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Monthly Current Affairs

November 2025

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CURRENT AFFAIRS

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Polity & Governance

EPF New Withdrawal Rules 2025

The **Central Board of Trustees (CBT)** of the **Employees Provident Fund Organisation (EPFO)** approved new guidelines for **partial and premature withdrawal of Provident Fund (PF) funds**, aiming to enhance the "ease of living" for subscribers.

EPF New Withdrawal Provisions 2025

- **Simplified Rules:** 13 complex withdrawal provisions merged into **three categories** – essential needs (illness, education, marriage), housing, and special circumstances.
- **Employer Contribution:** Members can now withdraw from **both employee and employer contributions**.
- **Minimum Balance Rule:** Members must maintain **at least 25% of their contribution balance at all times**, ensuring a financial cushion and long-term security.
- **Premature Withdrawal During Unemployment:** 75% of PF can be withdrawn immediately after leaving a job.
  - Full 100% withdrawal allowed if unemployed for **12 months** (previously 2 months).
  - The final pension **amount** can be withdrawn **only after 36 months**, instead of 2 months earlier.
    - ❖ The change aims to **help members accumulate a sufficient pension corpus** by discouraging early full withdrawals, as **about 50% of members had less than Rs 20,000** at final settlement.
- **Flexibility:** Withdrawals for marriage, house purchase, education, illness, or emergencies can now be made **earlier and more frequently**.

Employees Provident Fund (EPF)

- **About:** EPF is a **social security and retirement savings scheme** for salaried employees in India. It is administered by the **Employees' Provident Fund Organisation (EPFO)** under the **Ministry of Labour and Employment** and is governed by the **Employees' Provident Funds & Miscellaneous Provisions Act, 1952.**
  - The PF account benefits are extended to all the establishments which employ 20 or more persons.
- **Membership:** All employees of eligible establishments can become members from the date of joining.
  - Membership provides access to **Provident Fund (PF)** savings, **Pension benefits, and Insurance benefits.**
  - Members must **submit a nomination** at the time of joining.
- **Contribution Structure:** Employers and employees both contribute around 12% of wages in contribution accounts.
  - Further, the employers also contribute towards administration of the benefits under the EPF & MP Act.
  - Funds earn interest declared annually by the Government of India.
- **Benefits:** EPF provides long-term savings for retirement while allowing partial withdrawals for housing, education, marriage, illness, and special circumstances.
  - It ensures financial security for employees and their families in case of resignation, retirement, or death.
  - Members can also access online services such as e-passbook, PF account transfer, and claims.

Towards Fiscal Empowerment of Municipal Bodies

Urban India contributes nearly **two-thirds of India's GDP**, yet its municipalities control less than **1% of national tax revenue**. This stark fiscal imbalance has reignited debate over flawed **fiscal architecture of Indian urban governance** and the need for empowering cities through structural reforms.

Structural Issues that Undermine the Fiscal Effectiveness of Municipal Bodies

- **Over-reliance on Grants and Schemes:** Urban finance now **depends heavily on State and Central government grants,** many of which are tied or discretionary.
  - **Intergovernmental transfers and grants** often bypass municipal accounts or are delayed, disrupting planning and execution of projects.
- **GST Impact:** The introduction of **Goods and Services Tax (2017)** has undermined municipal fiscal autonomy by subsuming key local taxes such as **octroi, entry tax, and local surcharges**, leading to nearly **19% revenue loss**.
- **Unequal Contract:** While cities are tasked with critical services-**solid waste management, climate resilience, urban housing**, they lack the financial tools to deliver. This has led to what experts term an **"inversion of democracy".**
  - Weak fiscal capacity limits municipalities' ability to invest in infrastructure or meet sustainability goals.
- **Creditworthiness Issues:** Credit rating mechanisms focus narrowly on "own revenue" performance (e.g., property tax), ignoring the regularity of state/central transfers.
- **Political Hesitation:** Local representatives are reluctant to impose new taxes for fear of losing voter support.
- **Weak Institutional Capacity:** Lack of trained staff, poor data systems, and fragmented governance hinder fiscal reforms.

Sources of Funds for Municipalities
■ **Own Revenue Sources:** Property tax, user charges, advertisement tax, trade licenses, parking fees, and development charges.
■ **Transfers from Higher Governments:** State Finance Commission and Central Finance Commission grants, revenue-sharing arrangements, and special-purpose transfers under schemes like **AMRUT** and **Smart Cities Mission**.
■ **Borrowings and Bonds:** Municipal bonds allow cities to raise funds from investors for long-term projects. Cities like **Ahmedabad, Pune, Surat, Hyderabad, and Lucknow** have used this route.
■ **Public-Private Partnerships** (**PPP**): Monetising underutilised assets or developing infrastructure through private participation.

