibilities and support shared parenting. These are not merely perks but essential structures to retain talent.
- Equally vital are **awareness campaigns** that challenge outdated notions and normalise the dual identity of a working mother. CSR initiatives, employer-led discussions, and media representations can help build a more accepting societal narrative around work–motherhood balance.
- **Data-driven monitoring** is also key. Companies must be required to report **gender representation at KMP levels**, not just for compliance but to track meaningful progress. This transparency would enable benchmarking and hold firms accountable for diversity outcomes.
- Learning from global models can accelerate progress. "**Returnships**," structured re-entry programmes already successful in the UK and US, can offer returning mothers targeted mentorship, upskilling opportunities, and transitional roles that ease their path back into the workforce.

Conclusion: Reintegration as a Strategic Imperative

- Maternity reintegration is not an act of benevolence; it is a **strategic investment in human capital**. For a country like India, where female workforce participation is among the lowest globally, retaining and reintegrating skilled mothers is not just desirable — it is essential. Doing so will strengthen the economy, accelerate progress on gender equity, and foster a more inclusive and dynamic workplace culture.
- A truly inclusive organisation does not view maternity as a pause in a woman's career but as a **natural, supported phase** in her professional journey. Until reintegration becomes the norm, maternity will continue to act as a silent off-ramp for many talented women — a loss India can no longer afford.

UNICEF Report Highlights Decline in Child Marriages in India and Calls for Continued Reform

- A recent UNICEF report has highlighted a notable reduction in child marriages

across India, particularly in states such as Andhra Pradesh and Rajasthan. According to the data drawn from the National Family Health Survey (NFHS), child marriage prevalence in Andhra Pradesh has declined from 33% (NFHS-4) to 29.3% (NFHS-5), while Rajasthan has seen a more significant drop from 35.4% to 25.4% over the same period. These trends reflect measurable progress, bolstered by a combination of state-level innovations and national policy interventions.

- The report underscores the impact of collective, multi-sectoral approaches that have propelled India closer to achieving Sustainable Development Goal 5 (SDG 5) on gender equality. It highlights how coordinated efforts across departments, communities, and development agencies have contributed to curbing early marriages and promoting the rights and well-being of adolescent girls.

Learning from State-Level Interventions: Case Studies and Local Innovations

- Andhra Pradesh and Telangana have taken proactive steps to address the issue, guided by evidence-based advocacy from UNICEF that utilized NFHS-5 data. This led the Women Development and Child Welfare (WDCW) Department to launch targeted child marriage reduction initiatives in high-burden districts.
- In Assam, a unique model was introduced that focuses on engaging boys and men in transforming gender attitudes and behaviors, encouraging sustainable change in community norms. This male-inclusive approach emphasizes the role of men as allies in advancing gender equality.
- In Chhattisgarh's Jashpur district, the "Jay-HO" campaign emerged as a successful example of a volunteer-driven, multi-sectoral convergence model. It demonstrated how localized activism, when aligned with systemic support, can be instrumental in driving behavioral change.
- Odisha has successfully scaled its "Child Marriage Free Village" initiative, with 12,407 villages declaring themselves free of child marriage as of January 2022. This model has become a replicable strategy, showing how community ownership and public declarations can shift social norms.

National Initiatives to Eliminate Child Marriage

- India's legal and policy framework to prevent child marriage is anchored in the *Prohibition of Child Marriage Act (PCMA), 2006*, which explicitly prohibits the marriage of girls under 18 and boys under 21 years of age. Complementing this, the *National Action Plan to Prevent Child Marriage* offers a comprehensive roadmap aimed at safeguarding girls who are at risk, through education, protection, and empowerment.
- The *Bal Vivah Mukt Bharat* campaign adds momentum to the legislative and policy push by advocating for uniform legal provisions that set 18 as the minimum age of marriage for all individuals, without exceptions. This initiative emphasizes the importance of legal clarity and equal protection for children under the law.
- At the international level, India is also engaged with the *UNFPA-UNICEF Global Programme to End Child Marriage (GPECM)*, launched in March 2016. This global initiative promotes the rights of adolescent girls and works to eliminate child, early, and forced marriages through advocacy, education, and community engagement.

GEOGRAPHY, ENVIRONMENT AND DISASTER MANAGEMENT

Revised Guidelines for Tree Plantation under the Green Credit Programme (GCP)

The Union Ministry of Environment, Forest and Climate Change has recently issued an updated methodology for awarding green credits under the Green Credit Programme (GCP), significantly modifying the earlier framework. These changes pertain to key areas such as eligibility criteria, the assessment timeframe, and the permitted uses of credits. The revised rules represent a clear departure from earlier norms and aim to improve the quality and credibility of ecological restoration efforts.

Understanding the Green Credit Programme (GCP)

- The Green Credit Programme was formally introduced in November 2023 during the United Nations Climate Change Conference (COP28) held in Dubai. The Prime Minister of India launched the initiative as a voluntary environmental incentive system. The core aim of GCP is to encourage individuals, corporate entities, and community groups to engage in activities that support environmental conservation, including tree plantation, water conservation, and waste management.
- Under the programme, participants undertake voluntary ecological protection measures in return for green credits issued by the Environment Ministry. These credits are intended to serve as a form of recognition and accountability for positive environmental actions.

Significant Revisions in the Methodology

- The latest notification introduces a series of changes to the rules governing the awarding of green credits, particularly in relation to tree plantation. These revisions are designed to enhance the programme's effectiveness and long-term ecological impact.
- Under the previous methodology, green credits were granted based on a simple benchmark: a minimum density of 1,100 trees per hectare, achieved within two years of plantation. However, this approach was widely criticized for ignoring key ecological factors such as the survival rate of planted trees, the health of the forest, and the quality of the resulting canopy cover.
- The revised guidelines now require a minimum of five years of active restoration work on degraded forest land before green credits can be awarded. This change signals a shift in focus from quantity to quality. Credits will be calculated based on the change in vegetation status, including canopy density—which must reach a minimum of 40 percent—and the number of surviving trees. This longer time frame and quality-centric approach seek to ensure that plantations are not just established but are also sustained over time.

Reforms in Credit Tradability

- Another significant change pertains to the tradability of green credits earned through tree plantation activities. Previously, these credits could be traded freely in the market, allowing companies and other entities to buy and sell them as needed.
- Under the new rules, however, green credits linked to tree plantation are no longer tradable or transferable, with the sole exception of intra-corporate transfers between a parent company and its subsidiary. This restriction aims to prevent the commercialization of environmental actions and to preserve the authenticity of voluntary contributions to ecological restoration.

Permissible Applications of Green Credits

- Although the revised guidelines place restrictions on tradability, the utility of green credits remains intact for several critical purposes. Participants involved in tree plantation efforts under the GCP are still allowed a one-time exchange of green credits. These credits may be used to fulfil compensatory afforestation requirements, to meet corporate social responsibility (CSR) mandates, or to satisfy other legal obligations related to tree planting.
- Once the credit has been exchanged for any of these legal purposes, it becomes invalid for further use. Additionally, credits may be used for environmental reporting under environmental, social, and governance (ESG) leadership indicators, allowing corporations to demonstrate their environmental responsibility without treating the credits as financial instruments.

Underlying Rationale for Policy Overhaul

- The driving force behind these revisions is a clear shift in emphasis from superficial plantation metrics to measurable ecological outcomes. The earlier focus on tree count per hectare has given way to more meaningful indicators such as canopy density and long-term survival. By requiring a five-year restoration commitment, the updated rules promote the development of resilient ecosystems rather than short-term afforestation projects.
- Government afforestation initiatives have often been criticized for prioritizing the number of trees planted over their long-term survival and ecological value. The revised rules directly address this concern by ensuring that environmental contributions are not only substantial in scale but also sustainable in impact.
- Moreover, the new methodology is expected to strengthen the credibility of the Green Credit Programme. According to official data, 57,986 hectares of degraded forest land have already been registered under the GCP. With the implementation of the updated rules, the government anticipates improved transparency, accountability, and ecological outcomes from ongoing and future restoration efforts.

Conclusion: Towards Meaningful Ecological Restoration

- The revised guidelines for the Green Credit Programme mark a pivotal transition from symbolic tree-plantation campaigns to substantive ecological regeneration. By shifting the emphasis to tree survival, canopy development, and long-term monitoring, the new rules aim to foster a more credible and impactful approach to environmental restoration.
- This transformation holds significant promise for enhancing India's climate resilience, preserving biodiversity, and encouraging greater corporate engagement in environmental stewardship. If implemented effectively, the revised programme could set a new standard for ecological accountability, making voluntary environmental actions a more robust pillar of India's climate strategy.

Dhauliganga Hydroelectric Project

- In a recent incident at the **Dhauliganga Hydroelectric Project**, **nineteen personnel from the NHPC** were successfully rescued after being trapped for nearly **22 hours** inside a tunnel. The tunnel is part of the **280 MW run-of-river hydroelectric project** located near **Dharchula** in **Pithoragarh district, Uttarakhand**, situated on the Dhauliganga River.
- The Dhauliganga River is a crucial tributary of the Alaknanda, which forms a key component of the **Ganga River system**. Construction on this hydropower project began in the year **2000**, and it became operational in **2005**. The project is currently owned and operated by the **National Hydroelectric Power Corporation (NHPC).**
- It features a **concrete-faced rock-fill embankment dam**, standing **56 meters high** and extending **315 meters in length**. With a reservoir capacity of **6.2 million cubic meters**, the project operates with a **gross head of 310 meters** and a **net head of 297 meters**, making it a significant component in Uttarakhand's hydropower landscape.
- This project is vital not only for energy generation but also for demonstrating the strategic use of India's river systems in renewable energy. The recent rescue highlights both the risks involved in hydroelectric operations and the preparedness of response teams in managing emergencies.

Dioscorea balakrishnanii

- A newly discovered **edible tuber** has been identified by researchers in Kerala and named **Dioscorea balakrishnanii**. Found in the **Western Ghats** region of **Wayanad**, this tuber belongs to the **genus Dioscorea** and has been locally referred to as **'chola kizhangu'** by the **Kattunayikar tribal community**. When cooked, the tuber is edible and said to possess an excellent flavour.
- This species is endemic to the **sholas of evergreen forests** and grows exclusively in this fragile ecosystem. Due to its high adaptability and nutritional potential, **Dioscorea balakrishnanii** is considered a promising candidate for **food security initiatives**. It also holds potential for **agricultural cultivation**, especially as a crop

with a **low glycemic index**, making it valuable for health-conscious diets.

- Botanists have observed this species over the past **ten years**, noting the clear differences in floral structures between **male and female plants**. The Wayanad region, already recognized for its rich diversity of **wild tubers**, hosts over **14 species** with **23 different forms**, including the commonly cultivated relatives such as **kachil** and **kavat** (purple yams). These tubers are part of the **Dioscoreaceae family**.
- The discovery of Dioscorea balakrishnanii is particularly important not just from a botanical standpoint, but also in the context of **biodiversity conservation**, **traditional food systems**, and **the medicinal sector**. It emphasizes the need to protect ecologically sensitive zones like the Western Ghats and to recognize the role of indigenous knowledge in sustainable food systems.

Indian Rosewood

- Recent habitat modeling by the Institute of Wood Science and Technology (IWST), Bengaluru, has revealed that only 17.2% of suitable habitat for Indian rosewood (Dalbergia latifolia) lies within protected areas in India. Often dubbed the "ivory of the forests," this species, known in the north as Dalbergia sissoo, is a fast-growing, hardy, and deciduous tree prized for its rich wood grain, deep color, and durability.
- Indian rosewood is native to the foothills of the Himalayas, with a natural range stretching from Afghanistan to Bihar. It typically grows along riverbanks above 200 meters, with its elevation range extending up to 1,400 meters. The tree bears long, leathery leaves and white to pink flowers, contributing to its ornamental and ecological value.
- In terms of usage, Indian rosewood is extensively harvested for furniture, musical instruments, veneers, and decorative handicrafts. Its ecological role is equally vital—it fixes nitrogen, enriches soil fertility, and supports diverse bird and insect populations. Moreover, it acts as a long-term carbon sink, contributing to climate regulation.
- However, the species is currently facing serious threats. Studies indicate that existing populations are largely composed of mature, aging trees, with little to no natural regeneration. The scarcity of seedlings in the wild raises concerns about the species' long-term survival. Accordingly, Indian rosewood is listed as "Vulnerable" by the IUCN and is included in Appendix II of CITES, reflecting the need for both conservation action and regulated trade.

Mini Cloudbursts

- The **India Meteorological Department (IMD)** has recently clarified that while **major cloudbursts** are not showing an increasing trend, instances of **"mini cloudbursts"** are becoming more frequent across India. These are short but extremely intense rain events that, despite being smaller in scale, have the potential to cause significant damage.
- A **mini cloudburst** is characterized by **intense rainfall of 5 cm or more within an hour** over a **small geographical area** of approximately **20 to 30 square kilometers**. Though not as severe as full-fledged cloudbursts, which require rainfall of **10 cm or more per hour**, mini cloudbursts can still lead to serious **flash floods**, **landslides**, and **urban inundation**, particularly in **hilly or densely built environments**.
- Unlike larger cloudbursts, mini cloudbursts are **difficult to forecast** in advance due to their **localized and sudden nature**. The IMD currently relies on **nowcasting techniques** based on **satellite imagery and radar** to detect potential heavy rainfall zones, although **real-time ground monitoring** remains limited in remote regions.
- These phenomena are increasingly being reported from **Himalayan states** such as **Himachal Pradesh**, **Uttarakhand**, **Jammu & Kashmir**, and **Ladakh**, as well as from **urban hotspots** like **Mumbai**, **Delhi NCR**, and **Chennai**, where **orographic lifting** and **urban heat effects** amplify rainfall intensity.
- Even rainfall levels of **2–5 cm/hour** in mountainous terrains can lead to **infrastructure collapse**, **loss of lives**, and **widespread property damage**, placing additional pressure on India's **disaster management systems** and **climate adaptation strategies**.

CSEP Report on Climate Finance for Hard-to-Abate Sectors in India

- The **Centre for Social and Economic Progress (CSEP)** released a working paper titled **"India's Climate Finance Requirements,"** which evaluates the financial resources India will need to significantly decarbonize four major 'hard-to-abate' sectors: **power, road transport, steel, and cement**, over the period from 2022 to 2030. These sectors are termed 'hard-to-abate' because their production processes are both energy- and emissions-intensive, making decarbonization particularly challenging.
- Key findings indicate that India's contribution to global carbon emissions has risen markedly—from **2.5% in 1990** to an estimated **8.2% in 2023**. Despite this increase, India's per capita emissions remain below the global average. The report also underscores the severe economic risks posed by climate change, projecting potential per capita GDP losses of **2% by 2030**, escalating to between **3% and 9% by 2047**, depending on mitigation success.
- Financially, the total annual climate finance requirement to substantially reduce emissions in these four sectors is estimated at approximately **1.3% of India's GDP**. To meet this, the report advocates several policy directions. These include incentivizing private sector investment through regulatory support, particularly to promote low-carbon technologies and the adoption of electric vehicles.
- The government is urged to take an active role in building essential infrastructure, such as EV charging networks, and in investing in research and development focused on grid management, battery storage, and hydro-pumped storage for the power sector. Furthermore, the report highlights the importance of international cooperation, particularly for the transfer of **Carbon Capture and Storage (CCS)** technologies critical to decarbonizing these sectors.

"Two-System Interaction" Weather Phenomenon Causing Heavy Rainfall and Landslides in Northwest India

- The India Meteorological Department (IMD) identified a complex weather event called the **"two-system interaction"** as the cause of recent heavy rainfall and landslides in Northwest India. This phenomenon occurs when the **monsoon trough** interacts with an **active western disturbance**, creating highly unstable atmospheric conditions.
- The monsoon trough is an elongated low-pressure zone extending from Northwest India to the Bay of Bengal, acting as a semi-permanent feature of the monsoon circulation. Typically, its southward movement triggers active monsoon weather across the country. During this event, the western end of the monsoon trough remained near its usual position, while the eastern end was situated further south than normal.
- Western disturbances are low-pressure systems that generally move from west to east across northern India during winter, originating from the Mediterranean region. These systems bring clouds and precipitation and, when converging with the monsoon system, they significantly amplify rainfall intensity.
- In this instance, a western disturbance manifested as a cyclonic circulation over Northwest India, drawing moisture from both the **Arabian Sea and Bay of Bengal**. The convergence of these circulations led to the extreme weather experienced in the Himalayan foothills, causing severe rainfall and landslides.

Air Quality Life Index (AQLI)

- According to the 2025 edition of the **Air Quality Life Index (AQLI)** report, air pollution remains India's most critical health hazard, reducing the average life expectancy by 3.5 years. The index, developed by Michael Greenstone and the Energy Policy Institute at the University of Chicago (EPIC), offers a scientific quantification of how long-term exposure to air pollution, specifically PM2.5 particles, affects human life expectancy.
- The AQLI integrates empirical research on air pollution exposure with global air quality data to determine its real-life impact on communities. The 2025 report finds that air pollution now causes nearly double the life expectancy loss compared to malnutrition in children and mothers and more than five times the loss caused by unsafe water, poor

sanitation, and inadequate hygiene practices combined.

- Alarmingly, all 1.4 billion people in India reside in regions where PM2.5 concentrations exceed the World Health Organization's recommended safe limit of 5 micrograms per cubic metre. The northern part of India continues to be the most polluted, with 544.4 million individuals—or 38.9 percent of the national population—living under extreme air pollution.
- Delhi and the surrounding National Capital Region (NCR) are the most severely affected, with a potential life expectancy loss of 8.2 years per person if WHO norms are used as a benchmark. Even under India's more lenient national standard of 40 $\mu g/m^3$, the projected loss is still substantial at 4.74 years. Other states such as Bihar, Haryana, and Uttar Pradesh report average life expectancy reductions of 5.6, 5.3, and 5 years, respectively.
- The report also finds that 46 percent of India's population resides in areas that exceed even the national air quality standard. Should India manage to meet its own PM2.5 benchmark, the average citizen could gain 1.5 additional years of life. In cleaner regions, compliance with WHO's 5 $\mu g/m^3$ guideline would still result in an average increase of 9.4 months in life expectancy.
- The 2025 AQLI report further indicates that South Asia continues to be the most polluted region in the world. After a brief improvement in 2022, PM2.5 levels rose by 2.8 percent in 2023. On average, air pollution cuts three years off life expectancy across the region and more than eight years in the most affected zones.

Swarnamukhi River

- In a decisive step to restore and rejuvenate the Swarnamukhi River, the Tirupati Urban Development Authority (TUDA) has recently launched *Operation SWARNA*. This comprehensive initiative aims to rescue the river from illegal encroachments, revive its natural flow, and ensure its long-term ecological sustainability.
- The Swarnamukhi River is a significant east-flowing river in the Indian state of Andhra Pradesh. Despite its modest scale, it plays a vital role in the region's religious, environmental, and hydrological landscape. The river's total catchment area spans 3,225 square kilometres. It originates at an elevation of approximately 300 meters in the Eastern Ghats near Pakala village in Chittoor district. From there, the river flows northeast, passing through the sacred hills of Tirupati before eventually merging into the Bay of Bengal. The river's entire course stretches over 130 kilometres.
- Along its path, the Swarnamukhi traverses areas of deep cultural and spiritual significance, particularly in Tirumala and Srikalahasti, which house prominent Hindu temples, including the revered Srikalahasteeswara Temple. Unlike larger river systems that are part of wider networks, the Swarnamukhi is independent, receiving no inflow from other major rivers. Its water flow is predominantly governed by monsoon rainfall, especially in its upper catchment area. Rainfall across the basin is unevenly distributed, ranging from about 1270 mm in the eastern regions to around 762 mm in the west.
- The Kalyani River serves as its principal tributary, and in 1977, the Kalyani Dam was constructed across it to support water management and regional needs. The current restoration mission seeks to revive the ecological integrity of this important but vulnerable river system.

Killer Whales

- Recent behavioural studies on **killer whales**—also known as orcas—suggest a fascinating possibility: these highly intelligent marine mammals may be experimenting with human interaction by offering prey and waiting for a response, potentially as a form of social learning or communication.
- Killer whales are the apex predators of the oceans and belong to the Delphinidae family, making them the largest members of the dolphin family. Despite often being referred to as whales, they are in fact closely related to dolphins. This family also includes species such as the long-finned and short-finned pilot whales, which, despite their names, are also dolphins.

- Orcas are renowned for their advanced social structures and tend to live in groups called pods. These pods are typically composed of maternally related individuals who are observed together for the majority of their lives. Communication, navigation, and hunting in these species are deeply reliant on echolocation and underwater sound signals, which reflect their high cognitive abilities.
- Physically, killer whales are among the most iconic marine mammals, instantly recognisable due to their stark black-and-white colouration. They inhabit a broad range of marine environments, from open oceanic expanses to coastal waters across all major oceans.
- Despite their resilience, killer whales face increasing threats from human activities. One of the primary dangers is entanglement in commercial fishing gear, while habitat degradation due to marine pollution and shipping traffic poses additional concerns. On the conservation front, the International Union for Conservation of Nature (IUCN) lists the species as "Data Deficient," underscoring the need for further research and monitoring to understand their population dynamics and threats.

Srivilliputhur–Megamalai Tiger Reserve (SMTR)

- Environmental concerns have recently been raised over unauthorized road construction and repair works within the **Srivilliputhur–Megamalai Tiger Reserve (SMTR)** in Tamil Nadu's Theni district. These developments threaten the ecological integrity of the reserve, which lies in one of India's most biologically rich and sensitive zones.
- The SMTR spans across the districts of Theni, Virudhunagar, and Madurai and is situated within the ecologically critical Western Ghats region. Formed in February 2021, the reserve was created by merging two existing protected areas: the Grizzled Squirrel Wildlife Sanctuary and the Megamalai Wildlife Sanctuary.
- Functioning as a vital corridor, the SMTR connects two important conservation areas: Kerala's Periyar Tiger Reserve and Tamil Nadu's Kalakkad-Mundanthurai Tiger Reserve. This linkage is crucial for maintaining genetic diversity and facilitating wildlife movement across the landscape.
- The reserve is nourished by three perennial rivers—Vaigai, Suruliyaru, and Shanmuganathi—which play an essential role in supporting its rich biodiversity. The vegetation in the area ranges from tropical evergreen and semi-evergreen forests to dry and moist deciduous woodlands, interspersed with grasslands.
- The faunal diversity includes large mammals such as tigers, elephants, leopards, Nilgiri tahrs, and gaurs. Other species found here include barking deer, sambar deer, wild boars, porcupines, Nilgiri langurs, and the endangered lion-tailed macaque. The bird population is equally diverse, with species like the red-whiskered bulbul, common iora, grey wagtail, and pied bush chat commonly spotted. Reptiles such as the monitor lizard, wood snake, and chameleon also inhabit the area, further underscoring its ecological richness.

Mauritania

- Recently, a migrant tragedy unfolded off the coast of Mauritania, where a boat capsized, resulting in at least 49 confirmed deaths and around 100 individuals reported missing.
- Mauritania is a nation located in northwest Africa, forming part of the Sahel region—a transitional ecological zone between the arid Sahara Desert to the north and the humid savannas to the south. The country occupies approximately 1,030,000 square kilometres and shares borders with Western Sahara, Algeria, Mali, and Senegal. The Atlantic Ocean forms its western boundary.
- Roughly 90 percent of Mauritania's land lies within the Sahara Desert, making it predominantly arid. One of its most remarkable natural features is the Guelb er Richat, commonly known as the Eye of the Sahara. This vast geological structure is an eroded dome composed of both intrusive and extrusive igneous rocks. Mauritania's principal water resource is the Senegal River, which is vital for agriculture and human settlement.
- The majority of Mauritania's population comprises Moors, who are descendants of Arab and Berber ancestry—North Africa's

original inhabitants. While much of the land is desert, the population is primarily concentrated along the coast and near the Senegal River in the southern region. Gaining independence from France in 1960, Mauritania took a significant step in 1981 by becoming the last country in the world to formally abolish slavery.

- The capital of the country is Nouakchott. Arabic is the official language, though other languages such as Fulani, Soninke, Wolof, and French are also commonly spoken. Islam is the state religion, deeply influencing the cultural and social norms of the population.
- Mauritania possesses a wealth of natural resources, including iron ore, gold, copper, gypsum, and phosphate. These extractive commodities constitute about 75 percent of the country's total exports. Additionally, Mauritania's coastal waters are considered among the richest global fishing zones, and fishing contributes another 20 percent to export earnings. Oil exploration is also ongoing, further positioning the country as a resource-rich nation in the region.

Afghanistan Earthquake and Country Overview

- A devastating earthquake registering a magnitude of 6.0 struck eastern Afghanistan near the city of Jalalabad, resulting in over 800 fatalities and injuring at least 2,800 individuals. The tremor caused extensive damage across the provinces of Kunar, Nangarhar, and Laghman.
- Afghanistan is a landlocked and ethnically diverse country situated in south-central Asia. It occupies a historically significant position at the crossroads of major trade routes that connect South Asia, Central Asia, the Middle East, and Europe. This strategic location has made Afghanistan a focal point in regional and global geopolitics, famously playing a central role in the "Great Game" rivalry between Britain and Tsarist Russia during the 19th century, and later serving as a battleground in Cold War conflicts.
- The capital of Afghanistan is **Kabul**. The country shares borders with **Pakistan**, **India**, **Iran**, **Turkmenistan**, **Uzbekistan**, **Tajikistan**, and has a short boundary with the Xinjiang region of China via the **Wakhan Corridor**.
- Geographically, Afghanistan is dominated by the rugged **Hindu Kush mountain range**, which forms part of the broader Himalayan mountain system. Many peaks exceed 6,000 meters, and important mountain passes such as the **Khyber Pass** and **Shebar Pass** serve as critical transit routes. The region is seismically active due to the tectonic interactions between the Eurasian and Indian plates, which contribute to frequent earthquakes.
- Afghanistan's river system includes several significant water bodies: the **Amu Darya** forms a natural boundary with Central Asia to the north, the **Kabul River** flows eastward into Pakistan's Indus River, and the **Helmand River**—the longest river in the country, stretching about 715 miles—drains southwestward into the Sistan Basin. The **Hari Rud** river forms part of the border between Afghanistan and Iran.
- The country's terrain can be broadly categorized into three regions: the **Central Highlands**, characterized by rugged mountains and active seismic zones; the **Northern Plains**, which are fertile, densely populated, and rich in natural gas reserves; and the **Southwestern Plateau**, known for its deserts such as Registan and Margow, arid climate, and sparse river networks.

Typhon Missile System

- In a notable development in Indo-Pacific military cooperation, the United States and Japan have agreed to the temporary deployment of the **Typhon missile system** in Japan as part of a joint military exercise. This move marks a strategic effort to strengthen regional deterrence capabilities.
- The Typhon Missile System—also known as the Mid-Range Capability (MRC)—is a modern surface-to-surface missile platform developed by the U.S. defence company Lockheed Martin. Designed with a modular and containerized structure, Typhon allows for the launching of multiple missile variants, including the SM-6 and the Tomahawk cruise missile.
- The SM-6 missile is capable of striking targets at distances exceeding 320 kilometres, while

the Tomahawk extends the reach even further with a deep-strike range of up to 1,500 kilometres. The entire Typhon system is road-mobile, offering flexibility in deployment and enhancing survivability through dispersal across multiple locations. This makes it ideal for precision-strike missions against both land-based and maritime targets, especially in contested environments.

- A complete Typhon battery comprises four launchers, a central command post, and multiple reload and support vehicles—all mounted on mobile trailers. The dual-purpose nature of the system makes it a key asset for strategic sea denial and precision ground attack operations, providing a tactical edge in modern warfare scenarios.

Marine Biodiversity Treaty's Preparatory Commission – Second Session

- The Preparatory Commission for the Marine Biodiversity Treaty recently concluded its second session. This treaty, formally known as the Agreement under the United Nations Convention on the Law of the Sea (UNCLOS) on the Conservation and Sustainable Use of Marine Biological Diversity of Areas beyond National Jurisdiction (BBNJ Agreement), was adopted in 2023 by the Intergovernmental Conference convened under the United Nations.
- The BBNJ Agreement stands as the third implementing agreement to UNCLOS, joining the 1994 Part XI Implementation Agreement and the 1995 UN Fish Stocks Agreement. Its primary objective is the conservation and sustainable use of marine biological diversity in areas beyond national jurisdiction, commonly referred to as the High Seas. These areas represent global commons, open to all for activities such as navigation, overflight, laying of submarine cables, and pipelines.
- The treaty covers the High Seas and the seabed (the "Area") and addresses four major components: the use and equitable sharing of marine genetic resources, establishment of area-based management tools including marine protected areas, conducting environmental impact assessments, and fostering capacity-building and technology transfer related to marine biodiversity.
- To support its implementation, the treaty establishes a funding mechanism and institutional structures, including a Conference of the Parties, a Clearing-House Mechanism, and a secretariat. India has signed the agreement but has not yet completed its ratification process.

India's Humanitarian Assistance and Disaster Relief (HADR) & Soft Diplomacy

Context:

A powerful earthquake measuring 6.0 on the Richter scale recently struck eastern Afghanistan near Jalalabad, resulting in the tragic loss of over 1,400 lives. In response to this humanitarian crisis, India dispatched 21 tonnes of critical aid, including essential medicines, tents, blankets, and water purifiers, reflecting its commitment to regional stability and support.

Understanding India's HADR and Soft Diplomacy Initiatives:

India's Humanitarian Assistance and Disaster Relief (HADR) framework encompasses its coordinated relief operations aimed at disaster-stricken areas, both within the country and internationally. Complementing this is India's use of soft diplomacy, which relies on humanitarian aid, cultural outreach, and other non-coercive means to build goodwill, elevate its international image, and deepen strategic ties with other nations.

Key Characteristics:

1. **Rapid Deployment:** Emergency relief materials are swiftly airlifted using Indian Air Force aircraft or transported via Indian Navy ships, ensuring timely support to affected regions.
2. **Comprehensive Assistance:** The aid typically includes vital supplies such as food, clean drinking water, medical kits, shelter materials, and sanitation tools, covering the most urgent needs of disaster survivors.
3. **Neutral and Apolitical Approach:** Indian aid is delivered without attaching political conditions or influencing the domestic affairs of recipient nations, ensuring the assistance is perceived as genuine and altruistic.
4. **Wider Global Engagement:** India's relief efforts have reached countries like Nepal during the 2015 earthquake, Sri Lanka

during its floods, as well as parts of Africa and small Pacific island nations, extending its humanitarian footprint.

5. **Strong Institutional Support:** Organizations such as the National Disaster Management Authority (NDMA), the National Disaster Response Force (NDRF), Indian Air Force, Indian Navy, and the Ministry of External Affairs (MEA) work collaboratively to implement these large-scale operations efficiently.

Strategic and Diplomatic Significance:

India's proactive role in HADR operations positions it as a reliable "first responder" in the South Asian and Indian Ocean regions. This strengthens bilateral relations with key neighbours including Afghanistan, Sri Lanka, Nepal, and the Maldives, fostering trust and regional stability. On a global stage, these initiatives enhance India's image as a responsible and compassionate power that lives by the ethos of *Vasudhaiva Kutumbakam*—the world is one family.

Painted Stork

Following the discovery of a dead painted stork near a pond and the detection of another ailing stork within the water bird aviary, authorities at the National Zoological Park have heightened surveillance and implemented stricter biosecurity measures to prevent the spread of potential disease.

About the Painted Stork:

Scientifically known as *Mycteria leucocephala*, the painted stork is a large wading bird recognized by its distinctive heavy yellow beak with a curved tip.

Habitat and Distribution:

These storks are commonly found across the tropical plains of Asia, particularly in the Indian subcontinent and parts of Southeast Asia, south of the Himalayan range. They prefer freshwater wetlands and are often seen in irrigation canals and flooded rice fields, especially during monsoons. However, they tend to avoid arid zones, dense forests, and hilly terrains. Although not truly migratory, they may undertake short-distance movements within their range in response to seasonal changes or breeding needs.

Physical Features:

Standing between 93 to 102 cm tall and weighing 2 to 5 kg, painted storks are notable for a black pectoral band—unique within their genus. They possess white plumage accented with a rose-pink hue near the tail, and their long yellow bills and yellowish-red legs complete their striking appearance. The legs often appear white due to a thermoregulatory behavior known as urohidrosis, where the bird defecates on its legs. There is minimal sexual dimorphism, though males are slightly larger than females.

Conservation Status:

Currently, the painted stork is classified as 'Least Concern' on the IUCN Red List, indicating a relatively stable population.

Land Subsidence in Chamoli, Uttarakhand

- Severe **land subsidence** has been reported in **Nanda Nagar**, situated in **Chamoli district of Uttarakhand**, resulting in the **collapse of seven buildings** and placing **sixteen others at risk**. The incident has triggered **mass evacuations** and widespread panic among residents.
- Land subsidence refers to the **gradual settling** or sudden **sinking of the Earth's surface** due to the movement or removal of underground materials. It can occur **naturally**, but is increasingly induced by **human activities**.
- **Globally**, regions affected include parts of the **United States** (such as Chesapeake Bay and Louisiana), **China, Indonesia, and Iran**. In India, major subsidence events have occurred in **Joshimath**, **Chamoli**, **Himachal Pradesh**, and the **Delhi-NCR region**, largely due to **excessive groundwater withdrawal**.

Several key factors contribute to land subsidence:

- **Tectonic Setting**: The Himalayan region lies on an **active plate boundary**, where the **Indian Plate** is pushing into the **Eurasian Plate**, creating a fractured and unstable geological base that facilitates ground sinking.
- **Lithology (Soil and Rock Composition)**: Areas with **fine-grained alluvial soil**, **clay-rich sediments**, or **unconsolidated material** are more prone to subsidence when water is removed.
- **Hydrology (Water Flow)**: **Over-extraction of groundwater** lowers the water table and reduces pore pressure, causing compression of soil layers.
- **Geomorphic Forces**: **Heavy rainfall, floods, and glacial melt** add mass to

slopes and weaken their stability, increasing the risk of subsidence.
- **Human Activities**: **Mining, tunnelling, hydropower development**, and **unregulated construction** disturb the geological balance and hasten land degradation.

The consequences of land subsidence are far-reaching. It results in **displacement of communities**, **loss of property**, and long-term **psychological trauma**. Infrastructural damage includes **cracks in roads**, **building collapses**, and **disruption of utilities** such as pipelines and power lines. Economically, it leads to increased **rehabilitation costs**, **loss of tourism revenue**, and puts a **strain on disaster relief resources**.

Jarosite Discovery in Gujarat

- In a significant geological finding, researchers have confirmed the presence of **jarosite** in **Matanomadh**, located in the **Kutch region of Gujarat**. This discovery draws parallels with a similar identification made on **Mars** nearly two decades ago, providing a potentially valuable comparison for planetary science.
- **Jarosite** is a yellow-brown mineral primarily composed of **potassium, iron, and sulphate**, and is typically found in **arid, saline environments**. Its formation is considered a marker of **extreme geochemical conditions** and offers critical insights into complex **environmental and planetary processes**. On Earth, jarosite typically forms when minerals rich in **oxygen, iron, sulphur, and potassium** interact with water, a process often linked to **volcanic activity**.
- The mineral gained international attention in 2004, when **NASA's Opportunity rover** detected jarosite at the **Meridiani Planum** landing site on Mars. That Martian discovery provided one of the strongest indicators that **water once existed** on the planet.
- In the Indian context, the jarosite found in **Matanomadh** has been dated to around **55 million years ago**, corresponding to the **Paleocene epoch** of Earth's geological timeline. Apart from Gujarat, its presence in India has also been verified along the **Varkala cliffs in Kerala**. Globally, jarosite deposits have been reported in regions including **Mexico, Canada, Japan, Spain**, as well as in **Utah and California in the United States**.
- The scientific significance of this discovery lies in its potential to contribute to the understanding of **Martian palaeo-environmental evolution** and **chemical processes** that occurred in the planet's past. More importantly, since **sulphate minerals like jarosite** are known to **trap organic molecules and life-supporting elements**, the examination of jarosite samples from **Kutch** could inform strategies for future Mars missions aimed at **detecting life** or its precursors on the Red Planet.

Gastrochilus pechei – New Orchid Discovery

- Researchers have recently identified a new species of orchid, *Gastrochilus pechei*, in **Vijoynagar**, a remote region of **Arunachal Pradesh**. This species had previously only been recorded in Myanmar, making its discovery in India both significant and unique.
- The plant belongs to the **Gastrochilus** genus and is known to bloom during the **September–October** period. It thrives in **moist evergreen rainforests**, particularly on small trees growing close to riverbanks. The discovery marks the 23rd species of the genus recorded in India, with 15 of those species being native to Arunachal Pradesh.
- Arunachal Pradesh, often referred to as the **Orchid State of India**, is home to nearly **60% of the country's orchid species**. The *Gastrochilus* genus itself was first recorded in **1825** and currently includes **77 species** found across tropical, subtropical, and temperate regions of Asia.
- Botanically, this genus is characterised by: Short axillary inflorescences with brightly coloured flowers, a distinct **epichile** positioned in front of the **saccate hypochile**, and two **porate, globose pollinia** situated on a slender stipe.
- The finding contributes to the understanding of India's rich floral biodiversity and reinforces Arunachal Pradesh's status as a critical orchid habitat.

Sudan

Context: In a devastating natural disaster, a massive landslide in the Darfur region of Sudan has claimed the lives of over 1,000 people and completely flattened a mountain village in the Marra Mountains.

Geographic and Political Overview:

- Sudan is a country located in northeastern Africa. Historically referred to as *bilād al-sūdān* or "land of the blacks" by medieval Arab geographers, Sudan gained independence in 1956. It is currently governed by a transitional administration headed by President General Abdel Fattah al-Burhan.
- Strategically positioned at the crossroads of Africa and the Arab world, Sudan reflects a blend of Mediterranean and African cultural influences. Once the largest country in Africa, Sudan underwent territorial reduction following the secession of South Sudan in 2011.
- The national capital is Khartoum, located at the confluence of the White Nile and Blue Nile rivers. Sudan shares its borders with Egypt, the Red Sea, Eritrea, Ethiopia, South Sudan, the Central African Republic, Chad, and Libya.

Key Physical Features:

- Sudan's geography is marked by diverse terrains. The Marra Mountains in Darfur form volcanic highlands with elevations reaching up to 3,000 meters. Other significant formations include the Nuba Mountains, characterized by isolated rocky hills known as inselbergs.
- The Nile River system is the most dominant hydrological feature, with the White Nile and Blue Nile converging at Khartoum. The northern region consists of vast deserts, particularly the Qawz region with its rolling sand dunes. In the northeast, the Red Sea Hills rise prominently, while the south-central area features clay plains.
- Soil types vary across the country, from fertile alluvial clays in the agriculturally significant Gezira plain to the sandy and rocky soils of the arid northern deserts.

Environment Audit Rules, 2025

The Ministry of Environment, Forest and Climate Change has introduced the Environment Audit Rules, 2025. These rules aim to institutionalize environmental auditing nationwide, enhancing compliance monitoring while simultaneously supporting ease of doing business across India.

Key Provisions:

- The newly established *Environment Audit Designate Agency (EADA)* is responsible for certifying, registering, overseeing, and training environmental auditors.
- Only *Registered Environment Auditors (REAs)* are authorized to conduct environmental audits. Their certification will depend either on the scrutiny of their qualifications and experience or through an examination. To ensure neutrality, auditors will be randomly assigned to projects.
- REAs are tasked with sampling and analysis, assessing environmental damage and compensation, verifying green credit claims, and conducting audits under waste management and other environment-related laws.

A two-tier system has been introduced:

- **Tier 1**: Continuation of regulator-led compliance reviews by agencies such as CPCB, SPCBs, and regional offices of the ministry.
- **Tier 2**: Incorporation of audits led by REAs, bringing in independent expertise.

The ministry remains the primary oversight authority, while CPCB/SPCB/regional offices support inspections and implementation. A steering committee chaired by an Additional Secretary from the ministry monitors implementation and suggests reforms.

Beas and Sutlej Rivers

Context:

- Recent flooding due to rising water levels in the Beas and Sutlej rivers has severely impacted **Marar village in Tarn Taran, Punjab**, leading to erosion and damage to residential areas despite ongoing efforts to strengthen the embankments.
- **The Beas River** originates near **Rohtang Pass** in the **southern Pir Panjal Range** of **Himachal Pradesh**, at an altitude of approximately **4,062 meters**. It flows exclusively within India, covering a distance of **about 460 to 470 kilometers**. The river traverses through the districts of **Kullu, Mandi, and Kangra** in Himachal Pradesh before entering Punjab and eventually merging with the Sutlej River at **Harike**. Encompassing a **basin area of roughly 20,300 square kilometers**, the Beas is historically significant, known in ancient texts as **Vipasa** (Vedic) and **Hyphasis** (Greek). The river divides into multiple channels in its

lower stretches before converging again and serves as a crucial source of **irrigation, drinking water, and hydroelectric energy**.

- **The Sutlej River**, on the other hand, has its origins in the **Mansarovar–Rakastal lakes** located in **western Tibet**, at an altitude of approximately **4,570 meters**, where it is known as **Langqen Zagbo**. It flows in a northwesterly direction to cross into India at **Shipki La** on the **Tibet–Himachal Pradesh border**. The river carves deep gorges through the **Himalayas** before reaching the **Punjab plains at Rupnagar (Ropar)**. It later converges with the Beas River at Harike, flows into **Pakistan**, and ultimately joins the **Indus River** near **Mithankot**.
- Out of its total length of **1,450 kilometers**, about **1,050 kilometers** lie within India. The Sutlej's **catchment area** spans approximately **56,860 square kilometers**, of which **20,000 square kilometers** are within Indian territory. Major features of the river include the **Bhakra Dam**, constructed at **Naina Devi Dhar**, and its role in demarcating nearly **120 kilometers** of the **India–Pakistan boundary** in Punjab. Among its key tributaries are the **Beas** and **Ravi** rivers.

Punjab's Recurrent Flooding Crisis: A Complex Interplay of Rivers, Dams, and Governance Failures

Punjab is currently grappling with one of the most devastating floods in its history, with all 23 districts officially declared flood-affected. The disaster has impacted over 1,900 villages, displaced approximately 3.8 lakh residents, and damaged 11.7 lakh hectares of farmland. The death toll has risen to 43, with Gurdaspur emerging as the worst-hit district. Meanwhile, across the border, Pakistan's Punjab region has also experienced severe flooding, displacing more than 9 lakh people. While the region's geographical features make it naturally susceptible to floods, the crisis has been significantly worsened by human-induced factors.

Rivers: Punjab's Lifeline and Its Threat

- Punjab is sustained by three major perennial rivers — the Ravi, Beas, and Sutlej — along with the seasonal Ghaggar and various smaller hill streams (locally known as *choes*). These water bodies enrich the soil by depositing fertile alluvium, making the state one of the most agriculturally productive regions in the world. Despite occupying just 1.5% of India's land area, Punjab contributes nearly 20% of the country's wheat and 12% of its rice output, earning it the title of the "food bowl of India."
- However, the very rivers that enable Punjab's agricultural success also unleash destruction during the monsoon season. Rainfall within Punjab and in upstream catchments in Himachal Pradesh and Jammu & Kashmir causes rivers to swell beyond their carrying capacity. Although dhussi bundhs — earthen embankments — are built to protect surrounding areas, these structures are frequently overwhelmed by sudden surges in river volume.

Recurring Floods: A Persistent Pattern

Punjab has a long history of destructive floods, having experienced major inundations in 1955, 1988, 1993, 2019, and 2023. The pattern continued in 2024, when excessive rainfall once again triggered large-scale flooding. The Beas river, swollen by torrential rains in Himachal Pradesh, overflowed in August, inundating farmlands and villages across Kapurthala, Tarn Taran, Ferozepur, Fazilka, and Hoshiarpur. In the same period, the Ravi river swelled dangerously, and the collapse of two gates at the Madhopur Barrage led to catastrophic flooding in Pathankot, Gurdaspur, and Amritsar.

Compounding Effects of Excess Rainfall

The situation was aggravated by sustained rainfall across the state. While embankments along the Sutlej held firm, severe waterlogging plagued the Malwa region, impacting districts like Ludhiana, Jalandhar, Ropar, Nawanshahr, and Moga. According to the Indian Meteorological Department, Punjab, Himachal Pradesh, and Jammu & Kashmir all recorded rainfall over 45% above seasonal averages — a significant anomaly that exacerbated the flooding crisis.

Dams: Regulating Rivers, Exacerbating Floods

- Every major flood event in Punjab reignites scrutiny of the region's three key dams: the Bhakra Dam on the Sutlej (Bilaspur, Himachal Pradesh), the Pong Dam on the Beas (Kangra, Himachal Pradesh), and the Thein or Ranjit Sagar Dam on the Ravi (at the J&K–Punjab border). While the Bhakra and Pong dams are managed by the Bhakra Beas Management Board (BBMB) — a statutory body created

under the Punjab Reorganisation Act of 1966 — the Ranjit Sagar Dam is overseen by Punjab's State Power Corporation and the Irrigation Department. These dams are meant to regulate river flow and play a central role in mitigating flood risks.

- When reservoir levels exceed safe limits due to heavy rainfall, dam operators are compelled to release water to prevent overtopping — a scenario that could be disastrous. The BBMB follows a "rule curve" based on hydrology and forecast data to guide storage and release decisions. However, during extreme weather events, these guidelines are often overtaken by the need for emergency discharges. This year, the Pong Dam recorded inflows 20% higher than in 2023 — an extraordinary surge. Similarly, the Bhakra Dam also experienced unusually high inflows, although such volumes are not entirely unprecedented.

Punjab's Long-standing Concerns with BBMB

Punjab has consistently accused the BBMB of prioritising irrigation and power generation over flood management. State officials argue that reservoir levels are deliberately kept high during July and August to ensure sufficient water for winter crops and electricity production. This practice leaves minimal buffer capacity to absorb sudden heavy rains in late monsoon months like August and September. Sudden, large-scale water releases — often issued without adequate warning — worsen flooding in downstream areas and leave district administrations scrambling to respond.

Governance Tensions and Institutional Shortcomings

At the heart of Punjab's dissatisfaction is the structure of the BBMB itself. The Board is a central body with a mandate heavily focused on irrigation and power supply, but not on flood control. Punjab feels that its influence over BBMB decisions is limited. The situation deteriorated further in 2022, when the Centre amended BBMB rules to allow officers from any Indian state — not just Punjab and Haryana — to be appointed to top leadership roles. This move was met with strong criticism from Punjab, which accused the BBMB of delaying water release until the last possible moment, then opening gates abruptly, thereby aggravating flood impacts.

The Broader Governance Failure Behind the Crisis

Experts point to a combination of poor dam management, inadequate early warning systems, and fragile infrastructure as major contributors to this year's catastrophic flooding. The sudden release of water from the Thein Dam, coupled with the collapse of two gates at the Madhopur Barrage, underscores glaring coordination failures within Punjab's own Irrigation Department. Environmentalists also highlight how reservoirs at Bhakra, Pong, and Ranjit Sagar dams were kept dangerously full and later emptied too quickly — triggering severe downstream inundation. Compounding the situation were weak dhussi bundhs, many of which had been structurally compromised by illegal sand mining activities.

Conclusion

Punjab's flood crisis is not merely the result of natural forces but a reflection of deeply rooted governance failures, institutional rigidity, and short-sighted water management. As climate variability increases the frequency and intensity of extreme rainfall events, a coordinated and science-based approach to dam operations, infrastructure reinforcement, and inter-agency communication is urgently needed to protect lives, livelihoods, and the agricultural backbone of the state.

Centre Approves Independent Environment Auditors under Environment Audit Rules, 2025

In a significant step towards reforming India's environmental governance framework, the Ministry of Environment, Forest and Climate Change (MoEFCC) has notified the **Environment Audit Rules, 2025**, introducing a new category of certified and registered **independent environment auditors**. These auditors, licensed private agencies analogous to chartered accountants, will be empowered to inspect projects and verify compliance with various environmental regulations. Their role is designed to supplement the work of State Pollution Control Boards (SPCBs) by conducting environmental audits, impact assessments, and ensuring implementation of pollution prevention and control measures in line with legal and regulatory mandates.

Purpose and Rationale for the Environment Audit Rules

- The Environment Audit Rules, 2025, are rooted in the government's broader objectives of enhancing **Ease of Doing Business** while strengthening the foundations of **sustainable governance**. Drawing inspiration from global best practices, the rules aim to rectify long-standing gaps in environmental compliance monitoring. Presently, oversight responsibilities lie with the Central Pollution Control Board (CPCB), State PCBs, and MoEFCC's regional offices. However, these institutions often operate under severe constraints—limited manpower, insufficient infrastructure, and overstretched resources—which compromise the efficacy of environmental regulation and enforcement.
- The new rules introduce a mechanism that directly addresses these constraints by integrating private expertise into the compliance monitoring system. This model is intended to foster **transparency, accountability, and credibility**, thereby strengthening public trust in the environmental regulation regime.

Key Provisions and Institutional Mechanisms

Under the new framework, a dedicated body known as the **Environment Audit Designated Agency (EADA)** will be responsible for **certifying and registering environment auditors**. Two primary categories of auditors are defined:

- **Certified Environment Auditors (CEAs)**: Individuals who qualify through either a Recognition of Prior Learning process or a National Certification Examination.
- **Registered Environment Auditors (REAs)**: Certified professionals officially licensed to perform audits and enforce compliance assessments under the new rules.

Auditors will be assigned to projects **randomly** to reduce potential bias or conflicts of interest. Once appointed, they are mandated to:

- Verify compliance with environmental regulations, including those pertaining to **Green Credit Rules**, waste management laws, and forest and environmental legislation.
- Conduct **sampling, testing, and analysis** of environmental parameters.
- Verify **self-declared compliance reports** filed by industries and project developers.
- Calculate compensation for environmental damage where necessary.

These responsibilities mark a considerable expansion of the auditor's role, as they are now expected to ensure accurate compliance reporting and provide scientific verification that can influence regulatory and legal decisions.

Institutional Oversight and Governance Structure

The overarching implementation and monitoring of the Environment Audit Rules will be supervised by a **Steering Committee**. This body will be chaired by an Additional Secretary of the MoEFCC and will include representatives from various regulatory agencies, including CPCB, SPCBs, and regional offices. The committee's mandate includes:

- Reviewing the performance and effectiveness of the audit regime.
- Resolving operational challenges.
- Proposing periodic reforms and updates to the regulatory framework.

In parallel, the EADA will manage an online registry of certified auditors, develop training modules, and ensure that auditors maintain updated knowledge of evolving environmental regulations and audit methodologies.

Expected Outcomes and Impacts

The Environment Audit Rules, 2025, are expected to produce multiple positive outcomes across India's environmental regulatory landscape. These include:

- **Improved Compliance**: The involvement of independent auditors is anticipated to enhance the credibility and enforceability of monitoring systems.
- **Integration with Key Frameworks**: The audit process will support national programs such as the **Green Credit Programme**, **Ecomark certification**, and **Extended Producer Responsibility (EPR)** under waste management laws.
- **Capacity Expansion**: The inclusion of trained private professionals will allow government regulators to focus on high-risk industries, complex enforcement actions, and long-term policy development.

- **Transparency and Accountability**: Randomised assignment of auditors mitigates conflicts of interest and promotes public confidence in the audit process.
- **Digitised Governance**: With all audit findings stored electronically, policy-makers can use this data to inform decisions, drive targeted interventions, and increase disclosure.
- **Proactive Risk Mitigation**: The early detection of non-compliance allows for timely corrective action, thereby reducing the risk of long-term environmental damage.

Significance of the Shift in Monitoring Approach

The introduction of independent environment auditors represents a substantial shift in India's environmental monitoring strategy. By broadening the scope of enforcement beyond traditional pollution control boards, the government is making a deliberate move towards **professionalising and decentralising environmental audits**. This structural change also acknowledges the growing need for **data-driven, technically robust, and scalable monitoring systems**, especially in the face of climate change, rising industrialisation, and increasing public scrutiny.

Bridging Regulatory Gaps through Private Participation

- India's existing environmental enforcement bodies face a mounting challenge: an ever-expanding number of projects and industrial facilities require supervision, while staffing and budget constraints persist. The incorporation of licensed private auditors directly addresses this gap. These auditors bring in specialised expertise necessary for evaluating compliance with complex and evolving environmental regulations, including carbon emissions accounting and pollution control technologies.
- Notably, their role is crucial in operationalising schemes like the Green Credit Programme, which requires technical assessment of efforts such as afforestation, water conservation, and waste treatment. This kind of evaluation demands skills and resources that many state-level regulators may not currently possess.