Steps Taken to Strengthen Urban Fiscal Governance	Reforms to Strengthen Fiscal Architecture of ULBs
■ **AMRUT 2.0:** Incentives for **issuance of Municipal Bonds to ULBs**.	■ **Grants & Shared Taxes:** Treat as legitimate, stable income sources for municipal income to ensure reliable funding.
■ **SASCI 2023-24:** ₹3,298.23 cr given to states for **property tax reforms** under SASCI 2023-24 - **Part-IV** (Financing reforms in ULBs to make them credit worthy for Municipal Bonds and for issue of Municipal Bonds).	■ **Revising Credit Rating Norms:** Include **governance quality** and **fiscal management** as key indicators.
	■ **Using GST Compensation as Collateral:** GST compensation or State revenue shares can be allowed to serve as collateral for municipal borrowing.
■ **Finance Commissions Recommendations: 12ᵗʰ FC:** Use of GIS, digital mapping for property tax; **14ᵗʰ FC:** Empower ULBs to levy vacant land tax.	■ **Property Tax Reforms:** Use **GIS mapping**, regular **revaluation**, and better collection mechanism.
■ **Smart Cities & Swachh Bharat Mission:** Promote revenue generation through **user charges** and **service improvements**.	■ **Cooperative federalism:** Ensure **predictable, united, formula-based transfers**.
■ **Digital Reforms:** Promotion of **online tax payments, e-filing, transparent accounting practices**.	■ **Innovative Financing Tools:** Use **Social Stock Exchanges**, **Value Capture Financing**.

What are the key reasons for India's urban fiscal crisis, and what steps has the government taken to address it?

Drishti Mains Question

Internationalisation of Indian Higher Education

17 foreign universities mainly from the **UK and Australia,** have received approval to set up campuses in **India** under **UGC's 2023 regulations.** This move aligns with **National Education Policy (NEP) 2020** and comes amid growing demand for quality higher education in India.

India's Efforts to Advance Global Partnerships in Higher Education

■ **NEP 2020 Vision:** Guided by the principles of **Access, Equity, Quality, Affordability, and Accountability,** NEP 2020 aims to establish India as a **global education hub**.

- It allows **top 100 global universities to operate in India**, fostering **international collaboration**, **student and faculty mobility**, and **academic credit transfer** to elevate the entire **education ecosystem** to **global standards**.

■ **UGC's Regulations 2023:** To operationalize the **NEP 2020's vision**, **UGC's (Setting up and Operation of Campuses of Foreign Higher Educational Institutions in India) Regulations 2023** was enacted, permitting **top-ranked Foreign Higher Educational Institutions (FHEIs)** to establish campuses in **India**.

- Eligible FHEIs must be ranked within the **top 500 QS World University rankings**.

- These institutions are mandated to maintain the **same academic standards,** curricula, and degree equivalence as their parent campuses abroad.

- They are granted **operational autonomy, including flexibility in faculty recruitment—both Indian and foreign**—and are not bound by existing fee caps applicable to Indian universities.

Factors Driving Foreign Universities to Establish Campuses in India

■ **Demand Surge for Quality Higher Education:** With **over half its population under 30** and a **Gross Enrolment Ratio (GER) below 30%**, **India** presents a vast **untapped higher education market**.

- Rising **incomes**, a growing **middle class**, **English proficiency**, and demand for **global learning** make it an attractive destination for **foreign universities.**

■ **Supportive Policy Environment:** NEP 2020 promotes the **internationalisation of education**, inviting top global universities to India, while **UGC's 2023 regulations** provide a supportive framework for establishing their campuses.

■ **Declining International Students:** Recent data shows a sharp decline in **Indian students abroad** due to **stricter immigration policies**, including **restrictions on foreign**

students bringing **dependents** and other **measures to reduce immigration** in the **UK, US, and Canada**.

- **Diversification of Revenue:** With **stagnant domestic enrolments** and **declining public funding**, universities in the **UK, Australia, and Canada** see **India** as a **strategic market** for **revenue diversification** and **financial stability**.

- **Strategic Global Partnerships:** Indian campuses strengthen **institutional ties**, promote **research collaboration** and **student exchange**, and build a **talent pipeline** for future **postgraduate recruits** and **global alumni networks**.
  - E.g., **UK–India Education and Research Initiative (UKIERI)** promotes **bilateral student and faculty exchange.**

Implications of Internationalising India's Higher Education

- **Global Competitiveness:** Foreign universities introduce **global curricula**, **teaching standards**, and **quality assurance**, elevating India's academic ecosystem while attracting **innovation** and **research funding**.

- **Curbing Brain Drain: Highly skilled talented students** may now stay in India, reducing the **massive annual outflow of billions of dollars** spent on studying abroad.

- **Systemic Improvement:** The presence of **foreign universities** will drive Indian institutions to **innovate**, enhance **quality and competitiveness**, while their **governance models** and **industry-academia linkages** can serve as a **blueprint for systemic reform**.

- **Alignment with National Goals:** Courses in high-demand fields like **AI**, **Data Science**, and **Finance** will build a skilled workforce aligned with **Make in India** and **Digital India**, while fostering a **diverse and cosmopolitan academic environment**.

- **Affordable International Degrees:** Earning a foreign degree in India is far more affordable than studying abroad — e.g., **Southampton University's 2026 fees for Undergraduate (UG) courses (Rs 13.86–23.10 lakh)** are about **half** of UK on-campus costs.

> Examine how National Education Policy (NEP) 2020 and UGC Regulations 2023 facilitate the internationalisation of higher education in India and assess their policy implications
>
> **Drishti Mains Question**

Nutrient Based Subsidy (NBS) Scheme

The Union Cabinet, chaired by Prime Minister **Narendra Modi**, has approved the **Nutrient Based Subsidy (NBS) rates** for **Phosphatic and Potassic (P&K) fertilizers** for the **Rabi season 2025–26 (from October 1, 2025 to March 31, 2026)**.

- The move aims to ensure **affordable fertilizer availability** for farmers while reflecting the **latest global price trends** of fertilizer inputs.

Nutrient Based Subsidy (NBS) Scheme

- **About:** The **Nutrient Based Subsidy (NBS) Scheme**, is a **central sector scheme** launched in **2010** by the **Department of Fertilizers, Ministry of Chemicals and Fertilizers**.
  - It aims to make **Phosphatic and Potassic (P&K) fertilizers** available to farmers at **affordable prices** while promoting **balanced nutrient application** for sustainable agriculture.

- **Key Features of NBS Scheme:**
  - **Coverage:** 28 grades of P&K fertilizers, including **Di-Ammonium Phosphate (DAP)** and **NPKS grades**.
  - **Subsidy Based on Nutrient Content:** Provides a **fixed amount of subsidy per kilogram** of nutrient (**Nitrogen (N), Phosphorus (P), Potash (K), and Sulphur (S)**) is decided on an **annual or bi-annual basis**.
    - ❖ The subsidy is provided to the manufacturers/importers based on nutrient content in each fertilizer.
  - **Special support:** Government may provide **additional subsidy** (e.g., for DAP) to stabilize prices during global volatility.
  - **Decontrol of P&K Sector:** P&K fertilizers are **decontrolled** under NBS. Fertilizer companies can fix the **Maximum Retail Price (MRP)** at reasonable levels, which are monitored by the Government to ensure affordability.
  - **Urea exclusion:** Urea is **not covered** under NBS; its MRP is **fixed at Rs 242 per 45-kg bag** since 2018.

- **Significance of the Scheme:** Ensures **continuous supply** of essential fertilizers at **affordable prices**.
  - Promotes **nutrient balance** and reduces overuse of nitrogen-based fertilizers.
  - Enhances **transparency** and **fiscal discipline** in subsidy management.
  - Supports **soil health management** and **sustainable agricultural practices**.

Challenges with NBS

- **Imbalanced Fertilizer Use:** Urea's exclusion from NBS and its low fixed price have led to **overuse of nitrogen** and underuse of P&K nutrients.
  - Long-term soil degradation threatens agricultural sustainability and food security.

- **Rising fertilizer prices:** Rising prices of non-urea fertilizers have increased farmers' input costs despite subsidies. Price volatility discourages balanced fertilizer use and affects crop profitability.

- **Fiscal strain:** Fertilizer subsidy is India's second-largest after food, adding significantly to the fiscal deficit. Increasing global prices further strain the subsidy budget and limit funds for other rural schemes.

- **Import Dependence and Vulnerability:** India's high import dependence **(25% for urea, 90% for phosphates, and 100% for potash)** exposes it to global price shocks.
  - Any disruption in global supply chains directly impacts fertilizer availability and affordability.
- **Environmental Impact:** Overuse of nitrogen-rich fertilizers contributes to groundwater pollution and greenhouse gas emissions. Declining soil organic content affects long-term soil resilience and ecological balance.