Challenges at the Local Level

- Despite the promise of the Environment Audit Rules, their implementation must also contend with challenges at the **grassroots level**. Environmental violations are frequently most severe in districts, blocks, and panchayats, where enforcement capacity is weakest. If the new system focuses predominantly on centralised or large-scale projects, there is a risk that **local-level environmental degradation may continue unchecked**.
- To ensure holistic governance, it is imperative that district and panchayat-level officers are equipped with the training, authority, and support needed to act on audit findings and enforce environmental laws effectively. Without this, even the most sophisticated audit frameworks may fail to produce meaningful change on the ground.

Conclusion

- The **Environment Audit Rules, 2025** represent a landmark step in modernising India's approach to environmental compliance. By creating space for independent, professionally certified auditors, the government has opened a new chapter in regulatory oversight—one that values transparency, accountability, and expertise. These reforms have the potential to significantly enhance the credibility and efficiency of India's environmental governance.

However, the ultimate success of the initiative will depend on how well it integrates with existing institutions, especially at the local level. Strengthening enforcement capacity across all tiers—national, state, and grassroots—will be essential to realising the full benefits of this forward-looking regulatory shift.

Land Acquisition for Great Nicobar Trunk Road Deemed Beneficial: Social Impact Assessment Report

A Social Impact Assessment (SIA) conducted by Atlas Management Consultancy Services (AMCS) Private Limited has concluded that the land acquisition process for the Great Nicobar Trunk Infrastructure Road is beneficial. The project involves the diversion of approximately 130 hectares of land within tribal reserves, sparking discussions around development, displacement,

and tribal rights in ecologically and culturally sensitive regions.

Understanding the Social Impact Assessment Framework

The SIA is a structured process involving research, planning, and the management of social change or consequences resulting from policies, plans, developments, and projects, as defined by the United Nations Environment Programme (UNEP, 2007). In India, the Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement (RFCTLARR) Act of 2013 mandates the conduct of a Social Impact Assessment and the preparation of a Social Impact Management Plan before any land acquisition takes place. This requirement extends across acquisitions for government purposes, public-private partnerships, and private entities acquiring land for public benefit.

The Broader Context of Tribal Displacement and Development

- Development projects in India frequently intersect with regions inhabited by indigenous communities, particularly those rich in forests and mineral resources. Historically, this has led to the displacement of tribal populations, as seen in projects like the Sardar Sarovar Dam and the Ken-Betwa River Link. The consequences of such displacement are far-reaching, including loss of traditional livelihoods, cultural erosion, psychological trauma, and the breakdown of social structures.
- To address these impacts, policies such as the RFCTLARR Act, 2013, outline provisions for compensation and rehabilitation. However, the rehabilitation process often faces numerous challenges, including inadequate compensation, limited community involvement, bureaucratic inefficiencies, and instances of corruption. These issues can undermine the effectiveness of resettlement efforts and deepen the marginalisation of tribal communities.

Moving Beyond Displacement: Toward a Holistic Approach

- While displacement and rehabilitation remain central to the discourse on land acquisition, a more comprehensive perspective involves empowerment, self-governance, education, and livelihood enhancement for tribal populations. Key legislative tools such as the Panchayats (Extension to Scheduled Areas) Act (PESA), 1996, and the Forest Rights Act (FRA), 2006, reinforce the authority of Gram Sabhas in decision-making processes concerning land and natural resources. These laws aim to preserve tribal autonomy and ensure informed consent in development projects.
- Efforts to improve the socio-economic conditions of tribal communities also include initiatives like the Eklavya Model Residential Schools, which aim to provide quality education in tribal areas, thereby improving long-term developmental outcomes. Furthermore, livelihood diversification programmes, such as the Van Dhan Vikas Kendras, support the value-addition of Minor Forest Produce (MFP) and help generate sustainable incomes for tribal households.
- In addition, schemes like PM JANMAN (Prime Minister's Janjatiya Adivasi Nyaya Maha Abhiyan) are geared towards the holistic development of tribal communities, addressing not just economic needs but also health, education, and access to basic infrastructure.

Conclusion

The SIA report on the Great Nicobar Trunk Infrastructure Road suggests that, while the diversion of tribal land is significant, the project carries potential benefits. However, this assessment must be weighed against the historical and ongoing concerns of displacement, inadequate rehabilitation, and the erosion of tribal rights. A sustainable and equitable approach requires not only legal compliance but also meaningful community participation, empowerment, and the integration of development with cultural and ecological sensitivity. This ensures that infrastructure growth does not come at the cost of tribal well-being, but rather contributes to their inclusive progress.

India's First Port-Based Green Hydrogen Pilot Project at V.O. Chidambaranar Port

- India has taken a major step in its clean energy transition with the launch of the **first port-based Green Hydrogen Pilot Project** at **V.O. Chidambaranar (VOC) Port** in **Tuticorin, Tamil Nadu**. Inaugurated by the Union Minister, this initiative positions VOC

Port as the country's first maritime facility to produce green hydrogen, marking a milestone in sustainable infrastructure development.

- The project comprises a pilot facility with a production capacity of **10 Nm^3 per hour**, developed at a cost of ₹3.87 crore. It is part of the **Coastal Green Shipping Corridor Project** under the broader **Viksit Bharat 2047** mission and the **Sagarmala Programme**, which aims to modernise port infrastructure and promote environmentally responsible shipping.
- The primary goals of this initiative include reducing dependence on fossil fuels, promoting **green shipping**, and establishing VOC Port as a hub for **green bunkering and refuelling** in South India. The hydrogen produced will be used to power **streetlights and electric vehicle (EV) charging stations** within the port colony. This pilot project is also closely linked with a proposed **Green Methanol Bunkering and Refuelling Facility**, which is estimated to cost ₹35.34 crore and have a storage capacity of 750 m^3.
- **VOC Port**, formerly known as Tuticorin Port, is one of India's 13 major ports. Located on the **Coromandel Coast**, it plays a critical role in the maritime trade and logistics of South India. Renamed in 2011 in honour of freedom fighter **V.O. Chidambaranar**, the port has seen significant infrastructure expansion under the Sagarmala programme, with over ₹16,000 crore invested in modernisation and sustainability.

Vulture Network Portal: A Conservation Milestone

An Assam-based initiative has led to the creation of India's first comprehensive digital platform dedicated to vulture conservation—the Vulture Network Portal.

- **Purpose and Function:** Developed by We Foundation India, with support from the Assam Bird Monitoring Network and other stakeholders, the portal aims to centralize scientific knowledge, increase public awareness, and distribute educational materials related to vultures. It serves as a cloud-based hub for those engaged in vulture conservation across India.
- **Key Areas of Focus:** The portal highlights the major threats to vulture populations, including carcass poisoning, the use of harmful veterinary drugs such as diclofenac, and negative public perceptions. It also promotes awareness in local languages, beginning with Assamese.
- **Vulture Species in India:** India is home to several vulture species, including the slender-billed vulture (with only around 800 mature individuals left), white-rumped vulture, red-headed vulture, Himalayan griffon, Indian vulture, cinereous vulture, Eurasian griffon, Egyptian vulture, and bearded vulture.

Mission Mausam: Advancing India's Weather Forecasting Capabilities

The India Meteorological Department (IMD) will install four new radars in Jammu and Kashmir under "Mission Mausam" to deliver more accurate, district-level weather forecasts.

Overview and Implementation: Launched in 2024 by the Ministry of Earth Sciences, Mission Mausam is jointly implemented by IMD, the National Centre for Medium-Range Weather Forecasting (NCMRWF), and the Indian Institute of Tropical Meteorology (IITM). The initiative aims to transform India's capacity for weather forecasting and climate prediction.

Objectives:

- Enhance forecasting across short-term, medium-term, and seasonal scales
- Develop high-resolution models for monsoon prediction
- Expand observational networks with advanced technology
- Offer actionable advisories for agriculture, energy, health, water, and disaster management
- Promote research collaborations at national and international levels

Significance:

Mission Mausam represents a major leap in India's climate resilience strategy. By providing accurate and timely forecasts, it supports sustainable development, safeguards infrastructure, and protects livelihoods against the growing challenges posed by climate variability.

MY Bharat and the Role of Aapda Mitras in Disaster Response

- The Union Minister of Sports and Youth Affairs has announced the mobilisation of **MY Bharat Aapda Mitras** to assist in **rescue operations** in the flood-affected regions of **Punjab and Himachal Pradesh**. These youth volunteers are set to play a critical role in delivering emergency services and ensuring aid reaches the most vulnerable communities during floods and landslides.
- **MY Bharat** (Mera Yuva Bharat) is an **autonomous body** established under the **Department of Youth Affairs**, within the **Ministry of Youth Affairs and Sports**. Its primary mission is to provide **equitable digital access** to opportunities for Indian youth, helping them realise their aspirations while contributing to the vision of **Viksit Bharat**. Designed specifically for the 15–29 age group, the platform offers a wide range of resources—mentorship programmes, experiential learning modules, networking tools, and crucial industry linkages—to support youth development.
- A key initiative under MY Bharat is the **Aapda Mitra Programme**, a structured training effort in partnership with the **National Disaster Management Authority (NDMA)**. This programme equips young volunteers with certified skills in **disaster response**, including **search and rescue**, **first aid**, **crowd management**, and **emergency coordination**. These trained youth become vital first responders at the grassroots level, ensuring the delivery of **food**, **medical aid**, and **essential supplies** to remote villages isolated by floods or landslides.

International Centre for Integrated Mountain Development (ICIMOD) and Renewable Energy in the HKH Region

- A recent report by the **International Centre for Integrated Mountain Development (ICIMOD)** has highlighted the underutilisation of renewable energy in the **Hindu Kush Himalaya (HKH)** region, revealing that only **6.1%** of its clean energy potential is currently being tapped.
- ICIMOD is an **intergovernmental knowledge and learning centre** that operates on behalf of the people living in the HKH region. Officially established on **5 December 1983**, its mission is to build and share actionable knowledge that shapes regional policy and attracts investment toward **green**, **inclusive**, and **climate-resilient development**. The centre serves **eight member countries**: **Afghanistan, Bangladesh, Bhutan, China, India, Myanmar, Nepal, and Pakistan**, and is headquartered in **Kathmandu, Nepal**.
- ICIMOD performs critical functions, including **knowledge generation**, **scientific research**, and **policy integration**, offering a regional platform for experts, planners, and policymakers to exchange solutions for sustainable mountain development.
- The **HKH region**, often referred to as the **Third Pole**, stretches across approximately **3,500 kilometres** and contains the **largest area of permanent ice cover** outside of the Arctic and Antarctic. It is home to **four global biodiversity hotspots** and serves as the origin for **ten major Asian river systems**, including the **Indus**, **Ganges**, **Brahmaputra**, **Yangtze**, and **Mekong**. Given its strategic environmental significance, tapping into its renewable energy potential is vital for climate action and sustainable regional growth.

WMO's Air Quality and Climate Bulletin: Link Between Pollution and Climate Change

The **World Meteorological Organization (WMO)** has released its latest **Air Quality and Climate Bulletin**, which underscores the complex and interdependent relationship between air quality and climate change. The bulletin calls for integrated strategies to protect human health, preserve ecosystems, and sustain economic development.

- One of the most pressing concerns highlighted is **PM2.5 pollution**, identified as a major global health hazard responsible for **millions of premature deaths annually**. While air quality has improved in regions such as **North America, Europe**, and **East Asia** due to stricter regulations, levels remain dangerously high in **South Asia** and **high-latitude regions**, where pollution is driven by industrial activities and frequent wildfires.
- The bulletin also analyses **international shipping regulations**, specifically **MARPOL Annex VI**, which have reduced sulphur content in marine fuels. Although these

measures have improved air quality and health outcomes, they have had the unintended effect of slightly **increasing global warming**, by reducing the cooling influence of **sulphate aerosols**.

- The report further explains how **air pollution and climate change interact**. Pollutants such as **ground-level ozone** have warming effects, while changes in climate—through altered **chemical reactions**, **biogenic emissions**, and **human behaviour**—influence pollution levels. **Aerosols** also play a dual role: darker ones like **black carbon** contribute to warming by absorbing sunlight, while lighter ones like **sulphates** reflect sunlight and cool the Earth temporarily.
- A specific regional issue highlighted is the worsening of **winter fog in North India**, particularly across the **Indo-Gangetic Plain (IGP)**. The formation of dense fog is exacerbated by the condensation of moisture on **PM2.5 particles**, which act as **fog condensation nuclei (FCN)**. **Temperature inversions** trap pollutants close to the ground, prolonging foggy conditions. Additional contributors include **urbanisation**, **brick kilns**, and **ammonium emissions**. The resulting fog leads to **transport disruptions** and severe **respiratory health issues**, including **asthma**, due to the presence of toxic substances in fog water.
- The **WMO**, established in **1950** and headquartered in **Geneva, Switzerland**, is a specialised **UN agency** comprising **187 member states**, including India. It coordinates global atmospheric observations through its **Global Atmosphere Watch (GAW) Programme**, playing a pivotal role in monitoring climate and air quality trends.

Building Climate-Resilient Cities in India

Context

India's cities are projected to host nearly a billion people by 2070. With this rapid urban expansion comes heightened exposure to climate-related hazards such as flooding, heatwaves, cyclones, and earthquakes. These growing threats underscore the urgent need for cities to embed resilience into their core planning and infrastructure development.

Current State of Urban Climate Vulnerabilities

Urban centres across India are already facing the compounded effects of climate change due to unplanned growth, weak infrastructure, and fragile ecosystems:

- **Flooding**: Unregulated construction, encroachment on natural drainage systems, and insufficient stormwater infrastructure have rendered two-thirds of city dwellers vulnerable to floods. Economic damages from urban flooding could exceed $30 billion by 2070.
- **Extreme Heat**: The dominance of concrete structures and limited green spaces make urban areas 3–5°C hotter than their surroundings. This intensifies health risks, increases mortality rates, and lowers productivity across sectors.
- **Urban Transport**: Around 25% of urban roads are flood-prone. Even moderate waterlogging can cripple nearly half of a city's transport system, disrupting mobility and emergency services.
- **Housing**: Over 50% of India's future urban housing stock is yet to be constructed. If these developments follow poor design and location choices, they risk locking cities into decades of climate vulnerability.
- **Municipal Services**: Weak and outdated systems for waste management, drainage, and energy supply not only exacerbate pollution but also leave cities more exposed to the impacts of climate shocks.

Why Building Climate-Resilient Cities Is Essential

Cities lie at the heart of India's economic and social transformation. Making them resilient is critical for multiple reasons:

- **Safeguarding Lives**: As floods, heatwaves, and other disasters intensify, resilient infrastructure and planning can significantly reduce mortality and displacement.
- **Protecting Economic Growth**: Cities account for over 70% of GDP and employment. Ensuring their infrastructure can withstand climate impacts is vital for continued economic activity and investor confidence.
- **Promoting Social Inclusion**: Vulnerable groups — particularly the urban poor — are disproportionately affected during

climate disasters. Resilient urban design helps mitigate this inequity.
- **Reducing Long-Term Losses**: Proactive investment in resilience pays off by minimising future damages, reducing recovery costs, and attracting sustainable global capital.

Key Challenges Hindering Urban Resilience

Despite the urgency, several barriers continue to limit the effectiveness of climate-resilient urban planning in India:

- **Weak Urban Local Bodies (ULBs)**: Most local governments lack adequate staffing, technical expertise, and financial autonomy to plan and implement climate-resilient projects effectively.
- **Fragmented Governance**: Multiple agencies with overlapping jurisdictions result in uncoordinated responses and delays in executing adaptation strategies.
- **Financial Limitations**: Urban bodies face chronic revenue shortfalls, and access to international climate finance remains slow and bureaucratic.
- **Poor Urban Planning**: Construction on wetlands, riverbeds, and floodplains has not only increased disaster risk but also degraded natural buffers and urban ecosystems.
- **Inequity and Informality**: Slums and informal settlements, often located in high-risk zones, lack adequate infrastructure and are excluded from most climate adaptation efforts.

Major Initiatives Undertaken in India

India has launched several programmes and policies aimed at mainstreaming climate resilience into urban development:

- The **National Action Plan on Climate Change (NAPCC)** and **State Action Plans on Climate Change (SAPCCs)** provide policy frameworks to integrate adaptation into state and city-level governance.
- The **Sustainable Habitat Mission** focuses on promoting energy-efficient buildings, sustainable transport systems, and resilient waste management.
- The **Smart Cities Mission** and **Atal Mission for Rejuvenation and Urban Transformation (AMRUT)** incorporate resilience into the design of core urban infrastructure.
- **Heat Action Plans**, first implemented in Ahmedabad, have introduced measures like early warning systems, cooling shelters, and public awareness campaigns, which are now being replicated in other states.
- **Pradhan Mantri Awas Yojana (PMAY-Urban)** has the potential to deliver climate-resilient housing for millions if adaptation elements are meaningfully integrated.

Strategies to Build Climate-Resilient Cities

India's pathway to resilient urbanisation lies in multi-dimensional strategies that cut across infrastructure, governance, and community participation:

- **Urban Planning**: Cities must adopt compact development patterns, avoid construction in ecologically sensitive areas, and enforce updated, disaster-resistant building codes.
- **Flood Management**: Investments should prioritise modern drainage systems, the restoration of natural wetlands and floodplains, and the use of predictive flood forecasting tools.
- **Heat Resilience**: Expanding urban tree cover, implementing cool roofs, building shaded corridors, and regulating outdoor work during peak heat hours are crucial interventions.
- **Transport Infrastructure**: Elevated roads and metro lines, redundancy in transport networks, and resilient design can ensure continued mobility during extreme weather events.
- **Municipal Services**: Waste, water, and sanitation systems must be upgraded using climate-proof and circular economy principles to enhance efficiency and reduce vulnerability.
- **Finance and Partnerships**: Access to funding through public-private partnerships, green bonds, and global climate funds must be scaled up. Citizen engagement is essential for planning and accountability.
- **Capacity Building**: Training urban local bodies, deploying advanced tools like GIS and AI for risk mapping, and strengthening institutional resilience at

the city level are foundational to long-term adaptation.

Conclusion

India's urban future hinges on its ability to adapt to a rapidly changing climate. Building climate-resilient cities is not solely a matter of responding to disasters—it is about securing long-term economic prosperity, ensuring social equity, and preserving ecological balance. The window for action is rapidly narrowing. Integrating resilience into city planning must become an urgent national priority, shaping a sustainable and secure urban trajectory for decades to come.

Yedshi Ramling Ghat Wildlife Sanctuary: A New Home for Tigers

- In a rare event highlighting wildlife movement in Maharashtra, a young male tiger recently traversed approximately 450 kilometers from Vidarbha to settle in the Yedshi Ramling Ghat Wildlife Sanctuary. This event is particularly noteworthy as it marks the first time in decades that a big cat has taken residence in this sanctuary.
- Located in the Osmanabad District, Yedshi Ramling Ghat Wildlife Sanctuary was officially established on May 23, 1997, and spans an area of around 22.38 square kilometers. It lies within the Balaghat mountain range, which forms part of the larger Sahyadri hill system.
- A key attraction within the sanctuary is the ancient Ramling Temple, dedicated to Lord Shiva, drawing both devotees and nature lovers. The surrounding area features a waterfall and a cave steeped in local folklore, said to be associated with characters from the Ramayana, including Ravana and Jatayu.
- The sanctuary's vegetation is defined by the South Deccan Plateau's dry deciduous forests and thorn scrublands. Among the prominent tree species found here are teak (Tectona grandis), sandalwood (Santalum album), neem (Azadirachta indica), and various Acacia species. The shrub layer includes species such as Lantana camara and Carissa carandas.
- Yedshi Ramling Ghat Wildlife Sanctuary also supports a rich variety of fauna. Commonly observed species include leopards, sloth bears, blackbucks, jackals, wolves, foxes, monitor lizards, porcupines, barking deer, and hares, contributing to the region's ecological diversity.

Himalayan Brown Bear: A Rare Glimpse in Uttarakhand

- Excitement has been sparked in Uttarakhand's Gangotri National Park following a rare sighting of a Himalayan brown bear, reportedly accompanied by its family, in the remote Nelong and Jadung Valleys.
- The Himalayan brown bear, scientifically named *Ursus arctos isabellinus*, is the largest mammal inhabiting the high-altitude zones of the Himalayas. Often referred to as the "Himalayan Red Bear" or "Isabelline Bear," it is known locally as *Denmo* in Ladakhi. This bear is among the oldest surviving brown bear lineages. Some folklore even attributes the origin of the Yeti or "Abominable Snowman" legends to sightings of this bear walking upright.
- This species is distributed across the northwestern and central Himalayas, including parts of Pakistan, India, Nepal, Bhutan, and the Tibetan Autonomous Region of China. Typically, it resides above the timberline, inhabiting alpine and subalpine zones between 3,000 and 5,500 meters in elevation. In India, the bear exists in fragmented populations found in the high-altitude regions of Jammu and Kashmir, Himachal Pradesh, and Uttarakhand.
- Males are noticeably larger than females, with average lengths of around 1.9 meters and weights reaching up to 135 kilograms, while females generally measure 1.6 meters and weigh about 70 kilograms. Their fur is dense and often appears sandy or reddish-brown. As omnivores, their diet includes vegetation such as grasses, roots, and bulbs, as well as insects and small mammals like marmots, pikas, and voles. Solitary in nature, these bears interact only during mating seasons or in conflicts over mates—except in the case of mothers tending to their cubs. During winter, they hibernate in dens, and in the wild, they typically live between 20 and 30 years.
- Conservation-wise, the Himalayan brown bear is in a precarious position. It is listed as **Critically Endangered** on the IUCN Red List, protected under **Schedule I of the Wildlife**

Protection Act of 1972, and included in **Appendix I of CITES**, underscoring its need for urgent conservation efforts.

Ratle Hydroelectric Project: Development Amid Natural Hazards

- A recent landslide at the **Ratle Hydroelectric Project** in the Kishtwar district of Jammu and Kashmir led to injuries for five individuals, raising concerns about the vulnerability of infrastructure in geologically sensitive zones.
- The Ratle Hydroelectric Project is an 850-megawatt run-of-the-river scheme currently under development on the Chenab River in Kishtwar. The project is being executed by the Ratle Hydroelectric Power Corporation (RHPCL), a joint venture formed between the Jammu & Kashmir State Power Development Corporation (JKSPDC) and India's public-sector power company, the National Hydroelectric Power Corporation (NHPC). In terms of equity distribution, NHPC holds a 51% stake, while JKSPDC retains 49%.
- The project features a 133-meter-tall and 194.8-meter-long concrete gravity dam, along with a diversion dam and an underground powerhouse on the river's right bank. The underground powerhouse is a substantial structure, measuring 168 meters in length, 24.5 meters in width, and 49 meters in height. It will house four generating units of 205 MW each using Francis turbines, in addition to a 30 MW auxiliary turbine.
- The total electricity generation expected from the Ratle project is estimated at 3,137 gigawatt-hours (GWh) annually. However, the project has also been a point of diplomatic tension. Pakistan has repeatedly claimed that the Ratle project violates the terms of the Indus Waters Treaty of 1960, which governs water-sharing between India and Pakistan. India maintains that the project complies with the treaty provisions.

Nilgiri Tea: A Heritage Brew Struggling to Survive

- Tea growers in the **Nilgiris** region of Tamil Nadu are grappling with a long-standing crisis, driven by plummeting green tea leaf (GTL) prices, overproduction, and dysfunctional auction systems. These issues now threaten the viability of small-scale producers in one of India's most iconic tea regions.
- Nilgiri tea, derived from **Camellia sinensis var. sinensis**, is renowned for its aromatic, brisk, and full-bodied flavour. It is cultivated predominantly in the Nilgiris district, with smaller plantations in adjoining parts of Kerala and Karnataka. This tea, known for its bright liquor and floral notes, is often blended into masala chai, iced tea, and global tea products. It received

Geographical Indication (GI) status in 2008.

- The region's unique geography contributes to its distinctive tea quality. Located at elevations between 1,000 to 2,500 meters in the Western Ghats, the Nilgiris receive both Southwest and Northeast monsoons, along with alternating spells of mist and sunshine. The soil—rich, well-drained lateritic loam—further enhances crop quality. The cultivation cycle involves frequent plucking, around 32 times a year, with the first winter harvest or "frost tea" being particularly prized.
- Despite its potential, the industry faces serious challenges. Green tea leaf prices often fall below the cost of production, and too many processing units compete for limited crops, leading to quality degradation. Historical over-reliance on Russian markets has left the sector vulnerable, and auction mechanisms are plagued by manipulation and weak price discovery. Adulteration, rising labour and input costs, and lack of standardization also undermine profitability for small growers, threatening the survival of the Nilgiri tea legacy.

Giant African Snail: A Growing Urban Biohazard in Chennai

- Experts have raised alarms regarding the increasing presence of the Giant African Snail (*Lissachatina fulica*) in Chennai, warning that it poses significant health and environmental risks to city residents. Known as one of the world's most invasive species, this pest is capable of consuming over 500 varieties of crops and ornamental plants, thereby threatening both biodiversity and agricultural productivity.
- Native to East Africa, the species has spread across continents through the pet

trade, use as a food source, and accidental transportation. The snail thrives in tropical climates with high humidity and stable temperatures throughout the year. Its habitats include agricultural lands, urban areas, wetlands, forests, and scrublands.

- Adult Giant African Snails often feed on decomposing organic matter such as fallen fruit, garbage, and animal waste. However, their threat extends beyond agriculture. The snail is a known carrier of dangerous parasites like *Angiostrongylus cantonensis* and *A. costaricensis*, which cause diseases such as eosinophilic meningoencephalitis and abdominal angiostrongyliasis in humans. These conditions are transmitted through the accidental ingestion of contaminated snails or residues on unwashed produce, posing a public health risk.

Evia Island: Earthquake Near Greece's Second-Largest Island

- A magnitude 5.2 earthquake recently struck central Greece, with its epicentre located near Athens, on the island of Evia (also known as Euboea). As Greece's second-largest island—surpassed only by Crete—Evia covers an area of over 3,500 square kilometres and is situated in the Aegean Sea.
- Evia is geographically distinct, separated from the mainland by the Euboean Strait, yet its proximity to Athens and multiple connection points with the mainland have earned it the nickname "mainland island." The island is known for its diverse landscape, featuring alpine mountains, thick forests, coastal wetlands, narrow canyons, and scenic beaches.
- Halkida, the main city on the island, serves as its administrative and commercial hub. It is particularly famous for the Euripus Strait's tidal currents, which change direction multiple times each day—a phenomenon of both scientific and cultural interest. Among Evia's major mountain ranges are Dyrfi, Kandili, and Ohi. The island enjoys a Mediterranean climate, marked by mild, rainy winters and hot, sunny summers.

Hilsa Fish: A Culinary and Cultural Emblem of Bengal and Beyond

- As a diplomatic gesture underscoring bilateral ties, Bangladesh recently announced the export of hilsa fish to India ahead of the Durga Puja festivities. Known locally as Ilish, hilsa holds a unique place in the culinary and cultural traditions of Bengal, revered for its delicate flavour, buttery texture, and numerous small bones that add to its complexity.
- Scientifically named *Tenualosa ilisha*, hilsa belongs to the Clupeidae family, which includes other herring-like species. These fish are anadromous, meaning they migrate from saltwater oceans into freshwater rivers to spawn. Common migratory routes include Bangladesh's Padma and Meghna Rivers, and India's Ganges and Godavari Rivers. Bangladesh is the world's largest producer of hilsa, contributing around 70% to global production and earning the fish the title of the country's national fish. It also accounts for approximately 12% of Bangladesh's total fish catch and adds around 1% to the national GDP.
- Physically, hilsa are distinguished by their silvery sheen, flat bodies, and pointed heads. They can reach lengths of up to 50 cm and weigh over 3 kg. Despite their many bones, the fish's rich taste makes it a prized delicacy during festivals and cultural ceremonies. Currently, the species is listed as "Least Concern" on the IUCN Red List, though conservation efforts remain essential due to the pressures of overfishing and habitat degradation.

Phosphate Rock: India's Strategic Resource in a Fragile Ecosystem

- The Union Environment Ministry's Expert Appraisal Committee (EAC) has recently approved the initiation of an Environmental Impact Assessment (EIA) for the proposed Birmania Rock Phosphate mine in Rajasthan's Jaisalmer district. This site falls within a potential habitat of the endangered Great Indian

Bustard (GIB), raising concerns about the ecological trade-offs involved.

- Phosphate rock is the primary source of phosphorus, a key nutrient essential for plant growth. It is a sedimentary rock formed over millions of years from accumulated organic matter on ancient sea beds. Globally, large deposits are found in Morocco—which leads both in reserves and extraction—along with Africa, North America, Kazakhstan, the Middle East, and Oceania.
- In India, phosphate rock production is limited to just two states—Rajasthan and Madhya Pradesh. The country currently imports nearly 90% of its rock phosphate, mainly to produce Di-ammonium Phosphate (DAP) and NPK fertilizers, which are vital for agriculture. Besides its agricultural applications, phosphate rock is also used in animal feed supplements and industrial sectors including the manufacture of detergents, phosphoric chemicals, and insecticides.
- Given the mineral's strategic importance and the ecological sensitivity of the proposed mining site, a comprehensive and balanced assessment is essential to align developmental goals with environmental sustainability.

Cross River Gorilla

- Tucked away in the mist-clad mountainous regions along the Nigeria-Cameroon border, the Cross River gorilla—a critically endangered species—struggles for survival. With fewer than 300 individuals remaining in the wild, it is not only the most endangered gorilla subspecies but also the rarest primate in Africa.
- Scientifically classified as *Gorilla gorilla diehli*, the Cross River gorilla is a subspecies of the western gorilla. These gorillas inhabit a rugged and hilly terrain that spans the Cross-Sanaga-Bioko Coast Forest ecoregion. This region encompasses lowland, submontane, and montane forests situated on both sides of the upper drainage area of the Cross River, straddling the Nigeria-Cameroon border.
- These primates are physically characterized by brownish-grey or black fur, although their faces, hands, and feet are bare. A distinctive reddish crest crowns their cone-shaped heads, while adult males exhibit a prominent silvery streak of hair down their backs—an iconic trait of male gorillas that has earned them the name "silverbacks."
- Social by nature, Cross River gorillas typically live in groups ranging from 2 to 20 individuals. These groups are led by a dominant male and usually include 6 to 7 females along with their offspring. As herbivores, they feed on various plant materials such as leaves, branches, berries, and nuts.
- Despite their ecological importance, the Cross River gorilla remains on the brink of extinction and is currently classified as *Critically Endangered* on the IUCN Red List.

Grand Ethiopian Renaissance Dam (GERD)

- Ethiopia recently inaugurated the Grand Ethiopian Renaissance Dam (GERD), heralded as Africa's largest hydroelectric project and a landmark achievement for the nation. However, this development has stirred geopolitical tensions, with Egypt protesting at the United Nations, describing the dam as an existential threat to its water security.
- The GERD is a massive hydroelectric dam constructed primarily for power generation and regional energy trade, serving as a unifying symbol of national pride and development for Ethiopia. Geopolitically, however, it remains a contested project due to its impact on downstream countries.
- The dam is located on the Blue Nile River in Guba, Ethiopia, approximately 30 kilometers upstream from Sudan. The Blue Nile is critically important because it contributes around 85% of the Nile's waters, making any alterations to its flow highly sensitive in regional politics.
- Ethiopia embarked on this project in 2011, viewing it as a manifestation of self-reliance and an instrument to boost its developmental goals and regional influence. Structurally, the dam stands

about 170 meters tall and stretches around 2 kilometers in length. Its reservoir can hold up to 74 billion cubic meters of water, flooding approximately 1,874 square kilometers of land. The dam's hydroelectric capacity is projected between 5,150 and 6,450 megawatts, making it the largest power producer in Africa. It is designed to trap sediment inflow for about 100 years, although actual sediment accumulation could be higher.

About the Blue Nile River

- The Blue Nile, known locally in Ethiopia as the Abay River, is one of the two primary headstreams of the Nile River. It provides nearly 70% of the Nile's floodwaters at Khartoum, Sudan. Stretching approximately 1,460 kilometers (907 miles), the Blue Nile originates from a spring near Lake Tana in northwestern Ethiopia, situated at an elevation of around 1,800 meters (6,000 feet) above sea level.
- The river flows into and out of Lake Tana, descending through rapids and deep gorges within the Ethiopian highlands. From Ethiopia, the Blue Nile traverses through deep canyons around the Choke Mountains before entering Sudan, where it flows northwest to meet the White Nile at Khartoum, thereby forming the main Nile River.
- The Blue Nile is further fed by important tributaries such as the Dinder and Rahad rivers, which originate from the Ethiopian highlands and significantly enhance its flow.

Avalanche at Siachen: Tragedy Highlights Dangers of High-Altitude Deployment

- A tragic avalanche recently struck the Siachen base camp in Ladakh, claiming the lives of three Indian Army personnel, including two Agniveers. This incident underscores the extreme and unpredictable conditions faced by soldiers deployed in the world's highest battlefield.
- An avalanche is a sudden and rapid descent of snow down a mountain slope, often burying or sweeping away everything in its path. While snow is the most common medium, avalanches can also consist of rock, earth, and debris, resembling landslides. Such disasters are particularly common on slopes lacking trees or rocks, which otherwise help stabilise snow. A weak underlying layer of snow significantly increases the likelihood of an avalanche.
- Avalanches can be triggered by various factors, including heavy snowfall, strong winds, temperature fluctuations, and even minor disturbances such as the movement of skiers or snowmobiles. Two main types of snow avalanches exist: *sluffs* and *slabs*. Sluff avalanches occur when a weak layer lies on the surface, leading to a relatively small and powdery snow slide. In contrast, slab avalanches, which are far more dangerous, happen when a weak layer lies beneath heavier, compressed snow. When triggered, these slabs break off as a cohesive block, causing widespread destruction.
- Avalanches can range in severity from harmless to catastrophic, capable of destroying forests and entire settlements. Once the snow settles, it hardens like concrete, trapping victims and making rescue efforts difficult. Deaths usually occur from suffocation, physical trauma, or hypothermia. To mitigate these risks, mountainous regions employ preventative measures such as snow fences, diversion barriers, and controlled explosives to dislodge unstable snow safely.

New Discoveries in Mycology: Two New Species from Aspergillus Section Nigri

- Scientists at Pune's Agharkar Research Institute, an autonomous body under the Department of Science and Technology, have identified two previously unknown species of the fungal group *Aspergillus section Nigri*: *Aspergillus dhakephalkarii* and *Aspergillus patriciawiltshireae*. These findings add to the growing understanding of this significant fungal group.
- *Aspergillus section Nigri* comprises filamentous fungi characterized by their

black-pigmented spores (conidia) and a wide array of metabolic traits. These fungi are taxonomically classified within the genus *Aspergillus* and are widely known for their role in food spoilage, industrial enzyme production, and their impact on human health, particularly through mycotoxin generation and opportunistic infections.

- Primarily found in soil, members of this group are also prevalent in decaying plant matter and agricultural produce. They often affect crops such as maize, grapes, onions, and peanuts during various stages—from pre-harvest to post-harvest storage—making them a critical concern in food safety and agriculture.
- Some strains, notably *Aspergillus niger*, are notorious for producing *ochratoxins*, toxic compounds that may cause kidney damage and tumors in animals and potentially harm humans upon ingestion. Despite this, *A. niger* is among the most widely used fungi in biotechnology, where it plays a crucial role in producing citric acid, gluconic acid, and several industrial enzymes like amylases, proteases, and cellulases. These have extensive applications in food processing, pharmaceuticals, and bioengineering.

Vembanad Lake: Kerala's Ecological Gem Faces Growing Crisis

- Unchecked tourism, the proliferation of luxury houseboats, and years of encroachment have pushed **Vembanad Lake**, Kerala's largest water body and India's longest lake, into an ecological crisis.
- Also known as **Vembanad Kayal**, **Vembanad Kol**, **Punnamada Lake** (in Kuttanad), and **Kochi Lake** (in Kochi), the lake is fed by four rivers—Meenachil, Achankovil, Pampa, and Manimala. It is separated from the Arabian Sea by a narrow strip of land and is a central part of Kerala's famed backwater tourism.
- One of the lake's major attractions is **Vallam Kali**, including the Nehru Trophy Snake Boat Race, held every August. Recognized as a Ramsar site since 2002, the lake is part of the **National Wetlands Conservation Programme**. The **Kumarakom Bird Sanctuary**, situated on its eastern shore, adds ecological value to the area.
- However, increasing human activity threatens its fragile ecosystem. The impact of unregulated tourism, pollution, and encroachment calls for urgent environmental interventions to preserve this critical natural asset.

Scientists Confirm Discovery of a Large Offshore Aquifer Beneath the Atlantic Ocean

- Scientists have recently confirmed the existence of a vast offshore aquifer located beneath the floor of the Atlantic Ocean. Similar to terrestrial aquifers, these offshore aquifers consist of rock or sediment formations that contain freshwater, but unlike their land-based counterparts, they lie beneath the seabed.
- These aquifers are widespread, having been discovered off the coasts of various continents including Australia, China, North America, and South Africa. Some extend as far as 90 kilometers offshore and are believed to contain about one million cubic kilometers of freshwater, representing approximately 10% of all terrestrial fresh groundwater reserves.
- A key factor in the preservation of this freshwater is a cap rock layer composed of compacted clay-rich sediment, which acts as a barrier preventing the freshwater from mixing with the surrounding seawater. Scientists have proposed two main hypotheses regarding the formation of these aquifers. The Ice Age Hypothesis suggests that during past glacial periods, rainwater penetrated land areas now submerged beneath the ocean. Alternatively, the Connection Hypothesis proposes that these offshore aquifers remain hydrologically linked to onshore groundwater sources, receiving regular replenishment from rainfall.
- The significance of this discovery lies in the potential of these aquifers as a previously untapped freshwater resource, especially crucial for water-stressed regions facing increasing climate variability. According to a 2023 UN report, global freshwater demand is projected to

outstrip supply by 40% by 2030, heightening the urgency to explore alternative sources. However, the exploitation of offshore aquifers comes with considerable challenges, including high extraction costs, technical difficulties, potential ecological risks to marine ecosystems, and governance complexities surrounding international waters.

The Philippine Island of Pugad: Environmental Challenges

Context:

- The small Philippine island of Pugad is experiencing severe land subsidence at a rate of up to 11 centimeters per year, combined with rising sea levels, which threatens the displacement of its approximately 2,500 residents.
- Pugad is a tiny island covering roughly seven hectares in Manila Bay, located within the Hagonoy municipality of Bulacan province. The island is densely populated, with the majority of its inhabitants engaged in fishing and aquaculture.
- Pugad lies at the mouth of the Angat–Pampanga River Delta and was historically surrounded by mangroves and marshlands that provided natural coastal protection.

Issues and Challenges:

The island is sinking rapidly, at about 11 cm annually, which is the fastest rate in the Philippines. This subsidence is primarily caused by excessive groundwater extraction. In addition, the Philippines faces sea-level rise that is three times faster than the global average, currently measured at 3.6 millimeters per year and expected to accelerate to 13 millimeters annually. Frequent climate hazards such as floods, typhoons, and storm surges regularly disrupt the community's way of life. The conversion of mangrove forests into fishponds has further reduced the island's natural defenses against coastal erosion and extreme weather, increasing its vulnerability.

About the Philippines

- The Philippines is a Southeast Asian archipelago nation consisting of more than 7,000 islands scattered across the western Pacific Ocean. It is situated about 800 kilometers east of Vietnam, bordered by the Philippine Sea to the east, the South China Sea to the west, and the Celebes Sea to the south. The capital city is Manila, while Quezon City is the most populous urban area.
- The country features an extensive coastline measuring approximately 22,550 miles (36,290 kilometers), making it highly susceptible to the impacts of climate change. The terrain includes around 50 volcanoes, both active and dormant, with Mount Apo being the tallest at 2,954 meters. The Philippines has a tropical climate and is prone to typhoons, floods, earthquakes, and volcanic eruptions.

Vultures and Public Health: How Conservation Prevents Future Pandemics

Vultures, though often absent from mainstream discourse on pandemic preparedness, are indispensable to public health in South Asia. As nature's most effective waste managers, they play a crucial role in limiting disease transmission by rapidly consuming animal carcasses, thus preventing the spread of zoonotic diseases. Their efficiency in this task makes them not just ecological assets but essential components of public health infrastructure.

Vultures and Their Role in Pandemic Prevention

With India's *National Action Plan for Vulture Conservation (2016–25)* nearing its conclusion, the focus of the next phase should shift toward explicitly positioning vultures as frontline agents in pandemic preparedness. By swiftly eliminating potential disease sources from the environment, vultures mitigate zoonotic spillover risks and serve as an early warning system for disease surveillance and carcass management. Yet, their role in public health continues to be informally acknowledged and inadequately institutionalised. Local communities living in proximity to vulture populations remain largely untapped as valuable stakeholders in this conservation-public health nexus. Furthermore, financial support for vulture conservation does not yet reflect their potential as low-cost, high-impact tools for preventing pandemics—especially when compared to the

vast economic and human costs of outbreak response.

India's Vanishing Vultures and Public Health Risks

Historically, vultures functioned as nature's cleanup crew, effectively curbing the transmission of lethal pathogens such as rabies, anthrax, and botulinum. In the 1980s, India's landscapes were teeming with vultures, with over 40 million birds forming a robust natural barrier against disease spread. However, since the 1990s, vulture populations have collapsed by more than 95%, primarily due to the widespread veterinary use of diclofenac, a drug toxic to vultures. This drastic population decline has escalated from an environmental concern to a significant public health issue, revealing the deep interconnection between biodiversity loss and emerging pandemic threats.

Central Asian Flyway and Regional Linkages

India's vultures are part of the *Central Asian Flyway (CAF)*, a critical migratory route linking breeding sites in Central Asia with wintering grounds across South Asia. Covering more than 30 countries, this flyway supports millions of migratory birds, including numerous vulture species. As these birds traverse national boundaries, they also connect disparate ecosystems and the disease risks they carry. Poorly managed landfills, carcass dumps, and migratory stopovers along this route can become potent sites for pathogen spillover. The CAF thus represents more than a biodiversity corridor—it serves as a public health corridor, underscoring the urgent need for cross-border cooperation and integrated ecological management.

Conservation Challenges

Despite their ecological and epidemiological importance, vulture conservation efforts remain insufficient, fragmented, and underfunded. Vulture protection is still not systematically integrated into *One Health* frameworks, which seek to unify human, animal, and environmental health strategies. Infrastructure threats, including electrocution from exposed power lines and continued exposure to lethal veterinary drugs, remain largely unaddressed. Without significant policy shifts, increased funding, and cohesive regional strategies, efforts to conserve vultures—and by extension, safeguard public health—will continue to falter.

Protecting India's Vultures Through a Post-2025 Strategy

- A robust post-2025 strategy for vulture conservation in India should be anchored on five interconnected pillars. First, implementing nationwide satellite telemetry would enable real-time monitoring of vulture habitats and potential disease hotspots. Second, developing a *Decision Support System* that integrates wildlife, livestock, and public health data would facilitate timely interventions. Third, aligning vulture conservation with One Health strategies would ensure cross-sector coordination. Fourth, transboundary collaboration through the Central Asian Flyway—backed by global health security frameworks—would reinforce regional preparedness. Finally, empowering communities, particularly women and youth, in surveillance and awareness campaigns would ground conservation efforts in local stewardship.
- Collectively, these actions would position vultures as keystone species in a broader framework of public health resilience, in alignment with the WHO's regional health security roadmap. This shift moves India's vulture conservation agenda beyond species recovery toward systemic resilience, placing the country at the forefront of biodiversity-driven health security.

India's Opportunities in Linking Vulture Conservation with Health Security

- India stands at a pivotal moment to demonstrate that biodiversity conservation is not just an environmental concern but a foundational element of pandemic prevention. By integrating surveillance across human, animal, and environmental health systems, and reducing the time between disease detection and response, India can build resilient public health infrastructure at a fraction of the cost of managing outbreaks. Given its significant population of Central Asian Flyway vulture species—such as the Himalayan griffon, cinereous vulture, and Eurasian griffon—India is well-positioned to lead this effort.

- Scaling up telemetry, operationalising Decision Support Systems, and embedding vulture protection into the One Health framework would not only secure India's ecological future but also inspire regional and global models. Ultimately, safeguarding vultures is not only about preserving a species—it is about reinforcing the health and safety of entire ecosystems and human communities alike.

Himalayan Fragility and Unsustainable Development

Context

Recent floods and landslides in Punjab, Himachal Pradesh, Uttarakhand, and Kashmir have starkly revealed the consequences of unchecked construction and relentless deforestation in the Himalayas. Experts and even the Supreme Court have sounded alarms: unregulated "development" is driving these fragile mountains toward collapse.

What and Where Are the Himalayas

The Himalayas are the world's youngest and loftiest fold mountains, stretching approximately 2,400 kilometres across India, Nepal, Bhutan, China, and Pakistan. Their breadth ranges between 150 to 400 kilometres, and many peaks soar above 6,000 metres. Serving as the northern boundary of the Indian subcontinent, they present a natural barrier – climatic, cultural, and ecological. Among their highest summits are Mount Everest, which reaches 8,849 metres, and Kanchenjunga at 8,586 metres.

Geological Origins

The formation of the Himalayas dates back hundreds of millions of years. Around two hundred million years ago, the supercontinent Pangaea disintegrated into major landmasses: Laurasia in the north (incorporating Eurasia) and Gondwana in the south (including what is now India, Africa, and Australia). Between these lay the Tethys Sea, where river sediments accumulated over millennia.

About 140 million years ago, the Indian Plate separated from Gondwana and began moving northwards at a fast pace—around 15 centimetres per year. Roughly 50 million years ago, this plate collided with the Eurasian Plate. The sediments from the Tethys Sea were compressed and uplifted during this convergence, giving rise to fold mountain structures. Even today, the Himalayas continue to rise—by approximately 5 millimetres annually—owing to ongoing tectonic forces.

The Fragile Nature of the Himalayas

Because the Himalayas are geologically young, they are inherently unstable. They are especially prone to landslides and seismic disturbances. Their climate sensitivity compounds matters: warming is occurring at rates higher than global norms, accelerating glacial melt and making rainfall increasingly erratic. Fast-flowing rivers, steep inclines, and the sheer energy of the landscape magnify disaster risks such as flooding and soil erosion. With more than 25,000 glacial lakes dotting the region, the possibility of sudden glacial lake outburst floods (GLOFs) looms large. The Himalayas are also a biodiversity hotspot—home to unique species and ecosystems; their damage threatens both ecology and the livelihoods of those who rely on them.

What Is Driving Their Degradation

Multiple forces combine to damage this fragile region. Infrastructure projects—highways, tunnels, hydroelectric ventures—often employ heavy blasting and deep excavations that destabilize mountain slopes. Deforestation, especially the removal of native tree species like deodar that stabilize soil, occurs frequently as tourism infrastructures and urbanisation expand. Hydropower projects, when overbuilt, alter river courses and amplify disaster potential. Environmental Impact Assessments (EIAs) are frequently diluted, circumvented, or rushed through to facilitate approvals. Meanwhile, the tourism boom places pressure on land: increased demand for roads, hotels, and supporting facilities accelerates ecological strain and soil erosion.

Consequences of Unsustainable Development

The human cost is immense. Disasters like the 2013 Kedarnath tragedy and the 2021 Chamoli collapse led to extensive loss of life and mass displacement. Ecologically, unchecked development is eroding topsoil, degrading forests, and causing biodiversity losses that diminish long-term resilience. In many cases, intense rainfall becomes catastrophic flooding and landslides when the landscape has been weakened by development without safeguards. Economic losses follow: infrastructure gets damaged or destroyed, farmers suffer losses, and tourism suffers downturns—all reducing state

revenues. Socially, these tragedies breed distrust, especially among communities who feel decisions endangering lives were made without their voices being heard.

The Way Forward: Towards Sustainable Himalayan Development

Policies tailored to mountain environments are essential. Development models must account for the fragile carrying capacity of these zones. Environmental Impact Assessments need to be strengthened, both in their independence and in their willingness to assess disaster risk rigorously before granting project approvals. Nature-based solutions should be emphasised: afforestation, slope stabilisation, and watershed management can provide resilience. Development must involve local communities: improving climate literacy, promoting eco-tourism, and empowering local governance ensures that people affected participate in decision-making. In energy policy, there should be a shift away from hydropower as the default, towards greater reliance on solar, wind, and decentralised energy systems.

Conclusion

The Himalayas stand at a tipping point where thoughtless development collides with climate change. Only sustainable models that respect ecological boundaries, empower affected communities, and strive for balanced growth can preserve these "living mountains." Without such care, the Himalayas risk losing not just scenery, but vital foundations of climate, culture, and human survival for future generations.

Sedimentation Crisis Undermines India's Reservoirs: Study

Key Findings of the Study

A study conducted by IISER Bhopal examined government data for over 300 large Indian reservoirs each with storage capacity exceeding 100 million cubic metres. The researchers found that many dams have already lost nearly fifty per cent of their storage capacity due to sedimentation. This loss compromises their ability to generate power and weakens their capacity to protect against floods and droughts. Projections suggest that by 2050, many more reservoirs—especially those in Himalayan regions, the Narmada-Tapi basin, the Western Ghats, and the Indo-Gangetic Plains—will reach similarly diminished capacity if current trends continue. The primary drivers of sedimentation identified include soil erosion driven by agriculture, deforestation, and recurrent flooding.

About India's Dams and Related Safety Risks

India ranks third worldwide in the number of large dams, after China and the United States, with approximately 5,700 such dams. Several pressing concerns are associated with them. A large proportion—around eighty per cent—of these dams are more than twenty-five years old. Many dams are also located in seismically active zones, making them vulnerable to earthquakes. Financial constraints exacerbate the problem: maintenance and upkeep are intermittent, sometimes inadequate, which increases risk both to the dam structures themselves and to downstream communities.

What Needs to Be Done for Dam Safety

To secure the safety and functionality of dams, several measures are necessary. Ageing dams may need to be decommissioned. Modern dam-safety technologies should be adopted universally. Some countries, such as Japan, have already explored alternatives like subsurface dams in place of traditional large surface dams; these offer fewer risks in certain settings. For reservoirs deemed high or very high vulnerability, immediate attention and targeted management interventions are critical.

Existing Initiatives and Policy Instruments

Efforts are underway to strengthen dam safety in India. The **Dam Safety Act, 2021** mandates surveillance, inspection, operation, and maintenance of specified dams. The **Dam Rehabilitation and Improvement Project (DRIP)**—funded by the World Bank—works toward restoring the safety and functionality of aging dams. A **National Centre for Earthquake Safety of Dams** is being developed to enhance structural and seismic safety. Other supporting measures include the *Dam Health and Rehabilitation Monitoring Application* (DHARMA) and the *National Register of Large Dams (NRLD)*, which help monitor health and performance of dams systematically.

Conclusion

India's reservoirs and dam infrastructure are under threat from sedimentation, aging, neglect, and seismic risk. Left unaddressed, these threats imperil water security, power generation, and protection against floods and droughts. A combination of policy reform, technological intervention, rigorous oversight, and proactive

maintenance is required now to safeguard this critical infrastructure for future generations.

Cyrtodactylus Vanarakshaka

Context:

A newly discovered species of bent-toed gecko was recently recorded from the montane forests of central Assam.

About the Species:

- Named *Cyrtodactylus vanarakshaka*, this gecko belongs to the *Cyrtodactylus khasiensis* group. It was discovered in the Jatinga region of Dima Hasao district, a transitional ecological zone in the Barail Hills. The name honours the Assam Forest Department, with "vanarakshaka" derived from the Sanskrit words for forest ("vana") and protector ("rakshaka").
- Known for its endemic nature and restricted distribution, this discovery marks the fifth species of the *Cyrtodactylus* genus found in Assam.

About Geckos:

Geckos are small, mostly nocturnal reptiles found on all continents except Antarctica. They have adapted to diverse habitats including rainforests, deserts, and cold mountainous regions. These colourful reptiles belong to six families and play a vital ecological role.

Scarlet Dragonfly Spotted in Munnar: A Rare Visitor in the Western Ghats

- A rare sighting of the **scarlet dragonfly** (*Crocothemis erythraea*) has recently been reported from the **valleys of Munnar**, nestled within Kerala's **Western Ghats**. Belonging to the **Libellulidae** family, this vibrant species is also known by names such as the **broad scarlet**, **scarlet darter**, and **common scarlet-darter**.
- Although typically found in **southern Europe, Africa, and western Asia up to southern China**, scarlet dragonflies are known for their occasional **long-distance movements**. They prefer **sunny environments** near water bodies like rivers, streams, and ponds, avoiding densely shaded regions.
- The adult **male** is easily recognisable by its **bright scarlet red abdomen**, which is **flattened and broad**, featuring **amber patches** near the hindwings and **red wing veins**. **Females and immature dragonflies** display a **yellow-brown coloration** with a distinct **pale stripe** along the thorax. This rare appearance in Munnar adds to the growing list of **biodiversity highlights** in the Western Ghats, one of India's most ecologically sensitive zones.

Cicada Resurgence in Silent Valley: An Indicator of Ecological Shifts

- Scientists from the **Botanical Survey of India**, based in Coimbatore, have observed a notable **resurgence of cicadas** in the **Silent Valley** region. Cicadas, hemipteran insects renowned for their **loud and species-specific acoustic signals**, are being viewed as **bioindicators of ecological upheaval**.
- These insects spend the majority of their life underground, emerging primarily to **mate** during favorable environmental conditions—often when **predators are dormant**. Their emergence patterns are divided into **annual** and **periodical** categories. **Annual cicadas** surface each summer, blending into their surroundings to evade predators, while **periodical cicadas** follow **13- or 17-year life cycles**, emerging in synchronised, massive numbers.
- Found in **natural forests** with dense canopies, cicadas contribute to the ecosystem by **pruning trees**, **aerating the soil**, and **enriching it with nitrogen** after death. The current resurgence in Silent Valley may suggest changes in **climate patterns, predator-prey dynamics**, or **human-induced environmental stress**, underscoring the need for deeper ecological assessments.

Gandhi Sagar Wildlife Sanctuary: A New Frontier for Cheetah Conservation

- In a significant step toward expanding India's cheetah reintroduction programme, the **Madhya Pradesh government** has launched a **cheetah mating initiative** at the **Gandhi Sagar Wildlife Sanctuary**, aiming to establish a **second viable habitat** after **Kuno National Park**. This scientifically monitored breeding programme is part of broader efforts to **revive India's grassland ecosystems**, build a **self-sustaining cheetah population**,

and reduce the risks of concentrating all conservation activities at a single location.

- The Gandhi Sagar Wildlife Sanctuary, located along the northern boundary of Mandsaur and Neemuch districts in Madhya Pradesh and bordering Rajasthan, is known for its rich biodiversity and mixed deciduous forest cover. Originally notified as a sanctuary in 1974 and expanded in 1983, it spans 368.62 square kilometres, with the Chambal River flowing through it — creating an ideal landscape of dry forests and open grasslands suitable for cheetah habitation.
- The sanctuary is home to a diverse range of flora and fauna. The predominant tree species include Khair, Salai, Kardhai, Tendu, and Palash, providing an ecologically balanced environment. It also supports a healthy population of wildlife, including chinkara, sambar, nilgai, leopard, wild dog, otter, peacock, and mugger crocodile. Additionally, the sanctuary has significant cultural and historical value, housing heritage landmarks such as the Chaturbhujnath temple, Hinglajgarh Fort, Bhadkaji rock paintings, and the Dharmrajeshwar caves, which offer insights into the region's spiritual and artistic legacy.
- The newly launched cheetah mating programme is a scientific breeding initiative aimed at pairing relocated female cheetahs with an existing coalition of male cheetahs within the sanctuary. The broader objective is to establish a genetically diverse and self-reliant population, reduce overdependence on Kuno National Park, and facilitate the ecological restoration of grassland habitats, which have long been under threat.
- Key features of the programme include pre-mating monitoring, wherein males and females are housed in separate enclosures to observe behaviour and prevent aggression, particularly in light of lessons learned from a fatal incident at Kuno in 2023. To ensure safety and reproductive success, 17 leopards were relocated from the sanctuary to reduce the risk of predation during the cheetah's denning period.
- Nutritional management plays a crucial role in the success of the breeding programme. During gestation, pregnant females receive prey supplementation, with 15–20 kilograms of feed provided every 3–4 days. In addition, there is a robust framework for veterinary surveillance, including biweekly pregnancy check-ups, remote monitoring of denning sites, and post-birth health assessments of cheetah cubs to ensure their well-being.

Tipeshwar Wildlife Sanctuary: A Biodiversity Hotspot in Maharashtra

- Located in **Yavatmal district, Maharashtra**, the **Tipeshwar Wildlife Sanctuary** spans over **148.63 sq.km.** and draws its name from the nearby **Goddess Tipai shrine**. Positioned across the **Patanbori and Parwa Ranges** of the Pandarkawad Forest Division, the sanctuary features **volcanic basaltic soil** and is nourished by four rivers—**Purna, Krishna, Bhima, and Tapti**—earning it the poetic moniker, "**Green Oasis of Eastern Maharashtra**."
- The sanctuary is home to **Southern Tropical Dry Deciduous Forests**, with **teak** comprising 60% of the forest canopy. The vegetation varies with the undulating topography, supporting **grasses, bamboo groves**, and **medicinal plants**. Faunal diversity includes species such as **Hyena, Chital, Blackbuck, Sambar, Jackal, Wild Boar, Peacock, Blue Bull, Wild Cat**, and **Bears**.
- Villages within the sanctuary rely heavily on forest resources, making **sustainable coexistence** a vital element of conservation efforts. A recent incident involving the **poaching of a pangolin** has raised concerns about wildlife protection and the need for enhanced surveillance.

Sahyadri Tiger Reserve: Revitalisation Through Strategic Translocation

- The **Sahyadri Tiger Reserve (STR)**, located in the **Sahyadri Ranges of the Western Ghats**, is Maharashtra's **first tiger reserve in its western region** and fourth overall in the state. Spread across the **Koyana Wildlife Sanctuary** and **Chandoli National Park**, the reserve is defined by steep **escarpments, barren plateaus (Sadas),** and **dense thorny undergrowth**, along with reservoirs like **Shivsagar** and **Vasant Sagar**.

- Vegetation ranges from **moist evergreen** to **dry deciduous forests**, with areas of **climax vegetation** relatively undisturbed by human activity. Notable floral species include **Anjani, Jambhul**, and **Pisa**, while key faunal species include **tigers, leopards, wild dogs, wolves, jackals**, and **herbivores like sambar and barking deer**.
- Recently, the Union Environment Ministry approved the **translocation of eight tigers** from **Tadoba-Andhari and Pench Tiger Reserves** to Sahyadri, aiming to rejuvenate its **declining tiger population** and restore ecological balance.

Congo River Tragedy and Its Global Significance

- In a tragic incident, over **107 people lost their lives** in a **whaleboat fire on the Congo River**, highlighting both the region's infrastructural vulnerabilities and the significance of the river in daily life.
- The **Congo River**, also known as the **Zaire River**, is Africa's **second-longest river (4,700 km)** after the Nile and the **deepest river in the world**, reaching depths of **720 feet (220 m)**. It originates in **northeastern Zambia**, flowing through a massive **counterclockwise arc** before emptying into the **Atlantic Ocean** at Banana, Democratic Republic of the Congo.
- Crossing the Equator **twice**, the river flows through multiple countries including **DR Congo, Republic of the Congo, Central African Republic, Zambia, Angola, Cameroon**, and **Tanzania**. Its **drainage basin**, covering over **3.4 million square kilometers**, supports the **Congo Basin Rainforest**, the world's **second-largest tropical rainforest**.
- Fed by tributaries like the **Ubangi, Kasai, Lulonga, and Aruwimi**, the Congo River maintains a **steady year-round discharge** due to staggered rainy seasons across hemispheres. It also supports the **Congo Plume**, a major **carbon sink**, and continues offshore via a **submarine canyon 1,220 meters deep**. Despite its massive utility for **trade and transportation**, the Congo's unpredictable currents and limited safety infrastructure pose significant challenges for local communities.

The Global Plastic Pollution Crisis: Scale, Impact, and the Path to a Sustainable Future

Introduction and Context

The world is witnessing an unprecedented surge in plastic pollution, which has reached crisis levels. According to recent projections, global plastic waste is expected to triple by 2060, reaching a staggering 1.2 billion tonnes annually. This escalating crisis poses a severe threat to ecosystems, human health, and global climate stability, demanding urgent and coordinated international response.

Magnitude of the Crisis

- The explosive growth in plastic production has been a defining feature of the 21st century. Between 2000 and 2019 alone, global plastic production doubled, reaching 460 million tonnes. This surge has been largely driven by short-lived consumer goods and packaging, especially in fast-moving consumption economies. Despite this increase, only 9% of plastic waste is currently recycled. The remaining bulk leaks into landfills, rivers, and open dumps, aggravating the pollution load on natural ecosystems.
- One of the most alarming consequences is the marine plastic catastrophe, with approximately 11 million tonnes of plastic waste entering the oceans every year. This pollution has devastating effects on marine life, with countless seabirds, turtles, and fish ingesting or becoming entangled in plastic debris. Simultaneously, plastics degrade into micro and nano particles that infiltrate soil, air, and water, making their way into human lungs, bloodstreams, and even placental tissues.
- The future outlook is grim. Without comprehensive reforms, the Organisation for Economic Co-operation and Development (OECD) projects that plastic waste will nearly triple by 2060, far outpacing the capabilities of existing

waste management systems around the world.

Consequences of Plastic Pollution

- Plastic pollution is particularly insidious due to its long-lasting nature. Plastics can persist for centuries without decomposing, leading to a permanent build-up in the environment. Beyond the visible waste, the production and incineration of plastic contribute 3.4% of total global greenhouse gas emissions, worsening the climate crisis.
- Plastic waste is also a serious threat to biodiversity. Animals that ingest plastics often die from starvation or poisoning, and even reproductive functions are impaired by chemical exposure. Human health is at risk from carcinogens, endocrine disruptors, and microplastic particles, which leach into food and water supplies and compromise fertility, immunity, and developmental health.
- Economically, the cost of inaction is substantial. Marine plastic pollution alone results in estimated losses of $13 billion annually to the global economy, affecting sectors such as fisheries, tourism, and maritime transport.

Global and National Initiatives

- Recognising the scale of the crisis, global and national efforts have intensified in recent years. At the international level, the United Nations Environment Assembly (UNEA-5) launched negotiations in 2022 for a legally binding global treaty to end plastic pollution by 2024. This multilateral initiative aligns with several Sustainable Development Goals, particularly SDG 12 on sustainable consumption, SDG 13 on climate action, and SDG 14 on life below water. Simultaneously, a growing global push toward circular economy principles advocates redesigning, reusing, and recycling products to reduce dependence on virgin plastic.
- India has undertaken significant measures to combat plastic waste. The Plastic Waste Management Rules, first notified in 2016 and updated in 2022, have imposed bans on selected single-use plastic items while holding producers accountable through Extended Producer Responsibility (EPR) obligations. The Swachh Bharat Mission 2.0 aims to achieve 100% door-to-door waste collection, segregation, and scientific processing. India has also innovatively used waste plastic in the construction of over 1.2 lakh kilometres of roads, reducing bitumen usage and enhancing road durability.

Roles and Responsibilities in Addressing Plastic Pollution

- Effective management of the plastic crisis requires collective action at all levels of society. Individuals can play a key role by refusing to use single-use plastics such as disposable bags, bottles, and straws, thereby reducing their daily plastic footprint. Proper segregation of wet and dry waste at the household level is essential to enable efficient recycling and composting. Conscious consumer behaviour, such as opting for eco-friendly packaging and supporting companies with EPR compliance, can further drive sustainable demand.
- Communities and civil society also have an essential role. Organised clean-up drives at beaches, parks, and riverbanks can help remove litter and build collective responsibility. Establishing localised "plastic banks" incentivises citizens to return plastic waste for recycling or repurposing. Effective public-private partnerships involving local governments, recyclers, and non-governmental organisations can further enhance waste collection and processing efficiency.
- Governments must lead with robust legislation and strict enforcement. This includes penalising illegal production, sale, and use of banned plastics, and compelling companies to fulfil EPR obligations by taking back used packaging and meeting recycling targets. Fiscal tools such as landfill or incineration taxes, combined with subsidies for eco-friendly packaging and research and development (R&D), can nudge producers toward more sustainable practices.

The Way Forward

- To overcome the crisis, future strategies must be guided by the principles of the 6Rs — Refuse, Reduce, Reuse, Recycle, Recover, and Redesign. Embracing the circular economy is critical, where products are designed for longevity, reusability, and ease of recycling without losing economic value.
- Increased investments in R&D are necessary to develop bio-based and compostable plastic alternatives, as well as advanced recycling technologies that can tackle mixed or contaminated plastics. Decentralising waste management systems by empowering local governments, such as panchayats and urban local bodies, with financial resources and autonomy will enhance last-mile implementation and responsiveness.
- A widespread behavioural shift is equally essential. Awareness campaigns using digital media, popular influencers, and community outreach can help make a zero-plastic lifestyle aspirational and achievable, particularly among urban consumers and younger generations.

Conclusion

Plastic pollution represents a man-made ecological disaster with far-reaching consequences for the planet's climate, biodiversity, and public health. Its persistence and scale demand coordinated, multi-tiered action involving strong governance, industry accountability, community mobilisation, and individual responsibility. A future free from plastic pollution is not just a lofty environmental goal but a necessity for ensuring ecological balance, social justice, and sustainable development.

Kerala Cabinet Approves Amendment to Wildlife Protection Act (WPA) 1972

- The Kerala Cabinet has approved an amendment bill aimed at modifying the Wildlife Protection Act (WPA) of 1972, with the primary objective of simplifying the procedures for killing wild animals that pose threats to human life. This move comes against the backdrop of rising human-animal conflicts in the state, marking the first instance of a state government proposing changes to a central law of this nature.
- The proposed amendment seeks to grant expanded powers to the Chief Wildlife Warden (CWW), allowing them to order the killing of any wild animal that attacks humans within human habitats. Under the current provisions of the WPA, the CWW is empowered to issue permits for hunting animals listed in Schedules I, II, III, or IV only if those animals become dangerous to human life. This amendment would streamline the process, potentially reducing delays in handling dangerous wildlife situations.
- Additionally, the bill proposes to empower the state government to declare any wild animal included in Schedule II as vermin. Presently, the authority to declare animals as vermin lies with the central government under Section 62 of the WPA, which excludes animals in Schedule I and Part II of Schedule II from being declared as such and thus restricts the inclusion of these animals in Schedule V. Animals classified as vermin can be legally killed in specified areas for a limited time, a provision aimed at managing wildlife that threatens human safety or agricultural activities.
- The increase in human-animal conflict in Kerala can be attributed to several factors. Habitat loss due to rapid urbanisation, deforestation, and human encroachments has blocked critical animal corridors, disrupting natural movement and forcing animals into human settlements. Resource competition, particularly the scarcity of food and water, intensifies clashes between humans and wildlife. Climate change exacerbates these tensions by causing more extreme weather events and altering animal migration patterns, often pushing animals into villages. Furthermore, poaching and illegal wildlife trade disturb ecosystems and displace species, further destabilising the delicate balance between humans and animals.

Dongsha Islands

- Taiwan's Coast Guard Administration (CGA) recently confirmed that it dispatched vessels to repel both a Chinese coast guard ship and a Chinese fishing boat operating near the Dongsha Islands. This incident highlights ongoing territorial and maritime tensions in the region.
- The Dongsha Islands, also known as the Pratas Islands, consist of a small group of three islands situated in the northern sector of the South China Sea. They lie about 445 kilometers southwest of Kaohsiung, Taiwan, and approximately 320 kilometers southeast of Hong Kong. The islands are administered by Taiwan, although they have no permanent civilian population. Taiwanese marines are stationed there to maintain security and sovereignty.
- Geographically, the Dongsha Islands form a circular coral atoll, primarily composed of clastic coral and reef flats spanning roughly 24 kilometers (15 miles) in diameter. At the center is a lagoon measuring about 16 kilometers (10 miles) across. Of the three islands, Dongsha Island is the only landmass above sea level, stretching about 1.6 kilometers (1 mile) long and just over 0.8 kilometers (0.5 miles) wide. The other two—Northern Vereker and Southern Vereker atolls—remain submerged below sea level.

Garra nambashiensis

- Researchers have recently identified a new species of freshwater fish named *Garra nambashiensis* in Manipur, adding to the region's rich biodiversity.
- This species belongs to the Labeonine family and was discovered in Taretlok, a tributary of the Chindwin River located near the Nambashi Valley in Manipur's Kamjong district. The fish was collected from fast-flowing riffles—shallow sections of rivers or streams characterized by algae-covered gravel beds and a mixed substrate consisting of cobbles, boulders, pebbles, sand, fine silt, and coarse sediments.
- *Garra nambashiensis* is distinguished by several physical features, including a quadrate-shaped proboscis, 7-8 acanthoid tubercles on its anterolateral margin, black spots on the opercle (gill cover), 8-11 dorsal-fin scales, and six black stripes extending to the hypural plate (part of the tail). It typically measures between 90 to 140 millimeters (9 to 14 centimeters) in length. Locally, it is referred to as Nutungnu.
- Currently, 60 species of the genus *Garra* have been documented in various river systems across Northeast India, covering the Eastern Himalayan and Indo-Burma regions. Among these, 32 species belong to the 'proboscis species group,' which inhabit the Chindwin, Brahmaputra, Barak, and Kaladan river systems. The Chindwin river system alone hosts eight species, including the recently described *Garra chingaiensis*.

Koala

- Australia recently approved the world's first vaccine aimed at protecting koalas from the bacterial infection Chlamydia, a significant threat to their survival.
- The koala (*Phascolarctos cinereus*) is an arboreal, herbivorous marsupial endemic to Australia. It is the sole surviving species of the family Phascolarctidae and is closely related to wombats. Koalas are generally asocial creatures, coming together primarily during the breeding season. They spend much of their time in eucalyptus trees, where their paws—equipped with two opposing thumbs—allow them to grasp branches and climb effectively.
- Koalas are distributed across eastern and southeastern Australia, including regions such as northeastern, central, and southeastern Queensland, eastern New South Wales, Victoria, and parts of southeastern South Australia. Their habitats range from relatively open forests to woodlands, spanning tropical to cool temperate climates. Their diet consists almost exclusively of eucalyptus leaves, which they digest with specialized adaptations.

- The International Union for Conservation of Nature (IUCN) classifies koalas as vulnerable. They face numerous threats, including disease, habitat destruction, climate change, and road accidents.
- Chlamydia, caused by *Chlamydia pneumonia* and *Chlamydia pecorum*, severely impacts koalas. The disease can be transmitted through mating, infected discharges, and from mother to offspring at birth. It leads to eye infections, blindness, urinary tract complications, and infertility. Infected koalas often become weak and dehydrated, making them more susceptible to predators and environmental hazards such as bushfires. In some parts of Australia, up to 70% of wild koalas carry the infection. The disease spreads rapidly within koala populations due to overlapping territories and mutual grooming behaviors.

Eustoma

Exotic Eustoma flowers have bloomed for the first time in Odisha, grown inside a polyhouse at Sanatanpali, Sambalpur district, thanks to efforts by CSIR–NBRI.

About Eustoma

- Eustoma, also known as Lisianthus or Prairie Gentian, is a herbaceous annual flower belonging to the gentian family. It is highly valued worldwide for its long vase life and vibrant colors, often used in premium events, weddings, and luxury décor. Until this breakthrough, Eustoma flowers were primarily imported from countries such as the Netherlands and Kenya.
- Native to Mexico, the southern United States, the Caribbean, and northern South America, Eustoma typically thrives in grasslands and disturbed areas with warm climates. The plant grows between 30 and 90 cm tall and produces large, funnel-shaped flowers in multiple colors, including pink, purple, white, and blue.
- The successful cultivation in Sambalpur demonstrates its adaptability to hot Indian conditions. Economically, the flower offers high potential, with farmers able to harvest twice yearly and earn up to ₹2 lakh per acre per season, boosting rural incomes. Eustoma is available in both single and double-flowered varieties, including rare bicolored types, making it highly desirable for weddings, décor, and export markets.
- By cultivating Eustoma locally, India can reduce dependence on imported cut flowers, supporting CSIR-NBRI's network of over 400 farmer clusters and promoting sustainable floriculture.
- Eustoma is popular in the cut flower industry, known for its longevity (over two weeks). It opens new avenues in export floriculture, reducing reliance on traditional exports like roses. It is also suitable for retail, hospitality events, and gardening or landscaping purposes, especially dwarf varieties for pots and balconies.

Grey Rhino Event

Scientists have classified the devastating Wayanad landslide of July 2024 in Kerala as a "grey rhino event" in the report *Sliding Earth, Scattered Lives* (September 2025). This characterization underscores how policymakers ignored long-standing warnings about ecological fragility and high rainfall risks in the region.

About Grey Rhino Events

- A "grey rhino" is a metaphor for a highly probable and high-impact event that is visible and foreseeable but often neglected until it causes catastrophic damage. This contrasts with "black swan" events, which are rare and unpredictable.
- The concept was introduced by Michele Wucker, a U.S.-based policy analyst, in her 2016 book *The Gray Rhino: How to Recognize and Act on the Obvious Dangers We Ignore*.
- Key features of grey rhino events include predictability, visibility through early warning signs, neglect by authorities due to complacency or conflicting interests, and the potential to cause large-scale social, economic, and environmental damage. Unlike black swan events, grey rhinos are actionable, meaning preventive measures can be taken if timely.
- The grey rhino concept emphasizes the importance of risk governance, urging policymakers to identify and prioritize

visible but overlooked threats. It promotes proactive disaster preparedness, including early evacuations, strict zoning regulations, and environmentally sensitive development.

Salamis Bay

INS Trikand, an Indian Navy stealth frigate, recently arrived at Salamis Bay, Greece, as part of its deployment to the Mediterranean Sea. The vessel is set to participate in the first-ever bilateral maritime exercise between India and Greece aimed at enhancing interoperability and naval cooperation.

About Salamis Bay

Salamis Bay is a natural bay located on the west coast of Salamis Island, Greece, connected to the Saronic Gulf. It lies within the Aegean Sea region, approximately 16 km from Athens, near the town of Salamis. The bay spans roughly 9 km in length, with Cape Petriti marking its southwestern edge. Historically, it is renowned as the site of the pivotal Battle of Salamis in 480 BCE, where the Greek fleet defeated the invading Persian navy.

About Greece

Greece is a country in southeastern Europe, situated at the southern tip of the Balkan Peninsula. Its capital and largest city is Athens, followed by Thessaloniki and Patras. Greece shares land borders with Albania, North Macedonia, Bulgaria, and Turkey. Known as the cradle of Western civilization and the birthplace of democracy, Greece boasts the longest coastline in the Mediterranean, dotted with thousands of islands. It is home to 20 UNESCO World Heritage Sites, preserving ancient temples, theaters, and Byzantine monuments.

Rediscovery of Red Coral Kukri Snake Near Pilibhit Tiger Reserve

- In a significant find for herpetology, the rare **Red Coral Kukri Snake** (Oligodon kheriensis), last reported in 1936, was recently discovered trapped in a net near the **Pilibhit Tiger Reserve** in Uttar Pradesh. This nocturnal and fossorial (burrowing) species is one of the rarest non-venomous snakes in the Indian subcontinent.
- The snake is characterised by its striking appearance — a uniform bright coral-red body with a yellowish or pinkish underside and an obtusely pointed snout. It derives its name from the shape of its curved teeth, which resemble a **kukri**, the traditional Nepalese knife.
- Its distribution spans the lowlands (below 1500 feet) along the Himalayan foothills across Uttarakhand, Nepal, northern Uttar Pradesh, Bihar, West Bengal, Sikkim, and western Assam. Despite its rarity, the **IUCN** classifies it as *Least Concern*, and it is listed under **Schedule IV** of the **Wild Life Protection Act** in India.
- The **Pilibhit Tiger Reserve**, where the snake was found, lies along the India-Nepal border and forms part of the **Terai Arc Landscape**. It is a critical ecosystem, comprising dense sal forests, tall grasslands, swamps, and rivers such as the Gomti (which originates here), Sharda, Chuka, and Mala Khannot. The area experiences a hot and dry climate and includes the Sharda Sagar Dam, which stretches over 22 km along the reserve's boundary.

Lake Natron: Conservation vs Industrial Development

- In a significant move for ecological preservation, the government of **Tanzania** has suspended plans for large-scale **soda ash mining** at **Lake Natron**, a unique and ecologically sensitive salt lake located along the **Tanzania-Kenya border**.
- Situated in the eastern arm of the **Great Rift Valley**, Lake Natron is known for its striking red coloration caused by its high alkalinity. The lake contains deposits of salt, caustic soda, and magnesite and is mainly fed by the Ewaso Ng'iro River from central Kenya.
- Lake Natron serves as the **only reliable breeding ground for Lesser Flamingos** in Africa, supporting up to 75% of the global population. The area is also home to unique geological features, such as the **Shompole volcano**, which overlooks the lake from the northern end.
- Designated as a **Ramsar Site of International Importance** in 2001, Lake Natron faces multiple threats, including pollution, agriculture, and climate change. The proposed soda ash project had raised alarms among conservationists, who feared irreversible ecological damage. The recent suspension of the project is seen as a crucial

step in balancing developmental ambitions with ecological integrity.

Legal Provisions for Acquisition of Animals in India

Context

A Supreme Court-appointed Special Investigation Team (SIT) has recently confirmed that the acquisition of animals by Reliance-owned Vantara adheres to all relevant statutory requirements. The SIT found no legal violations, affirming that the procedures followed were in compliance with India's wildlife protection and trade regulations.

Wildlife (Protection) Act, 1972: Framework and Objectives

- Enacted by the Indian Parliament, the Wildlife (Protection) Act, 1972 is a comprehensive legal instrument designed to safeguard the country's wildlife and natural habitats while regulating human interactions with wild species. The Act's primary aim is to ensure the conservation of wild animals, birds, and plants and to maintain ecological balance by preventing the extinction of species. It also regulates hunting practices and the trade and possession of wildlife products.
- A critical feature of the Act is its classification of species into six schedules (later amended to four under the Wildlife Protection (Amendment) Act, 2022), each offering different levels of protection. Schedule I and II species receive the highest protection, while Schedule VI deals with certain plant species and their cultivation. The legislation also provides for the establishment of protected areas, including National Parks, Wildlife Sanctuaries, Conservation Reserves, and Community Reserves.
- Hunting of protected species is strictly banned, except under exceptional circumstances such as scientific research or population control. The Wildlife Crime Control Bureau (WCCB) has been instituted to tackle illegal wildlife trade and associated offences. In addition, Chapter IV-A of the Act governs the recognition, regulation, and management of zoos through the Central Zoo Authority. Penalties under the Act are stringent, particularly for offences involving Schedule I species, and include substantial fines and imprisonment.

Legal Provisions Governing Animal Acquisition

- The acquisition, possession, or transfer of protected wild animals is governed by detailed legal provisions under the Wildlife (Protection) Act, 1972. Section 40 and Section 42 mandate that any individual or organisation intending to acquire a scheduled wild animal—or any article derived from such an animal—must first obtain prior approval from the Chief Wildlife Warden (CWW). Section 43 explicitly prohibits the sale or offer for sale of these animals without the requisite permission. Furthermore, Sections 49 and 49B deal with the regulation of trade and transport of scheduled species, ensuring that such activities are not associated with poaching, smuggling, or illegal procurement.
- The acquisition process involves a formal application to the CWW, specifying the species, purpose, and source of the animal. This is followed by a thorough verification of the source, which must be legal and may include domestic zoos, recognised rescue centres, or approved foreign institutions. Upon successful verification, permits or licenses are issued either under the Zoo Rules, 2009 for recognised zoos, or under international frameworks such as CITES (Convention on International Trade in Endangered Species) for transboundary imports and exports.
- The law also mandates that the transport of live animals comply with the International Air Transport Association (IATA) Live Animal Regulations. Upon arrival at the destination, animals are required to undergo veterinary quarantine to ensure health and safety. Moreover, the acquiring entity must maintain comprehensive records and submit periodic reports to the authorities, ensuring transparency and traceability in wildlife management.

Tipeshwar Wildlife Sanctuary (TWS): A Biodiversity Haven in Maharashtra

Context

Five individuals were recently arrested for illegally poaching an Indian Pangolin in the Tipeshwar Wildlife Sanctuary (TWS), located in the Yavatmal district of Maharashtra. This incident underscores the ongoing threat of

poaching even in well-monitored conservation areas.

Overview and Significance

- Tipeshwar Wildlife Sanctuary is a protected ecological zone and designated tiger reserve in Maharashtra, notable for its rich biodiversity and high tiger density. Located in the Pandarkawada region of Yavatmal district, the sanctuary spans an area of 148.63 square kilometres. It is named after the local deity Tipai, whose shrine is situated in Tipeshwar village. While less crowded than Tadoba National Park, TWS offers an equally enriching safari experience.
- Declared a wildlife sanctuary under the Wildlife (Protection) Act, 1972, Tipeshwar has gained prominence through dedicated conservation efforts. Notably, it was home to Tigress Avni, the subject of Vidya Balan's film *Sherni*. Since 2010, targeted conservation measures have helped increase the sanctuary's tiger population from just 3 to over 20 individuals.
- Tipeshwar's forest is predominantly teak (about 60%) and red sandalwood (approximately 15%). The ecosystem also supports a wide variety of indigenous plant species, including Mahua, Achar, Lendia, and Tiwas, along with around 250 species of bamboo.
- Its fauna includes apex predators and a variety of mammals such as tigers, leopards, sloth bears, hyenas, jackals, chital, sambar, wild boars, and Indian pangolins. The sanctuary is also home to 26 reptile species and several rare mammals like the Rusty Spotted Cat and the False Vampire Bat.
- For birdwatchers, TWS is a treasure trove, offering sightings of 256 species, including residents, migratory birds, and rarities. Notable species include the Painted Francolin, Rain Quail, Lesser Whistling Duck, and Eurasian Wryneck. The sanctuary also boasts an impressive butterfly diversity, with 97 recorded species, including rare varieties such as the Black Rajah and Peacock Royal.
- Tipeshwar has significant potential for ecotourism, offering jeep safaris, nature trails, and rural tourism activities. These not only enhance visitor experiences but also contribute to local livelihoods by promoting community engagement in conservation-linked tourism.

Himalayan Rains: Understanding Topography and Climate Change

In recent days, Dehradun and multiple districts across Uttarakhand have been struck by intense rainfall, resulting in landslides, overflowing rivers, and at least 15 reported fatalities. Over the past month, both Uttarakhand and Himachal Pradesh have repeatedly experienced destructive weather events, including cloudbursts, flash floods, mudslides, and disruptions to communication infrastructure. Although such occurrences are common during the monsoon season, their increasing frequency and severity in recent years have raised significant alarm regarding the vulnerability and preparedness of the Himalayan region.

Topographical Reasons for Heavy Rainfall in Hilly Regions

- This monsoon season has seen unusually high rainfall in northwestern India, with precipitation levels 34% above average in August and surging to over 67% above normal during early September. This anomaly has been driven by consecutive low-pressure systems originating in the Bay of Bengal, which have moved further north than usual, bringing intensified rains. In mountainous regions such as the western Himalayas, the topography plays a crucial role in amplifying rainfall. As moist air rises and cools rapidly, it forms massive, vertically developed clouds that result in highly concentrated and heavy precipitation over localized areas. While such rainfall volumes may be manageable in coastal regions like Goa or Kerala, they tend to cause severe destruction in the hills. For instance, Udhampur in Jammu and Kashmir recorded an astonishing 630 mm of rainfall within 24 hours — equivalent to the annual rainfall of Rajkot — and Leh experienced 59 mm of rain in just two days, marking its highest two-day rainfall since 1973.

Why Mountainous Areas Face Greater Risks from Heavy Rain

- In the plains, heavy rainwater typically drains into nearby rivers or is absorbed into wetlands and local water bodies.

However, in hilly terrains, the steep slopes and shallow soil structure often result in rapid surface runoff, which triggers landslides, mudslides, and flash floods. Water racing downhill picks up loose debris, soil, and rocks, compounding its destructive potential. This phenomenon has been observed recently in areas such as Mandi, Kullu, Dharali, Tharali, and Jammu. Moreover, when rivers become blocked by debris, the resulting overflow can inundate downstream settlements, destroying critical infrastructure such as roads and bridges. It is important to note, however, that not every cloudburst leads to disaster — the outcome depends heavily on localized factors, including the stability of slopes and whether the debris falls into river channels.

- Emerging climatic patterns point to a southward shift in western disturbances — weather systems originating from the Mediterranean that bring rain and snow to northern India. These disturbances are now interacting more frequently with southwest monsoon currents, a trend attributed to global warming. This interaction has made rainfall behavior over the Himalayas more unpredictable, contributing to a rise in extreme rainfall events interspersed with prolonged dry spells. Additionally, the accelerated melting of Arctic sea ice is believed to influence monsoon dynamics, suggesting that the Himalayas could face increasing climatic instability and risk.

Why Cloudbursts Are So Common in the Himalayas

- The Himalayas lie at the intersection of two powerful atmospheric systems: moist, tropical monsoon winds from the south and mid-latitude westerlies from the north. This unique geographic positioning creates significant atmospheric uplift and instability, conditions that are ideal for cloudbursts. Warm, moisture-laden air is forced up the steep slopes, where it cools rapidly, condenses, and results in highly localized and intense rainfall. The region's vulnerability is being exacerbated by climate change. Arctic warming is weakening the polar jet stream, which leads to more frequent interactions between westerly troughs and the monsoon.
- Simultaneously, warmer air masses can hold more moisture, thereby intensifying rainfall. A slower, more erratic jet stream causes storm systems to linger, leading to extended periods of heavy rain and increased risk of flooding. These trends have already played out in other regions of the world, such as the catastrophic floods in Germany (2021), Pakistan (2010), and West Asia (2024).

Challenges in Forecasting Cloudbursts and the Limits of Current Tools

- The prediction of cloudbursts relies on a range of technologies, including Doppler Weather Radars (DWRs), satellites, ground-based rain gauges, GPS-based moisture monitoring systems, and high-resolution numerical weather prediction (NWP) models. While DWRs offer detailed insights into cloud formation and rainfall intensity, their effectiveness is limited in mountainous regions due to restricted coverage. Rain gauges and automatic weather stations provide accurate point-specific data but lack the spatial density needed to detect rapidly developing weather systems.

Satellites such as INSAT-3D/3DR, the Global Precipitation Measurement (GPM) mission, and Himawari contribute valuable data on cloud development and rainfall trends, but their relatively coarse resolution and susceptibility to errors in complex topography pose significant limitations. NWP models attempt to simulate storm formation and convective processes, yet their accuracy depends on ultra-fine resolution (less than 1 km), high-quality initial data, and realistic representation of physical processes, making the sudden onset of cloudbursts difficult to predict. To enhance forecasting capabilities, the deployment of denser observational networks, more sophisticated modeling systems, and integration of Artificial Intelligence (AI) and Machine Learning (ML) for advanced data assimilation are urgently needed.

Almatti Dam

- To facilitate the long-delayed Phase III of the Upper Krishna Project (UKP), the Karnataka Cabinet has recently approved the acquisition of 1,33,867 lakh acres of land. This clearance is essential to enable the elevation of the Almatti Dam's height from its current level of 519.16 metres to the proposed 524.256 metres.
- The Almatti Dam is a prominent hydroelectric project located on the Krishna River in northern Karnataka. Completed in July 2005, it was constructed with multiple objectives, including the provision of irrigation and potable water to nearby regions, hydroelectric power generation, and flood control.
- The dam has an annual electricity production capacity of 713 million kilowatts (KW) and holds a gross water storage capacity of 123.08 TMC at 519 metres above mean sea level. Measuring 52.5 metres in height and 3.5 kilometres in length, the Almatti Dam serves as the primary reservoir for the Upper Krishna Irrigation Project. The power generation facility, located on the dam's right flank, boasts a 290 MW capacity and operates with vertical Kaplan turbines, comprising five 55 MW units and one 15 MW unit.
- Electricity is generated at two separate facilities—Almatti I Powerhouse and Almatti II Powerhouse—positioned at a distance from each other. After power generation, the discharged water flows into the Narayanpur reservoir to meet downstream irrigation demands. Additionally, approximately 77 acres surrounding the dam have been transformed into carefully curated gardens, such as the Japanese Garden, Rock Garden, Mughal Garden, Gopal Krishna Garden, and Lavakush Garden.

Penna River

- In a recent incident, eighteen individuals trapped in the floodwaters of the Penna River in Andhra Pradesh's Nellore district were rescued after a challenging seven-hour operation.
- The Penna River—alternatively known as the Pennar, Pinakini, or Penneru—is a key river flowing through Karnataka and Andhra Pradesh in southern India. Its origin lies in the Nandi Hills located in Karnataka's Chikkaballapur district. The river flows north into Andhra Pradesh before turning east and then southeast. Upon traversing the Eastern Ghats, it bends eastward again, ultimately draining into the Bay of Bengal near Nellore.
- Stretching approximately 597 kilometres in length, the Penna River basin lies within a rain shadow region of the Eastern Ghats. As a result, it is seasonal, with heavy flows during the monsoon and reduced flow during dry periods. Its major tributaries—mostly seasonal—include the Chitravati, Papagni, Cheyyeru, and Kunderu rivers.
- The Penna River is critical to the agricultural economy of Andhra Pradesh, especially the drought-prone Rayalaseema region. To harness its waters, multiple irrigation projects have been developed, including the Somasila, Mylavaram, and Gandikota projects, which support both farming and drinking water supply.

Saunders's Tern

- A recent sighting of Saunders's Tern has been reported at the Adyar Estuary in Chennai.
- Saunders's Tern (*Sternula saundersi*) is a small, ground-nesting seabird belonging to the Laridae family. This species resides primarily along the shores of the north-western Indian Ocean and is known for breeding in regions ranging from the Red Sea and Persian Gulf to islands between India and Sri Lanka. It is believed to winter in the Seychelles, Maldives, and Cocos (Keeling) Islands.
- These birds inhabit a range of coastal environments, including tidal lagoons, estuaries, harbours, and shallow tropical or subtropical waters. Their diet consists of marine life such as small fish, mollusks, and crustaceans. Saunders's Terns typically nest on exposed sandy shores, gravel beds, or dried mud, often up to two kilometres inland.

- The breeding season spans from March to June. Despite their scattered populations, their conservation status remains stable, classified as "Least Concern" by the IUCN.
- The Adyar Estuary, where the sighting was made, is formed at the point where the Adyar River meets the Bay of Bengal. It is situated between Santhome Beach in the north and Elliots Beach in the south, providing a rich habitat for coastal and migratory bird species.

Ageing Dams in India: A Growing Structural and Policy Challenge

India is currently facing a significant infrastructure challenge due to its ageing dams. As of 2023, over 1,065 dams in the country are between 50 to 100 years old, while 224 dams have exceeded the 100-year mark. Experts have raised concerns that many of these structures are approaching the end of their original design life, with potential consequences for safety, irrigation, and hydropower generation. This growing issue demands urgent attention to ensure structural integrity, operational efficiency, and public safety.

Historical Development of Dams in India

- India's relationship with dams stretches back centuries. The Kallanai Dam, built in the 2nd century CE, remains one of the oldest functioning irrigation structures in the world. The Mettur Dam (1934) and Nizam Sagar Dam (1931) were among the first large-scale modern reservoirs constructed before independence. During the British colonial period, important irrigation infrastructure such as the Krishna and Godavari anicuts was developed, and the idea of the Damodar Valley Corporation was conceptualized, inspired by the Tennessee Valley model in the United States.
- Following independence, the construction of monumental projects like Bhakra-Nangal (1963), Hirakud (1957), Rihand, Tungabhadra, and Koyna dams marked a new era. These projects were celebrated by Prime Minister Jawaharlal Nehru as the "temples of modern India," instrumental in propelling the Green Revolution by providing water for agriculture and hydroelectric power.
- Between 1951 and 1971, India launched an ambitious infrastructure program, initiating construction on 418 large dams within two decades. These efforts aimed to enhance irrigation, generate electricity, and provide flood control. In more recent decades, dam projects have become increasingly multipurpose, integrating components like tourism, navigation, and inland fisheries to support comprehensive water resource development.
- Currently, the focus has shifted toward rehabilitating and modernizing ageing dams to enhance safety and climate resilience, with a long-term vision of prolonging their operational lifespan.

Legal and Policy Framework Governing Dam Safety

India has developed a legal and institutional framework to regulate dam safety, culminating in the **Dam Safety Act of 2021**. This legislation provides a formal structure for monitoring, surveillance, and maintenance of dams. It also establishes key bodies such as the National Dam Safety Authority (NDSA), the National Committee on Dam Safety, and State Dam Safety Organisations (SDSOs).

The Act mandates pre- and post-monsoon safety inspections, the preparation of Emergency Action Plans, and the creation of inundation maps to improve disaster preparedness. These measures are aimed at ensuring operational safety and rapid response during emergencies.

In addition, the **Dam Rehabilitation and Improvement Project (DRIP)**—phased across DRIP I, II, and III—has covered 736 dams across 19 states. Supported by the World Bank and the Asian Infrastructure Investment Bank (AIIB), the program focuses on structural upgrades, gate replacements, installation of monitoring equipment, and capacity-building for dam personnel.

The **Central Water Commission (CWC)** plays a key technical role, issuing periodic safety protocols, conducting risk assessments, and recommending corrective actions. Despite these efforts, India lacks a structured **decommissioning policy** for obsolete or unsafe dams and continues to emphasize lifespan extension rather than safe retirement.

Critical Challenges Facing India's Ageing Dams

Several pressing challenges arise from the deteriorating condition of dams in India:

- **Ageing Infrastructure**: By 2050, more than 4,200 dams will surpass 50 years of age, increasing the likelihood of structural fatigue and mechanical failure. Many of these dams were built with outdated spillway designs that are insufficient to manage today's increasingly severe floods, thereby heightening the risk of overtopping.
- **Sedimentation and Storage Loss:** Key reservoirs like Bhakra, Hirakud, and Lower Bhavani have already lost 20–30% of their storage capacity due to sedimentation. This reduction in live storage compromises the effectiveness of these dams in irrigation, hydropower generation, and drinking water supply.
- **Climate Change and Extreme Weather Event:** Recent events such as cloudbursts, glacial lake outburst floods (GLOFs), and intensified monsoon patterns are exerting tremendous stress on old dam infrastructure. The 2023 GLOF in Sikkim is a stark reminder of the vulnerability of high-altitude dams. Many dams have flood routing capacities that fall short of handling the probable maximum flood (PMF), increasing flood risks downstream.
- **Seismic and Geotechnical Threats:** Some of India's major dams, such as Mullaperiyar and Koyna, are located in seismically active zones. Issues such as recurring cracks, seepage, and foundation erosion are critical threats, particularly to earth-fill dams, where internal piping and geotechnical instability could result in catastrophic failure.
- **Institutional and Governance Gaps:** There is a noticeable lack of transparency in dam data, limited public engagement, and slow progress in implementing rehabilitation measures. Furthermore, the absence of a decommissioning framework leaves outdated dams in operation, posing long-term safety hazards.

Notable Case Studies

- The **Mullaperiyar Dam**, constructed in 1895, remains at the center of an inter-state dispute between Kerala and Tamil Nadu. At over 120 years old, its location in a seismic zone and vulnerability to structural stress have raised serious safety concerns.
- The **Hirakud Dam**, completed in 1957, experienced a near-overtopping incident in 1982, which led to the addition of an auxiliary spillway. The dam has also lost around 25% of its storage due to sedimentation.
- At the **Bhakra Nangal Dam**, sedimentation has reduced reservoir capacity by 23%. Authorities are currently undertaking seismic reassessment to evaluate risks under new climate and tectonic models.
- The **Tiware Dam failure** in 2019 resulted in the deaths of 19 people, exposing critical lapses in inspection protocols and the urgent need for a robust and accountable safety regime.

Path Forward: A Comprehensive Strategy for Dam Management

To address the looming crisis of ageing dams, India needs a science-based, multi-pronged strategy:

- **Risk-Based Prioritization:** Priority should be given to high-consequence dams—those located near large downstream populations or critical infrastructure. Independent, third-party safety audits must become standard to ensure unbiased risk assessments.
- **Strengthening Physical Infrastructure:** Dams should be retrofitted with updated spillways and structural reinforcements that meet current seismic and climatic standards. Catchment area treatment programs are essential to reduce silt inflow and preserve reservoir capacity.
- **Policy for Decommissioning and Repurposing:** India must establish a formal decommissioning framework to safely retire dams where risks outweigh benefits. Simultaneously, alternative water storage solutions such as aquifer recharge systems and check dams should be explored.
- **Community Engagement and Public Transparency:** Greater community involvement is crucial for safety. This

includes creating downstream hazard maps, setting up early warning systems, conducting regular mock drills, and making dam safety data publicly accessible to enhance citizen oversight.

- **Climate-Resilient Dam Design and Management:** Future dam management strategies must integrate modelling for glacial retreat, GLOF risks, and PMF projections. Resilience to climate-induced extremes should become a central criterion in all dam-related planning and rehabilitation.

Conclusion

India's ageing dams represent a dual reality: while they have served as critical instruments for development and water security, they now pose growing safety and environmental risks. A risk-informed, science-backed, and climate-conscious approach to dam management is not only urgent but essential. The goal should not be limited to preserving the physical structures, but to safeguarding lives, ensuring intergenerational equity in water access, and upholding the sustainability of India's hydraulic infrastructure.

Technology-Driven Disaster Management Strategy: A Future-Ready Framework for the Himalayas

The devastating Himalayan floods of 2025, which struck Jammu & Kashmir, Himachal Pradesh, Punjab, and Uttarakhand, resulted in severe loss of life and property. These events exposed significant shortcomings in the region's disaster preparedness and highlighted the urgent need for a forward-looking, technology-driven disaster management approach. Experts are now calling for a comprehensive strategy tailored specifically to the Himalayan context, integrating cutting-edge technologies, improved governance, and community engagement.

The Himalayan Disaster Profile

The Himalayan region, being geologically young and still rising, is inherently fragile. This geological volatility renders it highly susceptible to natural disasters such as earthquakes, landslides, and slope instability. The steep terrain, combined with intense monsoon rainfall, leads to frequent hydro-meteorological hazards, including cloudbursts, flash floods, and glacial lake outburst floods (GLOFs).

Human activities are compounding these risks. Infrastructure projects such as road widening, tunneling for hydropower, deforestation, and unregulated tourism continue to exert anthropogenic stress on the region's already fragile slopes. Furthermore, climate change is acting as a force multiplier—rising temperatures accelerate glacial melt and disrupt rainfall patterns, increasing the frequency and intensity of floods and landslides. The risk is further heightened by the location of towns, pilgrimage routes, and critical infrastructure on floodplains and unstable slopes, placing large populations in harm's way.

Current Disaster Management Strengths

- India has established a multi-tiered institutional framework for disaster management. At the national level, the National Disaster Management Authority (NDMA) plays a central role, while State Disaster Management Authorities (SDMAs), the National Disaster Response Force (NDRF), and State Disaster Response Forces (SDRFs) function at the state level.
- Response times are generally quick, with the Indian Army, Air Force, and Border Roads Organisation (BRO) deploying rescue teams, helicopters, and temporary bridges to restore connectivity and save lives. Technology is increasingly being leveraged—drones are deployed for aerial surveys, Doppler radars monitor weather systems, and the India Meteorological Department (IMD) provides real-time alerts through nowcasting systems and satellite-based communication.
- Efficient coordination among various agencies—the civil administration, armed forces, paramilitary units, and disaster response teams—ensures a unified response during emergencies. Community participation also plays a vital role; local volunteers, panchayats, and NGOs often carry out initial evacuations and distribute relief supplies before formal teams arrive.

Persistent Gaps and Challenges

- Despite these strengths, critical challenges remain. Forecasting capabilities are still limited, especially for hyper-local weather events like cloudbursts and GLOFs. The inability to provide accurate, short-notice warnings

reduces the window for evacuation and preparedness. Moreover, unplanned infrastructure development, including road cutting and encroachments, increases exposure to hazards and magnifies the impact of disasters.

- There is a widespread lack of public awareness. Many individuals ignore early warning alerts or are unfamiliar with evacuation procedures, leading to avoidable casualties. At the institutional level, many SDMAs face operational constraints due to inadequate manpower, outdated disaster management plans, and insufficient funding. Post-disaster recovery often falls short—damaged roads and bridges are rebuilt without addressing underlying slope stability, and compensation disbursements are frequently delayed, prolonging the rehabilitation process.

Technology's Role in Risk Reduction

- Technology offers transformative solutions to address these challenges. Geographic Information Systems (GIS) and remote sensing tools can be used to map hazard-prone areas, enabling better land-use planning, zoning regulations, and safe infrastructure development. Artificial Intelligence (AI) and machine learning can analyse historical and real-time rainfall data to predict flash floods and debris flows with greater accuracy.
- A 24×7 monitoring network comprising sensors for glacial lakes, soil moisture, and slope movement, along with Doppler radars, can provide early warnings of potential slope failures or flooding. Drones can serve multiple roles—from continuous surveillance of vulnerable areas to real-time delivery of supplies and providing live imagery for decision-makers during a disaster.
- Digital communication tools, including mobile apps, SMS alerts, sirens, and public announcement systems, are essential to disseminate warnings quickly and ensure timely evacuations, especially in remote and high-risk zones.

Governance and Community Engagement

- Building a resilient disaster management ecosystem requires active community participation and strong governance. Initiatives such as the *Aapda Mitra* programme are aimed at training community volunteers to act as first responders in their localities. These trained individuals can be invaluable in the immediate aftermath of a disaster.
- Strict regulatory frameworks must be enforced to prevent construction in ecologically sensitive areas, with mandatory compliance to seismic and safety standards. Regular mock drills, especially along pilgrimage routes and in schools, can familiarise people with evacuation protocols and reduce panic during real events. Decentralised disaster management plans should empower District Disaster Management Authorities (DDMAs) with adequate resources and autonomy to implement localised and timely actions.

Way Forward: Building a Resilient Future

- Moving ahead, disaster management must shift from reactive responses to preventive strategies. Hazard mapping should be integrated into the planning of urban expansion, hydropower development, and tourism infrastructure, avoiding high-risk zones altogether.
- Technological advancements must be embraced, including Internet of Things (IoT)-enabled sensors, AI-driven forecasting models, and blockchain systems for transparent tracking of relief distribution. Climate-resilient infrastructure is also essential—bio-engineered retaining walls, climate-adapted roads, and robust slope stabilisation measures can significantly reduce vulnerability.
- Investments in capacity building are crucial. This includes training disaster management professionals, ensuring dedicated budget allocations for SDMAs, and promoting grassroots disaster literacy. Public engagement must become a cornerstone of preparedness—civic education curricula should incorporate disaster readiness, encouraging every citizen to treat preparedness not as an option but as a responsibility.

Conclusion

The Himalayan floods of 2025 serve as a stark reminder of the region's vulnerability and the limitations of current disaster management practices. India must transition from a relief-centric approach to a proactive, risk-reduction model that is grounded in technology, informed governance, and empowered communities. Creating a resilient, tech-enabled, and citizen-aware disaster management system is vital for protecting lives, livelihoods, and ecosystems in the fragile Himalayan landscape.

National Tiger Conservation Authority (NTCA): Guardian of India's Big Cats

- The **Supreme Court** recently sought responses from the Centre and the **National Tiger Conservation Authority (NTCA)** on a **Public Interest Litigation (PIL)** that demands a **CBI investigation** into an alleged organized **tiger poaching and illegal wildlife trade racket** in states like **Maharashtra and Madhya Pradesh**.
- The NTCA was established in **2006** as a **statutory body** under the **Wildlife (Protection) Act, 1972**, and functions under the **Ministry of Environment, Forest, and Climate Change (MoEFCC)**. It provides a formal legal framework to oversee **Project Tiger**, a flagship conservation initiative launched in 1973.

Objectives and Governance

- NTCA was created to ensure **effective implementation of Project Tiger**, legal compliance, and transparent coordination between the Centre and states. It also acts as a **monitoring and oversight body**, with accountability to Parliament.
- The authority is chaired by the **Union Environment Minister**, with the **Minister of State as Vice-Chairperson**, supported by members of Parliament, ministry officials, and wildlife experts.