Reforms to Strengthen India's NBS Scheme

- **Bring Urea under the NBS framework:** As recommended by the **Commission for Agricultural Costs and Prices (CACP)** include urea in the NBS to ensure uniform subsidy treatment for all major nutrients. This will promote balanced fertilizer use and reduce the overdependence on nitrogen.
- **Link subsidies to Soil Health:** Align fertilizer subsidies with **Soil Health Card data** to encourage region-specific nutrient application. Promote customized fertilizer blends suited to local agro-climatic conditions.
- **Cap Excessive Subsidy Usage:** Introduce a limit on the number of subsidized fertilizer bags per farmer to prevent diversion and misuse.
  - Target subsidies better using **Aadhaar-linked and Direct Benefit Transfer (DBT) systems.**
- **Encourage Organic and Bio-fertilizers:** Provide financial incentives for using organic, bio, and nano fertilizers alongside chemical ones. This can improve soil health and reduce chemical dependency.
- **Promote awareness and training:** Educate farmers on balanced fertilizer use and sustainable nutrient management through **Krishi Vigyan Kendras (KVKs)** and extension services.

> Examine the objectives and limitations of the Nutrient Based Subsidy (NBS) Scheme. How can policy reforms reconcile farmer welfare with fiscal sustainability?
>
> **Drishti Mains Question**

Constitutional Morality in India

Constitutional morality in India has gained renewed attention amid ongoing debates on **institutional independence, rule of law, and ethical governance**, highlighting its critical role in shaping democratic conduct and upholding constitutional values.

Constitutional Morality

- **About:** It is defined as a **"paramount reverence for the forms of the Constitution"** that ensures **obedience to lawful authority** while allowing freedom of expression and dissent.

  - It refers to the **adherence to the Constitution not just in letter**, but in spirit**.**
  - The idea of constitutional morality was introduced by the British historian **George Grote** as a **balance between freedom and restraint**, where citizens uphold constitutional authority while retaining the right to openly critique those in power.
- **Dr. Ambedkar's Thought on Constitutional Morality: Dr. B.R. Ambedkar** invoked Grote's idea to stress the importance of cultivating a deep respect for constitutional processes. Ambedkar observed that **"constitutional morality is not a natural sentiment-it has to be cultivated".**
- **Pillars of Constitutional Morality:**
  - **Constitutional Values & Rights:** Upholding **justice, liberty, equality, fraternity,** secularism, and protection of **fundamental rights.**
  - **Rule of Law & Accountability:** Ensuring all, including those in power, are bound by law through checks, balances, and democratic participation.
  - **Ethical & Transparent Governance:** Promoting integrity, responsibility, and **transparency in public affairs.**

Judiciary's Role in Applying Constitutional Morality to Advance Social Reform in India

- **Protection of Privacy and Human Dignity:** In *Justice K.S. Puttaswamy (Retd.) v. Union of India (2017),* the SC recognised the right to privacy as a fundamental right, holding that dignity, autonomy, and liberty are essential components of constitutional morality.
- **Preservation of Constitutional Values:** In *Kesavananda Bharati v. State of Kerala (1973),* the Court established the Basic Structure Doctrine, ensuring that parliament cannot alter the essential democratic and secular features of the Constitution.
- **LGBTQ+ Rights:** In *Naz Foundation v. NCT of Delhi (2009)* and later reaffirmed in *Navtej Singh Johar v. Union of India (2018),* the SC held that constitutional morality must prevail over societal prejudice and decriminalised consensual same-sex relations.
- **Gender Equality and Religious Reform:** In *Indian Young Lawyers Association v. State of Kerala (Sabarimala, 2018),* the SC struck down the ban on entry of women into the Sabarimala Temple, holding that gender equality and liberty outweigh discriminatory religious customs.
- **Gender Equality and Marital Reform:** In *Joseph Shine v. Union of India (2018),* the Court decriminalised adultery by striking down **Section 497 of the IPC**, reaffirming gender equality and recognising women's autonomy within marriage.

Challenges to Constitutional Morality in India

- **Political Interference:** The increasing political influence over constitutional and statutory bodies has raised concerns, as seen in recent developments like the **judiciary ruling on the Governor's role in withholding assent to state bills,** highlighting tensions between institutional autonomy and political intervention.
- **Judicial Activism vs. Restraint:** While cases like *Vishaka v. State of Rajasthan (1997)* show how judicial activism can advance rights, excessive judicial overreach risks upsetting the separation of powers.
- **Weak Enforcement:** Delays in implementing key rulings such as the *Vineet Narain (1998) judgment* on institutional accountability and poor awareness of rights erode the force of constitutional morality.
- **Societal Resistance:** Deep-rooted caste hierarchies, gender discrimination, and religious orthodoxy- seen in issues like temple entry or inter-caste marriages-continue to obstruct equality and fraternity envisioned by the Constitution.