Powers and Responsibilities

NTCA's functions include:

- Approving state-prepared **Tiger Conservation Plans**
- Prohibiting unsustainable land use, like mining, within tiger reserves
- Regulating and standardizing tourism activities in core and buffer zones
- Monitoring tiger populations, prey density, and habitat health
- Mitigating human-wildlife conflicts and supporting eco-development
- Conducting mortality surveys and maintaining data on threats and conservation outcomes
- Providing technological, legal, and scientific support to states
- Facilitating international collaboration and research
- Building institutional capacity through training of forest personnel
- NTCA can issue binding directives to any person or authority to ensure the protection of tigers and their ecosystems.

Periyar Tiger Reserve: Flagged for Financial Irregularities Despite Ecological Achievements

A recent report by Kerala's Finance Inspection Wing has raised concerns about financial mismanagement at the Periyar Tiger Reserve (PTR), particularly the diversion of tourism revenues to a non-sanctioned "Park Welfare Fund" without official approval.

About Periyar Tiger Reserve

- Located in the Cardamom and Pandalam Hills of the Southern Western Ghats, spanning Idukki, Kottayam, and Pathanamthitta districts, the PTR is a prominent protected area under India's Project Tiger initiative. Originally designated as a wildlife sanctuary in 1950, it became India's 10th Tiger Reserve in 1978 and is also recognised as a UNESCO World Heritage Site.
- The reserve is home to a diverse range of species, including Bengal Tigers, Indian Elephants, Gaur, Leopards, and Wild Dogs. Its aquatic biodiversity includes seven endemic fish species, and the flora features three plant species found nowhere else.
- PTR is also known for its participatory conservation model, the "Periyar Model," which transformed former poachers into forest protectors. It involves 81 Ecodevelopment Committees (EDCs), including Vasanthasena, a women-led group engaged in patrolling and environmental clean-up. The Urali tribal community participates in organic pepper cultivation, which has gained international export value.

- The reserve employs modern tools such as the M-STrIPES app for ecological monitoring and maintains a trained dog squad ("Periyar Sniffers") and VIPER task force for anti-poaching activities. Educational facilities include interpretation centres, nature awareness halls, and an amphitheatre. Nature education and community training programmes have been active since 1989, reaching schools, NGOs, and media organisations. Additionally, climate-resilient farming initiatives support sustainable livelihoods for tribal populations.
- Despite these achievements, the flagged financial issues underscore the need for greater fiscal oversight and transparency in managing one of India's most celebrated conservation areas.

Plasticdweep: Lakshadweep's Mounting Waste Crisis

Context:

A major fire at the Minicoy Island dumping site in September 2025 has drawn national attention to Lakshadweep's escalating waste problem. This incident exposed the archipelago's accumulation of nearly 4,000 tonnes of unmanaged waste, posing a severe threat to coral reefs, marine ecosystems, and the livelihoods of fishing communities.

Understanding Plasticdweep:

The term *Plasticdweep* has come to symbolise the growing environmental and infrastructural crisis associated with land and marine waste across Lakshadweep's islands. The fire at Minicoy brought to light years of administrative neglect, irregular waste management practices, and the lack of any functional and sustainable disposal mechanism.

Trends and Alarming Data:

- Lakshadweep is grappling with the accumulation of approximately 4,000 tonnes of uncollected dry waste, including plastics, electronic waste, and discarded appliances. A 2024 survey by Cochin University of Science and Technology (CUSAT) documented 32,710 pieces of litter across 28 island beaches. Moreover, the survey found that 59% of coral colonies were suffocated by debris, while 15% showed signs of bleaching—both indicators of ecological degradation.
- The collapse of local governance systems has significantly contributed to the crisis. Since the dissolution of the panchayati system in 2021, routine waste collection services have been disrupted, leading to widespread unregulated dumping and open burning. These practices have not only worsened the environmental toll but have also increased public health risks. Compounding the issue are logistical constraints: due to rough monsoon conditions, marine waste evacuation is feasible only during a narrow window of four to five months each year. During this time, transport priorities are given to essential commodities like food and fuel, further delaying waste disposal.

Consequences and Ramifications:

- Ecologically, the unchecked plastic and waste buildup is having a catastrophic impact on coral reefs, which form the backbone of marine biodiversity in the region. Coral death leads to the depletion of fish stocks, which in turn disrupts the marine food chain and diminishes biodiversity. For local communities, particularly fisherfolk, this directly threatens their income, food security, and the tourism potential of the islands.
- On the health front, residents are increasingly exposed to the harmful effects of toxic smoke from burning plastics and to leachate that seeps into groundwater and the surrounding marine environment. Microplastic pollution also leads to bioaccumulation in the food chain, affecting not just marine life but also human consumers.

El Niño and Its Intensifying Impact on Central India

- A recent scientific study has drawn attention to a paradoxical consequence of the El Niño phenomenon on the Indian subcontinent, particularly central India. While El Niño is traditionally associated with the suppression of the southwest monsoon and an increased risk of drought, the study reveals that it also significantly elevates the probability of extreme daily rainfall events by nearly 50%. This dual impact—lower seasonal

rainfall but intensified bursts of precipitation—raises serious concerns regarding flood hazards, urban infrastructure resilience, and long-term climate adaptation planning.

- El Niño represents the warm phase of the broader El Niño–Southern Oscillation (ENSO) system and involves the abnormal warming of sea surface temperatures in the central and eastern tropical Pacific Ocean. Under normal conditions, trade winds push warm waters westward toward Indonesia, allowing for nutrient-rich upwelling off the South American coast. However, during an El Niño event, these trade winds weaken, causing warm water to accumulate in the eastern Pacific. This shift depresses the thermocline and limits upwelling, which in turn disrupts global atmospheric circulation patterns.
- The onset of El Niño is typically driven by a combination of factors including the weakening of easterly trade winds, a sustained positive sea surface temperature anomaly (exceeding 0.5°C above normal for at least five overlapping three-month periods), and the influence of westerly wind bursts and the Madden–Julian Oscillation (MJO). Global warming has also contributed to the increasing frequency and intensity of such episodes.
- El Niño events occur irregularly every 2 to 7 years and are monitored using the Oceanic Niño Index (ONI), which measures deviations in sea surface temperatures. The global consequences of El Niño are far-reaching, including droughts in Indonesia and Australia, flooding in parts of South America, and disruptions to fisheries and storm patterns.
- In the Indian context, El Niño generally delays the onset of the southwest monsoon and causes erratic withdrawal patterns. It reduces the number of rainy days but increases the severity of rainfall in already wet regions. This change in rainfall distribution, combined with urban vulnerability and poor drainage systems, exacerbates flood risks and poses complex challenges for disaster preparedness and agricultural planning.

WMO's State of Global Water Resources 2024: A World of Extremes

- The World Meteorological Organization (WMO) has released the 2024 edition of its *State of Global Water Resources* report, highlighting a deeply concerning trend: the Earth's water cycle is becoming increasingly erratic and extreme. Across the globe, water systems are oscillating unpredictably between severe droughts and catastrophic floods, posing critical risks to ecosystems, agriculture, and human settlements.
- One of the most alarming findings is that all global glacier regions reported mass loss for the third consecutive year. Many of the world's smaller glacier systems have already reached, or are nearing, the "Peak Water Point"—the stage where annual runoff from melting reaches its maximum and then begins to decline due to shrinking glacier mass. This not only threatens long-term freshwater availability but also contributes to rising sea levels and coastal inundation.
- The report reveals that nearly two-thirds of the world's river basins experienced either excessive or insufficient water flow in 2024. These anomalies contributed to a series of extreme events: unprecedented heavy rainfall in the tropical zones of Africa, widespread flooding in parts of Europe and Asia, and intense droughts in the Amazon Basin.
- At the heart of this growing instability is the intensification of the water cycle, driven by global climate change. As atmospheric temperatures rise, evaporation rates increase, causing more water to be stored in the atmosphere. This intensification leads to more extreme weather events, including prolonged droughts, heavy precipitation episodes, and stronger hurricanes. It also accelerates glacier melt and thermal expansion of ocean waters, directly contributing to sea-level rise and threatening coastal communities.
- The water cycle involves both "pools" and "fluxes." Pools refer to the various forms and locations where water is stored, such

as lakes, glaciers, or the atmosphere. Fluxes describe the movement of water between these pools, such as evaporation, condensation, and precipitation. With the accelerating pace of climate change, both pools and fluxes are being disrupted, leading to a planet increasingly defined by water-related extremes.

Single-Use Plastic Ban: A Persistent Challenge Despite Legislative Measures

Context

Although Karnataka became the pioneer state in India to impose a ban on single-use plastic (SUP) in 2016 under the **Environment (Protection) Act, 1986**, the actual implementation of this prohibition remains inadequate. Widespread use continues across the state, driven by poor enforcement, a thriving illegal manufacturing ecosystem, and low levels of public engagement.

Background and Context of the SUP Ban

- Karnataka's early action gave it a first-mover advantage in addressing plastic pollution. However, the ban's long-term effectiveness has been compromised by weak follow-through. The Union Government extended the effort nationally in **2022**, banning **19 categories** of SUPs, including plastic carry bags, thermocol items, straws, disposable cutlery, and flex banners.
- Yet, inspections conducted across **1.65 lakh establishments between 2021 and 2024** yielded seizures of over **1,000 tonnes** of banned plastic. However, the intensity of enforcement has significantly declined in recent years, diluting the impact of the initiative.

Data and Trends in Plastic Waste

- Karnataka generates between **3.45 and 5.28 lakh tonnes** of plastic waste annually—an average of roughly **1,000 tonnes per day**. Bengaluru alone accounts for **500 tonnes of SUP waste daily**, of which only **40% is effectively processed**. The remaining volume often ends up in **landfills, lakes, or stormwater drains**, exacerbating urban pollution.
- An estimated **300+ illegal plastic production units** continue to operate across Bengaluru. These units exploit inexpensive raw materials like plastic granules and chemical additives—costing ₹50–80/kg but sold at margins as high as ₹300/kg—making them highly profitable despite being illegal.

Environmental and Health Hazards

The ecological and human costs of SUPs are severe and multifaceted:

- **Microplastics Infiltration**: Plastics degrade into particles smaller than 5mm, contaminating soil, agricultural crops, and water sources, eventually entering the food chain.
- **Human Health Risks**: Chronic exposure has been linked to inflammation, hormonal disruptions, respiratory issues, and disorders such as hypothyroidism.
- **Ecosystem Disruption**: Microplastics disturb soil microbial life, affect fertility, and pose serious threats to aquatic biodiversity.
- **Animal Harm**: Stray animals, particularly cattle and dogs, often ingest plastic waste, resulting in fatal gastrointestinal blockages and organ damage.
- **Global Marine Impact**: According to UN estimates, **2,000 truckloads of plastic** are dumped into the oceans every day, contributing to large-scale phenomena such as the **Great Pacific Garbage Patch**.

Policy and Legal Framework

The legislative instruments guiding India's SUP regulation include:

- **Environment (Protection) Act, 1986**: The legal foundation for banning hazardous substances, including plastics.
- **Plastic Waste Management Rules, 2016 (with amendments)**: These mandate **Extended Producer Responsibility (EPR)**, holding producers, importers, and brand owners accountable for the lifecycle of plastic products.
- **EPR Portal**: Designed to track compliance digitally, but it suffers from weak enforcement. For instance, while over **1,200 producers/importers** exist, only **129 recyclers** are officially registered, highlighting a critical compliance gap.

Challenges in Implementation

Despite a comprehensive legal and institutional framework, several operational and systemic barriers hinder the effectiveness of the SUP ban:

- **Declining Enforcement**: Field raids have dropped dramatically—from **1.25 lakh in 2022–23** to merely **18,000 in 2024–25**, primarily due to staff shortages in enforcement agencies.
- **Flourishing Shadow Economy**: Localities like **Peenya**, **Dasarahalli**, and **SP Road** continue to host illegal plastic manufacturing units due to the easy availability of raw materials and limited regulatory oversight.
- **Consumer Apathy**: Public awareness is low, and consumer choices remain driven by the affordability and convenience of SUPs.
- **Inefficient Recycling Infrastructure**: While some recycling capacity exists, much of it remains underutilised due to poor segregation at the source and lack of integration with waste collection systems.
- **Disconnect Between Policy and Practice**: The current approach focuses heavily on punitive actions rather than incentivising **systemic waste management**, segregation, and development of a **circular economy**.

The Way Forward

To overcome these entrenched challenges, a multi-dimensional, integrated strategy is essential:

1. Strengthen Enforcement Mechanisms

- Create **dedicated anti-SUP task forces** equipped with GPS-enabled inspection tools and real-time reporting systems.
- Expand workforce capacity in agencies like the **Karnataka State Pollution Control Board (KSPCB)** and urban local bodies, mandating **monthly enforcement audits**.

2. Promote a Circular Economy

- Offer **subsidies and GST concessions** on eco-friendly alternatives such as cloth and jute bags or biodegradable cutlery.
- Enforce **strict EPR compliance**, penalising producers who fail to collect or recycle post-consumer plastic waste.

3. Enhance Citizen Engagement

- Launch **statewide awareness campaigns** targeting schools, residential welfare associations (RWAs), and public markets.
- Encourage "Bring Your Own Bag (BYOB)" initiatives and publicly recognise zero-waste businesses to foster responsible consumer behavior.

4. Reform Urban Governance

- Institutionalise **waste segregation** as a core component of **Swachh Bharat** and **Smart City** initiatives.
- Establish **decentralised Material Recovery Facilities (MRFs)** at the ward level to manage waste efficiently and closer to the source.

5. Leverage Technology and Innovation

- Employ **AI and IoT tools** for waste tracking, real-time pollution detection, and microplastic identification.
- Support **startups and innovators** working on **biodegradable packaging**, **plastic-to-fuel conversion**, and other sustainable technologies through government funding and incubation programs.

Conclusion

- The ban on single-use plastic in Karnataka has so far remained largely symbolic due to insufficient enforcement, public indifference, and the absence of economic incentives for sustainable alternatives. The state's experience illustrates the urgent need for a **national, mission-mode response** that brings together legal mandates, technology, community action, and market-based solutions.
- For India to achieve the ambitious goal of **Plastic-Free 2047**, aligned with the vision of **LiFE (Lifestyle for Environment)**, alternatives to plastic must not only exist—they must also be **affordable, accessible**, and **widely adopted**.

Yellow-Crested Cockatoos: Conservation Challenges in Hong Kong

- Yellow-crested cockatoos in Hong Kong are facing severe nesting challenges due to increasingly frequent typhoons and routine tree trimming, which are eroding their natural habitats. In response, conservationists are installing artificial nest boxes that replicate the birds' natural nesting conditions.

- The Yellow-crested cockatoo (*Cacatua sulphurea*) is a medium-sized bird known for its prominent retractile yellow crest and predominantly white plumage. It inhabits forests, scrublands, and cultivated areas up to 1500 meters above sea level. Native to East Timor and Indonesia's Sulawesi and Lesser Sunda Islands, the species has also formed a feral population in Hong Kong, largely from previously caged birds that were released.
- These birds are omnivorous, feeding on seeds, fruits, berries, nuts, small reptiles, insects, and roots. They are highly social and monogamous, forming lifelong pair bonds. Breeding typically occurs between September and May.
- Currently, the species is listed as **Critically Endangered** on the IUCN Red List. Major threats include illegal capture for the pet trade, habitat loss, and climate-induced environmental changes such as forest drying and increased fire risk.

New Deep-Sea Coral Species 'Iridogorgia chewbacca' Discovered

- **Context:** Scientists have identified a new species of deep-sea coral in the western Pacific Ocean, officially naming it *Iridogorgia chewbacca*.
- **Details of the Discovery:** This coral belongs to the genus *Iridogorgia* and has been formally described in the scientific journal *Zootaxa*. Though it was first spotted as early as 2006, it was only recently confirmed as a distinct species through advanced genetic analysis.
- **Habitat:** The species is native to the tropical western Pacific Ocean, where it was initially observed and later studied in detail. It has also been sighted in Hawaiian waters, though it remained unclassified until now.
- **Name and Inspiration:** The coral has been named *Iridogorgia chewbacca*, drawing inspiration from Chewbacca, the tall, furry character from the *Star Wars* franchise. The name reflects its distinctive appearance, particularly its shiny, curly, hair-like branches that resemble Chewbacca's fur.
- **Unique Features:** *Iridogorgia chewbacca* stands upright and grows solitarily on the ocean floor, mimicking the tall posture of its namesake. Its branches are not only long and curly but also have a reflective surface, enhancing its visual resemblance to the iconic Wookiee.
- **Significance of the Discovery:** This finding underscores the fact that even the most extensively studied marine regions still harbor unknown species. From a scientific perspective, it contributes valuable insight into the biodiversity and ecological complexity of deep-sea environments. Moreover, the creative naming helps bridge the gap between science and popular culture, potentially increasing public interest in marine biology.

Gulf of Finland: Geopolitical Flashpoint

- In a recent breach, three Russian MiG-31 fighter jets violated the airspace of Estonia, a NATO member, over the **Gulf of Finland**, remaining in the area for approximately 12 minutes.
- The Gulf of Finland is the easternmost extension of the Baltic Sea, situated in Northern Europe. It spans 400 km from east to west and between 19 to 130 km from north to south, covering an area of 30,000 square kilometres. It is bordered by **Finland to the north**, **Russia to the east**, and **Estonia to the south**, with major cities such as **Helsinki**, **Tallinn**, and **St. Petersburg** located along its shores.
- The gulf is a body of **brackish water** with a relatively low salinity (6 parts per thousand) and an average depth of 38 meters. It typically freezes for 3 to 5 months in winter. The region receives inflows from the **Neva** and **Narva rivers** and the **Saimaa Canal**. Numerous islands and skerries, including Kotlin Island (home to the city of Kronstadt), dot the gulf. The region experiences a humid continental climate, characterised by hot summers and cold winters, making it a critical yet sensitive geopolitical and ecological zone.

Lactifluus khasianus: New Edible Mushroom Species Found in Meghalaya

- Researchers have formally identified a new species of edible mushroom, now named *Lactifluus khasianus*, which has long been known to the Khasi tribal communities of Meghalaya by the indigenous name "Tit iongnah." This newly documented species was discovered in the East Khasi Hills region and belongs to the *Lactifluus* sect. *Gerardii*. It stands out for its distinctive chocolate-brown cap, unique microscopic characteristics, and specific genetic markers.
- The mushroom thrives in symbiotic association with the Khasi pine (*Pinus kesiya*) and is typically found at elevations around 1,600 metres. Although it bears resemblance to *Lactifluus gerardii*, a widely found species across North America and Asia, *L. khasianus* differentiates itself through larger cystidia—specialized fungal cells—and unique DNA sequences.
- This species becomes the fifth member of this section to be confirmed in India and notably, the first identified as edible. However, for the Khasi people, *Lactifluus khasianus* is far from a new discovery. Known for generations as "Tit iongnah," it has been traditionally gathered from forest floors during the monsoon, sold in local markets, and enjoyed as a seasonal delicacy.

Chenab River: Hydropower Strategy and Sawalkote Dam Revival

- India's strategy to harness the hydropower potential of the Chenab River has come into renewed focus with the revival of the previously stalled Sawalkote dam project. The Chenab is a vital tributary of the Indus River, formed by the confluence of the Chandra and Bhaga streams in Himachal Pradesh's Lahaul and Spiti districts. In its upper stretches, it is also known as the Chandrabhaga.
- The river traverses through Himachal Pradesh and Jammu & Kashmir before eventually merging with the Sutlej after receiving the Jhelum near Trimmu. Its left-bank tributaries include the Niru, Tawi, Neeru, and Liddrari, while the right-bank tributaries are Ans, Bhut Nalla, Bichleri, Kalnai, Marusudar, and Miyar Nalla.
- Major dams constructed on the Chenab include the Salal (a rockfill dam), Aalal (a concrete dam), Baglihar, and Dul. The Chenab's waters are governed under the Indus Waters Treaty (IWT) of 1960, signed between India and Pakistan with the World Bank as mediator. Under the treaty, the three eastern rivers—Ravi, Beas, and Sutlej—are allocated to India, while the western rivers—Indus, Jhelum, and Chenab—are mainly designated for Pakistan's use.

Indrayani River

- The State Level Technical Committee (SLTC) has recently sanctioned two sewage treatment plant (STP) projects in Pimpri-Chinchwad along the Indrayani River, aiming to mitigate water pollution and improve the river's ecological health.
- The Indrayani River, situated in Maharashtra, serves as a tributary of the Bhima River, which in turn joins the Krishna River. Originating in the Western Ghats near the hill station of Lonavala, along the Mumbai-Pune Highway, the river is primarily rain-fed. It meanders through Pune district before merging with the Bhima River at Tulapur, covering a total stretch of 105.3 kilometers.
- The river holds significant religious value. Two prominent spiritual towns—Alandi and Dehu—are located along its banks. Dehu is venerated as the birthplace of the saint-poet Tukaram, a revered figure in Maharashtra's Bhakti tradition, while Alandi houses the samadhi of the saint Dnyaneshwar.
- Besides its spiritual and cultural prominence, the Indrayani River also traverses the industrial town of Pimpri-Chinchwad, serving as a crucial water source for irrigation and agriculture in the region. The Valvan Dam at Kamshet, situated on this river, functions as a hydroelectric generating station, underlining the river's utility in energy production as well.

Super Typhoon Ragasa Approaches the Philippines

- The Philippines has suspended work and educational activities in anticipation of the arrival of Super Typhoon Ragasa, which is rapidly approaching the northern region of Luzon. With maximum gusts reaching up to 250 km/h, the typhoon poses a severe threat to the area.
- Super Typhoon Ragasa, locally known as "Nando," has been classified as a Category 5 storm, one of the most powerful in recent memory. It features sustained wind speeds of approximately 205 km/h, with gusts peaking at 250 km/h. This makes it among the strongest typhoons to impact northern Luzon in recent years.
- The typhoon originated over the western Pacific Ocean, where favourable conditions such as warm ocean waters and low wind shear facilitated its rapid intensification. Ragasa is currently progressing through the Luzon Strait and is expected to impact the Babuyan Islands before moving in the direction of southern China.

Geographical and Political Context of the Philippines

- Situated in Southeast Asia, the Philippines is an archipelagic country located in the western Pacific Ocean, comprising over 7,000 islands. It lies approximately 800 kilometres east of Vietnam and is part of the geologically active Pacific "Ring of Fire."
- Manila, the capital, serves as the political hub of the country. The Philippines shares maritime borders with several neighbours: to the north lies Taiwan across the Luzon Strait; to the west is Vietnam across the South China Sea; and to the south are Malaysia (specifically Sabah on Borneo) and Indonesia, separated by the Sulu and Celebes Seas.
- Geographically, the country is divided into three main island groups: Luzon in the north, the Visayas in the central region, and Mindanao in the south. Its landscape is marked by numerous mountains and volcanoes, including active ones like Mayon and Taal, making it particularly vulnerable to earthquakes and eruptions. Culturally, the Philippines is characterised by a unique blend of Asian and Western influences and is one of only two nations in Asia with a Roman Catholic majority.

Clean Plant Programme (CPP)

- The Clean Plant Programme, recently approved by the Union Cabinet, is witnessing accelerated implementation across the country.
- Spearheaded by the Ministry of Agriculture and Farmers Welfare in collaboration with the Asian Development Bank, the CPP is a transformative initiative designed to supply farmers with premium, virus-free planting material of critical fruit crops. It is being executed by the National Horticulture Board (NHB) in partnership with the Indian Council of Agricultural Research (ICAR).
- Key components of the programme include the establishment of nine Clean Plant Centers (CPCs), which will offer disease diagnostics, develop certified mother plants for commercial nurseries, and handle the quarantine of all domestic and imported planting materials. These CPCs will anchor large-scale nursery infrastructure, enabling the mass multiplication of clean planting materials for nationwide distribution.
- To ensure quality control and transparency, a comprehensive regulatory and certification framework will be instituted. This will allow for complete accountability and traceability of planting materials throughout the supply chain.

River Pollution in India: CPCB Reports Marginal Improvement Amidst Persistent Challenges

India's rivers are vital to the nation's agricultural, industrial, and domestic water needs, yet they continue to face severe pollution from a range of anthropogenic sources. The Central Pollution Control Board (CPCB), responsible for monitoring water quality across the country, has released its latest report indicating a marginal decrease in the number of polluted river stretches. Despite this slight progress, many rivers, especially in

industrial and densely populated states like Maharashtra, remain critically contaminated.

State of River Pollution in India

River pollution in India has remained a long-standing environmental crisis, primarily driven by unchecked urban expansion and inadequate waste management. Most urban centres continue to discharge untreated sewage directly into rivers. In parallel, industries — particularly in chemical, textile, and manufacturing hubs — release hazardous effluents, often in violation of environmental regulations. Agricultural practices further compound the problem, with pesticide- and fertiliser-laden runoff entering rivers, especially during the monsoon season.

The CPCB classifies a river stretch as polluted if two or more monitoring locations along its course report biological oxygen demand (BOD) levels exceeding 3 mg/L. High BOD levels indicate the presence of excessive organic matter, depleting dissolved oxygen in water and making it unfit for bathing and aquatic life.

Primary Sources of Contamination

Urban sewage remains the most significant contributor, with Indian cities producing over 72,000 million litres per day (MLD) of sewage — of which only about 30% undergoes treatment. Industrial effluents, particularly from Maharashtra, Gujarat, and Tamil Nadu, introduce a range of toxic substances into river systems. Agricultural runoff adds harmful chemicals during seasonal rains. Additionally, riverbed encroachments and rampant sand mining continue to degrade natural floodplains and disrupt ecological balance.

Consequences of River Pollution

The impacts of river pollution are wide-ranging and severe. Aquatic biodiversity has declined sharply in many regions, with several species facing habitat loss or extinction. Waterborne diseases, linked to unsafe drinking and bathing conditions, pose a public health risk. Fisheries and agriculture suffer economic setbacks, while contaminated rivers have also triggered social unrest — as seen in numerous public protests, particularly around the Ganga and Yamuna rivers.

CPCB's 2023 Report: A Snapshot

The CPCB's 2023 report notes a slight improvement, with the number of polluted river stretches reducing from 311 in 2022 to 296 in 2023. These stretches span 271 rivers across 32 states and Union Territories. Maharashtra remains the worst-affected state, reporting 54 polluted stretches. Kerala follows with 31, while Madhya Pradesh and Manipur each report 18, and Karnataka 14.

Polluted stretches are categorised by priority levels based on BOD concentration. Priority I rivers, where BOD exceeds 30 mg/L — indicating critical pollution — reduced from 46 in 2022 to 37 in 2023. Notably affected rivers in this category include the Yamuna in Delhi, Sabarmati in Ahmedabad, Chambal in Madhya Pradesh, and parts of the Tungabhadra and Sarabanga. On the lower end of the spectrum, Priority V stretches with BOD between 3.1 and 6 mg/L require comparatively less intensive intervention.

Worsening River Stretches

Despite the overall reduction, water quality has deteriorated in several rivers. These include the Jhelum in Jammu & Kashmir; the Ganga and Sikrahna in Bihar; Hasdeo and Mahanadi in Chhattisgarh; Cauvery and Tungabhadra in Karnataka; Periyar in Kerala; and Krishna in Telangana. This deterioration underscores the uneven nature of pollution control efforts and the need for targeted interventions.

Monitoring and Institutional Measures

The CPCB, together with State Pollution Control Boards, conducts water quality monitoring at over 4,700 locations under the National Water Quality Monitoring Programme. In response to a 2018 directive from the National Green Tribunal (NGT), states are mandated to implement river rejuvenation action plans. The current report places strong emphasis on measures such as catchment area management, expanded sewage treatment infrastructure, and the protection of river floodplains.

Challenges in Addressing River Pollution

India's efforts to clean up its rivers face several persistent obstacles. Many sewage treatment plants (STPs) are either under-capacity or non-functional, leading to direct discharge of waste into rivers. Bureaucratic inefficiencies and overlapping jurisdictions among central, state, and local bodies hinder coordinated action. Additionally, many state-level action plans lack adequate funding and rigorous monitoring frameworks. Urban sprawl, with rising waste generation and continued encroachments, has further complicated cleanup efforts.

Looking Ahead: A Path to Sustainable Rejuvenation

While the CPCB's report signals cautious optimism through the marginal reduction in polluted river stretches, it also reinforces the urgency of scaling up river rejuvenation initiatives. Flagship programmes such as the Namami Gange Mission and the Jal Jeevan Mission are important steps, along with a growing emphasis on decentralised wastewater treatment solutions.

However, the road ahead requires a multi-pronged approach. Effective management of agricultural runoff, strict enforcement of industrial compliance, and sustained community engagement are essential for reversing the damage done to India's rivers. Without these critical interventions, marginal progress may prove insufficient to address the deep-rooted crisis of river pollution in the country.

Discovery of *Impatiens selvasinghii*

- A newly identified species of flowering plant, *Impatiens selvasinghii*, has been discovered by researchers in the Kudremukh range of the Western Ghats in Karnataka, at an elevation of 1,630 meters. This plant, one of the smallest flowered balsams known from the Western Ghats, features distinctively small flowers and prominently lobed wing petals, setting it apart from other species. Named in honour of a botany associate professor from Madras Christian College, this species also plays a role in supporting small insect populations.
- The genus *Impatiens* in India comprises over 280 taxa, predominantly found in the Eastern Himalayas and the Western Ghats. Of these, more than 210 are endemic to the country, with 130 species restricted to the Western Ghats. Alarmingly, around 80% of these Western Ghats taxa are classified as endangered, highlighting the urgent need for habitat conservation in this biodiversity hotspot.

Fishing Cat Spotted in Ramgarh Vishdhari Tiger Reserve

- For the first time, a **Fishing Cat (*Prionailurus viverrinus*)** has been captured on camera within the Ramgarh Vishdhari Tiger Reserve (RVTR), marking a noteworthy addition to the region's small wild cat population. This elusive species is a robust, medium-sized wild cat native to South and Southeast Asia, including parts of India such as the Western Ghats, Sundarbans, and river valleys along the Ganga and Brahmaputra.
- Known for its affinity to aquatic environments, the fishing cat thrives in mangrove forests, marshes, swamps, and wetlands, and is capable of surviving in both fresh and saltwater habitats. It exhibits adaptations for a semi-aquatic lifestyle, including strong swimming ability, short limbs, and partially webbed feet. Its physical features include coarse, brownish-grey fur with a mix of spots and stripes, short rounded ears, and a short tail. Males are significantly larger than females, and the species is predominantly nocturnal.
- The fishing cat is currently listed as *Vulnerable* on the IUCN Red List and is also the state animal of West Bengal. Its presence in RVTR underscores the importance of wetland protection in supporting species diversity.

Volcanic Activity at Barren Island

- Minor volcanic eruptions have been observed twice within an eight-day period at **Barren Island**, located in the Andaman Sea. This island, situated approximately 138 kilometers northeast of Port Blair in the Andaman and Nicobar Islands, is notable for being **India's only active volcano** and the only active volcano along the tectonic arc extending from Sumatra to Myanmar.
- Barren Island is a **submarine emergent stratovolcano** composed of layers of lava, rock fragments, and volcanic ash. The island spans around three kilometers in diameter and features a central crater located roughly half a kilometer from the coastline. Positioned above the subduction zone where the Indian and Burmese tectonic plates converge, Barren Island has a history of intermittent volcanic activity, with major eruptions last recorded in 2017.
- Despite its harsh conditions, the island supports limited wildlife, including a

small population of goats, birds, bats, and rats. It remains uninhabited by humans due to its volatile environment.

Tropical Forests Forever Facility: Brazil's Landmark Initiative

- Brazil has become the first country to commit to the **Tropical Forests Forever Facility (TFFF)**, a global multilateral fund aimed at ensuring long-term conservation of tropical forests. First introduced at **COP28** in the United Arab Emirates in 2023, the TFFF represents an innovative financial mechanism led by the Brazilian government to mobilise up to **US$125 billion** in support of forest protection efforts.
- Structured as a blended finance model, the fund intends to attract investment from both public (20%) and private (80%) sources. Sponsors, including high-income countries and philanthropic organisations, will contribute alongside institutional investors, sovereign wealth funds, and endowments. Funds will be raised through debt instruments such as bonds and managed by Multilateral Development Banks (MDBs), like the World Bank.
- The return generated from the investment portfolio will be used to provide participating tropical forest countries with a fixed payment per hectare of conserved forest. This results-based financial approach is intended to provide stable, long-term funding for forest conservation while also ensuring investor returns.

Bonnet Macaques

Context:

The discovery of nine dead bonnet macaques in Thiruvananthapuram, Kerala, has raised serious concerns about possible poisoning or the outbreak of a disease.

- **About Bonnet Macaques::** Bonnet macaques are a species of primates native to southern India. They are commonly found in proximity to human settlements and are easily recognized by the distinctive "bonnet-shaped" whorl of hair on their heads.
- **Habitat:** These macaques inhabit a variety of environments across the southern plains and Western Ghats, including evergreen forests, dry deciduous forests, plantations, and the edges of villages. While they are primarily arboreal, they also spend considerable time on the ground and have shown remarkable adaptability to areas close to human habitation.
- **Conservation Status:** According to the International Union for Conservation of Nature (IUCN), bonnet macaques are classified as Least Concern (LC), largely due to their broad distribution across southern India.
- **Physical Characteristics:** They typically have greyish-brown to golden-brown fur and hairless, pinkish faces. Adult males weigh between 6.7 kg, while females are smaller at around 3.9 kg. Their body length ranges from 35 to 60 cm, not including the tail. Sexual dimorphism is evident, with males generally larger than females.

AI-enabled Nature Experience Centre at Betla National Park

Context:

India's first AI-enabled nature experience centre is being established in Betla National Park, located in Jharkhand, offering a pioneering approach to environmental education and eco-tourism.

- **Technological Features:** The centre incorporates several innovative elements, including AI-driven assistants for guided learning experiences and 3D holographic displays that portray life-sized animals. Augmented reality and immersive sound systems recreate jungle elements like waterfalls, bird calls, and animal hunts. Simulated displays also illustrate ecosystem interactions such as food-sharing, herd movement, and predator-prey relationships.
- **Purpose and Function:** The centre is designed to enhance eco-tourism and foster conservation education. It aims to provide interactive learning opportunities for visitors and serve as a valuable tool for

researchers, offering virtual access to wildlife observation.

About Betla National Park: Betla National Park, the only national park in Jharkhand, is known for its diverse flora and fauna and serves as the core area of the Palamu Tiger Reserve. It is a well-known tourist destination, attracting visitors with elephant rides, jeep safaris, waterfalls, and tribal culture-based eco-tourism. The park is located in the Latehar district, approximately 170 km from Ranchi.

Delhi's Study on Smog-Eating Photocatalytic Coatings

- To combat persistent air pollution, the Delhi government has initiated a time-bound study to assess the efficacy of "smog-eating" **photocatalytic coatings**. These coatings are designed to neutralise harmful airborne pollutants, such as nitrogen dioxide and volatile organic compounds, by using titanium dioxide (TiO_2) as a photocatalyst.
- Titanium dioxide, a cost-effective and chemically stable substance, interacts with light energy to break down pollutants into less harmful substances, contributing to cleaner air and water.
- Photocatalytically active materials have proven effective in environmental depollution and have potential applications in construction, given their compatibility with traditional building materials. Their ability to degrade organic matter and pollutants highlights their role in sustainable urban planning.

Understanding Smog and Its Types

- Smog is a complex form of air pollution resulting from the interaction of smoke and fog, exacerbated by specific meteorological and environmental conditions. Two major types are recognised:
- **Sulfurous smog**, primarily caused by sulfur oxide emissions from the burning of sulfur-rich fossil fuels, such as coal.
- **Photochemical smog**, which occurs predominantly in urban environments with high vehicular traffic, is the result of sunlight acting on nitrogen oxides and hydrocarbons, leading to the formation of harmful ozone and other pollutants.

Subansiri River and Oju Hydroelectric Project

- The Union Environment Ministry's expert panel has recommended environmental clearance for the proposed 2,220 MW Oju Hydroelectric Project, to be constructed on the Subansiri River near Taksing in the Upper Subansiri district, close to the India-China border.
- Originating from the western slopes of Mount Porom in the Tibetan Himalayas, the Subansiri River is a trans-Himalayan river known locally as the "Gold River" due to its historic association with gold dust. It flows into India from Tibet, entering the plains of Assam near Gerukamukh, and eventually joins the Brahmaputra River in Lakhimpur district. Its major tributaries include Laro, Nye, Yume, Tsari, Kamla, Jiyadhol, Ranganadi, and Dikrong.
- The Oju project is to be developed by Oju Subansiri Hydro Power Corporation Pvt. Ltd. It consists of a main power station with a capacity of 2,100 MW, supported by an additional 120 MW from a dam-toe powerhouse. Given its strategic location and scale, this project is expected to play a vital role in regional energy security and infrastructure development.

Almatti Dam Expansion Proposal

- The **Karnataka government** has proposed to increase the height of the **Almatti Dam** from **519.60 metres** to **524.256 metres**, thereby enhancing its storage capacity from **173 TMC** to **300 TMC**.
- The Almatti Dam is a crucial hydroelectric and irrigation infrastructure project forming the main reservoir under the **Upper Krishna Irrigation Project**. Commissioned in 2005, it has a power generation capacity of **290 MW**. It is located in the **Bijapur (Vijayapura) district** of Karnataka, with parts of its submergence zone extending into **Bagalkot**.
- Constructed across the **Krishna River**, one of South India's major eastward-flowing rivers, the dam plays a vital role in irrigation and water management across

four states—**Karnataka, Telangana, Andhra Pradesh**, and **Maharashtra**—all of which are riparian to the Krishna basin.
- Currently, the dam's gross storage stands at **108 TMC at 519 m MSL**, and the proposed expansion seeks to reach **300 TMC at 524.256 m MSL**. Water from the Almatti Dam is released downstream to the **Narayanpur reservoir** to support irrigation in the region.

Other major dams on the Krishna River system include:
- **Narayanpur Dam** – Karnataka
- **Srisailam Dam** – Andhra Pradesh/Telangana border
- **Nagarjuna Sagar Dam** – Telangana/Andhra Pradesh
- **Jurala (Priyadarshini) Project** – Telangana
- **Pulichintala Project** – Andhra Pradesh
- **Prakasam Barrage** – Andhra Pradesh

The proposal has raised concerns in **Andhra Pradesh**, the tail-end state of the Krishna river. There are apprehensions that increasing Almatti's storage, along with new irrigation projects initiated by Telangana, could adversely impact Andhra's share of Krishna waters. This has led to allegations of a breach of water allocations as defined under the **Bachawat Tribunal (KWDT-I)**. The matter involves significant financial stakes as well, with Karnataka having approved **₹70,000 crore** for irrigation canals, while Telangana has outlined plans to divert **100 TMC** of water to irrigate **11.3 lakh acres of ayacut**.

Tamil Nadu Coastal Restoration Mission (TN-SHORE)

- Approved in September 2025, the Tamil Nadu Coastal Restoration Mission (TN-SHORE) is a major project with an estimated budget of ₹1,675 crore, primarily funded by the World Bank. This mission aims to bolster Tamil Nadu's coastal economy and enhance its resilience against environmental challenges.
- A central feature of TN-SHORE is the restoration and plantation of 1,000 hectares of mangroves. The World Bank's funding will be directly routed to village mangrove councils, which are composed of local residents, empowering community-led conservation efforts. Beyond mangrove restoration, the mission also targets the rehabilitation of 30,000 hectares of seascapes and seeks to protect endangered marine species such as dugongs and turtles.
- Mangroves, defined as salt-tolerant plant communities that flourish in tropical and subtropical intertidal zones, play a critical ecological role. These ecosystems thrive in regions with high rainfall ranging between 1,000 to 3,000 millimeters and temperatures between 26°C to 35°C. Often called "Nature's Carbon Vault," mangroves store between 7.5 to 10 times more carbon per acre than typical tropical forests, making them vital in climate change mitigation. Moreover, mangroves provide livelihood opportunities; for example, in Navghar, Maharashtra, government-supported mangrove restoration efforts enabled women to engage in sustainable mud crab farming, securing stable, year-round income.
- According to the India State of Forest Report 2023 (ISFR-2023), the country's total mangrove cover stands at 4,991.68 square kilometers. India has witnessed an 11.4% net increase in mangrove area from 2001 to 2023. Among states, West Bengal holds the largest share of mangroves at 42.45%, followed by Gujarat with 23.32%.

Betla National Park: Blending Nature and Technology in Jharkhand

- In a pioneering move, India's first **AI-enabled nature experience centre** is being developed at **Betla National Park**, located in the Latehar district of Jharkhand. The park lies on the Chota Nagpur Plateau and is the state's only notified national park, established in 1986.
- Betla forms part of the *Palamau Tiger Reserve* and was one of the earliest reserves under Project Tiger. The park is ecologically significant, representing the Indo-Malayan realm and hosting diverse vegetation, including tropical wet evergreen, alpine, and moist/dry deciduous forests. Its rich biodiversity includes species like tigers, leopards,

wolves, wild dogs, and endemic birds such as the Malabar pied hornbill and Indian pitta.

The North Koel River flows through the region, creating picturesque waterfalls during monsoons. Indigenous tribes like the Oraon and Munda have inhabited this area for centuries, contributing to its rich cultural and ecological landscape. The introduction of artificial intelligence into the park experience is set to enhance wildlife education, conservation awareness, and eco-tourism in the region.

Apterichtus kanniyakumari

A new species of finless snake eel has been identified by researchers at the National Bureau of Fish Genetic Resources (NBFGR) and named *Apterichtus kanniyakumari* in recognition of its place of discovery.

Details of the Discovery

- This newly discovered species belongs to the genus *Apterichtus* and was located off the coast of Colachel near Kanniyakumari. It is characterised by a golden-yellow body with a pale white underside on the head, marked by yellow lines along the lower jaw. The species features three distinct black blotches: one located behind the eyes, one at the rictus (corner of the mouth), and another positioned posterior to it.
- Molecular analysis using the mitochondrial CO1 gene confirms that *Apterichtus kanniyakumari* forms a distinct clade alongside a sympatric species, *Apterichtus nanjilnaduensis*, indicating its unique taxonomic status.

Background on Snake Eels

Snake eels are marine creatures from the family Ophichthidae, named for their elongated, serpentine appearance. They inhabit both tropical and temperate oceans around the world. Typically found in sandy substrates of shallow waters, some species are known to dwell at depths of up to 800 metres. These eels exhibit a unique behaviour of burrowing backward into the seabed using their tails, creating secure hideouts within the marine floor.

Environmental Concerns Grow Over Mahendragiri Hills in Odisha

Environmentalists have sounded alarm bells over the growing threat posed by unchecked tourism and construction in the **Mahendragiri Hills** of Odisha, an ecologically sensitive area recognised as a **Biodiversity Heritage Site** since 2022.

Ecological and Cultural Significance of Mahendragiri Hills

Mahendragiri is a prominent mountain range in the Eastern Ghats, located in Odisha's Gajapati district at an altitude of 1,501 metres. Approximately 175 kilometres from Berhampur, the site is not only ecologically rich but also steeped in mythological and cultural importance. Known in ancient texts as **Mahendra Parvata**, the hill is believed to be the site of penance by Lord Parashurama and is linked to the **Ramayana** and **Mahabharata**. The region hosts temples dedicated to Shiva and the Pandavas, attracting thousands of pilgrims during Maha Shivaratri.

Biodiversity and Tribal Livelihoods

- The hills are home to 1,348 species of plants and 388 animal species, many of which are endemic and under threat. The Saora (Saura) and Kondh tribal communities inhabit the area and rely on forest resources for their livelihoods. However, increasing deforestation, wildlife decline, and tourism-related pressures are threatening this fragile ecosystem — including populations of elephants and tigers.
- Despite its protected status, the lack of stringent enforcement and eco-sensitive planning is endangering both biodiversity and traditional ways of life.

Venezuela

According to recent updates from the U.S. Geological Survey, northwest Venezuela was struck by a 6.2-magnitude earthquake, drawing renewed attention to the country's geography and seismological activity.

Geographical and Political Profile of Venezuela

- Venezuela is situated along the northern edge of the South American continent. Its land borders include Guyana to the east, Brazil to the south, and Colombia to the southwest and west. On the northern side, it faces the Caribbean Sea and the Atlantic Ocean, forming its maritime boundaries.

- Topographically, the country comprises several distinct regions: the Andes Mountains and Maracaibo Lowlands in the northwest, the expansive central plains known as the llanos, and the Guiana Highlands in the southeast. Major rivers such as the Orinoco—which it shares with Colombia—and the Rio Negro—shared with Colombia and Brazil—traverse its territory. Prominent water bodies include Lake Maracaibo, the largest in South America, and Lake Guri, a key hydroelectric reservoir.
- Venezuela also administers several Caribbean islands and archipelagos, including Margarita Island, La Blanquilla, La Tortuga, Los Roques, and Los Monjes. The country's highest point is Pico Bolívar. Notably, the world's tallest waterfall, Angel Falls, is nestled within the Andes Mountains in the Guiana Highlands.
- The nation is resource-rich, possessing the world's largest proven oil reserves alongside significant deposits of coal, iron ore, bauxite, and gold. Its capital city is Caracas.

Varkala Cliff

UNESCO has recently included the Varkala Cliff in its tentative list of World Heritage Sites, highlighting its exceptional geological and ecological significance.

About Varkala Cliff

- Located in the coastal town of Varkala in Kerala's Thiruvananthapuram district, the Varkala Cliff is a prominent geological formation. It reveals the Warkalli Formation, which dates back to the Mio-Pliocene epoch—estimated to be between 1.3 million and 25 million years old. Locally known as Sivagiri Thuruthu, the cliff features distinct laterite and sedimentary layers containing fossils and paleoclimatic markers, offering both scientific insight and aesthetic appeal.
- The site hosts natural springs and unique erosional landforms, contributing to its biodiversity and hydrological importance. At the base of the cliff lies the Papanasam Beach, famed for its spring waters which are believed to possess therapeutic properties.
- The cliff functions as a vital aquifer and natural water-harvesting system for nearby coastal communities. It also supports a diverse microhabitat and undersea reef systems essential to the livelihood of local fishing populations. Recognised for its geological heritage, Varkala Cliff has been designated as India's 27th national geological monument and is the second such site in Kerala after the Angadipuram Laterite formation.

Central Water Commission and Sujalam Bharat Summit (2025)

The Central Water Commission (CWC), functioning under the Ministry of Jal Shakti, recently convened a virtual workshop themed **"Technology for Efficient Water Management"** as part of the **Sujalam Bharat Summit 2025**. The summit is a key initiative aiming to integrate innovation and field-based insights into national water management policy.

Overview of the Central Water Commission (CWC)

As the apex technical body on water resources under the Ministry of Jal Shakti, the **CWC** plays a central role in India's water governance framework. Based in **New Delhi**, the Commission is responsible for formulating and coordinating major national schemes related to **flood control, irrigation, drinking water supply, inland navigation, and hydropower generation**. It also undertakes **detailed project investigations, construction oversight, and implementation** of large-scale water resource projects.

The CWC is led by a **Chairman**, who serves as an **Ex-Officio Secretary to the Government of India**, and is structured into three major functional divisions:

- **Designs & Research (D&R)**
- **River Management (RM)**
- **Water Planning & Projects (WP&P)**

Additionally, the **National Water Academy in Pune**, operating under the CWC, is tasked with training engineers from both central and state water management bodies.

About Sujalam Bharat Summit 2025

The **Sujalam Bharat Summit** is a nationwide initiative spearheaded by the Ministry of Jal Shakti in collaboration with **NITI Aayog**. It is designed to bring local and grassroots

perspectives into the policymaking process, particularly on matters concerning **water conservation, sanitation, and sustainable management practices**. The summit reflects the broader vision of the Prime Minister, focusing on participatory governance. A series of **six departmental summits** has been planned to collect feedback on the field-level impact of existing water-related policies and identify implementation challenges.

UNEP Young Champions of the Earth Award 2025

The United Nations Environment Programme (UNEP) has announced the winners of the 2025 **Young Champions of the Earth Award**, recognising outstanding environmental innovators from India, Kenya, and the United States.

About the Award and Its Mission

- The Young Champions of the Earth is UNEP's flagship youth engagement initiative, designed to honour and support entrepreneurs under the age of 30 who are implementing bold and scalable solutions to address pressing environmental challenges. First launched in 2017, the award was relaunched in 2025 through a new collaboration with Planet A, an environmental venture initiative founded by US cleantech entrepreneur Chris Kemper.
- The award is supported by a network of philanthropic and private sector partners. Its primary aim is to empower the next generation of environmental leaders tackling the interconnected crises of climate change, biodiversity loss, and pollution.

Eligibility and Benefits

Open to individuals under 30, the award offers not only global recognition but also financial and institutional support. Each winner receives $20,000 in seed funding, intensive training, tailored mentorship, and access to the Planet A pitch platform, where they may secure up to $1 million in additional funding.

2025 Award Winners

- **Jinali Mody (India)** – Founder of *Banofi Leather*, which manufactures eco-friendly leather using banana crop waste, significantly reducing the use of water, toxic chemicals, and carbon emissions in the leather industry.
- **Joseph Nguthiru (Kenya)** – Creator of *HyaPak*, a company converting invasive water hyacinth into biodegradable packaging and seedling wrappers, providing an alternative to single-use plastics.

Noemi Florea (United States) – Innovator behind *Cycleau*, a compact household system that purifies greywater into drinkable water using minimal energy, promoting water conservation in domestic settings.

Right to Cooling in the Global South – Explained

The Indian government's recent proposal to regulate air conditioner (AC) efficiency has reignited a broader and urgent debate around the *Right to Cooling*, particularly in the context of public health, climate justice, and development equity across India and the Global South. While the proposed regulations are primarily aimed at improving energy efficiency, they spotlight deeper questions of access, disparity, and the future of climate adaptation in a warming world.

Introduction: Cooling as a Necessity, Not a Luxury

- In the face of increasingly severe and frequent heatwaves across the Global South—including India—cooling is no longer a luxury but an essential safeguard for public health. In June 2025, the Government of India introduced a proposal mandating that all newly manufactured air conditioners operate within a set temperature range of 20°C to 28°C, with 24°C as the default.
- According to projections by the Bureau of Energy Efficiency (BEE), this initiative could save approximately 20 billion units of electricity annually and reduce emissions by up to 16 million tonnes. However, the implications of such a move go well beyond energy conservation. It raises critical concerns about equitable access, climate justice, and the urgent need to recognise cooling as a universal right in regions already bearing the brunt of global warming.

Access to Cooling: Stark Inequities in India and Beyond

- Cooling access in India remains alarmingly unequal. As of 2021, only 5% of Indian households owned air conditioners. The urban-rural divide is vast: while 13% of urban homes had ACs, rural ownership stood at a mere 1%. Within cities, disparities persist. In Delhi, 32% of households owned air conditioners, whereas in heat-prone, economically weaker states like Bihar and Odisha, the figure remained as low as 1%, despite enduring some of the country's most extreme heat conditions.
- Globally, the contrast is even more pronounced. In high-income nations such as the United States and Japan, air conditioner ownership exceeds 90%, while in Latin America it stands at around 22%, and in Sub-Saharan Africa, a mere 6%. Per capita electricity use for cooling in the U.S. is an astonishing 28 times higher than in India. Yet, while the North frames cooling as a health necessity, the South often faces criticism for increasing cooling demand, treated instead as an environmental liability—revealing an underlying imbalance in how thermal comfort is perceived and prioritised across regions.

Health and Productivity: The Human Cost of Heat

- Extreme heat has emerged not just as a symptom of climate change but as a full-fledged public health emergency. The World Health Organization (WHO) reports that between 2000 and 2019, heat exposure resulted in 489,000 deaths globally, with India accounting for over 20,000 of these. The risks are magnified in communities with unreliable electricity, thermally inefficient housing, and under-resourced public health systems.
- The consequences extend into the economic sphere. According to the International Labour Organisation (ILO), more than 70% of the global workforce was exposed to excessive heat in 2020, resulting in 23 million heat-related injuries and nearly 19,000 deaths. In India, where roughly 80% of workers are employed in sectors such as agriculture, construction, and informal vending—often outdoors and without access to cooling—the absence of heat-resilient workplaces threatens both worker safety and income security.

Policy Interventions: Heat Action Plans and Regulatory Measures

- In response to rising temperatures, several Indian states and cities have implemented **heat action plans** that include early warning systems, emergency cooling centres, and public awareness campaigns. These measures, while necessary, have thus far proven insufficient due to limited institutional capacity, inadequate legal mandates, and a lack of sustained funding. As a result, vast segments of the population remain exposed to the debilitating effects of heat, suffering from preventable illnesses and lost productivity.
- The government's initiative to regulate air conditioner efficiency is an important step towards energy savings and environmental responsibility. However, without a complementary focus on expanding affordable access to cooling for vulnerable populations, such regulatory moves risk remaining symbolic. Real progress will require aligning efficiency goals with equity-driven policies that ensure cooling solutions reach those most at risk.

Climate Justice and the Universal Right to Cooling

- The discussion around cooling is deeply embedded in questions of **climate justice**. Historically, developed nations have invested heavily in heating systems, often supported by generous subsidies and with little regard for emissions. Today, developing countries like India face a parallel need for cooling infrastructure—but are constrained by limited financial resources and intense international pressure to reduce emissions.
- Global emissions from cooling currently stand at around one billion tonnes annually—significantly lower than emissions from heating. However, demand for cooling is expected to **triple by 2050**, with India's share projected to grow eightfold. This dual challenge—of

providing widespread cooling access while also improving energy efficiency—places disproportionate pressure on countries in the Global South.

- To meet this challenge, cooling must be reframed not as an environmental burden but as a **development right**, essential for safeguarding health, ensuring equity, and securing livelihoods. Recognising the Right to Cooling involves acknowledging that thermal comfort, like clean water and sanitation, is a basic human need. It also requires policy frameworks that view cooling as part of climate adaptation, not just mitigation.

Bridging the Gap: What Needs to Be Done

- Achieving equitable cooling access in the Global South demands a multi-pronged approach. Developed countries must provide financial and technological support, recognising their historical emissions and current advantages. Large-scale public investment is necessary to make cooling infrastructure affordable and accessible, especially for lower-income communities. In addition, cooling strategies must be integrated into broader climate adaptation plans, ensuring they are sustainable, resilient, and inclusive.
- Without such interventions, millions in the Global South will remain trapped in a cycle of heat stress, poor health, and economic vulnerability, even as temperatures continue to rise. The Right to Cooling is no longer a future demand—it is a present necessity that must be recognised, institutionalised, and funded.

Pallikaranai Marshland

The southern bench of the National Green Tribunal has recently issued an order to suspend all construction within one kilometre of the Pallikaranai Marshland until a thorough scientific investigation is completed.

- **Location and Hydrology:** Situated approximately 20 kilometres south of Chennai in Tamil Nadu, the Pallikaranai Marshland is a freshwater marshland that is partially saline. It functions as a natural aquatic buffer, protecting the flood-prone districts of Chennai and Chengalpattu. The wetland system consists of sixty-five distinct wetlands that drain toward the Bay of Bengal via two main outlets: Okkiyam Madavu and the Kovalam Creek. On its eastern side, the marsh is bordered by the Buckingham Canal, and the area is also designated as a Ramsar site of international ecological significance.
- **Biodiversity and Ecosystem:** The marshland supports a rich and varied ecosystem. It is home to around 115 species of birds, ten mammal species, 21 reptiles, ten amphibians, 46 kinds of fish, nine molluscs, five crustaceans, and seven species of butterflies. Among its notable inhabitants are the Russell's viper (Daboia siamensis), the glossy ibis (Plegadis falcinellus), grey-headed lapwings (Vanellus cinereus), and the Pheasant-tailed jacana (Hydrophasianus chirurgus). Though located in a tropical climatic zone, the Marsh also shows noticeable influences from the adjacent Bay of Bengal.
- **Threats and Challenges:** Despite its ecological and hydrological importance, the marshland continues to face severe anthropogenic pressures. Encroachment by human settlements, illegal development, and discharge of untreated sewage pose serious threats to its integrity and the species that depend on it.

IUCN Recognition of Dugong Conservation Reserve in Palk Bay

- At the 2025 IUCN World Conservation Congress in Abu Dhabi, a landmark resolution was adopted acknowledging India's Dugong Conservation Reserve in Palk Bay, Tamil Nadu, as a global benchmark for marine biodiversity preservation and community-driven conservation.
- The Dugong Conservation Reserve, officially declared in September 2022 under the Wildlife Protection Act, 1972, is India's first such marine reserve dedicated to protecting the endangered Dugong (Dugong dugon), commonly known as the sea cow. This reserve spans 448.34 sq. km across the Thanjavur and Pudukkottai districts of Tamil Nadu,

located in the northern part of the Palk Bay. It harbors 12,250 hectares of seagrass meadows, forming a critical ecosystem.

- The Dugong is a large herbivorous marine mammal and the only strictly plant-eating marine mammal known. Physically, it measures about 3 to 3.5 meters in length and weighs over 300 kg, with paddle-like flippers and a dolphin-like tail. It grazes on species such as Halodule, Halophila, and Cymodocea, consuming 30–40 kg of seagrass daily. Despite its longevity of up to 70 years, it has a very low reproductive rate due to long calving intervals.
- In India, Dugongs are primarily found in Palk Bay, the Gulf of Mannar, the Andaman and Nicobar Islands, and the Gulf of Kutch. The reserve not only aims to protect the Dugong population but also sustains biodiversity that supports local livelihoods through fishing and harvesting of marine resources like crabs and shrimps.

Environmental Accounting on Forest 2025 Report

- The Ministry of Statistics and Programme Implementation (MoSPI) has released the eighth issue in its environmental accounts series, and for the first time, this edition focuses exclusively on forest accounting. The report is structured around the UN System of Environmental Economic Accounts (SEEA), adopted by India in 2018.
- Key findings include a net increase of 17,444.61 sq. km in forest cover between 2010-11 and 2021-22, reaching a total of 7.15 lakh sq. km—21.76% of India's geographical area. Kerala, Karnataka, and Tamil Nadu recorded the highest gains. From 2013 to 2023, forest extent rose by 3,356 sq. km, primarily due to reclassification and boundary adjustments. States like Uttarakhand, Odisha, and Jharkhand topped the charts in Recorded Forest Area (RFA).
- Forest condition was assessed through growing stock, which refers to the volume of usable wood in living trees. Between 2013 and 2023, this volume increased by 305.53 million cubic meters (a 7.32% rise), with Madhya Pradesh, Chhattisgarh, and Telangana as leading contributors.
- In terms of services, provisioning services—including timber and non-timber forest products—contributed about 0.16% of India's GDP in 2021-22, with Maharashtra, Gujarat, and Kerala leading. Regulating services like carbon sequestration accounted for approximately 2.63% of GDP, with Arunachal Pradesh, Uttarakhand, and Assam at the forefront.
- The SEEA Framework, introduced globally in 2012, integrates economic and environmental statistics to measure both the economic contributions of natural ecosystems and the environmental impact of economic activity.

National Geoscience Awards 2024

- A formal ceremony is scheduled at the Rashtrapati Bhavan Cultural Centre in New Delhi, where the President of India will present the National Geoscience Awards (NGA) 2024.
- Established in 1966 by the Ministry of Mines, the National Geoscience Awards (initially known as the National Mineral Awards until 2009) represent one of India's oldest and most esteemed honours in the geosciences. Their purpose is to recognise outstanding achievements and contributions in fields such as mineral discovery, exploration, mining technology, mineral beneficiation, and fundamental or applied geoscientific research.
- Any citizen of India who has made a significant contribution in any branch of geosciences is eligible. The awards are conferred annually across three categories: the National Geoscience Award for Lifetime Achievement, the National Geoscience Award, and the National Young Geoscientist Award. For 2024, twelve awards have been decided: nine awarded to individuals and three to teams.

Dolmens of Kodaikanal

- The ancient dolmens of Kodaikanal—megalithic structures dating back over

5,000 years—are rapidly vanishing. Today, less than half of the dolmens recorded in the early 20th century remain intact.

- Dolmens are megalithic stone constructions, typically consisting of a large horizontal slab resting upon three (or more) vertical supports. They often served as burial chambers or ritual sites, although some local traditions suggest they may also have had habitation functions.
- Constructed between 1500 and 2000 BCE, during the Pre-Iron Age era, the Kodaikanal dolmens in the Palani Hills are among the oldest remnants of early settlement. They are believed to be linked to the Paliyan and Kurumba tribal groups, possibly ancestral to or contemporaneous with the original builders. The first systematic record of these structures was made by Jesuit priests Rev. A. Anglade and Rev. L.V. Newton in the early 20th century; their findings, published in the 1928 Memoirs of the Archaeological Survey of India, already noted the destruction of many dolmens during road expansion.
- Excavations in areas like Thandikudi and Pethuparai unearthed artifacts such as black-and-red ware pottery and carnelian beads, attesting to a continuum of human habitation from the pre-Iron Age into early historic times.
- The dolmens were built with minimal stone dressing—builders used naturally quarried stones rather than finely cut blocks. Their cap-stone slabs are slightly inclined to allow rainwater runoff, preventing flooding of interior chambers. Many are situated on ridges, slopes, or close to rock outcrops to harness natural stability. Some groups of dolmens may have been aligned so that they fell within torch-signal visibility of one another. Most are located at altitudes of 4,000–5,000 feet above sea level—ideal terrain for ancient forest-based agricultural produce such as cardamom and pepper, thereby illuminating early settlement patterns.
- These megaliths are of immense archaeological importance, shedding light on prehistoric burial customs, social structure, and ancient trade routes. They also carry profound cultural significance: local communities such as the Paliyans continue to claim ancestral ties, embedding these structures with living heritage value.

Sustainable Mountain Development Summit (SMDS)

Context:

The 12th edition of the Sustainable Mountain Development Summit (SMDS-XII) commenced at Doon University, Dehradun, focusing on preserving the ecological and cultural integrity of India's Himalayan region.

About SMDS:

- The SMDS is an annual summit dedicated to addressing the pressing ecological, social, and economic challenges of the Indian Himalayan Region (IHR). Organised by the Integrated Mountain Initiative (IMI), a civil society-led platform, the summit brings together diverse stakeholders for policy dialogue, research exchange, and community engagement.
- The summit was first launched in 2011 in Nainital, Uttarakhand, and has since grown into a major forum that mainstreams mountain concerns into India's national development discourse. Its primary aim is to foster sustainable growth that respects the fragile ecosystems of the Himalayas while empowering local communities in governance and resilience-building.
- Key features include the Mountain Legislators' Meet (MLM), where lawmakers from Himalayan states deliberate on regional policy matters; and the Indian Himalayan Youth Summit, a platform for young voices to contribute to problem-solving. The summit hosts thematic knowledge sessions on agroecology, climate adaptation, sustainable tourism, and disaster preparedness.
- Its significance lies in its ability to shape policy outcomes. Recommendations from SMDS summits have influenced both state-level and central government strategies. The summit also plays a vital

role in promoting traditional farming methods, organic agriculture, and climate-resilient infrastructure, making it a cornerstone of India's mountain-focused environmental agenda.

Recent Incident and Overview of the Tungabhadra River

- In a recent tragic incident, police recovered the bodies of three young individuals from Karnataka in the Tungabhadra River near Mantralayam, located in Kurnool district of Andhra Pradesh. This event has drawn renewed public attention to the significance of the Tungabhadra River, a vital watercourse in southern India, revered both for its religious importance and ecological role.
- The Tungabhadra River is one of the major rivers of peninsular India, flowing primarily through the states of Karnataka and Andhra Pradesh. It serves as the principal tributary of the Krishna River, one of India's major river systems. Considered sacred by Hindus, the Tungabhadra finds mention in the ancient epic *Ramayana*, where it is referred to as "Pampa."
- The river originates at Koodli in Karnataka's Shimoga district, at the confluence of two rivers—Tunga and Bhadra. Both these rivers begin on the eastern slopes of the Western Ghats, and their merger marks the formation of the Tungabhadra. From its origin, the river flows for a total length of 531 kilometers before it merges with the Krishna River at Sangamaleshwaram in Andhra Pradesh. The Krishna River, into which it drains, eventually empties into the Bay of Bengal.
- Geographically, the Tungabhadra traverses 382 kilometers through Karnataka, forms the boundary between Karnataka and Andhra Pradesh for another 58 kilometers, and continues for 91 kilometers in Andhra Pradesh. The river's catchment area up to its confluence with the Krishna River spans approximately 69,552 square kilometers.
- The surrounding landscape is characterized by striking granite formations in various shades of grey, ochre, and pink. One notable region between the Tungabhadra and Krishna rivers is the "Raichur Doab," a fertile and historically significant tract of land. The river's flow is heavily influenced by the southwest monsoon, which governs much of peninsular India's hydrological patterns.
- Important tributaries of the Tungabhadra include the Varada River and the Hagari (also known as Vedathy) River. The river is also harnessed through several significant dams and reservoirs, such as the Tunga Anicut Dam, Bhadra Dam, Hemavathy Dam, and the Tungabhadra Dam, which are critical for irrigation, water supply, and hydroelectric power generation.
- Historically, the Tungabhadra River has played a crucial role in shaping the civilizations along its banks. The ancient city of Hampi, once the flourishing capital of the Vijayanagara Empire and now a UNESCO World Heritage Site, is located along its course, further underlining the river's cultural and historical importance.

Planetary Health Check 2025: Seven of Nine Planetary Boundaries Crossed

- The *Planetary Health Check (PHC) 2025* offers a sobering scientific assessment of Earth's ecological balance, warning that human activity has pushed the planet beyond its stable operating limits. This report highlights the urgent need for transformative environmental action on a global scale.
- Planetary Boundaries (PBs) are ecological thresholds that define the "safe operating space" within which humanity can continue to thrive. These boundaries are linked to nine critical Earth system processes that sustain life and global stability. They include climate change, freshwater use, ocean acidification, biosphere integrity, biogeochemical flows, land system change, novel entities, atmospheric aerosol loading, and stratospheric ozone depletion.
- These boundaries are determined based on scientific criteria such as the historical variability of the Holocene epoch,

resilience of ecosystems, outputs of Earth system models, and potential tipping points.

- According to the 2025 report, seven of these nine boundaries have already been transgressed. Only atmospheric aerosol loading and stratospheric ozone depletion remain within the safe limits. Alarmingly, ocean acidification has now crossed its threshold for the first time, endangering marine ecosystems, particularly coral reefs and mollusks.
- Indicators of climate change continue to worsen. Atmospheric carbon dioxide levels have reached 423 parts per million (ppm) in 2025, bringing the Earth dangerously close to the high-risk threshold of 450 ppm. Biosphere integrity also remains under severe threat, with extinction rates far exceeding sustainable levels.
- In response to these ecological breaches, the scientific community is spearheading the *Planetary Boundaries Initiative (PBI)*. This global platform aims to monitor planetary health in near-real-time, develop actionable solutions, and improve communication through advanced modeling, artificial intelligence, and multi-source datasets. The initiative envisions a "Planetary Mission Control Center" that will provide continuous assessments to support evidence-based decision-making by policymakers worldwide.

Santorini and Kolumbo Volcanoes: Shared Magma Reservoir

- A recent seismic event comprising over **1,200 earthquakes near Santorini** has revealed a groundbreaking discovery: the **Santorini and Kolumbo volcanoes** are connected by a **shared underground magma reservoir**.
- Located in the **southern Aegean Sea**, approximately 200 km southeast of mainland Greece, Santorini forms part of a volcanic archipelago and is a remnant of a massive caldera. It belongs to the **South Aegean Volcanic Arc**, and its most famous eruption, the **Minoan or Thera eruption** around 1600 BCE, had catastrophic effects on the ancient Minoan civilisation and may have contributed to climatic disturbances, including a volcanic winter.
- Situated about 7 km northeast of Santorini, Kolumbo is a **submarine volcano** and part of the **Christiana-Santorini-Kolumbo (CSK) volcanic field**. Its last major eruption occurred in **1650 AD**, producing **tsunamis and toxic gas emissions** that caused destruction across Santorini and surrounding islands.
- For the first time, scientists have confirmed a **magmatic connection** between the two volcanoes. GPS and seismic data from **2024–2025** show Santorini swelling due to **magma accumulation**, while **earthquakes migrated** from Santorini toward Kolumbo. The simultaneous deflation of both volcanoes provides compelling evidence of a shared reservoir, complicating eruption forecasts and necessitating **real-time, high-resolution monitoring**. These findings are vital for understanding interconnected volcanic systems, similar to those found in **Hawaii, Iceland, and Kamchatka**.

Aralam Wildlife Sanctuary

- Herpetologists recently conducted a biodiversity survey in the **Aralam Wildlife Sanctuary**, documenting **16 species of lizards** across its varied ecosystems.
- Located on the **western slopes of the Western Ghats**, Aralam is the **northernmost wildlife sanctuary of Kerala**, declared in **1984**. Its elevation ranges from **650 to 1150 metres**, and it is drained by rivers such as **Cheenkannipuzha**, **Narikkadavu thodu**, **Kurukkathodu**, and **Meenumuttithodu**.
- Aralam hosts a diverse mix of forest types, including **West Coast tropical evergreen**, **semi-evergreen**, **moist deciduous**, and **hilltop evergreen forests**. Common tree species include **Artocarpus heterophyllus**, **Dipterocarpus**, and **Cannarium strictum**. It is also home to key wildlife such as **elephants, tigers, panthers,**

Nilgiri langurs, wild dogs, and **Malabar giant squirrels**.

Coffee Board of India and EU Deforestation Regulation Compliance

The **Coffee Board of India** has recently initiated **capacity-building programmes** to encourage more growers to register on its **mobile application**, aimed at ensuring compliance with the **EU Deforestation Regulation (EUDR)**.

- **About the Coffee Board:** Established under the **Coffee Act, 1942**, the Board comprises **33 government-nominated members** serving three-year terms and operates under the **Ministry of Commerce and Industry**. Headquartered in **Bangalore**, the Board undertakes **research, extension, development, marketing**, and **grower welfare** activities.
- **Coffee Cultivation in India:** India cultivates two main species: **Coffea Arabica (Arabica)** and **Coffea Canephora (Robusta)**, primarily across **Karnataka, Kerala, Tamil Nadu, Andhra Pradesh**, and **Odisha**, with **Karnataka** producing over **70%** of the national output.
- **Climatic Requirements:** Coffee thrives in **hot and humid climates**, with temperatures between **15°C and 28°C**, annual rainfall of **150–250 cm**, and well-drained **loamy soil rich in humus and minerals**. Dry conditions are essential during the **ripening phase**.

The Grue Jay: A Rare Bird Hybrid

- In 2025, researchers from the **University of Texas at Austin** identified a rare avian hybrid, nicknamed the **"Grue Jay,"** marking the first confirmed cross between a **Blue Jay (Cyanocitta cristata)** and a **Green Jay (Cyanocorax yncas)**.
- **Discovery and Characteristics:** First sighted in **San Antonio, Texas in 2023**, the bird features **turquoise-blue plumage** with black facial markings, blending visual traits from both parent species. Its **body and tail resemble a Blue Jay**, while the **face mask mirrors that of a Green Jay**. Its vocalisations and solitary behaviour also reflect a hybrid nature. Though the Grue Jay was identified as a **male**, its **reproductive capability remains uncertain**, as hybrid sterility is common.
- **Ecological Significance:** Like other hybrids such as the **"Pizzly Bear"** (polar bear–grizzly) and the **"Zonkey"** (zebra–donkey), the Grue Jay serves as an indicator of **species interactions under ecological stress**, highlighting how environmental pressures influence wildlife genetics.

Stampedes in India – A Recurring Yet Preventable Tragedy

Context

The recent stampede at a political gathering in Karur, Tamil Nadu—triggered during a public meeting led by actor-turned-politician Vijay—once again brings national attention to India's vulnerability in managing large-scale crowds. This tragic incident, resulting in multiple deaths, is not an isolated event but part of a troubling pattern that underscores systemic failures in crowd control, infrastructure, and administrative preparedness.

Legal and Constitutional Dimensions

Under Article 21 of the Indian Constitution, which guarantees the Right to Life, the State holds an obligation to ensure the safety of citizens during mass gatherings. The Disaster Management Act of 2005 categorises stampedes as "man-made disasters," thereby requiring State and local authorities to put in place robust preventive and mitigation mechanisms. Furthermore, the Supreme Court, in its 2009 judgment in *Destruction of Public & Private Properties v. State of Andhra Pradesh*, emphasised the accountability of event organisers and law enforcement in maintaining order and safety during large public events.

Underlying Causes of Stampedes in India

- Stampedes in the country often result from a combination of systemic shortcomings and unpredictable crowd behaviour. One primary factor is overcrowding that exceeds the venue's capacity, often due to poor planning in political rallies, religious events, and sports celebrations. The 2013 stampede during the Kumbh Mela in Prayagraj is a

stark reminder of the perils of inadequate logistical preparation.

- Trigger events—such as a sudden fall, a structural collapse, or even a rumour—can create panic, causing massive crowd surges. In the Karur rally, for instance, chaos erupted when individuals fell from a tree into the densely packed audience. Similarly, poor infrastructure is another persistent issue. Narrow entry and exit points, insufficient barricading, and lack of emergency dispersal routes frequently turn crowded venues into death traps, as seen in the February 2025 stampede at New Delhi Railway Station's foot overbridge.
- Administrative failures further exacerbate the crisis. Weak coordination between police, organisers, and civic bodies, along with the absence of early warning systems, often leads to delayed and ineffective responses. The RCB IPL victory parade in Bengaluru (2025) highlighted this, where inadequate crowd control led to serious safety breaches. Additionally, sociocultural dynamics in India, where religious devotion and political loyalty run deep, often make crowd behaviour emotionally driven and difficult to regulate.

Consequences of Stampedes

- Stampedes inflict devastating human loss—resulting in fatalities, severe crush injuries, and lasting psychological trauma for survivors and families. Beyond the human toll, they also expose significant governance lapses, shaking public confidence in the State's ability to protect its citizens during public events. The economic implications are equally severe: emergency medical care, rehabilitation, and compensation impose heavy financial burdens on government resources already stretched thin.
- On the international front, recurrent crowd disasters tarnish India's global image, especially at a time when the nation aspires to be recognised as a capable and responsible emerging power. Repeated failures in managing mass gatherings signal institutional complacency and erode credibility.

Comparative Global Experiences

Globally, incidents like the 2022 Halloween stampede in South Korea and the 2010 Love Parade tragedy in Germany prompted widespread public outcry and swift reforms in event management and crowd safety. In contrast, India's repeated incidents reflect a lack of institutional learning and a failure to adopt effective crowd management practices consistently across States.

Persistent Challenges to Prevention

- Preventing stampedes remains an enormous challenge due to the sheer scale and unpredictability of Indian public events—be it spontaneous gatherings following cricket victories, religious yatras, or large political rallies. Compliance with safety norms remains weak; despite the National Disaster Management Authority (NDMA)'s 2014 guidelines covering crowd flow, exit routes, and barricading, enforcement is inconsistent and often neglected at the local level.
- Fragmented responsibilities among stakeholders—police, event organisers, municipal authorities—lead to poor planning and disorganised emergency response. Additionally, while technology exists to aid real-time monitoring, such as drone surveillance and AI-based analytics, these tools are underutilised. Another major hurdle is public behaviour itself: disregard for advisories, impatience, and emotional surges often result in panic situations, amplifying the risk of stampedes.

The Way Forward

- Scientific and proactive crowd management must be made central to all mass event planning. Technologies like AI-powered predictive modelling, real-time sensors, and drone-based surveillance should be used to monitor crowd density and detect anomalies early. States should also consider forming specialised Crowd Management Units within their police forces trained in disaster control and emergency response.
- Infrastructure at mass venues must be redesigned with safety in mind—wider entry and exit points, sturdy crash barriers, elevated monitoring stations,

and pre-designated evacuation routes are essential. Accountability should be enforced through the Disaster Management Act, penalising negligence by organisers and mandating real-time audits of event preparedness.

- Public engagement also plays a vital role. Awareness campaigns on crowd safety protocols and basic training for volunteers in first aid and evacuation drills can foster community participation in prevention efforts. Technology should be better integrated through mobile apps, geo-fencing alerts, and SMS-based advisories to keep the public informed and safe. The 2019 Kumbh Mela stands out as a positive example, where GIS mapping was effectively used for crowd dispersal.
- India can also adopt global best practices. The "one-way flow" strategy used during the Hajj pilgrimage in Saudi Arabia significantly reduces collision risks and can be replicated in Indian religious and cultural contexts. Similarly, real-time digital ticketing and capped attendance limits, already employed in sports and cultural events worldwide, can help prevent overcrowding.

Conclusion

Stampedes are not merely unfortunate accidents—they are avoidable disasters resulting from administrative apathy, inadequate infrastructure, and unpredictable human behaviour. As mass gatherings are an intrinsic part of India's cultural, political, and religious landscape, the country must invest in proactive, technology-enabled, and community-driven crowd management systems. As India marches towards its vision of *Viksit Bharat 2047*, ensuring the safety of citizens during such events must be recognised not just as a logistical task but as a fundamental expression of the Right to Life and a hallmark of good governance.

Yellow-tailed Ashy Skimmer

- A recent dragonfly survey at the Yamuna Biodiversity Park in Delhi recorded the Yellow-tailed Ashy Skimmer (Potamarcha congener) for the first time, marking a significant addition to the local biodiversity records.
- Belonging to the family Libellulidae, the Yellow-tailed Ashy Skimmer is one of only two species in the genus Potamarcha, the other being Potamarcha puella. Commonly referred to as the common chaser or swampwatcher, this medium-sized dragonfly is widely distributed across South Asia, Southeast Asia, and parts of Oceania, including India, Indonesia, China, Australia, and Vietnam.
- The species exhibits distinct physical features: its body near the head is bluish-black, while its tail is yellow adorned with black markings. The face coloration ranges from yellowish-green to dark brown, with reddish-brown eyes on the upper side and bluish-grey underneath. Male adults are characterized by a powdery bluish coating on their upper body and the initial segment of their abdomen.
- Females, on the other hand, display yellow and black stripes along their sides, with a black abdomen marked by dull orange patches. Notably, the Yellow-tailed Ashy Skimmer possesses remarkable aerial agility, including the ability to fly backward, a rare skill among flying insects.
- In terms of conservation, this species is classified as 'Least Concern' on the IUCN Red List, indicating that it currently faces no significant threats to its population.

Beddome's Cat Skink

- A recent biodiversity survey has, for the first time, confirmed the presence of Beddome's cat skink (Ristella beddomii) within the Aralam and Kottiyoor Wildlife Sanctuaries. Also known as Beddome's ristella, this species is named after the British naturalist Richard Henry Beddome. It is regarded as a rare species endemic to the Western Ghats. Physically, the skink is a small, reddish-brown lizard characterized by retractile claws and scales that are bicarinate in texture. Its habitat ranges across the forests of the Western Ghats, typically found at elevations between 400 and 1,300 meters. Reproduction in this oviparous species

coincides with the southwest monsoon season, during which it lays eggs.

- Skinks, in general, belong to the family Scincidae and represent a diverse group of lizards that have existed since the era of dinosaurs. These reptiles usually have smooth, shiny skin and feature small or rudimentary limbs. Most skinks lead secretive lives, dwelling primarily on the ground or burrowing underground. Behaviorally, they are known for being alert, agile, and fast-moving, actively foraging for insects and small invertebrates. Skinks inhabit a wide variety of environments ranging from arid deserts to lush rainforests, and they are highly skilled at camouflaging themselves within their surroundings. Globally, skinks are widespread, with notable diversity in Southeast Asia and surrounding islands, the deserts of Australia, and temperate zones of North America.

Lachipora Wildlife Sanctuary

- The District Magistrate of Baramulla has recently ordered the immediate shutdown of 14 gypsum mining units operating within a prohibited one-kilometer radius of the Lachipora Wildlife Sanctuary, underscoring the commitment to protecting this sensitive ecological zone.
- Located in Baramulla district of Jammu and Kashmir near the village of Lachipora, the sanctuary lies on the northern banks of the Jhelum River. Established in 1987, its primary objective is to conserve the endangered Markhor, a wild goat species distinguished by its spiraled horns. Spanning an area of 141 square kilometers, the sanctuary features an elevation range between 1,630 and 3,300 meters, which supports alpine meadows and a rich diversity of flora and fauna.
- The sanctuary's landscape is varied, ranging from gentle slopes to steep cliffs and rocky outcrops. It is home to extensive coniferous forests including deodar, Himalayan white pine, and blue pine, alongside broadleaf forests containing birch, horse chestnut, West Himalayan fir, and Persian walnut trees.
- Among its notable wildlife inhabitants is the endangered Hangul deer, also known as the Kashmir stag, which is emblematic of the sanctuary. Other mammals include the Himalayan black bear, snow leopard, musk deer, and a host of other species. Additionally, the sanctuary has been designated an Important Bird Area (IBA) due to the presence of vulnerable bird species such as the Western Tragopan.

Bhima River

- Recent heavy and continuous rainfall in Kalaburagi and parts of Maharashtra has caused a significant rise in the water levels of the Bhima River, resulting in widespread flooding across multiple villages. The Bhima River, also known as the Chandrabagha River, is the largest tributary of the Krishna River. Its source lies near the Bhimashankar Temple, situated in the Bhimashankar hills on the western slopes of the Western Ghats in Maharashtra's Pune District. From there, the river flows southeast through Maharashtra, Karnataka, and Telangana before merging with the Krishna River in Raichur district, Karnataka. The river extends over a length of approximately 861 kilometers.
- The drainage basin of the Bhima River is geographically defined by the Western Ghats to the west, the Balaghat Range to the north, and the Mahadeo Hills to the south. Its basin spans roughly 48,631 square kilometers, with about 75% of this area lying within Maharashtra, where the river is locally known as Sahyadri. The Bhima flows through a well-defined valley, and its banks are heavily populated. The river's water levels fluctuate seasonally in response to monsoonal rains. Major tributaries feeding into the Bhima include the Indrayani, Mula, Mutha, and Pavana rivers.
- Historically, the Bhima River has played a crucial role for the Maratha Empire and the surrounding regions, especially near Pune, where many significant battles and

events have taken place along its banks. The area was also a major hub for trade and commerce during medieval times. Pandharpur, a significant pilgrimage site, is located on the right bank of the Bhima River.

Andaman Sea

- The Union Petroleum Minister recently announced the discovery of natural gas in the Andaman Basin, affirming long-held assumptions regarding the rich natural gas reserves in the Andaman Sea. This sea is a semi-enclosed marginal water body located in the northeastern part of the Indian Ocean. It is situated between the eastern coast of India and the Malay Peninsula, bordered by Myanmar to the north and the Indonesian island of Sumatra to the south. To the west, the sea is bounded by the Bay of Bengal, while the Strait of Malacca lies to its east. The Andaman Sea spans an area of about 307,994 square miles, extending approximately 750 miles in length and 400 miles in width.
- Geologically, the Andaman Sea is a complex and tectonically active region, situated along a plate boundary. It forms part of the larger Sunda Plate, which lies adjacent to the Indian Plate on the northwest and the Australian Plate to the southeast. The ongoing convergence of these tectonic plates has led to the formation of the Andaman Basin, distinguished by underwater ridges, trenches, and fault lines. The most prominent geological structure in this region is the Andaman Trench, created by the subduction of the Indian Plate beneath the Eurasian Plate. This tectonic activity has rendered the area seismically active, resulting in frequent earthquakes and volcanic eruptions.
- Ecologically, the Andaman Sea supports extensive coral reef systems, seagrass meadows, and mangrove forests, which serve as vital habitats for numerous marine species. It is home to several endangered fauna, including the whale shark, devil manta ray, dugong, multiple dolphin species such as the Irrawaddy dolphin, and four species of sea turtles. The region is also an important stopover for migratory birds along the East Asian-Australasian Flyway.
- Most islands in this sea belong to India's Union Territory of Andaman and Nicobar Islands, whereas Myanmar controls the Coco Islands and Preparis Island in the Yangon region. The climate of the Andaman Sea is tropical, with two distinct monsoon seasons: the southwest monsoon occurring from May to September and the northeast monsoon spanning November to February.

Two New Ramsar Sites Added in Bihar

- India has recently designated two new Ramsar wetlands in the state of Bihar—Gokul Jalashay and Udaipur Jheel—bringing the country's total number of wetlands of international importance to 93. This milestone further cements India's leading position in Asia in terms of Ramsar sites.
- Gokul Jalashay, located in Buxar and spanning 448 hectares, is an oxbow lake situated along the southern bank of the Ganga River. It serves as a natural flood buffer for nearby villages and provides a habitat for over 50 species of birds. The lake supports local livelihoods through fishing, farming, and irrigation, and the community actively engages in annual cleaning rituals to maintain its ecological health.
- Udaipur Jheel, found in West Champaran and covering 319 hectares, is also an oxbow lake enveloping a local village. This wetland boasts more than 280 plant species, including the endemic herb *Alysicarpus roxburghianus*. It is an important wintering habitat for approximately 35 migratory bird species, notably including the vulnerable Common Pochard.

About Ramsar Sites

Ramsar sites are wetlands recognized as being of international importance under the Ramsar Convention, a global treaty signed in 1971 in Ramsar, Iran, which came into force in 1975 under UNESCO's aegis. The main goal of the convention is to promote the conservation and sustainable

use of wetlands, which are vital ecosystems supporting biodiversity, water security, flood control, and local livelihoods. The Ramsar framework facilitates national action and international cooperation to identify and protect wetlands critical for rare ecosystems, migratory birds, endangered species, fisheries, and maintaining hydrological balance.

India's Position on Ramsar Wetlands

As of September 2025, India boasts 93 Ramsar wetlands covering 1.36 million hectares. The country's tally has grown significantly from 26 sites in 2012, with 51 sites added since 2020 alone. Globally, India ranks third in the number of Ramsar sites, following the United Kingdom with 176 and Mexico with 144. In Asia, India holds the top position. With the recent additions, Bihar now has five Ramsar sites under its jurisdiction.

Cold Desert Biosphere Reserve

- The Cold Desert Biosphere Reserve (CDBR) in Himachal Pradesh has recently been added to UNESCO's World Network of Biosphere Reserves (WNBR). This biosphere reserve is situated high in the trans-Himalayan region, covering roughly 7,770 square kilometers within Himachal Pradesh's Lahaul-Spiti district. Established as a biosphere reserve in 2009, it is India's first high-altitude cold desert biosphere and ranks among the coldest and driest ecosystems listed in UNESCO's WNBR.
- The terrain includes windswept plateaus, glacial valleys, alpine lakes, and rugged high-altitude deserts. The reserve encompasses notable protected areas such as Pin Valley National Park, Chandratal, Sarchu, and the Kibber Wildlife Sanctuary. Botanically, it is home to 732 species of vascular plants, including 30 endemic species and 157 species that are near-endemic to the Indian Himalayas. The fragile ecosystem supports hardy alpine grasses, medicinal herbs, and rare stands of willow-leaved sea-buckthorn, Himalayan birch, and Persian juniper.
- Faunal species found here include the elusive leopard, Himalayan ibex, blue sheep, and Himalayan wolf. The area also supports diverse birdlife, including the Himalayan snowcock and the golden eagle.

Musi River: Flooding in Hyderabad

- Following heavy rainfall and the release of water from the Osman Sagar and Himayat Sagar reservoirs, the Musi River in Hyderabad surged, leading to flooding in several localities and submergence of bus stations.
- The Musi River is a significant tributary of the Krishna River, also known locally as the Muchukunda or Musunuru River. It flows through Hyderabad, effectively dividing the historic Old City from the newer parts of the city. The river originates from the Ananthagiri Hills near Vikarabad in Telangana and flows eastward before turning south at Chittaloor. It eventually merges with the Krishna River at Vadapally, near Miryalaguda in the Nalgonda district.
- The river system includes two important reservoirs, Osman Sagar and Himayat Sagar, which were created to supply drinking water to Hyderabad and Secunderabad. The Musi River has played a crucial role in shaping Hyderabad's urban settlement historically. However, the river is prone to flooding during periods of heavy rains and when reservoir water is released, as evidenced by the recent floods.

Delhi-NCR Registers Highest Ozone Pollution Levels in India

- According to a report by the Central Pollution Control Board (CPCB), the Delhi-National Capital Region (NCR) faces the highest levels of ozone pollution in India, followed by the Mumbai Metropolitan Region (MMR).
- Ozone (O3) is a triatomic form of oxygen found in two layers of the atmosphere: the stratosphere and the troposphere. In the stratosphere, ozone acts as a protective shield against the sun's harmful ultraviolet radiation. However, at ground level (troposphere), ozone is a pollutant harmful to human health and the environment.

- The safe limit for an eight-hour average exposure to ozone is set at 100 micrograms per cubic metre ($\mu g/m^3$), with a one-hour limit of 180 $\mu g/m^3$.
- Ground-level ozone (GLO) is a secondary pollutant formed through chemical reactions between oxides of nitrogen (NOx) and volatile organic compounds (VOCs). These precursor chemicals originate from human activities such as transportation, power plants, residential heating, and agriculture, as well as natural sources including soil emissions of NOx, wildfires producing carbon monoxide, and biospheric methane.
- GLO poses serious health risks by exacerbating bronchitis, triggering asthma attacks, and impairing lung function. It also acts as a potent greenhouse gas contributing to climate change and is a major component of smog. In agriculture and ecosystems, ground-level ozone interferes with photosynthesis and stunts growth in sensitive plant species.

India's E-Waste Recycling Challenges and Opportunities

While the Union government actively promotes local electronics manufacturing through initiatives such as semiconductor fabrication plants and the Electronics Component Manufacturing Scheme, the area of e-waste recycling remains a significant challenge. In recent years, millions of tonnes of discarded consumer electronics and household appliances have accumulated, posing serious environmental and health concerns. Policymakers increasingly recognize recycling as a critical process to recover scarce and valuable metals, especially given the projected surge in electronics consumption in the near future.

Understanding E-Waste

- E-waste encompasses discarded electronic devices such as smartphones, laptops, televisions, refrigerators, and chargers. Although these items often contain precious materials, they are frequently discarded improperly rather than being reused or recycled, contributing to environmental degradation and resource wastage.
- The mismanagement of e-waste carries severe health and environmental risks. E-waste contains toxic substances including lead, mercury, and cadmium, which can contaminate soil and water if handled improperly. Such contamination has been linked to serious health problems such as neurological disorders, kidney failure, and chronic illnesses. Environmentally, hazardous recycling methods pollute air, soil, and water resources, while also releasing greenhouse gases that exacerbate climate change and damage ecosystems.
- Beyond the health and environmental impact, ineffective recycling leads to a substantial economic loss. Valuable metals such as gold, silver, and copper end up wasted rather than being recovered and reused in manufacturing processes, representing missed opportunities for resource efficiency and economic gain.
- Effective e-waste management aligns closely with global sustainability agendas, particularly Sustainable Development Goal (SDG) 12, which promotes responsible consumption and production, and SDG 13, focused on climate action. Strengthening e-waste recycling mechanisms supports India's commitments toward Environmental, Social, and Governance (ESG) standards by embedding resource efficiency and environmental protection into the country's economic growth strategies.

Electronics Consumption and the Indigenous Manufacturing Push

Despite India having over 939 million mobile broadband connections, the country accounts for only about 4% of global electronics consumption. Fragile global supply chains, highlighted by recent disruptions, have pushed the government to ramp up domestic manufacturing and secure raw material access. A notable step in this direction is the ₹1,500 crore mineral recycling scheme announced in September, aimed at promoting circularity in resource use.

E-Waste Generation and Processing Trends

- According to the Global E-Waste Monitor 2020, India ranks as the world's third-largest generator of e-waste after China and the United States. With India's

electronics market among the fastest growing globally, this upward trend in e-waste generation is expected to intensify. A recent report projects the electronics industry in India to grow at a compound annual growth rate (CAGR) of 16.6%, expanding from USD 215 billion in fiscal year 2019 to USD 540 billion by 2025. This rapid growth will inevitably result in a significant increase in e-waste volumes.

- In 2022 alone, India produced an estimated 4.17 million metric tonnes of e-waste. However, only about one-third of this was processed through formal and environmentally compliant recycling channels, underscoring the gaps in current handling mechanisms.

Legal and Regulatory Framework for E-Waste

- Improper disposal of end-of-life electrical and electronic equipment (EEE) carries severe negative externalities including risks to human health and environmental degradation. To address these challenges, India enforces the E-Waste (Management) Rules, 2022, issued by the Ministry of Environment, Forest and Climate Change (MoEFCC), which came into effect on April 1, 2023.
- State Pollution Control Boards are tasked with maintaining inventories of e-waste, but inconsistent methodologies across states cause discrepancies in data when compared with international standards. Meanwhile, the Central Pollution Control Board has intensified oversight by auditing recycling firms, inspecting over 50 companies in recent months. Efforts are underway to formalize the fragmented informal recycling sector by aggregating operations into structured "mandi"-style streams, improving the recovery of metals such as gold, copper, aluminum, and steel.

Extended Producer Responsibility (EPR) Framework and Challenges

- The government has implemented Extended Producer Responsibility (EPR) rules that mandate manufacturers to collect and recycle end-of-life appliances, focusing on recovering metals like copper, aluminum, nickel, cobalt, and lithium. This initiative is partially motivated by geopolitical risks, including China's export restrictions on rare earth elements, which have underscored the need for India to secure its raw material supplies domestically.
- However, the recycling ecosystem remains dominated by the informal sector, as highlighted by a 2023 report from the Indian Cellular and Electronics Association. Informal operators primarily engage in component repair and harvesting but operate outside formal regulatory frameworks, which impedes the establishment of a truly circular economy. Even within the formal EPR system, practices such as "paper trading," where recyclers inflate reported volumes to gain financial incentives, continue to pose significant challenges.

Concerns Regarding Traceability and Best Practices

Experts emphasize that the e-waste sector in India suffers from widespread malpractices, with many recyclers lacking genuine metal extraction capabilities. There is a strong call for rigorous third-party audits, enhanced environmental safeguards, and comprehensive life-cycle tracking of electronic products. Unlike Western countries, where products are accounted for as potential e-waste from the point of sale, India's inventorying practices remain weak, hindering effective waste management.

Future Potential of E-Waste Recycling in India

Although the current contribution of recycled precious metals to India's supply chains remains minimal, industry leaders argue that with appropriate policy support, India could satisfy up to 70% of its rare earth material requirements through recycling within 18 months. The role of recycling is growing annually, underscoring its potential as a foundational pillar in India's electronics ecosystem and its broader industrial strategy.

Ophiorrhiza echinata: A New Coffee Plant Species

- A newly discovered coffee plant species named **Ophiorrhiza echinata** has recently been identified in the **Western Ghats**, highlighting the region's immense biodiversity.
- This species was found specifically in the **shola forests of Devikulam**, located in

Kerala's Idukki District. It inhabits the ecotone zone where evergreen forests transition into grasslands, thriving at an altitude of approximately **1,630 metres** above sea level. The plant is believed to possess **medicinal potential**.

- Classified under the **Rubiaceae** family, Ophiorrhiza echinata is closely allied with **Ophiorrhiza mungos**, a species known for its medicinal applications, particularly in cancer therapy and as an antidote. So far, this species has been found **only at its type locality**, occupying less than **four square kilometres**, with an observed population of just **35 individual plants**.

Pallid Fish Eagle: Rare Nesting in Corbett Tiger Reserve

- A recent survey conducted by the **State Forest Department** in collaboration with the **World Wide Fund for Nature (WWF)** has documented the rare nesting of the **Pallid Fish Eagle** in the **Corbett Tiger Reserve**.
- Also known as **Pallas's Sea Eagle** or **Band-tailed Fish Eagle**, it is a large bird of prey characterized by its brownish plumage. The eagle is typically found around **lakes, marshes, and rivers**, and it is known to breed in tall trees near water bodies. Its diet primarily consists of **fish**, although other prey are occasionally consumed. The bird is **partially migratory**, with populations from Central Asia moving to parts of South Asia, including **India**, during winter.
- The species is distributed across the **east Palearctic region**, including countries such as **Kazakhstan, Russia, Tajikistan, Turkmenistan, Uzbekistan, Mongolia, China, India, Nepal, Bangladesh**, and **Myanmar**. Listed as **Endangered** on the **IUCN Red List**, the Pallid Fish Eagle faces threats due to **habitat degradation**, **pollution**, and **overfishing**.
- Located in **Uttarakhand**, the **Corbett Tiger Reserve** was established in **1936** as **Hailey National Park**, making it the **first national park in India** and the **first under Project Tiger**. The reserve features an undulating terrain comprising valleys through which the **Ramganga, Pallaen, and Sonanadi** rivers flow. Its vegetation consists of **tropical moist deciduous forests**, **dry deciduous forests**, **sal forests**, and **riparian ecosystems**, spread across the **Bhabar and lower Shivalik ranges**.

Red Sanders Conservation

- In a recent initiative, the National Biodiversity Authority (NBA) has allocated ₹82 lakh to the Andhra Pradesh Biodiversity Board to support conservation efforts for the endangered and endemic species Red Sanders (*Pterocarpus santalinus*).
- Native to the southern portion of the Eastern Ghats, Red Sanders is primarily found in the districts of Anantapur, Chittoor, Kadapa, and Kurnool in Andhra Pradesh. This species thrives in rocky, degraded, and fallow lands characterized by red soil and a hot, dry climate.
- Red Sanders faces significant threats due to its high commercial value, which has led to widespread illegal harvesting and smuggling.

Conservation Status

- **IUCN Red List:** Endangered
- **CITES:** Appendix II
- **Wildlife (Protection) Act, 1972:** Schedule IV

National Biodiversity Authority (NBA)

Established under the Biological Diversity Act of 2002 and operational since 2003, the NBA is a statutory body headquartered in Chennai, Tamil Nadu. Its primary role is to oversee the implementation of biodiversity laws across the country. To facilitate decentralized biodiversity governance, the NBA works in coordination with:

- **State Biodiversity Boards (SBBs):** Regulate access to biological resources at the state level.
- **Biodiversity Management Committees (BMCs):** Function at the village or panchayat level to encourage local biodiversity conservation and documentation.

The NBA is led by a Chairperson with extensive experience in biodiversity conservation, supported by ten ex-officio government representatives and five non-official members

selected for their expertise in biodiversity-related fields.

Hunga Tonga–Hunga Ha'apai (HTHH) Volcano

- A multidisciplinary research team recently completed an extensive 54-day expedition aboard the CSIRO research vessel *Investigator*, focusing on the aftermath of the catastrophic 2022 eruption of Tonga's Hunga Tonga–Hunga Ha'apai (HTHH) submarine volcano.
- Located within the Tongan archipelago in the southern Pacific Ocean, HTHH is a submarine stratovolcano. It comprises two small islands—Hunga Tonga and Hunga Ha'apai—and a series of shallow reefs that outline the caldera rim of a significantly larger underwater volcanic structure. This edifice lies to the west of Tonga's main inhabited islands and approximately 30 km south of Fonuafo'ou and 65 km north of Tongatapu, the country's principal island.
- HTHH forms a part of the highly active Tonga–Kermadec Islands volcanic arc, a prominent subduction zone that stretches from New Zealand to Fiji. This arc was formed by the subduction of the Pacific Plate beneath the Indo-Australian Plate and has exhibited consistent volcanic activity over recent decades.
- A particularly powerful eruption occurred on January 15, 2022, making it one of the most significant volcanic events of the 21st century. This eruption propelled volcanic gases and ash into the stratosphere, triggered atmospheric shock waves, and generated tsunami waves that traveled across multiple ocean basins.
- Stratovolcanoes, also known as composite volcanoes, are characterized by their tall, steep, and conical structure, contrasting with the broader, flatter form of shield volcanoes. These volcanoes are typically situated above subduction zones and are often key features of volcanically active regions like the Pacific Ring of Fire.
- Comprising nearly 60% of Earth's individual volcanoes, stratovolcanoes primarily erupt andesite and dacite—lava types that are cooler and more viscous than basalt. This high viscosity allows pressure from trapped gases to accumulate, often resulting in explosive eruptions. Stratovolcanoes are typically composed of alternating layers of lava and pyroclastic material, with many featuring small summit craters that may hold water, ice, or even volcanic domes during dormant periods.

SCIENCE AND TECHNOLOGY

Mira Stars

- A significant breakthrough in astrophysics was recently achieved by scientists from the Inter-University Centre for Astronomy and Astrophysics (IUCAA), who employed Mira stars—cool, giant variable stars—to make the most precise measurement yet of the universe's expansion rate.
- Mira stars, named after the star Omicron Ceti—also known as "Mira," which means "the wonderful" in Latin—are known for their striking changes in brightness over regular intervals. First observed in the 17th century, Mira became the prototype for a class of stars now referred to as Mira variables. These stars were the first to be identified as "variable stars," meaning that their brightness fluctuates rather than remaining constant.
- Mira variables are large stars in the later stages of their life cycle. They undergo consistent cycles of expansion and contraction, leading to periodic changes in their brightness. These cycles typically range from 100 to 1,000 days. Despite their immense size, Mira stars are relatively cool, with surface temperatures around 3,000 Kelvin—roughly half that of the Sun's surface temperature.
- What makes Mira variables especially valuable to astronomers is the well-established correlation between their intrinsic brightness and the duration of their pulsation cycles. This relationship enables scientists to use Mira stars as "standard candles." A standard candle is an astronomical object whose true luminosity is known. By comparing this intrinsic brightness with the observed brightness from Earth, astronomers can calculate the distance to the object with high accuracy.
- This method plays a crucial role in building the "extragalactic distance ladder," a series of techniques used to measure increasingly vast distances in space. By contributing to a more accurate calibration of cosmic distances, Mira stars help refine our understanding of the universe's structure, size, and rate of expansion.

CEREBO – Indigenous Brain Tool

- In a significant advancement for emergency and rural healthcare, the **Indian Council of Medical Research (ICMR)** has launched **CEREBO**, a portable, indigenous brain diagnostic device. Developed in collaboration with **AIIMS Bhopal**, **NIMHANS Bengaluru**, and **Bioscan Research**, CEREBO is a compact, hand-held device designed to detect **traumatic brain injuries (TBIs)** in under a minute, using cutting-edge technologies such as **near-infrared spectroscopy** combined with **machine learning algorithms**.
- This innovation aims to address the diagnostic challenges of TBIs in regions with limited access to advanced imaging facilities such as CT or MRI scanners. CEREBO provides a **low-cost**, **non-invasive**, and **radiation-free** alternative, making it particularly valuable in **rural clinics**, **ambulances**, **trauma centres**, and **disaster zones**. It can be safely used even on **infants** and **pregnant women**, a notable advantage over traditional imaging techniques. The device produces **colour-coded, easily interpretable results**, making it user-friendly even for **paramedics or untrained healthcare personnel**.
- Validated through multi-centre clinical trials, the tool has been approved for emergency applications, including **military use**. CEREBO bridges a critical gap in trauma care by enabling **early detection and triage** of brain injuries, which can significantly reduce both fatalities and long-term complications. It also helps alleviate the reliance on costly and infrastructure-dependent imaging systems, and due to its versatility and affordability, it has the potential for **widespread adoption in global trauma and emergency medicine**.
- Traumatic Brain Injury (TBI), the focus of this device, refers to a sudden disruption in normal brain function, usually caused by an external force. TBIs can range from mild forms such as **concussions** to **severe injuries** that cause lasting physical and cognitive impairments. The primary causes of TBIs in India are **road accidents** (around 60%), **falls** (20–25%), and **violence** (about 10%).
- Immediate symptoms of TBI include **loss of consciousness**, **headache**, **dizziness**, **seizures**, and **confusion**, while complications can involve **intracranial bleeding**, **brain swelling**, or even **coma**. Long-term impacts

include **memory issues**, **cognitive decline**, **depression**, **anxiety**, and behavioural disorders, with an increased risk of **neurodegenerative conditions**. A particularly dangerous aspect is that **mild TBIs** often go undiagnosed initially, but if untreated, they may worsen and cause serious consequences over time

PRATUSH Telescope

- Scientists at the Raman Research Institute (RRI) in Bengaluru, in collaboration with the Indian Space Research Organisation (ISRO), have proposed an ambitious space-based project titled **PRATUSH**—Probing ReionizATion of the Universe using Signal from Hydrogen. This innovative radio telescope mission is designed to explore the universe's early epochs, specifically the "Cosmic Dawn."
- PRATUSH aims to be deployed on the far side of the Moon, offering an ideal observation environment shielded from Earth-based radio interference. The telescope will be equipped with a wideband, frequency-independent antenna covering the frequency range of 30 to 250 MHz. Alongside this, it will carry a self-calibrating analog receiver and a digital correlator capable of high spectral resolution.
- The telescope's observational strategy will involve continuous monitoring of vast sky regions and recording the beam-averaged radio emission spectra with a fine resolution of 100 kHz. The mission's planned lifespan is two years, which will be sufficient to achieve a high signal-to-noise ratio and adequate sky coverage. The preferred orbital placement is a circumlunar orbit to ensure uninterrupted observations from the Moon's far side.
- Central to PRATUSH's innovative design is a seemingly modest component—a single-board computer (SBC). Initially built around a Raspberry Pi, the SBC will function as the master controller, coordinating every subsystem of the telescope. Its responsibilities include managing the antenna that collects cosmic radio signals, controlling the analog receiver that amplifies them, and directing the Field Programmable Gate Array (FPGA) that digitizes and maps the brightness of the sky at different frequencies. In addition, the SBC will also handle high-speed data storage and preliminary data calibration.
- Through PRATUSH, Indian scientists hope to unlock new insights into the early stages of the universe, particularly the era of reionization, when the first stars and galaxies began to form.