Ways in which Public Institutions Can Uphold Constitutional Morality

- **Strengthening Institutions:** Bodies responsible for governance, investigation, and oversight(Election Commission, CBI, and NIA) must operate **autonomously and without political interference** to uphold constitutional values and public trust.
- **Enhancing Access to Justice:** Simplifying legal procedures, reducing judicial backlog, and improving legal aid can ensure equality before the law.
- **Encouraging Ethical Leadership:** Public officials must demonstrate integrity, accountability, and adherence to constitutional principles.
- **Promoting Civic Education:** Educating citizens, especially youth, about constitutional rights and responsibilities can cultivate constitutional culture.

> Discuss the significance of Constitutional Morality in strengthening democratic governance and ensuring the ethical functioning of constitutional institutions in India.
> **Drishti Mains Question**

Curriculum on AI and Computational Thinking (CT) for Class 3 Onwards

The **Ministry of Education** plans to introduce **Artificial Intelligence (AI) and Computational Thinking (CT)** from Class 3 onwards in the 2026–27 academic year under the **National Curriculum Framework for School Education (NCF-SE) 2023**, in line with **National Education Policy (NEP) 2020** to prepare students for an AI-driven future.

- The **Central Board of Secondary Education (CBSE)** has set up an expert committee led by Prof. Karthik Raman to develop the curriculum, guided by the concept of linking **AI learning to "The World Around Us" (TWAU)** for real-life relevance.

AI & CT Curriculum

- **About:** The AI & CT curriculum aims to **make AI education a universal skill** as essential as reading or numeracy.
  - Aligned with **NEP 2020** and **NCF-SE 2023**, it promotes a shift from rote learning to **problem-solving, creativity, and ethical technology use**, fostering **critical thinking, logical reasoning, and responsible innovation** among students.
- **Early Integration into Schooling:** AI & CT will be **introduced from Grade 3 onwards**.
  - The idea is to **organically embed AI-related learning** from the **foundational stage** so that children grow up understanding how technology impacts their world.
  - The approach promotes "**AI for Public Good**," highlighting ethical and socially responsible applications of technology.
- **Institutions/Bodies Involved:**
  - Central Board of Secondary Education (**CBSE**)
  - National Council of Educational Research and Training (**NCERT**)
  - Kendriya Vidyalaya Sangathan (**KVS**)
  - Navodaya Vidyalaya Samiti (**NVS**)
  - State and Union Territory (**State/UT**) Education Boards
    - ❖ All will work collaboratively under the guidance of the **Department of School Education and Literacy (DoSE&L)** to develop the AI and CT curriculum.
- **Implementation and Resources: Teacher training** will be the backbone of this rollout, led through **NISHTHA (National Initiative for School Heads' and Teachers' Holistic Advancement) training modules** and **video-based learning resources**.
- **Broader Significance:** Represents a major step towards creating **tech-literate and ethically aware citizens**.
  - It strengthens India's long-term vision of becoming an **AI-driven knowledge economy** and reinforces the shift towards **future-oriented, inclusive, and competency-based education**.

> **NOTE:** NCF-SE 2023, introduced TWAU as a core curricular area at the preparatory stage of school education.
>
> TWAU is a multidisciplinary course that helps students explore natural, social, and cultural environments through active learning, linking concepts from science, social studies, and environmental education.

Challenges of Integration of AI and CT in Education	Suggestions
■ **Digital Divide**: ~50% schools lack **electricity, internet, computers** which may widen educational **inequality** ■ **Teacher Training Gaps**: Most lack **AI pedagogy skills**; overburdened staff ■ **Dis-Education Risk & Dependency**: **Overuse of AI tools** may reduce **motivation, reasoning**, harm **intergenerational learning** ■ **Curriculum Rigidity**: Fast-changing tech risks making **content obsolete** ■ **Privacy, Psychological & Ethical Risks**: **Unsupervised AI use** can lead to **data misuse, bias**, and **psychological risks** without strong regulation.	■ **Phased Rollout**: **Classes 3–5**: AI literacy via real-life examples; **classes 6–8**: Applied understanding & responsible use; **classes 9–12**: Technical skills (Python, data analysis, AI models) ■ **Unplugged Learning**: Offline **logic/ethics games** for schools with limited resources ■ **Focus Areas**: Teach **AI ethics**, data **privacy, bias detection**; promote **critical thinking, adaptability, lifelong learning** ■ **Teacher Support**: Training via **NISHTHA**, led by **NCERT–CBSE** coordination; ensure **infrastructure, teacher support, ethical safeguards** before scaling

Role of AI and Computational Thinking (CT) in Education

- **Global Trends and Workforce Readiness:** Countries like China, UAE, and the UK are already incorporating AI into school education. Early exposure **builds a foundation for careers** in data science, robotics, and AI critical for a digital economy.