Clopidogrel

- Recent medical evaluations suggest that **clopidogrel**, a widely used antiplatelet drug, may be more effective than aspirin in preventing heart attacks over the long term—especially in individuals identified as high-risk patients.
- Clopidogrel belongs to a class of medications known as antiplatelet agents. These drugs work by inhibiting platelets in the blood from clumping together, thereby reducing the likelihood of forming clots that can lead to cardiovascular events such as heart attacks or strokes. The drug is particularly prescribed for individuals with peripheral artery disease, unstable angina, or those who have undergone medical procedures where clot prevention is critical.
- Among its common uses are the prevention of heart attacks, strokes, and the treatment of peripheral artery disease. It is also prescribed to prevent clot formation in patients suffering from atrial fibrillation or following procedures like angioplasty and stent placements.
- Clopidogrel is typically administered orally and can be taken with or without food. The recommended dosage and frequency depend on the patient's health condition, age, and how well they respond to the medication. Most commonly, it is taken once daily at a fixed time to maintain steady drug levels in the bloodstream, thereby ensuring its effectiveness.

Vikram 3201 – India's First Indigenous 32-bit Microprocessor

At the Semicon India 2025 conference, India introduced the Vikram 3201, its first completely indigenous 32-bit microprocessor, a landmark achievement in the nation's semiconductor and space technology journey.

Overview and Significance:

- Developed by the Vikram Sarabhai Space Center (VSSC) and fabricated at the Indian Space Research Organisation's (ISRO) Semiconductor Laboratory (SCL) in Chandigarh, the Vikram 3201 represents a major upgrade over the earlier Vikram 1601—a 16-bit processor used in ISRO's launch vehicles since 2009.
- Unlike processors designed for commercial electronics, this chip is built specifically for space applications, handling essential tasks such as navigation, control, and mission management in launch vehicles.

Technical Highlights:

The Vikram 3201 is designed to perform complex, high-speed calculations crucial for maintaining rocket stability and trajectory. Engineered to military-grade standards, it is tested rigorously for resilience against harsh conditions, including extreme temperatures (ranging from –55°C to +125°C), vibrations, and space radiation. It supports advanced 64-bit floating-point operations, is compatible with the Ada programming language, and features integrated 1553B bus interfaces, ensuring robust communication during missions.

This achievement marks India's first attempt at indigenously designing and fabricating a processor of this caliber for use in space launch systems, representing a significant leap in self-reliance and technological capability.

Solar Orbiter Mission

- A recent study has highlighted new findings from the European Space Agency's (ESA) *Solar Orbiter Mission*, which has successfully traced the origins of Solar Energetic Electrons (SEEs) that are emitted by the Sun.
- The Solar Orbiter is a collaborative mission between ESA and NASA, launched in 2020. Its primary aim is to study the Sun and the heliosphere from close quarters and from positions outside the ecliptic plane.
- Equipped with ten scientific instruments—six for remote sensing and four for in-situ measurements—the orbiter observes the solar corona, solar wind, high-energy particles, and electromagnetic fields.
- Solar Energetic Electrons are high-energy particles generated by the Sun and are crucial to the dynamics of the space environment. These particles can originate either from intense solar flares—sudden, explosive outbursts from small solar regions—or from large-scale Coronal Mass Ejections (CMEs).
- Between November 2020 and December 2022, the Solar Orbiter recorded over 300 instances of SEE bursts. The new findings reveal that different types of SEEs stem from distinct solar phenomena, offering fresh insights into their behavior and origin.
- The mission holds great significance for enhancing the understanding of space weather, which can have critical implications for satellite operations, communications, navigation systems, and astronaut safety.

Graphite Spyware

In a recent development, the Trump administration has lifted a freeze on a previously stalled Biden-era contract with Paragon Solutions, an Israeli-founded firm known for its spyware technology called *Graphite*.

What is Graphite Spyware?

Graphite is a form of sophisticated spyware engineered to remotely infiltrate and assume control of mobile devices. Once embedded in a device, the spyware enables its operator to access a user's personal data, such as photographs and messages, monitor encrypted communications on platforms like WhatsApp and Signal, and even track the user's location in real-time. Additionally, it can covertly activate the mobile phone's microphone, effectively converting the device into a remote listening tool.

Understanding Spyware

Spyware, by definition, is a type of malicious software designed to secretly gather information from a user's computer or device and transmit it to external parties, typically without the user's knowledge or consent. This harvested data, often of a personal or sensitive nature, is commonly monetized by selling it to advertisers, data brokers, or other malicious actors.

There are several major categories of spyware, each with its unique method of operation:

- **Adware** monitors user activity, collects behavioral data, and sells this information to advertisers or malicious third parties. It may also serve intrusive and malicious advertisements.
- **Infostealer** is a class of spyware that scans devices for specific types of information, including login credentials

and instant messaging conversations, and transmits this data externally.

Keyloggers, also known as keystroke loggers, belong to the infostealer category and work by recording every keystroke made by the user, enabling the extraction of passwords, personal messages, and other sensitive inputs.

Majorana Particles

In the quest to build stable quantum computers, scientists are increasingly focusing on Majorana particles, as their extraordinary properties hold the potential to overcome the persistent challenge of qubit decoherence. Recent experimental results in condensed matter physics, particularly in superconducting nanowires, have indicated signals that align with what are believed to be Majorana modes.

Understanding Majorana Particles:

- A Majorana particle is a unique, hypothetical particle characterized by the rare trait of being its own antiparticle. Unlike conventional particles such as electrons or protons—which annihilate upon contact with their antimatter counterparts—Majorana particles exhibit perfect symmetry and do not destroy themselves when they meet. This distinct self-mirror nature sets them apart in the world of particle physics.
- Originally proposed in 1937 by Italian physicist Ettore Majorana, these particles were first conceptualized in the realm of theoretical particle physics. However, contemporary exploration has shifted toward condensed matter systems, where they are investigated as quasiparticles rather than free particles.

Key Characteristics:

- Majorana particles are electrically neutral, making them inherently difficult to detect using standard experimental techniques. They typically manifest in specialized materials such as superconductors and only under extremely low-temperature conditions. These particles do not exist freely in nature but rather appear within laboratory environments as quasiparticles.
- A particularly fascinating property is that Majorana particles come in paired "halves," with each half representing part of a single quantum state. What makes them so compelling for quantum computing is that these halves can be spatially separated, offering a form of natural protection against environmental noise and error. They also belong to an exotic category of particles known as *non-Abelian anyons*. When these particles are exchanged or "braided," the overall quantum state transforms in a distinctive and predictable way, unlike traditional particles.
- Despite several experimental claims, scientists remain cautious, as many of the signals that suggest the presence of Majorana particles can be mimicked by other effects in the system.

Applications:

Majorana particles hold considerable promise in multiple scientific domains. In quantum computing, they are being explored as the basis for *topological qubits*, which are inherently resistant to decoherence and environmental noise. In particle physics, the search continues for fundamental Majorana fermions, with neutrinos often considered a prime candidate. In condensed matter physics, they have spurred advances in superconductors, nanowires, and next-generation quantum materials.

2D Materials

Context: The **Frontier Tech Hub** of **NITI Aayog**, in collaboration with **IISc Bengaluru**, has released the **fourth edition** of the *Future Front Quarterly Insights*, titled **"Introduction to 2D Materials"**, emphasizing their growing relevance and the need for India to prioritise their development.

About 2D Materials:

Two-dimensional (2D) materials are substances that are **only one atom thick**, far thinner than anything conventionally used. The most famous example is **graphene**, a single layer of carbon atoms arranged in a hexagonal lattice. Other key examples include **MoS_2 (molybdenum disulfide)**, **WS_2**, **hexagonal boron nitride (h-BN)**, and newly emerging materials like **Xenes** (e.g., **silicene**).

These materials are flat at the atomic level and possess extraordinary physical properties due to their minimal thickness and high surface-to-volume ratio. First isolated in **2004** through a simple tape-peeling experiment from graphite—a discovery that led to the **2010 Nobel Prize**—they have since revolutionised materials science.

Key characteristics include:

- **Exceptional conductivity**: Graphene, for instance, can carry electricity more efficiently than copper and dissipates heat rapidly.
- **Extreme strength**: Around **200 times stronger than steel**, while remaining flexible and stretchable.
- **Electronic tunability**: Their **bandgap** can be altered, making them ideal for **next-generation chips** and **quantum devices**.
- **Environmental sensitivity**: Their thinness makes them highly responsive, enhancing their potential in **sensors**.
- **Quantum potential**: Certain 2D materials display quantum mechanical effects, such as **spin–valley coupling**, with implications for **quantum computing**.

Applications of 2D materials are wide-ranging:

- In **semiconductors**, they enable transistor designs that transcend traditional silicon limits.
- In **neuromorphic computing**, atomically thin **memristors** can simulate brain-like computing.
- In **optoelectronics**, tunable properties allow development of **ultra-thin LEDs**, **solar cells**, and **photodetectors**.
- Bulk uses include **aerospace composites**, **water filtration**, **protective coatings**, **energy storage**, and **supercapacitors for EVs**.

Indian Science Congress Replaced by Emerging Science, Technology and Innovation Conclave (ESTIC)

India has officially replaced the century-old Indian Science Congress (ISC) with the Emerging Science, Technology and Innovation Conclave (ESTIC), whose inaugural edition is scheduled to be held in November 2025 at Bharat Mandapam in New Delhi. This development marks a significant transformation in India's scientific landscape, reflecting a shift toward a more structured, innovation-centric framework that aligns closely with national developmental objectives, particularly the vision of *Viksit Bharat 2047*.

Historical Context and Significance of the Indian Science Congress

- For over 100 years, the Indian Science Congress served as the country's foremost platform for dialogue among scientists, researchers, and policymakers. Since its inception in 1914, the ISC evolved into a highly prestigious annual event, often inaugurated by the Prime Minister, and succeeded in bringing together leading national and international scientific minds. It played a foundational role in shaping India's scientific community both before and after Independence, hosted several Nobel Laureates, and contributed to the formulation of numerous science policies. It also fostered public engagement by making science accessible to students and the general population through exhibitions and lectures.
- However, in recent years, the Congress experienced a notable decline in relevance and quality. Increasingly criticised for its lack of academic rigour, the ISC was marred by controversies arising from unscientific claims made by certain speakers, undermining its credibility. Its significance as a policy-influencing platform also diminished. Compounding these issues were institutional tensions between the Department of Science and Technology (DST) and the Indian Science Congress Association (ISCA), leading to funding reductions and organisational instability. The onset of the COVID-19 pandemic further disrupted its continuity, with only one physical edition held in 2023, deepening its disconnect from the evolving needs of India's scientific and innovation landscape.
- These persistent challenges created the impetus for establishing a new, more relevant platform—resulting in the launch of ESTIC.

Emerging Science, Technology and Innovation Conclave (ESTIC): A New Chapter

- The first edition of ESTIC will take place on November 3–4, 2025, and is expected to be inaugurated by Prime Minister Narendra Modi, highlighting the strategic importance the government places on this initiative. Organised by the DST in partnership with all ministries related to science and technology, ESTIC aspires to become the country's premier forum for innovation-led research and collaboration.

- This new conclave introduces several key structural and thematic advancements. It will feature 11 focused technical sessions on cutting-edge topics including space exploration, biotechnology, deep-tech, and renewable energy. A dedicated innovation showcase will include 75 exhibition stalls representing India's growing deep-tech startup ecosystem. Confirmed international participants include Nobel Laureate Andre Geim (Physics, 2010), French space expert Jean-Yves Le Gall, and Japanese biologist Professor Masaru Tomita, underscoring ESTIC's intent to foster high-level global engagement.
- Unlike its predecessor, ESTIC will witness direct involvement from all major science-related ministries—ranging from atomic energy to IT and space—reflecting a whole-of-government approach. The event is designed not merely as a platform for scientific celebration, but as a serious, policy-aligned conclave aimed at realising India's technological ambitions.

Objectives and Strategic Direction

- The core objectives of ESTIC are to promote advanced research and showcase breakthrough innovations, to recalibrate India's scientific engagement in line with national priorities like *Viksit Bharat 2047*, and to offer a globally competitive platform for serious scientific discourse. It is envisioned as distinct from the India International Science Festival (IISF), which is more focused on science popularisation and public outreach.
- By offering a venue where research excellence, policy thinking, and technological innovation converge, ESTIC seeks to provide strategic direction to India's future in science and technology.

Implications of the Transition

- The replacement of ISC with ESTIC signifies a broader evolution in India's science policy framework. It reflects a conscious move from a general-purpose scientific gathering to a goal-driven, innovation-focused platform. The shift underlines the increasing importance of applied research, startup ecosystems, and global scientific leadership in shaping India's future. Moreover, the reorganisation of oversight—placing ESTIC directly under the DST—resolves long-standing institutional conflicts, thereby streamlining governance and ensuring greater policy coherence.
- This transformation not only modernises the country's approach to scientific engagement but also reinforces India's ambition to become a global leader in science, technology, and innovation.

Blood Moon – September 7, 2025

- On **September 7, 2025**, a **blood moon**—a total lunar eclipse—will be visible across various parts of India. During this celestial event, the moon will appear **dark red or coppery**, owing to the Earth's shadow completely covering it.
- A blood moon occurs when the Earth moves directly between the sun and the moon, casting a shadow that blocks direct sunlight. However, light from the sun still reaches the moon after passing through the Earth's atmosphere, which scatters shorter wavelengths like blue and allows the longer red wavelengths to reach the moon. This phenomenon, known as **Rayleigh scattering**, gives the moon its distinctive reddish hue during the eclipse.
- The intensity of the colour depends on factors such as atmospheric dust, pollution, and volcanic activity. This eclipse will be visible across large geographical regions where the moon is above the horizon at the time of the event. The entire occurrence can last for several hours, depending on the alignment and positioning of celestial bodies.
- In addition to its astronomical significance, the blood moon offers insights into the Earth's atmospheric conditions and serves as an important tool for scientific outreach. Across cultures, it also holds spiritual and symbolic meanings, adding to its public appeal.

p47 Protein Identified as a Mechanical Chaperone

- A breakthrough study conducted at the S. N. Bose National Centre for Basic Sciences has revealed an unexpected function of the p47 protein, traditionally considered a secondary cofactor, as a mechanical chaperone.

Scientific Insight:

- p47, previously known only for supporting the p97 cellular machinery in protein trafficking and degradation, has now been observed to independently stabilize and guide polypeptides through narrow cellular pores under mechanical stress. This capability significantly reduces the risk of protein misfolding and enhances efficient protein translocation from the endoplasmic reticulum (ER) to the cytoplasm.
- This represents the first single-molecule evidence of a cofactor possessing autonomous, force-responsive chaperone-like activity. The discovery may pave the way for innovative therapies targeting protein misfolding disorders by focusing on mechanical cofactors like p47.

Methandienone Long-Term Metabolite: Strengthening Anti-Doping Infrastructure

India has achieved a scientific milestone by developing a high-purity Reference Material (RM) for Methandienone Long-Term Metabolite (LTM), a critical component in anti-doping efforts.

Development and Collaboration: The RM was developed by the National Institute of Pharmaceutical Education and Research (NIPER) in collaboration with the National Dope Testing Laboratory (NDTL). Reference Materials are essential for detecting banned substances, with this particular RM enhancing the ability to trace Methandienone, an anabolic steroid, in athletes.

Impact and Utility: This development will significantly bolster the country's doping detection capabilities, acting as a deterrent to athletes contemplating the use of prohibited substances. It strengthens India's commitment to fair play by supporting transparency and protecting clean athletes.

About NDTL: The National Dope Testing Laboratory is India's premier body for human sports dope testing. It is accredited by both the National Accreditation Board for Testing and Calibration Laboratories (NABL) and the World Anti-Doping Agency (WADA)

Intellectual Property Rights (IPR) Challenges in AI Development

- A recent lawsuit filed by authors against **Apple** for allegedly using their books to train its AI model has reignited debates surrounding **intellectual property rights** (IPR) in the context of **AI development**. The case highlights significant **legal and ethical challenges** regarding the use of copyrighted content for training AI systems.
- One major concern is the **unauthorised use of copyrighted materials** in machine learning datasets, which constitutes potential copyright infringement. At the same time, overly restrictive laws may hamper innovation by limiting access to data required for training AI systems. Another contentious issue is **authorship**—whether AI-generated content can be legally attributed to a non-human creator. For instance, **South Africa** granted a patent listing the AI system **DABUS** as the inventor, prompting global debate.
- Questions also persist around the **patentability** of AI-generated innovations, especially regarding **originality**. Technologies like **deepfakes** complicate matters further by blurring the lines between genuine and artificially generated content. Ethically, the rapid rise of AI challenges the **primacy of human creativity**, potentially diluting the value of intellectual human effort.
- India's **Copyright Act of 1957** currently recognises the human creator behind computer-generated works, but does not allow for authorship by non-human entities like software or AI. The **Parliamentary Standing Committee on IPR** has recommended introducing a **new category** for protecting AI-generated inventions and revisiting existing copyright and patent laws.
- Globally, countries like the **UK** and **New Zealand** already offer copyright protections for computer-generated works with no human author. There is a growing need to strike a balance between protecting original human expression and enabling innovation in AI, while also avoiding monopolistic control over AI-generated content.

Technology Perspective and Capability Roadmap (TPCR) 2025

- The **Ministry of Defence** has unveiled the **Technology Perspective and Capability Roadmap (TPCR) 2025**, a 15-year vision document aimed at guiding the Indian Armed Forces' long-term **modernisation and**

technology development strategies. The roadmap highlights the growing relevance of **indigenisation**, and serves as a directive for collaboration between the government, industry, and academia.

- TPCR 2025 builds upon its earlier editions (2013 and 2018) and emphasises **public-private partnerships** as essential to achieving defence self-reliance. The roadmap outlines the profound impact that emerging technologies such as **Artificial Intelligence (AI)**, **Machine Learning (ML)**, **Big Data**, **unmanned systems**, and **cyber warfare** will have on future military operations.
- The roadmap identifies several critical capability areas. These include:
  - **Autonomous AI-driven ground vehicles**, **deep fake detection software**, and **drone-based mine delivery systems**.
  - Advanced **remotely piloted aircraft systems** with stealth capabilities.
  - **Electronic warfare tools** such as **electronic denial bubbles**, **radiation detectors**, and **armoured amphibious dozers**.
  - **Nuclear deterrence** technologies and future-ready platforms across air, land, and sea.
  - **Naval modernisation**, featuring **next-generation corvettes**, **aircraft carriers**, and **nuclear propulsion systems**.

Key indigenisation initiatives include the **MAKE** programme, which comprises **Make-I (government funded)**, **Make-II (industry funded)**, and **Make-III** categories for technologies not developed domestically. Additionally, platforms like **iDEX (Innovation for Defence Excellence)** and the **Srijan Portal** are helping incubate innovation by enabling start-ups and MSMEs to contribute meaningfully to defence manufacturing.

Two-Factor Authentication (2FA): Fortifying the Digital Frontier

- Amid growing concerns over password security and the rise in cyberattacks, Two-Factor Authentication (2FA) has emerged as a critical defence mechanism for safeguarding digital identities. Platforms like Google Authenticator have widely adopted TOTP-based codes that refresh every 30 seconds, making unauthorized access nearly impossible.
- Two-Factor Authentication involves verifying user identity through two independent methods—typically something the user knows (like a password) and something the user possesses (such as a phone or authenticator app). The concept of multi-factor authentication dates back to security research in the 1980s. The TOTP standard—Time-based One-Time Password—was formalized in 2011 by the Internet Engineering Task Force (IETF) to ensure global interoperability.
- The goal of 2FA is to add an additional layer of security, reducing the likelihood of breaches caused by stolen or weak passwords. The system works by first requesting a password and then requiring a time-sensitive code generated by an app or hardware device. Both the app and the server must share a secret key, and use synchronized time-based counters to generate matching cryptographic codes.
- These codes typically remain valid for 30 seconds and are created using strong encryption standards such as HMAC-SHA256. 2FA can be implemented through authenticator apps (like Authy, Google Authenticator, or Microsoft Authenticator), hardware tokens (e.g., YubiKey), or even through SMS and push notifications.
- This layered security system protects against phishing, brute-force attacks, and data theft. It has become essential for secure banking, government portals, healthcare services, and corporate IT environments. In the context of India's growing digital infrastructure, 2FA is vital for the success of initiatives like Digital India, Aadhaar-based services, and overall cybersecurity governance.

Duchenne Muscular Dystrophy: A Rare but Devastating Genetic Disorder

- Every year on September 7th, the Ministry of Social Justice and Empowerment, Government of India, observes World Duchenne Muscular Dystrophy Day to

raise awareness about this debilitating condition.

- Duchenne Muscular Dystrophy (DMD) is a rare genetic disorder marked by progressive weakening and degeneration of muscles. The root cause lies in a mutation that disrupts the production of dystrophin, a crucial protein that shields muscle fibers from enzyme-induced breakdown. The absence or deficiency of this protein results in muscles becoming increasingly vulnerable, leading to steady deterioration.
- First identified in 1860 by French neurologist Guillaume Benjamin Amand Duchenne, the disorder is multi-systemic in nature. It doesn't only affect skeletal muscles but also compromises the functioning of the heart and lungs over time. Since the gene responsible for producing dystrophin is located on the X chromosome, DMD predominantly affects males, while females generally carry the mutation without showing symptoms.
- Symptoms typically begin to manifest between the ages of two and three, initially targeting proximal muscles—those located near the core of the body—before progressing to the distal muscles of the limbs. Early signs include difficulty in running, walking, and jumping, often accompanied by enlarged calf muscles, a waddling style of walking, and lumbar lordosis, which is an exaggerated inward curve of the spine.
- Current treatment strategies focus on slowing disease progression and improving quality of life. These include gene therapy approaches, exon skipping technologies, stop codon read-through techniques, and targeted gene repair. While no definitive cure exists, ongoing research offers hope for improved outcomes.

Russia's mRNA Vaccine "Enteromix" Achieves 100% Success in Preclinical Trials

Russia has developed a new mRNA-based vaccine named *Enteromix*, which has demonstrated 100% success during preclinical trials. The vaccine utilizes messenger RNA (mRNA) technology to stimulate targeted immune responses, specifically against cancer cells. Initially focused on colorectal cancer, *Enteromix* offers a fully personalized approach. Each dose is uniquely customized to the individual patient by analyzing specific tumor mutations through comprehensive profiling, making the treatment highly precise and tailored.

Understanding mRNA Vaccines

- Messenger RNA (mRNA) vaccines operate by using a small segment of mRNA to instruct human cells to produce a protein that mimics a component of a virus or, in this case, a tumor antigen. mRNA, or messenger Ribonucleic Acid, is a genetic molecule that acts as a set of biological instructions, guiding the body's cells to create proteins using the cell's own machinery.
- These vaccines deliver the mRNA—encapsulated within lipid nanoparticles—into the body. Once inside, the cells begin to produce proteins that resemble antigens from the targeted pathogen or abnormal tissue. For instance, in the case of COVID-19, the mRNA vaccine directed cells to replicate the coronavirus's outer spike protein. The immune system then recognizes these proteins as foreign, prompting the release of antibodies and T-cells, and effectively training the body to respond more swiftly and effectively to future exposure.

However, mRNA vaccines come with several challenges. One of the main issues is their strict storage requirements; they often need to be kept at ultra-cold temperatures, complicating large-scale distribution, particularly in low-resource settings. Short-term side effects such as fever, fatigue, and injection site soreness are also common. Moreover, since mRNA vaccine technology is still relatively new, long-term safety and efficacy continue to be studied.

India's Space Economy Projected to Grow Fivefold by 2033: CII-KPMG Report

- A recent report jointly published by the Confederation of Indian Industry (CII) and KPMG projects a dramatic expansion of India's space economy. It estimates that the sector will grow from USD 8.4 billion in 2022 to USD 44 billion by 2033. This growth is expected to be largely driven by satellite-enabled services and exports, significantly increasing India's share of

the global space economy—from the current 2% to an anticipated 8% over the next decade.

- The report identifies a shift in strategic focus within the space sector, emphasizing the monetization of downstream services. These include Earth Observation (EO), Satellite Communication, and Navigation, which are now being actively integrated into multiple sectors such as telecommunications, agriculture, disaster management, urban planning, and infrastructure monitoring.
- Several key drivers and enablers are highlighted as contributing to this anticipated growth. Chief among them is the burgeoning private sector, with nearly 200 startups spearheading innovation. Institutional reforms have also played a crucial role; for example, the Indian National Space Promotion and Authorization Centre (IN-SPACe) has been established to consolidate demand and streamline processes. Furthermore, the integration of space-based inputs with governance platforms, such as the Bhoonidhi portal, has created practical, real-world applications for space data.
- Despite these positive trends, the report outlines several challenges. One major limitation is the restricted global usability of India's regional navigation system, NavIC, which hampers its broader international application. The commercial market for EO data remains underdeveloped, with low enterprise awareness, minimal innovation, and fragmented demand. Additionally, private sector involvement is hampered by the high capital costs, lengthy incubation timelines, and unclear regulatory frameworks.
- Workforce shortages are also an issue, driven by mismatched skills and ongoing brain drain. Moreover, unresolved tax and regulatory uncertainties—such as those related to GST, digital taxation, and revenue sharing under Public-Private Partnerships—pose structural barriers to scaling up EO services. Security concerns and the increasing risk of space debris also emerge as critical issues in a rapidly expanding space economy.
- To address these hurdles, the Indian government has initiated several reforms and support mechanisms. The Indian Space Policy 2023 allows for full participation of Non-Governmental Entities in all space-related domains. NewSpace India Limited (NSIL), functioning as ISRO's commercial arm, has been tasked with promoting and marketing Indian space technologies. Additional measures include permitting 100% Foreign Direct Investment (FDI) in the space sector and the creation of a ₹1,000 crore Venture Capital Fund aimed at encouraging startups and private innovation.

Multi-Stage Malaria Vaccine AdFalciVax

- The Union government has authorized five Indian companies to manufacture and commercialize **AdFalciVax**, the country's first indigenous multi-stage malaria vaccine developed by the Indian Council of Medical Research (ICMR). This recombinant chimeric vaccine targets *Plasmodium falciparum*, the deadliest malaria parasite, and is designed to both prevent infection and block transmission.
- Developed by the ICMR Regional Medical Research Centre (RMRC) in Bhubaneswar, with support from the ICMR National Institute of Malaria Research (NIMR) and the National Institute of Immunology (NII), New Delhi, AdFalciVax aims to curb infection in individuals and reduce malaria transmission at the community level, thereby supporting India's malaria elimination objectives.
- The vaccine acts on the parasite before it enters the bloodstream, offering multi-stage protection that covers both infection and transmission phases. It is affordable, scalable, and stable, maintaining efficacy for over nine months at room temperature. It has been successfully validated through pre-clinical trials.
- The five firms licensed to produce AdFalciVax in 2025 include Indian Immunologicals Ltd, Techinvention Lifecare Pvt. Ltd, Panacea Biotec Ltd,

Biological E Ltd, and Zydus Lifesciences. India currently bears 1.4% of global malaria cases and accounts for 66% of Southeast Asia's malaria burden. The vaccine strengthens India's Atmanirbhar Bharat initiative in health research and development by indigenizing vaccine technology, reducing reliance on imports, and advancing the country's Malaria Elimination Goal for 2030.

NASA Discovers Potential Biosignatures on Mars: Sapphire Canyon and Cheyava Falls

Context:

- NASA's Perseverance rover has identified the strongest potential biosignatures found so far on Mars, discovered within a rock sample named Cheyava Falls, located in the Sapphire Canyon region.
- Sapphire Canyon is a rocky outcrop situated on the edge of the Neretva Vallis River valley, near the Jezero Crater on Mars. This feature was named by the Perseverance science team and includes the rock formation known as Cheyava Falls. The discovery and drilling of this rock sample took place in July 2024, with the sample securely stored in a sealed tube for future return to Earth.
- The rock is composed of clay, silt, organic carbon, sulphur, iron oxides, and phosphate—minerals and compounds considered ideal for preserving traces of ancient microbial life. The surface exhibits distinctive black mottling, described as resembling "poppy seeds," along with leopard-spot-like textures. These features may have formed due to chemical reactions between water and rock in Mars's past. Additionally, white calcium sulfate veins within the rock indicate historic water flow through the region. Instruments aboard Perseverance, specifically SHERLOC and PIXL, detected organic matter and phosphate, which are key constituents necessary for life.

Understanding Biosignatures:

A biosignature refers to any object, chemical, or structure that might have a biological origin—either formed or influenced by living organisms. The SHERLOC instrument onboard Perseverance detected organic carbon compounds and markers of electron-transfer reactions, which suggest possible microbial metabolism in ancient lake sediments. The combination of the minerals and unique structures found in the rock sample strengthens the hypothesis of past life on Mars. This discovery represents the closest evidence yet of life beyond Earth and bolsters support for the Mars Sample Return Mission, which aims to definitively confirm whether the observed biosignatures have biological or non-biological origins.

Light-Based Computers (Optical Computers)

Context:

Researchers at Tampere University in Finland and Université Marie et Louis Pasteur in France have demonstrated that intense light pulses traveling through optical fibers can perform artificial intelligence tasks faster and with significantly less energy consumption than traditional electronic computers.

What Are Light-Based (Optical) Computers?

- Optical computers utilize photons—particles of light—instead of electrons to process and transmit information. They hold the promise of ultra-fast, energy-efficient, and high-bandwidth computing, making them particularly suitable for applications involving artificial intelligence and big data processing.
- The recent advancement was achieved by teams at Tampere University and Université Marie et Louis Pasteur, who successfully demonstrated image recognition AI by sending light pulses through glass optical fibers.
- The process begins by converting input data, such as an image, into a light pulse. This pulse is then transmitted through an optical fiber where light exhibits a unique non-linear response. As the pulse travels, its characteristics—such as the color spectrum or "fingerprint"—change, effectively transforming the data. This altered light data is then decoded to produce an output, such as identifying a number within the image.
- The use of light offers tremendous speed advantages since photons travel faster than electrons, enabling near-instantaneous calculations. Optical computers generate significantly less heat

than silicon-based chips, which leads to substantial energy savings. Additionally, they can process multiple data streams simultaneously by exploiting different light wavelengths as separate channels. Experiments have shown image recognition accuracy rates between 91% and 93%. Performance is optimized by adjusting the length of the fiber and the strength of the light pulse.

- Potential uses include accelerating AI and machine learning tasks such as neural network training and real-time image recognition. They are also promising for energy-efficient supercomputing needed in climate modeling, genomics, and weather forecasting. In telecommunications, optical computers could enhance fiber-optic data processing and reduce latency. Furthermore, they have strategic value in defense and space sectors for high-speed data analysis in surveillance and satellite imaging.

Melioidosis: A Deadly but Underreported Disease Surfaces in Andhra Pradesh

- Health authorities in Andhra Pradesh have confirmed a case of **melioidosis** in Turakapalem village, raising public health concerns.
- Melioidosis is a potentially fatal disease caused by the Gram-negative bacterium **Burkholderia pseudomallei**, commonly found in soil and water in tropical regions. It is endemic in Southeast Asia, northern Australia, southern China, and parts of the Indian subcontinent. A large percentage of cases—between 75% and 85%—occur during the rainy season.
- Vulnerable populations include those with diabetes, alcohol dependency, chronic kidney disease, or lung disorders. Symptoms range from fever and respiratory distress to abdominal and chest pain.
- Transmission occurs through contact with contaminated soil (especially via cuts), inhalation of dust or droplets, and ingestion of unsafe water. Natural disasters like cyclones and monsoons can exacerbate exposure.
- Currently, **no vaccine** exists for melioidosis, making early diagnosis and antibiotic treatment essential to manage the disease and reduce its **case fatality rate**, which can range from 16% to 50%.

Permafrost: Ancient Frozen Ground Reveals Prehistoric Wolf in Siberia

- In a remarkable discovery, scientists in Siberia recently unearthed a 44,000-year-old wolf preserved almost entirely intact in permafrost. This finding sheds light on the long-term preservation capabilities of permafrost and its significance in climate and biodiversity studies.
- Permafrost refers to ground that has remained at or below 0°C (32°F) for at least two consecutive years. It is most commonly found in high-altitude regions and at the Earth's poles but can also exist beneath oceans and mountaintops. Thickness varies from a single meter to over 1,000 meters, with nearly one-fourth of the Northern Hemisphere's land area resting atop permafrost. In colder regions, the active layer—the upper soil that thaws in summer—is only 10 to 15 cm thick, whereas in warmer zones, it can extend several meters.
- Composed of a mix of soil, rock, sand, and ice, permafrost can remain frozen for hundreds of thousands of years. For example, the oldest known permafrost, also found in Siberia, has been frozen for about 650,000 years. Near the surface, it contains large amounts of organic carbon—dead plant matter that never decomposed due to the low temperatures. When thawed, this organic matter begins to decompose, releasing methane and carbon dioxide, thereby contributing to global warming.
- Thawing permafrost also poses risks to human infrastructure. As it melts, the ground becomes unstable, jeopardizing roads, pipelines, and buildings built atop it. This makes the study of permafrost vital for understanding climate change and planning sustainable development in permafrost regions.

Hellfire Missile: US Weaponry in the Spotlight After Mysterious Incident

- A recent viral video appearing to show a US Hellfire missile bouncing off a UFO near Yemen has captured widespread attention and disbelief in Washington. While the authenticity and implications of the footage are under scrutiny, it has reignited interest in the missile itself.
- The **AGM-114 Hellfire** is a subsonic, air-to-ground, laser-guided tactical missile, originally developed by the United States in 1972 to counter Soviet armored threats. It is now used by over 30 US allies and is deployed on a range of platforms including helicopters, fixed-wing aircraft, surface vessels, and UAVs such as the MQ-1 Predator, MQ-9 Reaper, and MQ-1C Grey Eagle.
- Hellfire missiles are highly precise and versatile, capable of neutralizing tanks, bunkers, and enemy aircraft. They are equipped with an 8 to 11 kg warhead and can travel at speeds up to Mach 1.3 (450 m/s) over distances of 7 to 11 km. Propelled by a solid-fuel rocket motor, the missile uses a semi-active laser guidance system.
- The latest iteration, the **AGM-114R** or Hellfire Romeo, consolidates the capabilities of previous variants. It features a blast-fragmentation sleeve warhead, making it effective against a broad range of targets. This variant continues to be a weapon of choice for both precision strikes and broader tactical operations.

World's First AI Minister Appointed in Albania

Context:

Albania has appointed the world's first artificial intelligence (AI) minister — an AI-generated bot named *Diella* — to oversee and manage public tenders for government projects. This move aims to enhance transparency, reduce corruption, and introduce AI governance into public administration.

Role of AI in Public Services and Governance:

AI can significantly boost the efficiency and objectivity of public service delivery. For instance, in healthcare, urban planning, and disaster relief, AI-enabled tools like the *RAHAT* app are already optimising relief operations and resource allocation. AI systems also reduce human bias in welfare distribution, automate public grievance redressal through platforms like *UMANG*, and enable real-time multilingual citizen engagement via tools such as *Bhashini*.

Challenges and Risks:

- Despite its advantages, AI governance presents significant challenges. Delegating decision-making to non-human agents can erode democratic accountability and transparency. For example, if an AI system incorrectly flags a beneficiary in a welfare program, it could disrupt access to vital services. Similarly, predictive policing systems in countries like the U.S. have been criticised for disproportionately targeting minority communities due to biased training data.
- Another concern is the opaque nature of AI systems—often termed "black boxes"—which limits public understanding of their decision-making processes. The absence of regulatory frameworks to assign liability for AI errors, along with data privacy concerns, further complicates its implementation. Therefore, while AI offers opportunities for better governance, it must operate under clear ethical, legal, and democratic oversight to ensure public trust and fairness.

INS Aravali: A Strategic Leap in India's Maritime Communication Infrastructure

- The Indian Navy has recently commissioned **INS Aravali**, a new naval base located in **Gurugram, Haryana**, marking a significant enhancement of its information and communication capabilities. Named after the ancient **Aravali mountain range**, this facility symbolizes strength, stability, and technological progression in naval operations.
- The establishment of INS Aravali reflects the Navy's emphasis on **advanced communication networks**, essential for strengthening **Maritime Domain Awareness (MDA)** and ensuring effective **command and control** across India's vast maritime zones. Guided by the motto

'Maritime Security through Collaboration', the base is built to serve as a hub for supporting and synchronizing naval information and communication centres.

- The facility is not merely a technological asset but also a **strategic tool** that embodies a spirit of cooperation. It will work in conjunction with other naval units, domestic MDA centres, and allied stakeholders to ensure a seamless exchange of information and enhanced situational awareness. The emblem of INS Aravali, featuring a central mountain and a rising sun, symbolises **steadfast resilience**, **eternal vigilance**, and the **dawn of cutting-edge communication technology** in India's maritime sphere.
- Further underscoring India's commitment to regional maritime security, the base aligns with the vision of **MAHASAGAR—Mutual and Holistic Advancement for Security and Growth Across Regions**. By enabling better inter-agency coordination, INS Aravali will play a critical role in safeguarding national interests, enhancing India's position as the **Preferred Security Partner in the Indian Ocean Region**, and advancing long-term maritime strategy.

Sarcoidosis: A Complex Immune Condition Under the Microscope

- A newly published peer-reviewed study offers an in-depth exploration of **sarcoidosis**, a disease characterised by the formation of **granulomas**, which are small clusters of immune cells surrounded by dense fibrous tissue. These granulomas result from the immune system's **overreaction to perceived threats**, although the exact triggers remain unclear.
- Sarcoidosis is most frequently found in the **lungs and lymph nodes**, but it can also affect the **skin, eyes, heart, and other organs**. The condition manifests variably—some patients experience mild symptoms, while others develop severe, chronic complications. **Symptoms** range from persistent **cough and shortness of breath** to **eye irritation** and **skin lesions**, with some cases progressing to **pulmonary fibrosis**, leading to **permanent lung damage**.
- While the precise cause is unknown, researchers believe it likely results from a **combination of genetic predisposition and environmental triggers**, such as **bacteria, viruses, dust, or chemicals**. These elements may provoke an exaggerated immune response in susceptible individuals, culminating in the characteristic granuloma formation.
- Treatment for sarcoidosis depends on its severity. Many cases resolve on their own without medical intervention. However, when treatment is necessary, it typically involves **immunosuppressive therapies** aimed at reducing inflammation. Although there is **no known cure**, most individuals manage to live normal lives, with regular monitoring and, in some cases, long-term treatment to prevent organ damage.

Red Ivy Plant Innovation: Blending Tradition with Nanotechnology for Wound Healing

- In a significant scientific breakthrough, researchers at JNTBGRI, Kerala, have developed an advanced wound-healing pad using the Red Ivy Plant, also known as Strobilanthes alternata or *Murikooti Pacha*. This innovation blends traditional ethnomedicinal knowledge with modern nanotechnology, resulting in a biodegradable, cost-effective solution for wound care.
- The red ivy plant, a sprawling vine with red-green leaves, is native to tropical regions of India, Sri Lanka, and Southeast Asia, thriving particularly well in the Western Ghats. Traditionally, it has been used by indigenous communities to treat cuts, bruises, and skin infections. The scientific team successfully isolated acteoside, a powerful bioactive compound from the plant, which exhibits antioxidant, anti-inflammatory, and antimicrobial properties.
- This is the first recorded scientific isolation of acteoside from the red ivy plant, establishing the basis for its application in wound healing. The newly developed wound pad is effective at very low concentrations (0.2%), making it both economically viable and scalable for widespread use. The innovation underscores the potential of combining traditional

medicinal plants with modern biomedical engineering to create accessible healthcare solutions.

AI-Powered Weather Forecasting: Empowering Farmers with Precision Advisory

- In a groundbreaking initiative, the Ministry of Agriculture and Farmers' Welfare (MoAFW) launched India's first AI-powered monsoon forecasting system, delivering SMS-based weather advisories to 3.8 crore farmers across 13 states. This pioneering initiative is designed to assist farmers in Kharif crop planning, enhance climate resilience, and mitigate the risks associated with monsoon variability.
- The system is developed in collaboration with Development Innovation Lab – India and Precision Development, and integrates advanced forecasting tools such as the Google Neural Global Climate Model (GCM) and ECMWF's Artificial Intelligence Forecasting System (AIFS). These models provide four-week advance forecasts with significantly higher accuracy than traditional methods, enabling proactive decision-making.
- Utilizing the m-Kisan SMS platform, the initiative disseminates personalized, localized, and region-specific advisories in farmer-friendly language, making the information accessible and actionable. The advisories offer early warnings about monsoon onset, help farmers in planning sowing and irrigation schedules, and provide decision support for choosing the right crops and inputs, thereby minimizing input wastage and optimizing productivity.
- The system demonstrated real-time accuracy in 2025 by correctly identifying a 20-day monsoon stall, a critical variable for timely agricultural interventions. With weekly updates and potential scalability to Rabi season, this innovation marks a major leap in climate-smart agriculture.
- Beyond its immediate benefits, the initiative has broader implications for food security, economic growth, and technological leadership, positioning India at the forefront of AI-enabled agri-advisory services.

Zircon Missile

- Russia recently announced it had launched a Zircon (Tsirkon) hypersonic cruise missile at a target in the Barents Sea, underscoring its advancing military capabilities.
- The 3M22 Zircon, also known by its NATO code designation SS-N-33, is a scramjet-powered hypersonic cruise missile developed by Russia. Initially designed for targeting naval vessels, it has since been adapted to include land-attack functions, making it a versatile tool for precision strikes. The missile entered service in 2022 and was first deployed on Project 22350 Admiral Gorshkov-class frigates.
- The Zircon missile measures approximately nine meters (30 feet) in length with a diameter of about 60 centimeters (24 inches), and weighs between 3,000 and 4,000 kilograms (3–4 tons). It features a two-stage propulsion system: a solid-fuel booster engine that accelerates the missile to supersonic speeds, followed by a scramjet engine powered by liquid fuel that propels it to hypersonic velocities, reaching speeds of up to Mach 9. This extreme speed makes the missile exceptionally difficult to intercept.
- The missile's operational range is estimated at 400–450 kilometers (250–280 miles) when flying at low altitudes, which can extend to approximately 1,000 kilometers (620 miles) when following a semi-ballistic trajectory. It can carry either conventional or nuclear warheads, adding to its strategic flexibility.
- Guidance systems include inertial navigation, radar homing, and a feature known as plasma stealth. During hypersonic flight, the missile generates a plasma cloud around itself that absorbs radio waves, significantly reducing its radar detectability.

INS Trikand

- The Indian Naval Ship (INS) Trikand recently led the maiden bilateral maritime exercise between India and Greece, calling at Salamis Bay, Greece, during its ongoing deployment to the Mediterranean Sea.

- INS Trikand is a Talwar-class guided-missile frigate serving with the Indian Navy. It is the third and final ship of the second batch of Talwar-class frigates procured by India. The vessel was built by the Yantar shipyard in Kaliningrad, Russia, and was commissioned into the Indian Navy on June 29, 2013, at Kaliningrad.
- The ship operates under the Indian Navy's Western Fleet, which is commanded by the Western Naval Command headquartered in Mumbai.
- INS Trikand is equipped with a sophisticated combat suite that includes the supersonic BRAHMOS missile system, advanced surface-to-air missiles such as Shtil, an upgraded A190 medium-range gun, an electro-optical 30 mm close-in weapon system, and anti-submarine weapons including torpedoes and rockets. Its electronic warfare capabilities are advanced, supported by the Combat Management System 'Trebovanie-M,' which allows the ship to detect and neutralize multiple threats simultaneously from surface, subsurface, and aerial domains.
- Powered by four gas turbines, INS Trikand can achieve speeds exceeding 30 knots and is capable of carrying a Kamov 31 helicopter. The ship has a crew complement of around 300 personnel, including officers.

International Electrotechnical Commission (IEC)

India is set to host the 89th General Meeting (GM) of the International Electrotechnical Commission from September 15 to 19, 2025. The event will take place at Bharat Mandapam in New Delhi.

About the International Electrotechnical Commission

- The IEC is a nonprofit organization founded in 1906 that develops and publishes international standards covering all electrical, electronic, and related technologies. Its mission centers on fostering international cooperation among member countries on matters of electrotechnical standardization and associated issues. IEC standards are developed through a consensus-driven process involving experts from participating nations and serve as the foundation for harmonizing technical requirements globally, reaching over 150 countries.
- The IEC is governed by the Standardization Management Board (SMB), its highest policy-making body for technical standards. It collaborates closely with other standard-setting organizations like the International Organization for Standardization (ISO) and the International Telecommunication Union (ITU). With a network of approximately 30,000 experts worldwide, the IEC is the premier body for developing standards related to electrical and electronic technologies.
- India will host the IEC General Meeting for the fourth time, having previously hosted it in 1960, 1997, and 2013. The IEC's headquarters is located in Geneva, Switzerland.

INS Androth

The Indian Navy recently inducted the second indigenously constructed anti-submarine warfare shallow watercraft (ASW-SWC), named INS Androth.

About INS Androth

Named after Androth Island in the Lakshadweep archipelago, INS Androth is the second of eight ASW-SWCs built by Garden Reach Shipbuilders and Engineers (GRSE) in Kolkata. The vessel is designed and constructed according to the Indian Register of Shipping (IRS) classification rules, showcasing India's growing indigenous shipbuilding capabilities.

Features

- Measuring about 77 meters in length, INS Androth is the largest warship built indigenously for the Indian Navy. It is powered by a diesel engine coupled with a waterjet propulsion system, providing high speeds and excellent maneuverability in shallow waters. The ship is armed with lightweight torpedoes, indigenous ASW rockets, and advanced shallow-water sonar systems, enabling effective detection and engagement of submarines in littoral zones.

- INS Androth significantly enhances the Indian Navy's anti-submarine warfare, coastal surveillance, and mine-laying capabilities. Over 80% of its components are domestically sourced, reflecting a reduction in import dependence.

CCMB's Discovery on White Blood Cell Adaptation

- Researchers at the **Centre for Cellular and Molecular Biology (CCMB)** in Hyderabad have made a breakthrough discovery regarding how **white blood cells (WBCs)** adapt their internal skeletons to fight pathogens. This research sheds new light on the immune system's dynamic capabilities and could have major implications for developing new therapeutic strategies in immunology and infectious disease management.
- The **CCMB**, a premier institution under the **Council of Scientific and Industrial Research (CSIR)** and the Ministry of Science and Technology, was established in 1977. It is recognised globally for its research excellence in molecular biology and cellular mechanisms.
- Located in Hyderabad, Telangana, CCMB conducts cutting-edge research across various domains including genetics, immunology, biotechnology, molecular medicine, and bioinformatics. Its work is both fundamental and translational, with applications in medical research, agriculture, and environmental sustainability.
- The centre is equipped with state-of-the-art facilities such as high-throughput genomic platforms and a bioinformatics hub. As a designated "Centre of Excellence" by the **Global Molecular and Cell Biology Network, UNESCO**, CCMB also offers extensive training and collaborates with international institutions to advance scientific innovation.

Polypropylene

- The Prime Minister of India recently laid the foundation stone for a **polypropylene (PP) plant** at **Numaligarh Refinery Limited (NRL)** in Golaghat, Assam. This initiative is expected to boost regional industrial development and support India's goal of self-reliance in petrochemicals.
- **Polypropylene** is a **thermoplastic polymer** formed through the addition polymerisation of propylene. It belongs to the polyolefin family and is known for its versatility, light weight, flexibility, and resistance to heat and chemical corrosion. These qualities make it ideal for packaging, consumer goods, medical equipment, and electrical insulation.
- Its properties include high flammability, low density, and excellent insulating capabilities. Due to its resistance to chemical and biological degradation, polypropylene is widely used in the manufacture of cleaning product containers, electrical casings, and plastic packaging materials.

Hand, Foot, and Mouth Disease (HFMD)

- A rapid spread of Hand, Foot, and Mouth Disease has been reported among children in Delhi and nearby regions of Haryana. This has prompted advisories from healthcare professionals and educational institutions.
- **Understanding HFMD:** Hand, Foot, and Mouth Disease is a highly contagious viral illness, named for the blister-like rash on the hands and feet, and painful sores in the mouth. Although the rash may appear anywhere on the body—including the back, chest, genitals, arms, and buttocks—it typically affects children under the age of five. Adult cases are rare but not impossible. This disease often spreads quickly in daycare settings and schools. Caused by several viruses, HFMD can recur in the same individual. It should not be confused with foot-and-mouth disease in livestock, as the two are unrelated and caused by entirely different viruses. Humans cannot contract the animal disease, nor can animals contract HFMD from humans.
- **Transmission and Symptoms:** HFMD spreads easily via contact with contaminated surfaces or fluids—such as saliva, nasal mucus, blister fluid, feces, or unwashed hands. Common symptoms include fever, sore throat, blistering mouth sores, and a rash on the hands and feet. Although complications are rare, the

disease can cause discomfort and inconvenience.

- **Treatment and Recovery:** There is no specific cure or vaccine for HFMD. Most people recover within 7 to 10 days with minimal medical intervention. However, children under two may take slightly longer to clear the infection.

Ion Chromatography

- Scientists have recently developed a method for conducting ion chromatography in field settings, marking a significant step forward in real-time analysis.
- Ion Chromatography (IC), also known as ion exchange chromatography, is a highly precise analytical technique used for separating and quantifying ions in a sample. It works by exploiting the varying affinities of ions to an ion-exchange resin. The technique can be divided into two primary types: cation exchange and anion exchange.
- IC enables the detection of major anions such as fluoride, nitrate, nitrite, sulfate, and chloride, as well as cations like sodium, potassium, calcium, magnesium, lithium, and ammonium, often at parts-per-billion levels. It can also be used to identify concentrations of organic acids.
- Ion chromatography involves passing a sample through a pressurized column containing a resin. Ions in the sample bind to the resin, and as an eluent is introduced, they are separated based on their individual retention times. These measurements reveal the concentrations of specific ions in the sample.
- This technology is widely used in environmental science, particularly for analyzing drinking water and aquatic ecosystems. It also has applications in food chemistry—such as determining sugar or salt content—and in the isolation of specific proteins for biomedical research.

Global Innovation Index (GII) 2025

- **Context:** The World Intellectual Property Organization (WIPO) released the Global Innovation Index (GII) 2025, assessing 139 economies based on technological progress, investments, adoption patterns, and socioeconomic outcomes.
- **India's Performance:** India has climbed to the **38th position**, a dramatic improvement from **81st in 2015**. Alongside Vietnam, India is among the longest-standing overperformers, exceeding expectations for its development level for 15 consecutive years. Major Indian innovation hubs — Bengaluru (21st), Delhi (26th), Mumbai (46th), and Chennai (84th) — rank among the world's top 100 clusters.
- **Top Performers:** Switzerland leads the rankings, followed by Sweden, the USA, South Korea, and Singapore. Innovation clusters such as Shenzhen–Hong Kong–Guangzhou, Tokyo–Yokohama, and San Jose–San Francisco dominate globally.
- **India's Innovation Framework:** Flagship initiatives like **Startup India**, **Atal Innovation Mission**, **NIDHI**, and **AGNIi** are driving grassroots and high-end innovation. These are supported by schemes such as the Prime Minister's Research Fellowship and NITI Aayog's tech platforms.
- **Innovation Metrics:** India leads the world in **ICT services exports** and ranks **3rd in domestic market scale**, **4th in late-stage VC deals**, **8th in intangible asset intensity**, and **11th in unicorn valuations**. It has improved in creative output (rising from 49th in 2023 to 42nd in 2025) and maintains a high output-to-input efficiency ratio in innovation.

Meta Display Smart Glasses: Redefining Wearable AR Technology

Context:

- At the **Meta Connect 2025** event, Meta unveiled the first-ever **Ray-Ban smart glasses** with an integrated **augmented reality (AR) display**, marking a significant leap in wearable technology and mainstream AR adoption.
- Meta's latest innovation is a **wearable AR device** embedded within stylish eyeglasses. The glasses project **digital content—including text, images, and videos—directly onto the lens**, allowing users to see virtual information overlaid

on their real-world environment. This makes the Ray-Ban Display the first widely available AR glasses with a built-in display since the days of Google Glass.