- **Bridging the AI Awareness Gap:** AI literacy can help students critically understand the technology they already encounter (e.g., AI-powered chatbots, recommendation engines).
  - A Youth Ki Awaaz survey revealed **88% of students already use AI for studies**, formal education can guide safe, ethical use.

- **Personalized and Adaptive Learning:** AI tools can adapt content to each student's pace and style, helping address learning gaps, especially in underperforming areas.
  - Promotes project-based learning, critical thinking, and real-world problem-solving.

- **Gradual and Age-Appropriate Rollout Planned:** Class 3 onwards will focus on **AI literacy** (basic concepts and ethics), while higher classes (11-12) will include **AI skills** (coding, NLP). Emphasis remains on foundational learning till middle school.
  - Students develop the ability to understand and critically evaluate technology, gaining meta-skills that are now as essential as literacy and numeracy in the digital era.

> Critically examine the merits and challenges of introducing Artificial Intelligence (AI) and Computational Thinking from early school grades in India.
>
> **Drishti Mains Question**

Contempt of Court in India

The recent **controversy** over **derogatory remarks** made against the **Chief Justice of India** and the **Supreme Court**(SC) has sparked a debate about the **limits of free speech** and the **administration of justice** in India.

- The demand to initiate **contempt proceedings** against those responsible has brought the issue of **contempt of contempt** to the forefront.

Contempt of Court in India and Related Landmark Judgments

- **Contempt of Court Act, 1971:** In India, **contempt of court** is defined in the **Contempt of Court Act, 1971** (enacted based on the recommendations of the **HN Sanyal Committee 1963**), which divides contempt into two categories:
  - **Civil Contempt:** Defined as **willful disobedience** of any **court order**, **decree**, or **judgment**, or **breach of an undertaking** given to the court.
  - **Criminal Contempt:** Defined as actions that **scandalize or lower the authority** of any court, or **interfere with judicial proceedings**.
    - ❖ This includes the **publication of materials** (in any form—written, spoken, or visual) that can **damage the court's reputation** or **hinder the administration of justice**.

- **Constitutional Basis:** The **SC** and **High Courts**(HC) are designated as **courts of record** under **Articles 129 and 215**, respectively.
  - A **court of record** maintains its **decisions for future reference** and possesses the **inherent power to punish for contempt**, as outlined in the **Contempt of Court Act, 1971**.

- **Objective:** To **uphold the** authority, dignity, and effective functioning of the judiciary by preventing acts that **disrespect, obstruct, or undermine** the courts, thereby ensuring their **independent and fair operation** without interference.

- **Initiation of Contempt Proceedings:** The process for starting **contempt action** is **specifically defined** in the Contempt of Court Act, 1971.
  - **Suo Motu Power**: The **HC** or **SC** can initiate **proceedings** on its own motion (**suo moto**) if it believes a **contempt** has been committed.

- **Third-Party Petition**: A **third party** can also file a **petition**, but it requires the prior **consent** of the **Attorney General** (for the **Supreme Court**) or the **Advocate General** (for a **High Court**).
- **Punishment:** The **Act** provides that a person found guilty of **contempt of court** may face **simple imprisonment** up to **six months**, a **fine** up to **Rs 2,000**, or **both**.
  - However, the court may **exempt** the accused if a **satisfactory apology** is offered.
- **Landmark Judgments Related to Fair Criticism vs. Contemptuous Criticism**: It is generally recognized that **fair criticism of a court's judgment does not constitute contempt**. However, when such criticism **crosses the limits of fairness** and **undermines judicial authority**, it may be treated as contemptuous.
  - In *Ashwini Kumar Ghosh v. Arabinda Bose (1952)*, the SC held that fair criticism is permissible, but any attempt to erode the court's authority is punishable.
  - This view was reaffirmed in *Anil Ratan Sarkar v. Hirak Ghosh (2002)*, where the court emphasized that the **power to punish for contempt** must be exercised **with restraint** and only in cases of **clear and serious violations.**
  - In *M.V. Jayarajan vs. High Court of Kerala (2015)*, the SC held that **using abusive language in public speeches while criticizing a court** amounts to **criminal contempt.**
  - Similarly, in *Shanmugam @ Lakshminarayanan vs. High Court of Madras (2025)*, the Court emphasized that the **purpose of contempt punishment** is to **uphold the administration of justice.**
- **Relevance for Democracy:** The **judiciary** upholds **state priorities** and the **sanctity of justice**. While **citizens and media** can critique courts, **misrepresentation or abusive criticism** that **undermines authority, interferes with justice, or harms democracy** is prohibited.