- These glasses operate via a **micro-display system** that beams a bright, compact image onto the inside of the right lens, positioned just below the user's line of sight. An array of **sensors and cameras** captures environmental data, enabling context-aware AR overlays. Built-in **processors render content in real time**, while **Bluetooth connectivity** allows seamless linking with smartphones for access to data, messaging, and calls. The device is controlled through a **touch-sensitive panel on the temple arms**, **voice commands**, and an innovative **neural wristband** that detects finger gestures for intuitive input.
- The smart glasses boast a **Heads-Up Display (HUD)** that presents floating text and images for directions, live translations, and call notifications. Integrated with **Meta AI**, users can ask questions and receive multimodal responses—both visual and textual. Real-time features include **conversation captioning, translation, video calling**, and **AR navigation guidance**. Media functionality includes **photo and video capture**, with seamless sharing across **WhatsApp, Instagram, and Messenger**. Battery performance supports up to **6 hours of active use**, extendable to **30 hours** via the portable charging case. **Privacy safeguards** include a visible **LED indicator** whenever the camera is active.
- Meta Display Smart Glasses offer practical utility across various domains: In **navigation and travel**, users receive turn-by-turn walking directions and contextual landmark information. For **communication**, features like live captions and hands-free video calls enhance accessibility. In **education and training**, AR overlays provide real-time guidance and immersive learning environments. **Enterprise users** can leverage the glasses for field service, technical assistance, and remote collaboration. The **fitness and sports** segment benefits from integrations with Garmin, offering real-time pace tracking, heart rate monitoring, and data logging. **Entertainment** applications include AR gaming and virtual screen content viewing.
- Despite their innovation, these glasses face several constraints. The **battery life**, capped at roughly 6 hours for active use, necessitates frequent recharging for continuous performance. **Privacy concerns** are prevalent, especially around public camera use and surveillance implications. Functionality is heavily reliant on **constant connectivity** to a smartphone and internet access. Furthermore, there are **distraction risks**, particularly while driving or in situations requiring full cognitive attention.

Reinforcement Learning (RL): A Trial-and-Error Path to Smarter AI

- In a recent publication, DeepSeek-AI revealed that its model, *R1*, developed novel reasoning skills using *Reinforcement Learning* (RL), a method grounded in trial and error driven by feedback.
- Reinforcement Learning is a sub-discipline of machine learning where an AI agent learns to act in a dynamic environment by continuously interacting with it and receiving feedback in the form of rewards or punishments. Unlike supervised learning, RL involves no direct instructions. The agent relies solely on the environment's responses to determine the best course of action that maximizes cumulative reward.
- The agent processes information about the current state of the environment and selects an action. If this action results in a positive reward, the agent is more likely to repeat it under similar circumstances. Over time, this cycle enables the system to make optimal decisions. The RL framework is comprised of four key components: the **agent** (decision-maker), the **environment** (external system), the **actions** (available choices), and the **rewards** (feedback received after actions).

- This learning model is particularly effective in solving sequential decision-making problems in uncertain environments, making it a promising tool for advancing artificial intelligence.

NE-SPARKS: North East's Window to Space Exploration

- The NE-SPARKS initiative—*North East Students' Programme for Awareness, Reach, and Knowledge on Space*—has been launched to cultivate scientific curiosity and interest in space technology among school students from India's northeastern region.
- Supported by the Ministry of Development of North Eastern Region (MDoNER) and the governments of the eight northeastern states, the programme enables 800 meritorious science students (100 from each state) to visit ISRO centres in Bengaluru. These visits offer students direct exposure to India's advancements in space research, helping bridge the geographic and informational gap between the northeast and the country's scientific institutions.
- Funded in a 60:40 ratio by the central and state governments respectively, NE-SPARKS aims to promote STEM (Science, Technology, Engineering, and Mathematics) education while fostering a culture of innovation among youth.

Fentanyl: A Deadly Synthetic Opioid

- The United States recently revoked visas for certain Indian business figures accused of involvement in trafficking fentanyl precursor chemicals.
- Fentanyl is a synthetic opioid, originally developed for medical use to treat severe pain, particularly in post-surgical or cancer patients. It is approximately 100 times more potent than morphine and 50 times stronger than heroin. When misused, even in minuscule amounts, fentanyl can cause fatal overdoses, making it one of the leading causes of opioid-related deaths globally.
- Its synthetic nature allows it to be cheaply produced in labs, making it a favoured substance among illegal drug manufacturers. Like other opioids—such as morphine, codeine, and oxycodone—fentanyl acts on the central nervous system to relieve pain but also induces euphoria, sedation, and dependency. Repeated use alters brain activity, leading to addiction and long-term health issues.

INS Rajali: Strategic Hub for Maritime Surveillance

- INS Rajali, one of India's most significant naval air stations, recently hosted a two-day seminar focused on Long-Range Maritime Reconnaissance (LRMR), organised under the Indian Navy's Eastern Naval Command. This event highlighted India's expanding maritime responsibilities and the country's growing surveillance capabilities across the Indian Ocean region.
- Situated near Arakkonam in Tamil Nadu, INS Rajali was commissioned on March 11, 1992. The base derives its name from 'Rajali', an aggressive bird of prey from the hawk family that is native to the coastal regions of Tamil Nadu. Spanning an area of 2,200 acres and located approximately 80 km west of Chennai, INS Rajali holds the distinction of being the most modern and largest naval air station in India. It currently houses a garrison strength of 4,700 personnel and plays a dual role in naval operations and training.
- Operating under the Eastern Naval Command, INS Rajali is also home to the longest military runway in Asia. The station hosts the Indian Navy's INAS 312 squadron, which plays a crucial role in maritime reconnaissance and anti-submarine warfare using the advanced P8I aircraft.
- The base also operates MQ-9B Sea Guardian drones, extending the navy's surveillance range and operational endurance across the vast Indian Ocean. In addition to its surveillance role, INS Rajali also houses the Indian Navy's Helicopter Training School, further cementing its strategic and training importance.

Chirality and Perovskite Materials: A Breakthrough in Material Science

- Recent research has made significant progress in understanding how **chiral perovskite materials** crystallize, a development that opens up possibilities for creating **phase-pure chiral perovskite films** and **high-performance optoelectronic devices**.
- **Chirality** refers to the property of an object being **non-superimposable on its mirror image**—a concept present in nature at all scales, from spiral galaxies to DNA molecules. In **materials science**, chirality plays a vital role in facilitating **unique light–matter interactions**, including the manipulation of **electron spin** and the detection of **circularly polarized light**. These properties make chiral materials valuable in fields such as **quantum optoelectronics**, **advanced sensing technologies**, and **spintronics**.
- For example, chiral materials can distinguish between **left- and right-handed circularly polarized light**, allowing them to selectively influence **electron spin orientation**. Such characteristics are crucial for building next-generation devices like **CPL detectors**, **spintronic components**, and **neuromorphic photonic synapses**.
- Traditionally, the focus in this field has been on **organic chiral materials**, which interact well with light but suffer from **poor electrical conductivity**, limiting their integration into optoelectronic systems. **Halide perovskites**, however, offer a powerful alternative by combining **robust optical behavior** with **efficient charge transport**. When integrated with chiral organic molecules, these materials form **low-dimensional chiral perovskites** that are both **functionally versatile** and **structurally stable**.
- A persistent challenge has been the difficulty of producing **high-quality chiral perovskite films**, which requires precise control over the **crystallization process**—a process that has until now remained poorly understood. The latest findings address this knowledge gap, potentially transforming the future of **optoelectronic material design**.

Adamya Fast Patrol Vessel: Boosting India's Maritime Security

- The **Indian Coast Guard** recently commissioned the **Adamya**, a fast patrol vessel, at **Paradip Port**. This marks the induction of the **first ship** in the new series of eight **Adamya-class Fast Patrol Vessels (FPVs)**.
- The name "Adamya", meaning **"indomitable"**, reflects the Indian Coast Guard's enduring commitment to ensuring secure, clean, and safe maritime environments that serve India's strategic interests. The vessel has been **designed and built indigenously** by **Goa Shipyard Limited**, aligning with the national objective of self-reliance in defence manufacturing.
- With an approximate displacement of **320 tons**, Adamya is powered by **two 3000 KW diesel engines**, enabling it to achieve speeds of up to **28 knots** and an endurance of **1500 nautical miles** at economical cruising speeds. It is the **first vessel** equipped with **indigenously developed Controllable Pitch Propellers and gearboxes**, enhancing both manoeuvrability and operational flexibility.
- Its arsenal includes a **30 mm CRN 91 gun** and **two 12.7 mm Stabilized Remote-Controlled Machine Guns**, integrated with **advanced fire control systems**. The vessel also boasts modern features such as an **Integrated Bridge System**, **Integrated Platform Management System**, and **Automated Power Management System**, contributing to higher levels of **operational efficiency and automation**.

World's First AI-Designed Viral Genome Successfully Created

Context:

On September 20, 2025, researchers from Stanford University and the Arc Institute achieved a major scientific milestone by designing the first-ever functioning viral genome entirely with the assistance of artificial intelligence.

- **Achievement Details:** Using advanced AI tools, scientists developed viable viral genomes capable of infecting and destroying antibiotic-resistant bacteria. This was done by re-engineering a small bacteriophage known as ΦX174, which naturally targets *Escherichia coli* (E. coli).
- **Methodology:** The project employed the Evo AI genomic model, which allowed researchers to redesign the virus's genome sequence in a coherent and functional manner, resulting in a custom bacteriophage.
- **Applications in Biosciences:** AI's role in biosciences is rapidly expanding. In biotechnology and medicine, it holds the promise of accelerating drug and vaccine development. In bacterial control, tailor-made viruses could be used to combat drug-resistant strains. Synthetic biology may benefit from AI-driven designs in creating biofuels, biodegradable materials, and engineered microbes. In research, AI opens up new possibilities for understanding gene functions, interactions, and evolutionary patterns. For instance, DeepMind's AlphaFold solved the long-standing challenge of predicting protein structures.
- **Concerns and Risks:** Despite its potential, the use of AI in genetic engineering raises serious issues. There are dual-use risks, where such technologies could be misused to create dangerous pathogens or biological weapons. Biosafety concerns persist around potential accidental releases. The lack of international regulations introduces ethical and legal uncertainties. Furthermore, an over-reliance on AI could diminish human oversight, increasing the margin for critical errors.

'Androth': Indian Navy's New Anti-Submarine Shallow Water Craft

- The Indian Navy has recently inducted **'Androth'**, the second vessel in the series of **Anti-Submarine Warfare Shallow Water Craft (ASW-SWC)**, built by **Garden Reach Shipbuilders and Engineers (GRSE)** in Kolkata. This marks a strategic addition to India's maritime defence capabilities.
- Designed specifically for **shallow water operations**, Androth will be deployed for **coastal security and submarine patrols**, particularly around sensitive maritime zones like the **Lakshadweep archipelago** and other critical sea routes.
- With a length of approximately **77 metres**, Androth ranks among the **largest shallow-water naval vessels**. It is equipped with **indigenous lightweight torpedoes**, **anti-submarine rockets**, and advanced **sonar and sensor systems**. Its **diesel engine–waterjet propulsion** ensures excellent **manoeuvrability**, making it ideal for littoral environments.
- Over **80% of its components are indigenously manufactured**, reinforcing the government's **'Aatmanirbhar Bharat'** mission to boost domestic defence production and reduce reliance on imports.

Supercomputers vs Normal Computers

- Germany has recently inaugurated JUPITER, Europe's first exascale supercomputer, highlighting the intensifying global race in developing ultra-fast and energy-efficient computing infrastructure. This development has cast fresh attention on India's National Supercomputing Mission, particularly its PARAM and AIRAWAT series.
- Normal computers are intended for daily tasks such as web browsing, office productivity, multimedia consumption, and gaming. In contrast, supercomputers are designed for high-performance computing applications that involve solving extremely complex, data-intensive problems, including weather forecasting, nuclear research, and artificial intelligence model training.

Aspect	Normal Computers	Supercomputers
Processing Power	Billions of operations per second (GFLOPS)	Quintillions per second (ExaFLOPS); years of work done in hours

Architecture	1–16 CPU cores	Thousands to millions of CPUs/GPUs in parallel
Memory & Storage	GB–TB scale	Petabyte-level with parallel file systems
Networking	Ethernet/Wi-Fi	High-speed interconnects like InfiniBand
Cooling & Power	Small fans, low power consumption	Liquid or immersion cooling, power usage comparable to small towns
Access & Use	Personal and direct use	Accessed remotely via job schedulers for scientific research

China Activates JUNO: The World's Largest Neutrino Detector

- China has officially launched the Jiangmen Underground Neutrino Observatory (JUNO), now the world's largest neutrino detector. Situated 700 metres beneath the Earth's surface, the underground location helps block other interfering particles, such as muons, allowing more accurate detection of elusive neutrinos.
- JUNO aims to address two major scientific questions: determining the mass hierarchy of neutrinos and measuring their oscillation frequency. Neutrinos exist in three types—electron, muon, and tau—each corresponding to a different fundamental particle. These types are known to oscillate or shift from one form to another, and understanding the frequency of this phenomenon is one of the observatory's primary objectives.
- Neutrinos are often referred to as ghost particles due to their extremely elusive nature. They possess no electric charge, have negligible mass, and are infinitesimally small. Despite being the second most abundant particles in the universe (after photons), their detection is challenging because they interact only through the weak nuclear force and gravity. Neutrinos travel in straight paths, are unaffected by magnetic fields, and move at nearly the speed of light.
- Other major neutrino research facilities around the world include the India-based Neutrino Observatory (INO), located in the Bodi West Hills of Tamil Nadu and jointly funded by India's Department of Atomic Energy (DAE) and Department of Science and Technology (DST). The IceCube Neutrino Observatory in Antarctica is another key installation, designed to study cosmic phenomena from deep within the South Pole ice. Additional observatories include China's TRIDENT (Tropical Deep-sea Neutrino Telescope) and the United States' DUNE (Deep Underground Neutrino Experiment).

Sarcophagus Discovery in Tamil Nadu

- A landmark archaeological discovery has been made in Tamil Nadu, where AMS radiocarbon dating has been conducted for the first time on a terracotta sarcophagus excavated at Kilnamandi in the Tiruvannamalai district. The dating places the artifact around 1692 BCE, aligning it with the Late Harappan period.
- The sarcophagus, a type of burial container, contained grave goods including charcoal, iron implements, pottery, and carnelian beads etched in a style associated with regions like Gujarat and Maharashtra. This suggests active trade between southern India and Harappan regions.
- Graffiti found on the sarcophagus includes forked symbols, concentric U-shaped motifs, and wavering vertical lines—patterns bearing approximately 90% similarity with Indus Valley symbols. The graffiti's limited distribution across certain burials implies a clan-based identity system.
- The excavation also uncovered iron spears of 7–8 feet, collective urn burials in stone slab enclosures, and bronze objects with a high tin content—indicative of a complex, socially stratified society in ancient Tamilakam.

- This discovery significantly alters our understanding of early trade networks, pushing back the timeline for Tamil Nadu's graffiti tradition to the 17th century BCE and highlighting cultural connections with the northern Harappan civilization.

Protecting India's Satellites: Strategic Imperatives and Emerging Solutions

Context

India has recently approved a ₹27,000-crore programme aimed at launching 52 surveillance satellites starting in 2026. In response to growing threats and close-call incidents in space, India is also exploring the deployment of "bodyguard satellites"—a strategic move intended to shield critical space infrastructure from external dangers.

The Urgent Need to Safeguard Satellites

Satellites as Critical Infrastructure

India's satellites serve as the foundational framework for multiple essential functions—ranging from communication, weather forecasting, internet connectivity, and navigation (through NavIC), to national defence and surveillance. Their role in enabling both economic operations and strategic security makes them indispensable to national interests.

Multiple Threat Vectors

Satellites in orbit face a wide spectrum of risks:

- Space debris and accidental collisions pose mechanical threats.
- Hostile manoeuvres by adversarial satellites can lead to intentional disruption.
- Jamming and spoofing techniques threaten signal integrity.
- Cyber intrusions can compromise control systems.
- Natural phenomena such as solar storms and coronal mass ejections can disable or permanently damage satellite electronics.

High Financial Stakes

With the cost of launching and maintaining satellites running into billions, protecting them is vital to ensuring a return on investment. Beyond monetary value, safeguarding satellites upholds India's strategic autonomy in space.

Initiatives Already Undertaken

- **Indian Space Situational Awareness (IS4OM) Centre – Bengaluru:** This facility monitors Indian satellites, issuing alerts on potential collisions. It enables timely manoeuvres that help avoid catastrophic accidents.
- **Project NETRA (Network for Space Object Tracking and Analysis):** NETRA aims to build indigenous space situational awareness capabilities using a combination of radars and optical telescopes. It is instrumental in detecting threats and tracking both space debris and satellites.
- **Aditya-L1 Mission:** Designed to study solar activity, Aditya-L1 forecasts solar storms and coronal mass ejections, offering early warnings that can prevent satellite damage and prolong their operational life.
- **CERT-In Cybersecurity Guidelines (2025):** These guidelines mandate robust cybersecurity for space assets, including strong encryption, network segmentation, and strict cyber hygiene protocols to mitigate the risk of satellite hacking.
- **IN-SPACe Licensing Framework:** Through the Indian National Space Promotion and Authorisation Centre, private space firms are required to follow safety and security standards. This ensures that the increasing commercialisation of space adheres to national security priorities.
- **Debris-Free Space Mission by 2030:** At the IADC 2024, India pledged to avoid creating new space debris and to adopt sustainable practices for orbital operations, reinforcing its commitment to responsible space behaviour.
- **Concept and Function of Bodyguard Satellites:** India is considering the deployment of **bodyguard satellites**—dedicated orbital companions designed to **escort and protect** high-value satellites from external threats.

These advanced platforms serve multiple functions:

- **Monitoring Proximity**: Constantly scan surrounding space to detect close approaches by foreign satellites or debris.
- **Threat Detection**: Identify suspicious activities such as shadowing or aggressive proximity operations by rival spacecraft.

- **Collision Avoidance**: Actively manoeuvre to reposition themselves or the protected satellite to avoid physical contact or signal jamming.
- **Alignment with Global Trends**: This initiative aligns India with major space-faring nations that are developing proximity and escort satellites as part of their national security doctrines.

Key Challenges in Implementation

- **Technological Barriers:** Developing bodyguard satellites demands mastery of advanced sensor systems, AI-based autonomous decision-making, and precise orbital manoeuvring—areas where India is still building capacity.
- **Financial Commitment:** The cost of research, development, and deployment of such satellites is substantial, necessitating a long-term, stable investment strategy.
- **Cybersecurity Vulnerabilities:** Ground control systems and user terminals continue to be soft targets for cyberattacks. Without robust defences, even advanced satellites remain exposed.
- **Geopolitical Sensitivities:** The deployment of defensive satellites, while intended to protect, may be perceived as a step toward space militarisation. This could lead to mistrust among global powers and potentially escalate tensions or spark an arms race in outer space.
- **Sustainability Concerns:** Adding escort satellites into already crowded orbital paths must be managed carefully to avoid worsening space congestion and debris risks.

Strategic Way Forward

1. **Invest in Indigenous Space Situational Awareness (SSA) Technologies:** India must accelerate the development of LiDAR-equipped satellites and high-resolution radar systems that can autonomously detect and track orbital threats.
2. **Develop Resilient Anti-Jamming and Signal Protection Systems:** Focus on creating encrypted, hardened waveforms and self-correcting autonomous systems to safeguard satellite communication from jamming and spoofing.
3. **Encourage Public–Private Collaboration:** India's vibrant private space sector and start-up ecosystem can be leveraged to innovate cost-effective, scalable solutions for satellite protection, reducing reliance on solely state-led development.
4. **Engage Actively in Global Governance Platforms:** Participation in multilateral bodies such as COPUOS (Committee on the Peaceful Uses of Outer Space) and IADC (Inter-Agency Space Debris Coordination Committee) can help India shape global norms around responsible space behaviour.
5. **Adopt a Defensive-First Strategy:** India's approach must prioritise non-weaponised, sustainable defence measures that ensure the safety of its assets without contributing to the weaponisation of space.

Conclusion

Protecting India's satellite infrastructure is no longer a matter of choice—it is a strategic necessity. As the country invests heavily in expanding its presence in orbit, a **layered defence approach** that integrates cutting-edge technology, strong governance, and international diplomacy is essential. With deliberate planning and responsible innovation, India can ensure the resilience of its space assets while continuing to champion peaceful and sustainable space operations.

Artificial Intelligence and India's Global Race

Context

India's expanding role in the global artificial intelligence (AI) landscape was the focus of discussion on *Surrokar* (Sansad TV), where both the transformative potential of AI and the systemic challenges facing the country were explored. Key areas of opportunity—such as healthcare, education, agriculture, and finance—were examined alongside critical concerns around regulation, research, infrastructure, and ethical use.

India's Position in the Global AI Race

- India is actively positioning itself in the global AI ecosystem, although it faces significant disparities in investment and research depth compared to major AI powers. The Government of India has launched the *India AI Mission*, backed by a ₹10,372 crore budget, to build core infrastructure, computing capabilities,

and foster domestic research. The country also benefits from its digital strength, with over one billion smartphone users and more than 20 billion monthly UPI transactions, placing it among the world's most digitally connected nations.

- However, when compared with global AI leaders, the funding gap remains considerable. In 2024, China invested $30 billion and the United States $20 billion in AI initiatives, significantly outpacing India's investment levels. Despite this, India holds a strategic advantage in its vast talent pool—boasting around 18 million software engineers and AI integrated into school curricula. Yet, while India excels in scale, it continues to lag behind in the depth and impact of AI research.

Opportunities of AI for India

Artificial Intelligence presents transformative possibilities across multiple sectors in India:

- In **healthcare**, AI is being used for cancer diagnostics and rural telemedicine, alongside predictive models for epidemics and personalised treatment plans. In **education**, projects like *Bhashini* are enabling real-time translation in classrooms and Parliament, while ed-tech platforms are leveraging AI for personalised learning tailored to regional dialects and student needs.
- In **agriculture**, AI is facilitating precision farming, offering weather-based advisory services, and supporting disaster prediction models to aid farmers in preparing for droughts or natural calamities. For **financial inclusion**, AI is being integrated into rural banking through features like "Hello UPI," and is aiding in fraud detection and credit scoring for underserved communities.
- In **disaster management**, states like Odisha are employing AI-driven cyclone prediction systems, and AI-based geospatial mapping tools are being used for better flood and forest monitoring.

Challenges in India's AI Ecosystem

Despite these advancements, India's AI ecosystem faces a series of foundational and policy-related challenges:

- The **infrastructure gap** is significant, with delayed availability of GPUs, sluggish development of data centres, and a lack of large-scale, world-class supercomputing facilities. The **research and innovation deficit** is equally concerning. India accounts for only 1.4% of global AI research publications and contributes less than 2% of global AI PhDs, indicating a weak footprint in cutting-edge innovation.
- **Regulatory and ethical concerns** are mounting, with India's digital space still governed by the outdated IT Act of 2000. There is an urgent need for updated frameworks that address issues such as data privacy, algorithmic accountability, and the mental health impacts of generative AI tools like chatbots.
- The **talent bottleneck** is another critical barrier. While numerous certificate courses offer entry-level AI training, there is a shortage of advanced research talent and experienced professors to guide the next generation of AI leaders. Furthermore, India risks becoming merely a "market for AI" rather than an originator of innovation, especially as global powers like the US, EU, and China continue to race ahead with large language models (LLMs) and foundational AI research.

Way Forward

To bridge these gaps and assert itself as a responsible and innovative AI power, India must adopt a multi-pronged strategy:

- Strengthening the **R&D ecosystem** is crucial, which involves increasing government support for fundamental AI research and incentivising private sector and start-up investments in deep-tech innovation. Building **human capital** is equally important; AI education and training must be expanded beyond elite institutions like the IITs. This includes upskilling educators and researchers to cultivate a more robust academic pipeline.
- On the **policy front**, the enactment of a *Digital India Act* and a dedicated AI regulatory framework is necessary to create a balanced environment that fosters innovation while ensuring safeguards. An India-specific ethical

charter, drawing inspiration from frameworks like the EU AI Act, would help shape responsible AI development tailored to Indian socio-economic realities.

- **Public-private partnerships** should be actively encouraged, fostering collaboration between the government, academia, and industry. Creating dedicated AI innovation hubs focused on key sectors like healthcare, agriculture, and sustainability could accelerate practical deployment. On the **global stage**, India must deepen engagement with international projects such as ITER (fusion energy), EAST (China), and STEP (UK), while also asserting leadership within platforms like the G20 and BRICS to shape the global AI discourse.

Conclusion

India stands at a critical intersection in the AI revolution. While the country holds immense potential to leverage AI for national transformation—especially in healthcare, education, finance, and agriculture—it must overcome foundational barriers in research, infrastructure, talent, and governance. Without strategic investments and robust policy frameworks, India risks remaining a consumer rather than a creator of AI. To truly lead in the AI-driven digital century, India must balance ambition with ethics and innovation with inclusivity.

Paracetamol (Tylenol) and Autism: Controversy and Clarification

- In a recent controversy, former U.S. President **Donald Trump** claimed that the use of **paracetamol (marketed as Tylenol in the U.S.)** during pregnancy may lead to autism. The claim has been widely dismissed by health experts, including **former WHO Chief Scientist Soumya Swaminathan**, who called it unscientific and misleading.
- Paracetamol, also known as **acetaminophen** in the U.S., is a **non-opioid analgesic and antipyretic**. It is widely used across the world and is listed on the **WHO's Essential Medicines** for its safety, affordability, and accessibility.
- The active ingredient is **acetaminophen**, and it is primarily used to relieve **mild to moderate pain**, including headaches, arthritis, menstrual cramps, toothaches, and postoperative discomfort. It is also effective in **reducing fever** in both children and adults. During pregnancy, it is the preferred medication for pain relief, particularly for those who cannot tolerate NSAIDs like ibuprofen or aspirin.
- Paracetamol is available in various forms including **tablets, syrups, chewables**, and **dissolvable packs**. It is often used as a first-line treatment during pregnancy and can be safely combined with ibuprofen in certain cases for enhanced pain relief.
- However, there are limitations. While safe in short-term, excessive use (over **3–4 grams/day** in adults) can lead to serious **liver damage or failure**. It is generally less effective than NSAIDs for inflammation-related conditions such as arthritis and offers limited relief in chronic pain conditions such as cancer or osteoarthritis.

Khoe-San: Genetic Heritage and Historical Displacement

- A recent genetic study published in the *Cell Press* journal has uncovered significant alterations in the ancestral genetics of the indigenous **Khoe-San** peoples of southern Africa, caused by **European colonisation**.
- The Khoe-San refers collectively to the **San (Bushmen)**, traditionally hunter-gatherers, and the **Khoekhoe (Khoi)**, known for their pastoral lifestyle involving cattle, goat, and sheep herding. These communities represent one of the most ancient human lineages, characterized by **exceptionally high genetic diversity**.
- The study reveals a pattern of **sex-biased genetic mixing**, whereby **European male settlers** displaced Khoe-San men, while **Khoe-San women** contributed significantly to modern genetic lineages. Furthermore, it highlights the **impact of the transcontinental slave trade**, especially during the period of Dutch

colonial rule, when the **Dutch East India Company (VOC)** transported enslaved women from **South Asia, Southeast Asia, Eastern Africa, and Madagascar** to the Cape. These women, alongside Khoe-San women, became part of the local population's ancestry.

- Historically, the Khoe-San have endured successive waves of displacement and assimilation. Around **2,000 years ago**, Eastern African pastoralists and **Bantu-speaking agro-pastoralists** entered the region, initiating cultural and demographic shifts. Over the past **1,500 years**, Bantu groups largely replaced or integrated Khoe-San communities in eastern South Africa. Following the **VOC's arrival in 1652**, **European colonisation** unfolded over 250 years, bringing significant genetic and societal transformations. Between **1652 and 1808**, approximately **63,000 enslaved individuals**, mostly women, were brought to the Cape from various parts of Africa and Asia. Simultaneously, the indigenous Khoe-San were recruited into **colonial labour systems**, further altering the demographic landscape.

Nightmare Bacteria: The Spread of Antibiotic Resistance in the US

- According to scientists at the **US Centers for Disease Control and Prevention (CDC)**, drug-resistant bacteria known as **"nightmare bacteria"** are spreading rapidly across the United States, posing a serious public health concern. These bacteria are driven by the **NDM gene**—a gene that confers resistance to some of the most powerful antibiotics available.
- The term "nightmare bacteria" refers to **Carbapenem-resistant Enterobacteriaceae (CRE)**, a group that includes dangerous pathogens like **Klebsiella pneumoniae** and **Escherichia coli (E. coli)**. These bacteria are resistant to **carbapenems**, a class of last-resort antibiotics used for treating life-threatening infections. Their threat lies in the **ease with which they spread resistance genes** to other bacteria, coupled with their ability to cause **severe infections** in the bloodstream, lungs, or urinary tract, which are often **unresponsive to most treatments**.

Symptoms vary by infection type:

- **Urinary tract infections** may involve burning sensations, cloudy urine, or a frequent urge to urinate.
- **Bloodstream infections** can manifest as high fever, rapid heart rate, or dangerously low blood pressure.
- **Lung infections** may result in persistent coughing, shortness of breath, or chest pain.
- The **NDM-1 gene (New Delhi Metallo-beta-lactamase-1)** enables bacteria to produce **carbapenemase enzymes**, which destroy antibiotics, including those used against other resistant infections such as **methicillin-resistant Staphylococcus aureus (MRSA)**. The spread of this gene has become a global concern for antimicrobial resistance.

Soilification Technology

Context:

Researchers at the Central University of Rajasthan (CUoR) have successfully cultivated wheat on arid desert land in Ajmer using a breakthrough method called soilification technology.

About Soilification Technology:

- Soilification is a cutting-edge biotechnology technique that converts loose desert sand into a soil-like medium conducive to agriculture. This process relies on indigenous bioformulations and naturally derived polymers to enhance soil structure, improve fertility, and significantly increase water retention.
- The technology involves binding sand particles using polymers, which creates a cohesive structure resembling fertile soil. Simultaneously, microbial bioformulations are introduced to stimulate nutrient cycling and improve overall soil health. This dual-action approach also enhances plant resilience to heat and arid conditions. In field trials, crops such as wheat, bajra, chickpeas, and guar gum have demonstrated remarkable adaptability and productivity.
- Wheat cultivation using this method yielded a seed-to-harvest ratio of 1:20—

double that of traditional desert farming. Moreover, irrigation frequency was reduced from 5–6 cycles to just 3–4, preserving groundwater in one of India's most water-scarce regions. The process is cost-effective, uses locally available materials, and requires no heavy machinery, making it ideal for widespread adoption.

- This innovation has significant implications for combating desertification, particularly in the Thar Desert region. It also addresses pressing concerns around food and water security by enabling sustainable agriculture in previously non-arable zones.

Gaia Telescope's 3D Map of Stellar Nurseries

- The **Gaia Space Telescope** has produced a **new 3D map** revealing **star-forming regions (stellar nurseries)** within 4,000 light-years of the Sun. This map offers unprecedented clarity of **glowing hydrogen gas clouds**, significantly advancing our understanding of star formation and interstellar dynamics.
- By integrating **Gaia dust maps** with the ionising radiation effects from **87 massive O-type stars**, scientists created a simulation displaying detailed glowing hydrogen clouds. The map surpasses previous emission charts in precision and helps researchers explore the physics of turbulent interstellar gas.

About the Gaia Mission:

- Launched in **2013** by the **European Space Agency (ESA)**, Gaia is stationed at **Lagrange Point 2 (L2)**, about 1.5 million km from Earth. Originally called the **Global Astrometric Interferometer for Astrophysics**, its mission is to compile the most accurate **3D map of the Milky Way Galaxy**.
- Gaia features **twin telescopes**, a **1-billion-pixel digital camera**, and three core instruments: an **Astrometer** (for position measurements), a **Photometer** (for star brightness and temperature), and a **Spectrometer** (for chemical composition and motion analysis).

Hanle Dark Sky Reserve (HDSR)

- The **Hanle Dark Sky Reserve (HDSR)** in Ladakh recently hosted its **third annual Star Party**, reaffirming its status as India's leading destination for astronomical observation.
- Designated in **December 2022**, HDSR is India's first **International Dark Sky Reserve**, located around the **Indian Astronomical Observatory (IAO)** at Hanle. It is jointly managed by the **Indian Institute of Astrophysics (IIA)** under the **Department of Science and Technology (DST)** and supported by the **UT Ladakh administration**.
- The reserve serves both scientific and economic purposes, aiming to **minimise light pollution** while promoting **astro-tourism** for local livelihood enhancement. Situated at **4,500 metres** within the **Changthang Wildlife Sanctuary**, it offers **Bortle-1 level skies**—the darkest classification possible.
- The recent Star Party was a collaborative effort by the IIA, the **Department of Wildlife Protection of UT Ladakh**, and **BARC**.
- Recognised by the **International Dark Sky Association (IDSA)**, such reserves must span at least **700 km²**, contain a **core pollution-free area**, and be surrounded by a **buffer zone**. A mandatory **Lighting Management Plan (LMP)** must cover 80% of the population and area, with annual reporting obligations to IDSA.

AstroSat

- India's first dedicated Space Astronomy Observatory, AstroSat, recently celebrated a decade of operation. Launched on September 28, 2015, by the PSLV-C30 (XL) rocket from the Satish Dhawan Space Centre in Sriharikota, AstroSat was initially designed with a minimum operational lifespan of five years but has continued to deliver valuable scientific data well beyond that period.
- AstroSat was developed to simultaneously observe the universe across multiple wavelengths—visible, ultraviolet, and both low and high-energy X-rays—using five onboard scientific instruments. These

payloads include the Ultra Violet Imaging Telescope (UVIT), Large Area X-ray Proportional Counter (LAXPC), Cadmium-Zinc-Telluride Imager (CZTI), Soft X-ray Telescope (SXT), and Scanning Sky Monitor (SSM). The satellite's mission operations are managed by the Mission Operations Complex (MOX) under ISRO's Telemetry, Tracking, and Command Network (ISTRAC) in Bengaluru.

- The primary scientific objectives of AstroSat include studying high-energy processes in binary star systems involving neutron stars and black holes, estimating the magnetic fields of neutron stars, examining star formation regions, exploring high-energy phenomena in distant galaxies, detecting transient X-ray sources, and conducting limited deep field ultraviolet surveys of the universe.

BSNL Launches Indigenous 4G Network Stack

- In a significant step towards technological self-reliance, the Prime Minister of India recently inaugurated BSNL's fully indigenous 4G network stack and commissioned nearly 98,000 mobile towers across the country. This achievement places India as the fifth nation worldwide to design, build, and deploy its own telecom network stack, reinforcing the vision of Aatmanirbhar Bharat.
- The Swadeshi 4G network stack is India's first completely indigenous 4G telecom infrastructure developed under the Aatmanirbhar Bharat mission. It offers an end-to-end cloud-native architecture that is ready for 5G deployment. The core network technology was developed by the Centre for Development of Telematics (C-DOT), the Radio Access Network (RAN) by Tejas Networks, and integration and deployment were managed by Tata Consultancy Services (TCS). BSNL has implemented the system with government support.
- The initiative aims to achieve strategic autonomy and digital sovereignty by reducing reliance on foreign vendors and promoting domestic manufacturing. It also strives to expand universal digital connectivity, particularly targeting remote, border, and tribal areas.
- Technically, the cloud-native architecture enables seamless upgrades, allowing the 4G towers deployed by BSNL to be upgraded to 5G without large-scale hardware changes. The fully Indian-made stack ensures secure communication and improved resilience against cyber threats.
- Key features of this stack include scalability due to its cloud-native design, future readiness with 5G capability, and a foundation laid for 6G technology adoption. It supports a wide range of applications such as digital payments, telemedicine, e-governance, online education, and precision farming.
- The strategic significance of this indigenous network lies in enhancing national security by minimizing foreign dependency, generating employment, strengthening local manufacturing, and nurturing Indian research and development. Furthermore, this digital infrastructure is crucial for connecting an estimated 29,000 to 30,000 remote villages under the Digital Bharat Nidhi program.

Infectious Bovine Rhinotracheitis (IBR)

- Indian Immunologicals (IIL) has recently introduced India's **first indigenous gE-deleted DIVA marker vaccine** against **Infectious Bovine Rhinotracheitis (IBR)**, a significant step in controlling this cattle disease.
- IBR is an endemic disease in India caused by the **Bovine Herpes Virus (BoHV-1)**, part of the **Varicellovirus** genus under the **Alphaherpesvirinae** subfamily. It affects both domestic and wild cattle and manifests in three forms: **respiratory**, **genital**, and **encephalitic**, with the first two being more prevalent.
- The virus is primarily transmitted through **aerosol droplets** and via **semen**, especially from infected bulls. It adversely impacts bovine productivity by causing **infertility**, **abortions**, and **a decrease in milk yield**. There is currently **no specific treatment or vaccine** available in India, making prevention and early diagnosis critical.
- Clinical signs include upper respiratory issues such as **purulent nasal discharge**, **reddening of the muzzle (red nose disease)**, **conjunctivitis**, **fever**,

depression, **anorexia**, and **reduced milk output**. Abortions are also commonly observed in affected cattle.

HISTORY, HERITAGE AND CULTURE

Vrindavani Vastra

- In a significant cultural development, the **British Museum** has agreed to loan the **16th-century Vrindavani Vastra** to Assam in the year 2027 for an 18-month public exhibition. This exquisite textile masterpiece holds immense historical and religious importance in Assam's cultural heritage.
- The Vrindavani Vastra is a splendid silk tapestry created during the 16th century under the guidance of **Srimanta Sankardeva**, the revered saint and reformer who spearheaded Assam's Vaishnavite movement. This tapestry is composed of 15 intricately woven panels that were later stitched together, forming a large textile measuring 937 centimeters by 231 centimeters. The artwork depicts various scenes from the life of **Lord Krishna in Vrindavan**, interspersed with other mythological motifs that highlight spiritual narratives.
- The tapestry's origin traces back to its commissioning by **Koch king Nara Narayan** in Assam. It subsequently traveled to Tibet, where it was repurposed in a monastery at Gobshi. In 1904, during the Younghusband expedition, British journalist **Perceval Landon** acquired the textile, which was then taken to London and added to the British Museum's collection (catalogued as As1905,0118.4). Initially misclassified as Tibetan silk, the textile's Assamese provenance was only rediscovered several decades later.
- Crafted from silk, the Vrindavani Vastra is richly adorned with vibrant motifs and narrative art. What makes this tapestry unique is its creation within the Vaishnavite tradition under Sankardeva, which notably discouraged idol worship. Instead of idols, this textile became a powerful medium to portray sacred stories and religious symbolism, effectively fusing spirituality with artistic expression. It embodies a blend of ritual significance and visual storytelling.
- The significance of the Vrindavani Vastra extends beyond its artistic merits. It stands as a living testament to Assamese cultural identity, the Vaishnavite Bhakti movement, and the region's silk craftsmanship. Globally, its display will enhance awareness of India's tangible and intangible heritage, also intensifying demands for the repatriation of cultural artifacts to their places of origin.

Karma Puja

- The Prime Minister of India recently extended his greetings to the nation, particularly to the tribal communities, on the occasion of Karma Puja.
- Also known as Karam or Karam Parab, Karma Puja is among the most significant festivals celebrated by tribal communities in India. The festival is intrinsically linked to agricultural cycles and involves reverence to the Karam tree, which symbolizes fertility, prosperity, and auspiciousness.
- Karma Puja is observed with great enthusiasm in Jharkhand, Chhattisgarh, Odisha, Bihar, Madhya Pradesh, West Bengal, and Assam. It holds cultural and spiritual importance especially among tribal groups such as the Munda, Ho, Oraon, Baiga, Kharia, and Santhal.
- The festival is celebrated on Ekadashi, the eleventh day of the lunar fortnight, typically falling between August and September.
- In the week leading up to the festival, young women collect clean river sand and plant seven varieties of grains. On the day of the celebration, a branch of the Karam tree is ceremoniously planted in the community space or courtyard known as the *akhra*. Worship rituals are performed by a tribal priest, or *pahan*, accompanied by singing and dancing of traditional Karam songs. Devotees offer *jawa* (hibiscus flowers), and the festival concludes with the immersion of the Karam tree branch in a river or pond.
- To seek divine blessings for their harvests, branches from *sal* or *bhelua* trees are often planted in farmlands following the festival, with the belief that the Karam Devta will safeguard their crops.

Self-Respect Movement

The year 2025 marks the centenary of the Self-Respect Movement, a radical reform initiative launched in Tamil Nadu in 1925 by social reformer E.V. Ramasamy, popularly known as Periyar.

What was the Self-Respect Movement?

- The Self-Respect Movement was a transformative social movement aimed at dismantling caste-based oppression, patriarchy, and religious orthodoxy. Emphasizing rationalism, individual dignity, and equality over ritualism and social hierarchy, the movement sought to empower the marginalized, particularly the non-Brahmin communities.
- Launched through the Tamil weekly *Kudi Arasu* (meaning "Republic"), the movement found its roots in the socio-political climate of early 20th-century Tamil Nadu. It drew inspiration from the work of earlier reformers such as Iyothee Thass, Jyotirao Phule, and B.R. Ambedkar. Initially supported by the Justice Party, the movement later evolved into the Dravidar Kazhagam under Periyar's leadership.

Objectives and Features

- The movement aimed to eradicate the entrenched caste system and Brahmanical dominance, promote social justice, and champion gender equality. Unlike previous reform efforts, it shifted the focus from elite non-Brahmins to the broader populace.
- Key features of the movement included the promotion of "self-respect marriages" devoid of priests and caste rituals; advocacy for women's rights, including widow remarriage, property rights, divorce, and abortion; and support for inter-caste unions. The movement offered a sharp critique of religious dogma, superstition, and male dominance in society.
- Periyar and his followers rejected the Indian National Congress's "religion-tinted nationalism" and criticized Gandhian orthodoxy for its conservative stance on caste and religion. They instead advanced a rationalist, Dravidian identity.

Significance

The Self-Respect Movement played a pivotal role in instilling a sense of dignity, political awareness, and social consciousness among the non-Brahmin masses. Its ideals laid the foundation for the emergence of Dravidian politics in Tamil Nadu and influenced the state's progressive, welfare-oriented governance model.

200th Birth Anniversary of Dadabhai Naoroji

Dadabhai Naoroji, often referred to as the **"Grand Old Man of India"** and the **"Official Ambassador of India"**, was a pioneering figure in India's freedom struggle. Born in 1825, he was an Indian Parsi scholar, trader, and politician whose contributions left a lasting impact on India's social, economic, and political awakening. He was a founding member of the **Indian National Congress (INC)** and served as its president **three times**—in **1886**, **1893**, and **1906**.

Key Contributions of Dadabhai Naoroji (1825–1917)

- **Social Reform:** Dadabhai Naoroji was deeply committed to social upliftment, particularly in the area of education and community reform. He actively promoted **women's education**, and in 1848, founded the **Literary and Scientific Society**, which, by 1849, had established **six schools for girls**—a remarkable step for its time. He also worked to reform social attitudes within his own Parsi community. To spread progressive and rationalist thought, he founded the newspaper **Rast Goftar**, which means "Truth Teller." In 1851, he co-founded the **Rahnumai Mazdayasan Sabha**, an organization dedicated to social and religious reform among Parsis.
- **Economic Contributions:** Dadabhai Naoroji's most influential work was in the field of economic critique of British colonialism. He is best known for formulating the **'Drain of Wealth' theory**, which argued that British economic policies were systematically transferring India's wealth to Britain. This drain, he argued, occurred through excessive taxation, inflated administrative costs, high salaries paid to British officials, pensions paid in England, and remittances. His major literary works include **"Poverty of India" (1876)** and **"Poverty and Un-British Rule in India" (1901)**. These publications offered detailed statistical and economic analysis to expose the exploitative nature of British rule. He also used platforms like the **East India Association** to highlight the economic injustices being inflicted on India, making Indian issues visible in international forums.

Political Contributions

- Naoroji was a moderate leader who believed in **constitutional methods of political**

engagement, such as petitions, peaceful protests, and dialogue. He laid the foundations for early Indian nationalism by establishing the **London Indian Society in 1865** and the **East India Association in 1866**, both of which played key roles in connecting Indian concerns with British lawmakers.

- In 1892, Dadabhai Naoroji achieved a historic milestone by becoming the **first Indian elected to the British Parliament**, representing the **Liberal Party** from **Finsbury Central**. From this position, he consistently advocated for Indian self-governance and brought Indian grievances directly to the British political arena.
- He also played a pivotal role in shaping the Indian National Congress's political ideology. At the **1906 INC session**, Naoroji made a landmark declaration by explicitly stating **Swaraj (self-government)** as the **Congress's political objective**, giving the freedom movement a clear direction.
- His influence extended beyond his own leadership. He acted as a mentor to several prominent Indian leaders, including **Bal Gangadhar Tilak**, **Gopal Krishna Gokhale**, and **Mahatma Gandhi**, guiding them during their formative years in public life.

Dr. Sarvepalli Radhakrishnan

- Every year, **Teachers' Day** is celebrated across India on the **birth anniversary of Dr. Sarvepalli Radhakrishnan**, in honour of his contributions to education and philosophy.
- **Dr. Radhakrishnan** was a prominent **Indian philosopher and statesman**, deeply committed to the idea of **education as a force for societal transformation**. His academic and diplomatic career was both illustrious and impactful.
- He held the position of **Professor of Eastern Religions and Ethics at the University of Oxford** and served as **India's delegate to the League of Nations** during the **1930s**. From **1949 to 1952**, he was appointed as **India's Ambassador to the Soviet Union**. Later, he served as **Vice-President of India from 1952 to 1962**, and then as **President from 1962 to 1967**.
- A significant part of his legacy lies in interpreting **Indian philosophical thought** for Western audiences, often comparing **Eastern and Western ideologies** to build bridges of understanding. His **literary works** include: *The Principal Upanishads*, *The Hindu View of Life*, *Indian Philosophy*, *The Philosophy of the Upanishads*, *An Idealist View of Life*, and *East and West: Some Reflections*.
- His vision continues to inspire generations of educators and students across India.

Pavagadh Kalika Mata Temple: Sacred Heritage and Tragedy

- A tragic incident occurred at the Kalika Mata temple in Gujarat's Panchmahal district, where six people lost their lives after the cable wire of a ropeway—primarily used for transporting materials—snapped. This resulted in the cable car crashing to the ground in the Pavagadh region, drawing attention to safety concerns around temple infrastructure.
- Located at the summit of Pavagadh Hill, the Kalika Mata Temple is a prominent Hindu pilgrimage site in Gujarat's Panchmahal district. The temple is dedicated to Maa Kali, a fierce form of Goddess Durga or Shakti, and is one of the 51 revered Shakti Peethas scattered across India. It sits at an elevation of 762 meters above sea level, perched dramatically on a cliff surrounded by thick forests, enhancing both its spiritual aura and natural allure.
- Believed to be over a thousand years old, the temple's origins are traced back to the 10th or 11th century. The idol of Mahakali was established in the 12th century, during a period marked by architectural and spiritual growth. The Solanki Rajput dynasty, which controlled large portions of Gujarat, offered significant patronage to the temple and supported its renovation over the years.
- Under Sultan Mahmud Begada's rule, Pavagadh and nearby Champaner rose to prominence as influential centers of religion and culture. Today, the Kalika Mata Temple forms an integral part of the **Champaner-Pavagadh Archaeological Park**, a UNESCO World Heritage Site since 2004, signifying its historical and architectural value.
- The temple, constructed from stone, showcases typical features of medieval Hindu architecture, including intricate carvings,

stone domes, and a sanctum (garbhagriha). The idol of Mahakali inside the sanctum is carved from black stone. Interestingly, only the upper portion of the idol is visible to devotees, while the lower half remains underground, symbolizing divine mysticism and spiritual depth. In recent years, the temple has undergone refurbishments, including improved ropeway access and upgraded amenities, all while preserving its sacred atmosphere.

Sree Narayana Guru: Saint, Philosopher, and Social Reformer

- The birth anniversary of **Sree Narayana Guru (1856–1928)** was recently celebrated, paying homage to his profound impact as a spiritual leader and social reformer, particularly in Kerala.
- Sree Narayana Guru championed the radical idea of **"One Caste, One Religion, One God for Mankind"**, challenging the caste system and advocating for human equality. He founded the **Sree Narayana Dharma Paripalana Yogam (SNDP)**, an organization aimed at the upliftment and education of the **Ezhava community**, historically marginalized under the rigid caste hierarchy.
- One of his early contributions was the **Aruvipuram movement**, where he consecrated a temple open to all castes—one of the earliest assertions of equal rights to temple access. He also supported the **Vaikom Satyagraha** (1924–25) in Travancore, which sought temple entry rights for lower-caste Hindus.
- Sree Narayana Guru founded ashrams grounded in the principle **"Om Sahodaryam Sarvatra"** (all human beings are equal in the eyes of God). His teachings continue to inspire values of **equality, non-violence, compassion, integrity, and courage**, standing as a beacon for social reform in modern India.

Bharat Ratna Dr. Bhupen Hazarika: Celebrating a Centenary of Cultural Greatness

- The state of Assam has commenced a year-long celebration to mark the birth centenary of Bharat Ratna Dr. Bhupen Hazarika, with tributes flowing in from national leaders and numerous cultural events being held across the region. This commemoration reflects the deep reverence India holds for a man who not only elevated Assamese culture but also gave a powerful voice to the nation's socio-political conscience through his music, films, and writings.
- Bhupen Hazarika (1926–2011), popularly known as *Sudhakantha* (nectar-voiced) and the *Bard of Brahmaputra*, was an iconic Indian artist whose contributions spanned across roles—singer, composer, lyricist, poet, filmmaker, and intellectual. He was born on 8 September 1926 in Sadiya, Assam, and raised in the rich folk traditions of the region. Remarkably, he recorded his first song at the tender age of ten on All India Radio, Kolkata.
- Academically, he completed a Master's degree in Political Science from Banaras Hindu University (BHU) and later earned a PhD in Mass Communication from Columbia University in 1952. It was during his time at Columbia that he came under the influence of Paul Robeson and global civil rights movements, which would go on to shape much of his socially conscious art.
- In the field of music, Bhupen Hazarika composed timeless songs like *Manuhe Manuhar Babe*, *Moi Eti Jajabor*, and *Bistirno Parore*, effortlessly blending Assamese folk elements with universal themes of justice, humanity, and harmony. His cinematic contributions include the direction and production of Assamese films such as *Era Bator Sur* and *Chameli Memsaab*, and music composition for Hindi and Bengali films like *Rudaali*, *Daman*, and *Saaz*.
- More than just an artist, Hazarika used his creative expression to voice the concerns of the marginalized, addressing issues of caste, poverty, inequality, and social alienation. This made him a cultural bridge between Northeast India and the Indian mainstream. His public service record includes serving as Chairman of the Sangeet Natak Akademi and being elected as a Member of the Assam Legislative Assembly in 1967.

- Dr. Hazarika's significance lies in his role as a cultural icon who redefined Assamese identity and brought Northeast India's voice to the national platform. His global relevance stems from his art's message of brotherhood, equality, and human rights. Among the many accolades he received are the Dadasaheb Phalke Award, Padma Bhushan, Padma Vibhushan, and posthumously, the Bharat Ratna in 2019, the highest civilian award in India.

The Bhil Tribe: Preserving Oral Heritage Through Modern Technology

- A translated compilation of Bhil folk tales is soon to be released in Hindi as an e-booklet through the Ministry of Tribal Affairs' 'Adi Vaani' platform, offering deep insight into themes like caste, love, folk theatre, and social justice. This initiative not only preserves oral traditions but also amplifies the voices of one of India's oldest indigenous communities.
- The Bhils, belonging to the Austroloid racial group and often linked to Dravidian ancestry in Western India, are among the most ancient tribal communities in the country. They are renowned for their expertise in archery, with the word 'Bhil' derived from the Dravidian term *billu/villu*, meaning bow. Their traditional settlements span across states such as Rajasthan, Gujarat, Madhya Pradesh, Maharashtra, and Bihar, with smaller communities now found in Tripura, Chhattisgarh, and Jharkhand.
- Historically, the Bhils are referenced in epics like the Ramayana and Mahabharata, with associations to characters like Shabari and Eklavya. Some oral traditions even consider them descendants of the Harappan civilization. During the medieval period, they actively resisted invasions by Rajputs, Mughals, and Marathas through guerrilla warfare. Under British rule, they were branded a "criminal tribe" via the Criminal Tribes Act of 1871, subjecting them to forced labor, taxes, and displacements.
- The Bhils have a rich history of resistance, notably through the Bhagat Movement initiated by Govind Guru in 1883, culminating in the tragic Mangarh massacre in 1913. This was followed by the Eki Andolan led by Motilal Tejawat in 1920, demanding tribal rights and justice.
- Socially, Bhil communities are structured around worship of village deities like Gramdev, Kuldev, and Kuldevi. They maintain a patriarchal system tempered by communal decision-making through village elders and extended kinship ties. Culturally, they are known for their vivid oral storytelling traditions, folk theatre, and energetic dances. Celebrations often include music played on traditional instruments like flutes and drums, accompanied by rituals dedicated to both natural and local deities such as Baba Dev, Bhilat Dev, and Bag Dev, along with pan-Indian gods like Shiva and Durga. Their mythological roots are also deeply intertwined with the story of Shabari and her devotion to Lord Rama.
- 'Adi Vaani', the platform enabling this revival, is a language translation tool and website launched by the Government of India to enable two-way communication between Adivasi languages and Hindi/English. Developed by the Ministry of Tribal Affairs, it draws on linguistic data provided by State Tribal Research Institutes to ensure accuracy. Currently, the app supports languages like Gondi, Bhili, Mundari, and Santali, with plans to add Kui and Garo soon. It offers multi-platform access, a feedback system for users, and was developed as a low-cost alternative to commercial platforms—making it a case study in frugal innovation for digital inclusion.

Decoding the Harappan Script: A Global Conference Hosted by the Culture Ministry

The Union Ministry of Culture is set to organise a major international conference in New Delhi from September 11 to 13, focusing on the enduring mystery of the Harappan script. The event will convene archaeologists, scientists, and subject-matter experts from various disciplines to share their research and insights into this undeciphered script, which has puzzled scholars since its discovery nearly a century ago. The conference is being coordinated by the Indira Gandhi National

Centre for the Arts (IGNCA), an autonomous institution functioning under the aegis of the Culture Ministry.

The Enigmatic Script of the Indus Valley Civilisation

The Harappan script, unearthed in the 1920s by Sir John Marshall's archaeological team, remains one of the world's most enduring linguistic mysteries. Associated with the Indus Valley Civilisation (IVC), which thrived between 2600 and 1900 BCE, the script is emblematic of a sophisticated society that spanned roughly 800,000 square kilometres across modern-day Pakistan and north-western India. This civilisation boasted advanced urban infrastructure, including systems of trade, taxation, and drainage that were remarkably ahead of their time.

Nature and Material of the Inscriptions

Harappan inscriptions have been discovered primarily on seal stones and terracotta tablets, with occasional examples on metal surfaces. These inscriptions typically blend pictograms with depictions of animals or human figures, further complicating efforts to decode them. Disagreement persists among scholars over the number of unique signs the script contains. Archaeologist S.R. Rao estimated 62 signs in 1982, while Finnish Indologist Asko Parpola suggested 425 signs in 1994. More recently, in 2016, Bryan K. Wells placed the number at 676, highlighting the extent of scholarly divergence.

Ongoing Debates Over Linguistic Origins

The linguistic roots of the script remain fiercely contested. Sir Alexander Cunningham, who first reported a Harappan seal, believed the script to be an early form of Brahmi, a script that eventually gave rise to over 200 scripts across South and Southeast Asia. Some scholars have supported this hypothesis. However, Asko Parpola disagrees, arguing that Brahmi actually evolved from the Aramaic script used in the Persian Empire, thus detaching it from the Harappan tradition. The absence of scholarly consensus on both the number of characters and the script's linguistic foundation has ensured that the Indus script continues to elude decipherment, ranking among the most profound unsolved puzzles in ancient history.

The Conference and Diverging Scholarly Views

The upcoming Culture Ministry conference promises to bring these scholarly debates into sharper focus. Papers scheduled for presentation reflect a wide array of conclusions, further illustrating the unresolved status of the Harappan script. These divergent perspectives underscore the complexity and mystery surrounding the language of one of the world's earliest urban civilisations.

Competing Theories on the Script's Origins and Content

A number of theories have emerged over time regarding the language and content of the Harappan script. Some researchers claim that the script is rooted in Sanskrit and contains references to Rig Vedic mantras. These scholars argue that many Harappan seals had primarily religious significance, even asserting that they contain allusions to Puranic literature—although historians caution that the Puranas were written centuries after the Harappan era. In contrast, other researchers propose a Dravidian basis for the script, with some asserting that up to 90% of the inscriptions have already been deciphered as Gondi, a Proto-Dravidian language. Another line of inquiry links the script to Santali, an Austroasiatic language, a theory that draws inspiration from Asko Parpola's earlier research.

Challenges Facing Decipherment

Despite the proliferation of theories, historians consistently stress that deciphering the Harappan script demands a rigorous, interdisciplinary methodology. Key obstacles include the absence of bilingual inscriptions, the vast territorial range of the civilisation, and its centuries-long duration—all of which suggest that multiple languages may have been in use. The competing claims—whether linking the script to Sanskrit, Dravidian, Gondi, or Santali—demonstrate the intellectual allure and inherent difficulties of cracking this ancient code. Scholars generally agree that no credible breakthrough has yet been achieved and that a more systematic, contextual, and comparative approach is essential for meaningful progress.

Political and Cultural Undercurrents in the Script's Interpretation

Efforts to decipher the Harappan script are not limited to the academic sphere; they are deeply entwined with contemporary political and cultural narratives in India. Tamil Nadu Chief Minister M.K. Stalin has publicly announced a $1 million reward for anyone who can credibly decode the script. A conclusion pointing to

Dravidian roots would bolster political claims that southern India, rather than the north, is home to the subcontinent's oldest civilisation.

Conversely, some ideological groups view the Harappan script as a tool to challenge the Aryan migration theory. These proponents argue that the Harappans were Vedic people and point to the Ghaggar-Hakra river system—identified by some as the Saraswati River mentioned in the Rig Veda—as a core piece of evidence. If this linkage is substantiated, it would suggest that the Harappan script is a form of Sanskrit and support the theory of a continuous Vedic-Harappan cultural lineage.

Conclusion

As the international conference unfolds, it brings with it the hope of fresh insights, while also highlighting the multifaceted challenges that have long hindered decipherment of the Harappan script. Whether viewed through the lens of linguistics, archaeology, or cultural politics, the script remains one of the most captivating and unresolved enigmas of the ancient world.

Lankhong Puja

The Tiwa tribe of Assam recently celebrated Lankhong Puja, a traditional socio-religious festival aimed at invoking blessings for a prosperous harvest in the upcoming Rabi agricultural season.

Lankhong Puja is deeply rooted in the cultural and religious life of the Tiwa community, a tribal group residing mainly in Assam. The festival involves communal prayers and ritual offerings to deities, accompanied by music, dance, and various cultural performances. These rituals reinforce the agricultural traditions, foster community bonding, and help preserve cultural continuity within the tribe.

About the Tiwa Tribe

- The Tiwa tribe, formerly known as Lalung, is a significant indigenous group in Assam, classified under the Mongoloid ethnic category. Linguistically, they belong to the Tibeto-Burman family and share close cultural and linguistic ties with the Bodo and Naga tribes.
- Tiwa people primarily inhabit districts such as Nagaon, Morigaon, Dhemaji, Dibrugarh, Jorhat, and Titabor in Assam, as well as regions of Meghalaya and Tripura. Their settlements are broadly categorized into hill Tiwas and plain Tiwas, whose lifestyles vary due to geographic and cultural influences from neighboring communities.
- Physically, the Tiwa exhibit typical Mongoloid features, and their name is believed to derive from the words "Ti" meaning water and "Wa" meaning superior. Their cultural heritage includes rich oral traditions, folk music, and dance. Historical references to the Tiwa appear in Assam Buranji and other regional chronicles like Jayanta Buranji and Kachari Buranji. Their religious practices revolve around sacred spaces such as the Borghar, Thaan Ghar, and Naamghar.
- Socially, youth organizations like the Chamadi play a pivotal role in upholding community service and social responsibilities, while the tribe's festivals and rituals are closely tied to agricultural cycles and communal life.

Govind Ballabh Pant: Remembering a Stalwart of India's Freedom Struggle and Nation-Building

- The birth anniversary of Govind Ballabh Pant, a prominent figure in India's freedom movement and post-independence governance, was recently commemorated. Born on 10 September 1887 in Almora, Uttarakhand, Pant was a visionary leader whose contributions spanned from active participation in the independence struggle to shaping the administrative structure of modern India.
- In 1916, Pant founded the *Kumaon Parishad*, a regional political body aimed at addressing the socio-political issues of the Kumaon region. His national political journey began with his election to the United Provinces Legislative Council in 1923 on a Swaraj Party ticket. A close associate of Mahatma Gandhi, he played a vital role in major movements such as the Salt March and the Quit India Movement. He was arrested in 1930 for his involvement in planning the Civil Disobedience Movement.
- Pant later became the first Chief Minister of Uttar Pradesh, where he initiated several reforms in governance and public

administration. His most significant contribution at the national level came during his tenure as India's Home Minister from 1955 to 1961. During this period, he played a key role in the linguistic reorganisation of states, which redefined India's federal structure based on linguistic and cultural identities.

- In recognition of his service to the nation, Pant was awarded the *Bharat Ratna*, India's highest civilian honour, in 1957. Known for his unwavering courage, integrity, and compassion, Pant left a legacy of ethical leadership and dedication to public service that continues to inspire generations.

Adi Sanskriti Platform: Preserving Tribal Heritage through Digital Innovation

- The Ministry of Tribal Affairs recently launched the beta version of *Adi Sanskriti* at Bharat Mandapam in New Delhi during the National Conference on the Adi Karmayogi Abhiyan. This groundbreaking platform represents a significant step in the preservation of tribal heritage, the promotion of indigenous livelihoods, and the global integration of India's tribal communities through a digital learning ecosystem.
- Envisioned as the world's first Digital University dedicated to tribal culture, Adi Sanskriti seeks to preserve, promote, and globally showcase the traditional knowledge systems of tribal communities. It not only offers a platform for education but also serves as a marketplace to enable the world to access tribal artisanal products, thus enhancing economic opportunities for tribal artisans.
- The platform integrates three core components. The first is **Adi Vishwavidyalaya**, a Digital Tribal Art Academy currently offering 45 in-depth courses across diverse domains such as tribal dance, crafts, music, painting, and folklore. Second is **Adi Sampada**, a socio-cultural repository featuring more than 5,000 curated documents, covering five major themes—paintings, dance, textiles and clothing, artefacts, and livelihood practices. Third is **Adi Haat**, which currently functions in collaboration with TRIFED and is envisioned to evolve into a comprehensive online marketplace, providing direct access to tribal artisans and promoting sustainable livelihood options.
- The development of Adi Sanskriti is taking place in close collaboration with various State Tribal Research Institutes (TRIs). In its initial phase, TRIs from Andhra Pradesh, Assam, Bihar, Chhattisgarh, Goa, Gujarat, Kerala, Madhya Pradesh, Maharashtra, Meghalaya, Odisha, Rajasthan, Tamil Nadu, Telangana, and Uttar Pradesh have been actively involved in the documentation, content creation, and digital mapping of tribal art forms, laying the foundation for the platform's educational and commercial objectives.

Acharya Vinoba Bhave: Remembering a Gandhian Icon

Context:

On 11 September 2025, the Prime Minister of India paid tribute to Acharya Vinoba Bhave on his birth anniversary, recognising his enduring contributions to India's spiritual, social, and freedom movements.

Profile:

- Vinoba Bhave, regarded as the "National Teacher of India" and the spiritual heir to Mahatma Gandhi, was a philosopher, social reformer, linguist, and a strong advocate of *Sarvodaya*—the welfare of all. He is best remembered for initiating the *Bhoodan* (Land Gift) Movement.
- Born on 11 September 1895 in Gagode village, Maharashtra, Vinoba was spiritually inclined from a young age, deeply influenced by the Bhagavad Gita. He abandoned formal studies after reading Gandhi's speech at BHU, joined Gandhi at Kochrab Ashram in 1916, and fully immersed himself in Gandhian activities.
- At Gandhi's request, Vinoba became the first Individual Satyagrahi in 1940, symbolising non-violent resistance. He played an active role in the Quit India Movement (1942) and Gandhian programmes promoting Khadi, Nai Talim, and village industries. His Gita discourses,

delivered at Sabarmati Ashram's "Vinoba Kutir," were later widely published and translated.

- Vinoba launched the Bhoodan Movement in 1951, collecting over 4 million acres of land from landlords and redistributing it to the landless. In 1954, he initiated *Gramdan*, calling for entire villages to be donated for community ownership. He championed self-reliance, sanitation, rural development, and non-violence. A polyglot, Vinoba translated the Gita into Marathi (*Geetai*) and wrote commentaries on the Bible, Quran, and *Dnyaneshwari*.
- Vinoba Bhave successfully bridged the divide between spiritual ideals and socio-economic reform. His work continues to inspire land reform initiatives, rural development, and Gandhian economic principles based on trusteeship.

Red Fort: Environmental Threats and Historical Significance

- A recent study has revealed that the Red Fort, a prominent symbol of India's architectural heritage, is experiencing the formation of a 'black crust' on its walls. This phenomenon has been attributed to the high levels of air pollution in Delhi. The blackened deposits are damaging the structure's red sandstone exterior, raising concerns about the long-term preservation of this iconic monument.
- The **Red Fort**, also known as *Lal Qila*, is a Mughal fort situated in Delhi. Originally named *Quila-e-Mubarak* (Blessed Fort), it stands along the banks of the Yamuna River, whose waters once supplied the moats surrounding the fort. Commissioned in 1639 by the Mughal emperor Shah Jahan as part of his new capital Shahjahanabad, the fort was designed by architects Ustad Ahmad Lahauri and Ustad Hamid. Its name derives from the massive red sandstone walls that enclose it. The Red Fort is located adjacent to *Salimgarh Fort*, an earlier structure built by Islam Shah Suri in 1546, and together they form the Red Fort Complex.
- Serving as the residence of Mughal emperors for nearly two centuries until 1857, the Red Fort represents a pinnacle of Mughal architecture. Recognising its cultural and historical significance, UNESCO declared it a World Heritage Site in 2007. Today, it plays a vital role in India's national identity, as the Prime Minister hoists the national flag and addresses the nation from its ramparts every year on August 15, marking Independence Day.
- The **architecture of the Red Fort** showcases an amalgamation of Persian, Timurid, and Indian traditions. The fort's formidable sandstone walls rise to a height of 75 feet (23 metres) and enclose a complex of palatial buildings, including entertainment halls, intricately designed balconies, baths, indoor canals, and geometrically arranged gardens. It also houses a mosque of fine architectural merit. Though its layout follows Islamic design patterns, the pavilions within reflect distinct Mughal innovations.
- The fort is octagonal in shape, with its north-south axis longer than its east-west axis. Two of the most notable structures are the *Diwan-i-'Am* (Hall of Public Audience), supported by sixty red sandstone pillars and topped with a flat roof, and the more intimate *Diwan-i-Khas* (Hall of Private Audience), a pavilion crafted from white marble. The use of marble, intricate floral motifs, and the presence of double domes exemplify the refined aesthetic of later Mughal architecture. The complex has two principal gates: *Lahore Darwaza* on the western side and *Delhi Darwaza* on the southern side.
- The degradation caused by pollution is a pressing issue, as it threatens not only the structural integrity of the monument but also its aesthetic appeal and cultural symbolism. Preservation efforts will require both environmental reforms and conservation initiatives to protect this historic site for future generations.

Nankana Sahib and Pilgrimage Restrictions

Several political parties and Sikh organisations have recently appealed to the central government to revisit its directive advising state governments against processing applications for pilgrimage to Nankana Sahib in Pakistan. This pilgrimage is of particular importance during the birth anniversary celebrations of Guru Nanak Dev.

Historical and Religious Significance of Nankana Sahib

- Nankana Sahib is a city situated in Pakistan's Punjab province and holds immense spiritual significance for the Sikh community. It is revered as the birthplace of Guru Nanak, the founder of Sikhism. Originally named Rai-Bhoi-Di-Talwandi, it was renamed Nankana Sahib by Rai Bhullar Bhatti, the grandson of the village's founder, Rai Bhoi, to honour Guru Nanak's birth.
- Guru Nanak Dev Ji spent his formative years in this town, and it is from here that his spiritual journey and divine mission began. The city is home to the Gurdwara Janam Asthan, also known as the Nankana Sahib Gurdwara, which stands on the site where Guru Nanak is believed to have been born in 1469. The shrine was commissioned by Maharaja Ranjit Singh following his visit to Nankana Sahib in 1818–19 after the Battle of Multan.
- In addition to Gurdwara Janam Asthan, Nankana Sahib houses several other significant gurdwaras, each marking key episodes from Guru Nanak's life. These include Gurdwara Patti Sahib, Gurdwara Bal Leela, Gurdwara Mal Ji Sahib, Gurdwara Kiara Sahib, and Gurdwara Tambu Sahib. Moreover, the town also contains gurdwaras commemorating Guru Arjan, the fifth Sikh Guru, and Guru Hargobind, the sixth. Guru Hargobind is believed to have visited the town in 1621–22, further cementing its religious importance.

Seven New Indian Sites Added to UNESCO Tentative List

Context

India has added seven new natural sites to UNESCO's Tentative List—a prerequisite for being considered for inclusion in the World Heritage List. With these additions, India's Tentative List now includes a total of 69 properties.

New Additions to the Tentative List

The newly added sites are:

1. **Deccan Traps at Panchgani and Mahabaleshwar (Maharashtra)**
2. **Geological Heritage of St. Mary's Island Cluster (Karnataka)**
3. **Meghalayan Age Caves (Meghalaya)**
4. **Naga Hill Ophiolite (Nagaland)**
5. **Natural Heritage of Erra Matti Dibbalu (Andhra Pradesh)**
6. **Natural Heritage of Tirumala Hills (Andhra Pradesh)**
7. **Natural Heritage of Varkala (Kerala)**

ASI to Revise Sarnath Plaque, Acknowledging Benares Ruler's Family over British Officials

- In a significant move aimed at correcting historical narratives, the Archaeological Survey of India (ASI) is set to revise the existing plaque at Sarnath to officially credit the family of the Benares ruler—specifically Jagat Singh—for the site's rediscovery and preservation. This revision comes ahead of a visit by a UNESCO team evaluating Sarnath for inclusion in the World Heritage List.
- Sarnath, located approximately 10 kilometers from Varanasi in Uttar Pradesh, is among the most sacred and historically rich locations in the Buddhist world. It is the revered site where Gautama Buddha delivered his first sermon after attaining enlightenment in Bodh Gaya. This event, known as the *Dharmachakra Pravartana* or the Turning of the Wheel of Dharma, marks the formal beginning of the Buddhist Sangha (community), making Sarnath a foundational landmark in the history of Buddhism.

Historical Importance

- Around 528 BCE, Buddha addressed his first five disciples at Sarnath, preaching the Four Noble Truths and the Eightfold Path—principles that became the core philosophy of Buddhism. Emperor Ashoka, after adopting Buddhism in the 3rd century BCE, played a crucial role in transforming Sarnath into a Buddhist hub by erecting stupas, monasteries, and the iconic Lion Capital, which is now India's national emblem. The site further flourished under the Gupta dynasty (4th–6th century CE), known for its patronage of Buddhist art and architecture.
- Over time, especially with the decline of Buddhism in India around the 12th century CE and successive invasions, Sarnath fell into disrepair and was nearly forgotten. It was only during the colonial period that the site was brought back to public attention, although the mainstream

historical narrative long attributed this rediscovery to British efforts.

Key Monuments and Features at Sarnath

- Among Sarnath's most prominent structures is the **Dhamek Stupa**, originally built by Ashoka and later expanded. This massive cylindrical structure—standing 43.6 meters tall and 28 meters wide—marks the exact location of Buddha's first sermon. Its lower portion is adorned with intricate floral and geometric carvings typical of Gupta art.
- Another important monument is the **Chaukhandi Stupa**, which commemorates Buddha's initial meeting with his disciples and features a Mughal-era pavilion added much later.
- The **Ashokan Pillar**, topped with the Lion Capital now housed in the Sarnath Archaeological Museum, is one of the most iconic relics from the Mauryan period. This four-lion sculpture serves as the national emblem of India and is also featured on Indian currency.
- Modern additions include the **Mulagandha Kuti Vihar**, a monastery built in 1931 by the Mahabodhi Society. It showcases frescoes that vividly depict scenes from Buddha's life. The site also contains extensive **monastic ruins**, evidence of Sarnath's status as a thriving centre of Buddhist education and monastic life in ancient India.

Debate Over Historical Attribution

- For decades, the rediscovery and preservation of Sarnath have been widely attributed to British figures such as Jonathan Duncan and Colin Mackenzie in 1798, and later, to archaeologist Alexander Cunningham. However, recent scholarly research and archival evidence have challenged this version of history, pointing instead to Jagat Singh, a descendant of the Benares ruler Chait Singh, as the first to excavate the site in 1787–88—more than a decade earlier than the British interventions.
- Singh's excavation, initially undertaken for construction purposes, unexpectedly revealed a trove of Buddhist relics. Some of these items are still preserved at the Asiatic Society in Kolkata. This discovery laid the foundation for Sarnath's re-identification as a major Buddhist site. Yet, his role has largely been overshadowed by colonial narratives that positioned British officials as the primary preservers of Indian heritage.

Revisiting the Narrative: ASI's Recent Moves

- The current revision of the Sarnath plaque follows an earlier amendment made by the ASI at the **Dharmarajika Stupa**, prompted by a petition from Jagat Singh's descendants. The earlier version of that plaque had controversially described Singh as a "destroyer" of ancient monuments. The updated plaque now acknowledges that the stupa came to light due to Singh's actions, marking a shift towards a more balanced representation of history.
- The upcoming revised plaque at Sarnath will explicitly credit Jagat Singh for revealing the site's significance through his excavations in 1787–88—an acknowledgement that precedes any formal British efforts by more than a decade.

Scholarly Backing and Cultural Implications

- The push to recognise local contributions has been bolstered by the work of scholars like B.R. Mani, former Director of the National Museum, whose excavations revealed that Buddhist activity in Sarnath predates even the Mauryan period. This research adds depth to the case for acknowledging indigenous efforts in heritage preservation.
- Additionally, Singh's descendants have urged the ASI to update nearby cultural notice boards to reflect these corrections, suggesting that the initiative should go beyond plaques to encompass the broader interpretive material at the site.
- This shift in historical attribution is not simply about setting the record straight; it reflects a larger national effort to decolonise India's historical and cultural narratives. It also aligns with India's current cultural diplomacy strategy, which places strong emphasis on promoting Buddhist heritage, particularly among international visitors from South

and Southeast Asia, who form a significant portion of tourists to Sarnath.

UNESCO World Heritage Bid and Strategic Context

- As Sarnath awaits UNESCO's evaluation, the government is eager to bolster its candidacy by presenting a more inclusive and accurate historical account. The revised plaque plays a symbolic role in asserting India's own cultural and historical agency. By recognising Jagat Singh's early excavation and contribution to the rediscovery of the site, India aims to demonstrate that the roots of heritage conservation run deep within the local traditions and rulers—long before colonial interventions began.
- Sarnath has long featured on UNESCO's tentative list. With the revised narrative and the government's renewed focus, it is now considered a strong contender for full inclusion.

Hathei Chilli: Indigenous Pride and Economic Lifeline of Manipur

The 14th Sirarakhong Hathei Chilli Festival was recently inaugurated in Manipur with the objective of promoting the **GI-tagged Hathei Chilli**, a unique agricultural product that holds cultural, economic, and ecological significance in the state.

Origin and Cultivation

Hathei Chilli, also known as the **Sirarakhong Chilli**, is a distinctive variety that flourishes exclusively in the unique climatic conditions of **Sirarakhong village**, located approximately 66 kilometres from Imphal in Manipur. This indigenous chilli is cultivated on the **sloped terrains using the traditional jhum (shifting cultivation) method**, which is still widely practiced in the region. The chilli received its **Geographical Indication (GI) tag in 2021**, which affirms its origin-linked qualities and distinguishes it from other varieties in the market.

Characteristics and Significance

- Hathei Chilli is celebrated for its **deep red colour, unique flavour profile, and characteristic size and shape**, which are exclusive to the variety grown in Sirarakhong. It is regarded as **one of the finest chillies in the world**, with a high market demand both within Manipur and across other states. Its high **American Spice Trade Association (ASTA) colour value of 164** indicates its strong pigment and suitability for culinary and commercial use. The ASTA value is a globally recognized metric used to measure the extractable colour of chillies.
- The chilli is not only valued for its taste and colour but also for its **nutritional and health benefits**. Rich in **antioxidants**, it contains **high levels of calcium and Vitamin C**, making it a functional food product that contributes to health and immunity.
- Economically, the cultivation of Hathei Chilli serves as the **main source of livelihood for the villagers of Sirarakhong**, who are predominantly from the **Tangkhul Naga community**. The annual festival has become a platform for cultural celebration, market access, and the empowerment of local farmers, helping to boost rural incomes through sustainable agriculture.

Understanding Geographical Indications (GI) Tag

- A **Geographical Indication (GI) tag** is a form of intellectual property that signifies that a particular product originates from a specific geographical area and possesses qualities or a reputation that are inherently linked to its origin. GI tags are applicable to a broad range of products including **agricultural produce, foodstuffs, wine and spirits, handicrafts, and industrial goods**.
- In India, GI tags are governed by the **Geographical Indications of Goods (Registration and Protection) Act, 1999**, and are granted by the **Geographical Indication Registry** operating under the **Department for Promotion of Industry and Internal Trade (DPIIT), Ministry of Commerce and Industry**. The objective is to protect the cultural heritage, ensure economic benefits to local producers, and preserve the unique identity of the product.

Javari Temple: Renewed Attention on Heritage and Restoration

- The **Javari Temple** in Khajuraho, Madhya Pradesh, recently drew national attention after the **Chief Justice of India** commented during a hearing on a petition demanding the restoration of a **seven-foot-tall, headless idol of Lord Vishnu** housed within the temple. This statement sparked renewed public interest in the temple and its historical significance.
- The Javari Temple forms part of the renowned **Khajuraho Group of Monuments**, a **UNESCO World Heritage Site**. These temples, located in Madhya Pradesh, were constructed during the rule of the **Chandella dynasty**, which flourished between **950 and 1050 AD**. Known for their **nagara-style architectural design**, the temples are particularly celebrated for their intricate carvings, including depictions of human figures and **erotic sculptures**.
- The Javari Temple itself was constructed between **1075 and 1100 AD** and is dedicated to **Lord Vishnu**. Architecturally, the temple exemplifies the **Nagara style** and is elevated on a plinth. It features key structural elements including a **sanctum**, **vestibule**, **mandapa**, and **portico**, although it notably lacks a **pradakshinapatha** (circumambulatory path). One of its most striking features is the **Makara Torana**, or Capricorn Arch, and an elegantly rising **shikhara** (tower).
- Inside the sanctum is the now-damaged **four-armed Vishnu idol**, which is headless. The temple also houses sculptures of various Hindu deities and **navagrahas** (nine planetary gods). The entrance gateway and surrounding walls are adorned with elaborate carvings, including depictions of men and women, enhancing the temple's aesthetic and cultural richness.

Tripura Sundari Temple: Reviving a Sacred Cultural Landmark

- In a significant cultural development, the Prime Minister of India inaugurated new infrastructure and beautification projects at the **Tripura Sundari Temple complex** in Udaipur, Tripura. This sacred site, believed to have lent its name to the state of Tripura, holds deep spiritual and historical significance.
- Established in 1501 AD by Maharaja Dhanya Manikya of the Tripura Kingdom, the temple is one of the 51 *Shakti Peethas* across the Indian subcontinent. Locally revered as *Matabari* and also known as *Kurma Pith* due to its tortoise-shaped foundation, it is a key pilgrimage destination in Northeast India.
- Architecturally, the temple features a square layout and a sloping roof reminiscent of rural Bengal huts, reflecting a fusion of local style and religious symbolism. The sanctum houses two idols—the principal deity *Goddess Tripura Sundari* and a smaller idol of *Goddess Chhoto-Ma (Chandi)*. The latter historically accompanied Tripura's kings into battles and hunting expeditions.
- Celebrated as a symbol of syncretism, the temple welcomes worshippers from diverse religious backgrounds—Hindus, Muslims, and tribal communities—who jointly participate in its rituals. The recent renovations aim to preserve this rich cultural legacy while improving facilities for pilgrims.

Chero Archers: Celebrating Jharkhand's Warrior Heritage through Sport

In a significant and symbolic gesture, the Jharkhand archery team has been named the **"Chero Archers"** in the inaugural **Archery Premier League (APL)**. This naming pays homage to the legendary **Chero warrior clan**, known for their fearless resistance against both the Mughal and British empires. By adopting this historical identity, the team not only acknowledges a proud martial legacy but also redefines it within a modern sporting framework.

The Chero Warrior Clan: A Legacy of Resistance and Resilience

The Cheros were a prominent warrior community who rose to prominence during the medieval era. Primarily concentrated in **Palamu (Jharkhand)**, as well as in **Shahabad (Bihar)** and parts of **eastern Uttar Pradesh**, the Cheros gained recognition for their exceptional courage, expertise in archery, and unwavering defence of their territories against external aggressors. Their history is marked by a continuous thread of

defiance, first against the Mughals and later against British colonial forces.

Resistance Against Mughal Expansion

During the 16th and 17th centuries, the Cheros emerged as formidable opponents to Mughal authority in eastern India. **Palamu**, under the leadership of **Chero King Medini Rai**, became a symbol of this resistance. Medini Rai is credited with fortifying the Palamu forts and standing firm against repeated assaults from Mughal forces dispatched by **Emperor Aurangzeb**. Although the forts eventually fell to the Mughals, the determined resistance mounted by the Cheros demonstrated their martial prowess and their deep-seated desire to retain independence.

Opposition to British Colonial Rule

The Cheros continued to display their combative spirit during the colonial period. In the late 18th and early 19th centuries, they actively participated in uprisings against British land revenue policies and forest exploitation. Aligning with other tribal communities such as the **Santhals, Mundas, and Oraons**, the Cheros leveraged their knowledge of Jharkhand's rugged terrain and their skill in guerrilla tactics to oppose British expansion. Archery remained a central tool of resistance, reinforcing their reputation as skilled and strategic warriors.

Cultural Symbolism and Tribal Identity

Over time, the Chero legacy evolved into a broader symbol of **tribal identity, resistance, and valor** for the people of Jharkhand. Their stories have been preserved through **oral traditions, folk songs, and regional folklore**, passing down memories of their courage through generations. In many ways, the Cheros became a touchstone for indigenous pride and defiance, representing the unyielding spirit of Jharkhand's tribal communities.

Archery in Jharkhand: An Inherited Tradition

- Archery has long held a unique place in the cultural fabric of Jharkhand. Far from being merely a sport, it has historically functioned as a **way of life**, a survival mechanism, and a **cultural ritual**. For centuries, bows and arrows have been integral tools for **hunting, self-defence**, and daily life in forested regions. This traditional skillset continues to shape modern aspirations in the state.
- Jharkhand has produced world-class archers such as **Deepika Kumari** and **Komalika Bari**, who emerged from modest tribal backgrounds to achieve international acclaim. Their journeys reflect the region's deep-rooted connection with archery and highlight how ancient practices can evolve into professional excellence. Across numerous villages, young children continue to train with **bamboo bows**, keeping alive a tradition that fuses heritage with ambition.

The Chero Archers: Bridging Heritage and Modern Sports

The decision to name the APL team "Chero Archers" is a powerful act of **cultural reclamation and modern reinvention**. It repositions a centuries-old martial tradition within the contemporary world of competitive sports. This symbolic move intertwines the **warrior ethos of the Chero clan** with Jharkhand's ongoing dominance in archery, turning historical memory into a living narrative of excellence and resilience.

Reviving Identity and Inspiring a Generation

- This initiative carries profound implications beyond sport. It represents a deliberate effort to **revive indigenous cultural identity** and bring it into national consciousness. By elevating the Cheros from historical obscurity into the limelight of a high-profile sports league, Jharkhand has ensured that their legacy resonates with newer generations.
- The "Chero Archers" name also functions as an **inspirational symbol** for young athletes, especially from tribal communities, by reminding them of their ancestors' strength, resolve, and commitment to sovereignty. It reinforces the message that archery is not only a professional pursuit but also an inheritance of pride and purpose.

A Cultural Statement in the National Arena

- By grounding its archery team in local history, Jharkhand has set a compelling precedent for other Indian states to celebrate their own **regional heroes and cultural icons** through sports. The initiative brings a nuanced layer to national sports representation, one that integrates **historical depth with contemporary relevance**.

- In essence, the "Chero Archers" embody a unique synthesis of **past and present, tradition and modernity, resistance and aspiration** — transforming the legacy of a warrior clan into a powerful emblem for the future of Indian archery and tribal pride.

Ishwar Chandra Vidyasagar

Context:

The Union Home Minister paid homage to Ishwar Chandra Vidyasagar in Kolkata on the occasion of his 205th birth anniversary, celebrating the enduring legacy of one of India's greatest social reformers.

About Vidyasagar:

- Ishwar Chandra Vidyasagar was a 19th-century scholar, reformist, and pioneer in education, widely regarded as the "Father of Modern Bengali Prose." Known affectionately as *Vidyasagar* (Ocean of Knowledge) and *Dayar Sagar* (Ocean of Kindness), he was a central figure of the Bengal Renaissance.
- Born on 26 September 1820 in Birsingha village, Midnapore district (then part of Bengal Presidency), Vidyasagar rose from a life of poverty to academic excellence, mastering Sanskrit and English. He passed the Law Examination in 1839 and went on to serve as Head of the Sanskrit Department at Fort William College. He later became Principal of Sanskrit College in Calcutta, where he broke barriers by extending education to non-Brahmins and women. His 1855 publication *Borno Porichoy* remains the foundational Bengali alphabet primer.
- Vidyasagar's reform work significantly impacted Indian society. He was instrumental in the passing of the Hindu Widow Remarriage Act of 1856, and led campaigns against child marriage and polygamy. He advocated for women's education by establishing several girls' schools and was a staunch supporter of progressive educational movements, including the Bethune School. By modernising the Bengali language, he fostered cultural unity that would later feed into the broader nationalist awakening.
- He spent his later years in Karmatanr (present-day Jamtara, Jharkhand), working among the Santhal communities, where he founded schools, adult literacy centres, and free healthcare clinics. His reformist zeal influenced the Brahmo Samaj and carried forward the progressive legacy initiated by Raja Ram Mohan Roy.

ETHICS

Corruption in India: Structural Rot, Ethical Failure, and the Road to Reform

The recent decision by the Rajasthan High Court to cancel the **SI Recruitment-2021 examination** due to a **paper leak scam** once again draws attention to the systemic nature of corruption in India. In parallel, **Dr. Manju Sharma**, a member of the **Rajasthan Public Service Commission (RPSC)**, resigned from her post, citing her inability to compromise on **transparency and integrity in public life**. These developments underscore a broader crisis in governance, public trust, and institutional ethics.

Understanding Corruption: A Multifaceted Ethical Breach

- **Corruption**, fundamentally, is the **abuse of entrusted power for private gain**. It violates the ethical bedrock of public service by breaching **probity**, **transparency**, and **accountability**.
- Philosophically, corruption contravenes **deontological ethics** (duty-based morality), undermines **virtue ethics** (principles like honesty and integrity), and erodes the **social contract** between the state and its citizens.

Types of Corruption in India

As detailed by the **Second Administrative Reforms Commission (ARC)**, corruption in India can be broadly classified into three categories:

- **Petty Corruption** involves small-scale bribery for everyday services—such as acquiring certificates, licenses, or permits. It reflects the deterioration of routine ethical conduct in administrative settings.
- **Grand Corruption** refers to large-scale scams that subvert public interest in areas like **recruitment**, **infrastructure contracts**, or **natural resource allocations**, often involving high-level collusion.
- **Collusive Corruption** represents an entrenched nexus between **politicians**, **bureaucrats**, and **corporate actors**, facilitating unethical exchanges behind institutional facades.

Causes Behind the Prevalence of Corruption

The persistence of corruption in India stems from a complex interplay of **administrative, economic, political, social, legal**, and **psychological factors**:

- **Administrative flaws**, such as **discretionary power without accountability** and weak institutional oversight, allow public officials to operate with impunity.
- **Economic drivers** include **inadequate salaries**, particularly at lower bureaucratic levels, and **rent-seeking opportunities**, which incentivise corrupt practices.
- **Political culture** fosters corruption through the **criminalisation of politics**, vote-bank strategies, and **patronage networks**, which legitimise illegalities for electoral gain.
- **Social acceptance** of corruption, expressed in euphemisms like *"chai-paani"*, lowers ethical expectations and normalises bribery in daily life.
- **Legal-institutional weaknesses**, such as **delayed judicial proceedings** and insufficient **whistleblower protection**, embolden corrupt actors by reducing fear of consequences.
- **Psychological factors**, drawing from thinkers like **William James**, highlight the human capacity for moral rationalisation, making systemic corruption **socially tolerable** over time.

Implications of Corruption

The consequences of corruption are **devastating**, affecting both **individual citizens** and **societal structures**:

For Individuals:

- **Meritocracy collapses** when undeserving candidates are favoured, undermining fairness and morale.
- **Ethical dissonance** emerges in public servants who must navigate between duty and personal survival within a corrupt system.
- **Vulnerable populations**, particularly the poor, are systematically denied their legal entitlements due to their inability to pay bribes, thus **reinforcing social exclusion**.

For Society:

- **Institutional trust collapses**, as citizens increasingly view governance structures with suspicion and disengagement.
- **Inequality deepens**, since corruption channels benefits to the elite while the disadvantaged remain deprived.
- **Economic development suffers** through leakage of public funds, distorted allocation of resources, and disincentivised investment.
- **Democratic legitimacy weakens**, with citizens growing cynical and apathetic toward electoral and governance processes.

Challenges in Combating Corruption

Efforts to counter corruption face serious impediments:

- **Institutional capture** by vested interests restricts the autonomy of vigilance and enforcement agencies, rendering them ineffective.
- **Entrenched collusion** between political, bureaucratic, and corporate actors limits transparency and accountability.
- **Whistleblowers face retaliation**, making citizens and insiders reluctant to expose wrongdoing.
- **Cultural normalisation** of corrupt practices discourages public outrage, allowing corruption to persist as an accepted social practice.
- **Digital technologies**, though designed to enhance transparency, are often manipulated—evident in digital paper leaks, proxy usage, and biometric fraud—highlighting the gap between intent and implementation.

The Way Forward: Towards Ethical and Structural Reforms

Addressing corruption demands more than legal frameworks; it calls for **ethical renewal**, **institutional empowerment**, and **public mobilisation**.

- **Ethical Reorientation** must be the foundation. Civil servants need **value-based training**, as advocated by the Second ARC's report on **"Ethics in Governance."** Public functionaries should embody **constitutional morality** and **Gandhian ideals of trusteeship**, viewing power as a public responsibility, not a personal asset.
- **Institutional reforms** must follow. Bodies like the **Lokpal**, **Lokayuktas**, and the **Central Vigilance Commission (CVC)** must be granted true independence. Recruitment agencies, such as **RPSC and UPSC**, must operate with absolute transparency to prevent future examination scams and political meddling.
- **Administrative efficiency** should be enhanced through reduction of discretionary powers, and the government must shift towards **"minimum government, maximum governance."** Expanding **digital platforms**, with innovations like **blockchain in recruitment and procurement**, can help curb leakages and ensure auditability.
- **Social and cultural transformation** is also necessary. Citizens must internalise a zero-tolerance stance against corruption. Institutions like the **media**, **civil society organisations**, and mechanisms like the **Right to Information (RTI)** must be empowered to act as watchdogs.
- **Legal reforms** must support these changes through **fast-track courts for corruption cases**, robust **whistleblower protection laws**, and meaningful incentives for integrity.

Conclusion: Corruption as a Moral and Governance Crisis

Corruption in India is not merely an economic offence—it represents a **deep ethical failure** across state, society, and individual behaviour. It threatens the foundational values of **justice**, **equality**, and **rule of law**, as enshrined in the Constitution. To reclaim public trust and ensure just governance, India must move beyond **compliance-based rulebooks** and adopt **value-driven governance models**. Without this shift, health, education, recruitment, and welfare systems will continue to be compromised. A **corruption-free India** is not a utopia but a constitutional imperative—critical for realising the vision of a just, equitable, and ethical republic.

Integrity in Public Office: Reaffirming Ethical Governance in Light of the Nupur Bora Case

Context

The recent arrest of Assam Civil Service officer Nupur Bora on charges of amassing assets allegedly 400 times her known sources of income has cast a spotlight on the deep fissures in public accountability. Following a six-month

investigation by the Chief Minister's Vigilance Cell, authorities recovered more than ₹2 crore in cash and jewellery, signalling a profound breach of ethical and legal norms within the public administration. This incident underscores the critical need to uphold integrity in public office as a cornerstone of good governance.

Understanding Integrity in Public Office

Integrity in public office refers to the steadfast adherence to moral, ethical, and legal principles while discharging official duties. It entails using public power solely in pursuit of public interest, with no room for private enrichment or misuse of authority. Integrity is not merely about the absence of wrongdoing—it is about a proactive commitment to honesty, fairness, and accountability in all administrative actions.

Core Dimensions of Integrity

Integrity in public administration is defined by several interrelated elements:

- **Probity and Honesty** involve an unwavering commitment to ethical conduct and a refusal to accept bribes or favours, thereby fostering a culture of zero tolerance for corruption.
- **Accountability** requires that public officials be answerable for their decisions and actions, subjecting them to audits, public scrutiny, and legal oversight to ensure responsible governance.
- **Impartiality** demands that all actions be free from bias or conflict of interest, ensuring equal treatment of citizens irrespective of background or influence.
- **Transparency** in processes, finances, and decision-making enhances public trust by making information openly accessible and reducing opportunities for misconduct.
- **Adherence to the Rule of Law** ensures that all actions are grounded in constitutional and legal frameworks, guaranteeing justice, equity, and procedural fairness.

Ethical Foundations of Integrity

Several ethical theories underpin the concept of integrity in public life:

- **Deontological Ethics**, particularly Kantian philosophy, focuses on duty and moral obligation. It holds that public officials must act rightly regardless of the consequences, prioritising rules and responsibilities over outcomes.
- **Utilitarian Ethics** emphasizes decision-making that maximizes societal benefit and minimizes harm, ensuring that policies serve the greater good.
- **Virtue Ethics** centres on the character of public servants, stressing the cultivation of personal virtues such as honesty, courage, humility, and fairness.
- **Social Contract Theory** posits that the legitimacy of public authority rests on its service to collective interests; officeholders must justify their power by aligning with the public good.

Why Integrity Matters in Public Office

- Integrity is essential to the health and efficacy of democratic institutions. It builds **public trust**, encouraging citizens to engage more positively with the state and comply with laws and policies. Clean governance also results in **efficient service delivery**, reducing leakages, misuse of funds, and bureaucratic red tape, which directly enhances welfare outcomes.
- In the economic sphere, integrity attracts both domestic and foreign investment by lowering the costs associated with corruption. It reinforces the **rule of law**, discouraging practices like favouritism and the creation of patronage networks, which often undermine fair competition. Moreover, ethical public servants serve as **moral leaders**, setting examples for broader societal behaviour.

Challenges to Upholding Integrity

Despite its importance, integrity in public office faces multiple systemic and institutional challenges:

- **Weak enforcement mechanisms** allow unethical behaviour to persist, especially when vigilance inquiries and departmental proceedings are delayed or ineffective.
- **Opaque procedures**, such as failure to disclose assets or explain decisions in a timely manner, create breeding grounds for corruption and misuse of authority.
- **Political patronage** can shield corrupt officials from accountability through strategic transfers or interference in investigations.

- **Low deterrence** levels—owing to slow judicial processes and low conviction rates—fail to instil sufficient fear of consequences among wrongdoers.
- **Organised corruption networks**, often involving officials, contractors, and intermediaries, make corruption more systematic and harder to dismantle.

The Role of the Prevention of Corruption (Amendment) Act, 2018

The **Prevention of Corruption (Amendment) Act, 2018** represents a key legal tool in addressing these challenges. It introduces several critical reforms:

- It broadens the scope of "undue advantage" to include not just cash but also gifts, favours, and non-monetary benefits, closing previous legal loopholes.
- It holds **bribe givers** accountable, while also protecting individuals who are coerced into giving bribes and later come forward as whistleblowers.
- It introduces **corporate liability**, making companies responsible for acts of bribery committed by employees unless they can demonstrate effective preventive systems.
- The Act mandates **time-bound trials**, ensuring that corruption cases are concluded within two years (extendable to four), thereby enhancing the speed of justice.
- It allows for the **attachment and confiscation of illicit assets**, ensuring that those who benefit from corruption are deprived of their illegal gains.

Way Forward: Strengthening the Integrity Ecosystem

To institutionalise integrity in public administration, several strategic interventions are necessary:

- **Enhancing internal vigilance** by granting greater autonomy, resources, and legal backing to watchdog bodies like the Lokayuktas, Central Vigilance Commission (CVC), and departmental vigilance units can lead to more proactive detection and deterrence.
- **Leveraging digital transparency** through online declaration of assets, real-time public dashboards on postings and transfers, and open access to administrative decisions will foster greater public oversight.
- **Building capacity** among civil servants through regular training programmes on ethics, conflict of interest, and public accountability will help internalise the values of integrity.
- **Expediting justice** by setting up dedicated special courts for corruption trials and disproportionate asset cases will enhance public confidence and deter future violations.
- **Protecting whistleblowers** by effectively implementing the Whistleblower Protection Act will encourage more individuals to report wrongdoing without fear of retaliation.

Conclusion

- Integrity is the soul of public service. When compromised, it corrodes governance from within, undermining public faith and institutional credibility. The case of Nupur Bora stands as a stark reminder of the urgent need to reinforce ethical conduct in public life. It highlights not only the weaknesses in our current systems but also the possibilities for reform.
- To realise the vision of a transparent, citizen-centric, and corruption-free administration, India must foster a culture rooted in values, backed by robust legal frameworks like the PCA 2018 and vigilant institutional mechanisms. Only through sustained commitment to ethical governance can the bureaucracy regain its rightful place as a pillar of democratic accountability and public trust.

Lessons from the Octopus

Introduction

A recent study published in *Scientific Reports* by researchers at the **Marine Biological Laboratory, Woods Hole (USA)** has shed light on the intriguing and highly organised behaviour of the **octopus**. Far from being a chaotic mass of limbs, the octopus demonstrates a sophisticated system of limb coordination, assigning **distinct roles to different arms** depending on context and need.

This study reflects nature's deep intelligence, showcasing principles of

compartmentalisation, cooperation, and adaptability. The findings offer not just biological insights, but profound implications for fields ranging from **robotics** and **cognitive science** to **philosophy**, **public policy**, and **ethical thinking**.

Key Findings of the Study

Division of Labour Among Limbs

- Each of the octopus's eight limbs performs a unique function, based on its position and the situation.
- The **front arms** act like diplomats — highly flexible, far-reaching, and capable of navigating complex environments.
- In contrast, the **rear arms** serve more practical purposes such as **locomotion, propulsion, and escape**, ensuring swift reaction in unpredictable situations.
- This form of **functional specialisation and cooperation** equips the octopus with remarkable adaptability across diverse habitats.

Parallels in Nature

This division of labour mirrors **other natural systems**:

- The **human brain** divides linguistic and spatial tasks between hemispheres but relies on constant inter-hemispheric communication.
- **Bird wings**, though symmetrical, each make micro-adjustments for stability, lift, and thrust.
- **Social insects** like ants and bees operate on decentralised specialisation, combining individual roles into collective efficiency.

Core Principle: Specialisation + Cooperation = Resilience

The underlying lesson is that **diversity in roles**, combined with **harmonious functioning**, contributes to **survival, flexibility, and system resilience**.

Cross-Disciplinary Implications

- **Robotics and Artificial Intelligence:** In robotics, the octopus provides a **bio-inspired blueprint**. Rather than designing machines with monolithic, uniform programming, engineers can develop systems composed of **specialised, flexible modules** that work collaboratively. For example, **soft robotics** based on octopus limbs are already being explored in areas like **minimally invasive surgery**, **underwater exploration**, and **disaster rescue**. In **AI systems**, the idea of **distributed intelligence**—where decision-making is decentralised—offers models for systems that are more adaptive and less prone to single points of failure.
- **Cognitive Science and Neuroscience:** The octopus's neural structure suggests a model of **distributed cognition**: its arms possess localised decision-making ability, independent of the central brain. This challenges traditional concepts of intelligence as a top-down process. It prompts inquiry into whether **cooperation between semi-autonomous agents** might better explain **learning**, **creativity**, and even **mental well-being**. This decentralised model could reshape how we understand both **artificial cognition** and the **human brain**.
- **Philosophical and Social Dimensions:** The octopus teaches us that **resilience arises from diversity, not uniformity**. Each arm knows when to take charge and when to play a supportive role — a profound metaphor for **human societies and institutions**. Just like the octopus, social systems thrive when **different arms—legislature, executive, judiciary, media, and civil society—coordinate** without overstepping. This aligns with the ethical and philosophical concept of **pluralism**, where progress and harmony are achieved through **balanced diversity**, not centralised domination.
- **Governance and Public Policy:** The octopus provides an analogy for **federal governance**. Its model suggests that **local, state, and central bodies** should be empowered according to their capacities and contexts. Just as the rear arms handle propulsion and the front ones navigate complexity, **policy implementation and vision-setting** must be contextually divided. This insight supports models like **cooperative federalism**, which balance **autonomy with coordination**.

- **Environmental and Evolutionary Perspective:** From an ecological standpoint, the octopus exemplifies how **adaptability, decentralisation, and diversity** enhance survival. As humanity grapples with climate change, **resilience strategies** must reflect this logic: **local solutions**, **global cooperation**, and **diverse approaches** are essential. Nature, through evolution, has shown that survival favours **specialisation combined with effective communication**—not rigid structures.

Broader Ethical Insights

- **Plurality and Innovation:** Innovation is more likely to emerge in **diverse ecosystems** where unique roles and ideas can coexist. Uniform systems may be **efficient temporarily** but prove **fragile** in the face of crisis.
- **Leadership and Flexibility:** The octopus model implies that **not all limbs (or individuals or institutions)** need to lead at once. Effective systems require the wisdom to **adapt roles according to circumstances**, rotating leadership as needed.
- **Resilience in Complexity:** The **adaptive complexity** of the octopus arms serves as a metaphor for systems—social, political, or technological—that **embrace diversity and decentralisation**. These are the systems that **withstand shocks**, **evolve**, and **recover**.
- **Ethical and Humanistic Dimensions:** The octopus provides a compelling **ethical parable** for human life. It shows that **patience, intuition, adaptability**, and **balance** offer more long-term strength than conformity or force. In polarised times, the capacity to **respect differences—of identity, opinion, and culture—is not a weakness** but a moral strength. **Ethics rooted in pluralism**, not uniformity, make societies more humane and more sustainable.

Way Forward: Research and Application

- **Biomimicry and Technology**: Further research into **cephalopod-inspired robotics** can revolutionise **healthcare**, **defence**, and **marine engineering**.
- **AI and Cognitive Models**: Study of **distributed intelligence** in natural organisms can lead to **smarter, safer, and more adaptive AI** systems.
- **Governance Innovation**: Use decentralised frameworks to tackle global issues such as **pandemics**, **climate change**, and **conflict resolution**.
- **Ethical Paradigms**: Build **ethical systems and social structures** that value **diversity, cooperation**, and **context-based leadership**.

Conclusion

- The octopus, with its elegant coordination of limbs and decentralised intelligence, teaches a timeless lesson: **resilience stems from diversity, adaptability, and shared leadership**.
- In a world facing increasing complexity—from technological disruption to climate threats and social fragmentation—this lesson is more relevant than ever.

To build lasting systems—whether in governance, technology, or ethics—**humanity must embrace the octopus's way**: flexible, decentralised, and deeply cooperative. Knowing **when to lead, when to follow, and when to adapt** is the essence of ethical survival.