Balancing Free Speech and Contempt of Court in India

- **Protecting Robust Criticism:** The balance can be maintained by **permitting strong criticism** of the judiciary's functioning to promote **accountability**, while **restricting malicious or baseless allegations** of **corruption or bias** that erode **public confidence**.
- **Preserving Judicial Authority: Fair criticism** of a judgment's **reasoning or outcome** is protected, but **personal attacks** on a judge's **character or integrity** are not, as judges need protection from **vilification** to ensure **impartial functioning**.
- **"Truth" Defense as a Shield for Public Good:** Section 13 of the **Contempt of Courts Act** protects **truthful, public**

interest criticism, allowing **evidence-based scrutiny** of the judiciary. However, the **burden of proof** lies on the accuser, making it a **strong but limited defense**.
- **Using Contempt Power as a Last Resort:** Courts should treat **contempt powers** as a **weapon of last resort**, exercising them with **caution and restraint**, while ensuring **order compliance** and preventing **obstruction of justice**.

> Examine the constitutional and statutory provisions governing contempt of court in India.
>
> **Drishti Mains Question**

Reforming Centrally Sponsored Schemes (CSS)

The **Comptroller and Auditor General of India (CAG)** has set up a **committee** to tackle challenges in **Centrally Sponsored Schemes (CSS)** and strengthen their **budgeting, accounting, and payment systems**.

- It will review how states **reflect and integrate CSS allocations** with **SDGs**, aiming for **uniform and transparent budgeting** and **accounting practices** nationwide.

Centrally Sponsored Schemes (CSS)

- **About: CSSs** are schemes that are **jointly funded by the Centre and States**, implemented by the States, and focus on areas listed under the **State and Concurrent Lists** of the Constitution.
  - They are designed to **supplement State efforts** by leveraging the **Centre's stronger financial capacity**, with all **fund transfers routed through the Consolidated Fund of the State**.
  - India currently runs **54 CSS** and **260 Central Sector Schemes**, with **8 paise of every rupee** spent on CSS.
- **Categories:** CSS is divided into three main categories:
  - **Core of the Core Schemes:** These are the **most essential programmes** aimed at **social inclusion and protection**, such as **MGNREGA.**
  - **Core Schemes:** Focused on key **developmental sectors** like **agriculture, infrastructure, education, health**, and **rural development**, examples include the **Mid-Day Meal (School Nutrition Programme)** and **Pradhan Mantri Gram Sadak Yojana**.
  - **Optional Schemes:** States have the **flexibility to implement** these based on their priorities, such as the **Border Area Development Programme**.
- **Financing:** The **Centre** allocates around **10% of its budget** to **CSS**, with the **Centre-State funding ratio** varying as follows: **60:40** for most schemes, **80:20** for select schemes, and **90:10** for **North-Eastern** and **Special Category States**.

■ **Difference Between CSS and Central Sector Schemes:**

Basis	Central Sector Schemes (CS)	Centrally Sponsored Schemes (CSS)
Funding	**100%** funded by the **Central Government**	Funded by **both Centre and States** in fixed ratios (e.g. 90:10, 75:25, 60:40)
Implementation	**Implemented** directly by **Central Government** machinery or its agencies	Implemented by **State/UT Governments**
Subject Area	Based mainly on subjects under the **Union List**	Based on subjects under the **State List**
Financial Transfer	**No funds are transferred to States**; expenditure made by the Centre	Funds are **transferred to States** for implementation
Objective	To execute programmes of **national importance** directly by the Centre	To assist States in implementing **welfare and development programmes**
Examples	Space Research Programme, Central Armed Police Forces, BharatNet	MGNREGA, National Health Mission, Mid-Day Meal Scheme

Key Issues Related to CSS

■ **Lack of Transparency:** A major challenge is the **unclear representation of CSS funds** in state budgets, where **Centre and State shares are not distinctly shown**, hindering alignment with broader goals like the **SDGs** and tracking of total public spending.

● **Inconsistent accounting**, **overlapping reports**, **weak monitoring**, and **poor audits** undermine **impact assessment.**

■ **Unpredictable Flow of Funds:** The **flow of funds** from the Centre to the States and implementing agencies is often **irregular and unpredictable**, causing **project delays**, **idle resources**, and a **rush to spend funds** at year-end, which affects **quality**.

■ **Inflexible Allocation: Rigid budget allocations** prevent states from **adjusting funds** to local needs, as the **"one-size-fits-all" approach** overlooks **regional disparities**.

■ **Challenges in Payment Systems:** Despite **Direct Benefit Transfer (DBT) reforms**, **payment delays** persist due to **procedural bottlenecks**, **verification errors**, and **tech glitches**.

● **Inaccurate beneficiary data**, **banking issues**, and the **lack of real-time tracking** lead to **leakages**, **grievances**, and **poor accountability**.

Reforms to Improve the Effectiveness of CSS

■ **Unified & Transparent Budget Headings:** Adopt a **standardized budget structure** for all CSS to clearly show **Central and State shares**. Mandate **SDG-linked budgeting** to align expenditures with **specific development outcomes**.

■ **Forward-Looking Funding:** Inform **states** of annual **allocations** in advance, adopt a **3-year rolling fiscal framework** for major **CSS**, and link **10–15% of funds** to **performance indicators** to ensure better **planning**, **project continuity**, and **result-oriented implementation.**

● **Cooking cost provisions** under schemes like **Midday Meal** and **PM-POSHAN** should be **WPI-indexed** and **revised biennially**.

■ **Standardized Accounting Codes:** Develop a **National Accounting Template** for **CSS** with **uniform classification codes** across states to enable **data consolidation**, **inter-state comparison**, and a clear **audit trail** for the **CAG**.

■ **Mandatory Integration with State IFMIS:** Integrate all CSS **transactions** with **State Integrated Financial Management and Information System (IFMIS)** for **accurate accounting** while maintaining an **Aadhaar-linked beneficiary database**.

● Enable **authentication and grievance redressal** through **Common Service Centers (CSCs)**.

■ **Leveraging Technology for Efficiency:** Leverage **AI and data analytics** to track fund flows, detect anomalies, and predict spending trends, while enabling officials to **record expenditures and progress** through **mobile-based real-time monitoring**.

> Examine the challenges in the implementation of Centrally Sponsored Schemes (CSS) and suggest institutional reforms to improve fiscal transparency and service delivery.
>
> **Drishti Mains Question**

Reimagining Agriculture: A Roadmap for Frontier Technology

The **NITI Aayog** released the report *"Reimagining Agriculture: Roadmap for Frontier Technology-Led Transformation,"* highlighting how **AI**, **IoT**, **drones**, and **biotechnology** can transform **Indian agriculture**.

■ The roadmap proposes **Digital Agriculture Mission 2.0** with three pillars — **Enhance, Reimagine, and Converge** — to drive technology-led agricultural transformation.

Frontier-led Technologies in Agriculture

■ **About:** It encompasses **advanced technologies** revolutionising **food, fiber, and fuel production**, advancing toward an **intelligent and sustainable food system** through **climate-resilient seeds**, **digital twins**, and **precision tools.**

■ **Objectives:** It seeks to shift agriculture from **input-intensive** to **innovation-driven**, using **digital** and **scientific tools** to ensure **food security**, **climate resilience**, and **diverse incomes** for farmers.

- **Components:** Artificial Intelligence; Internet of Things; Drones and GIS; Biotechnology and Genomics; Blockchain; Robotics and Automation
- **Farmers Category:** To holistically implement frontier technologies, the report divides farmers into **3 archetypes:**
  - **Aspiring Farmers (70–80%):** **Small, rain-fed** farmers needing **micro-irrigation**, **credit**, and **market access**.
  - **Transitioning Farmers (15–20%):** **Medium, entrepreneurial farmers** seeking **machinery**, **buyer linkages**, and **storage solutions**.
  - **Advanced Farmers (1–2%):** **Large, export-focused farmers** requiring **blockchain traceability**, **advanced seeds**, and **robotics** for global competitiveness.

Digital Agriculture Mission (DAM)

- **About:** Digital Agriculture Mission (DAM) is an **umbrella scheme** aimed at integrating **Information and Communication Technologies (ICT)** and **data ecosystems** to make farming **profitable, sustainable, and data-driven**.
  - It supports **Digital Public Infrastructure (DPI)**, **Digital General Crop Estimation Survey (DGCES)**, and other IT-based initiatives by **Central and State Governments**, as well as **academic and research institutions**.
- **Mission Components:** The mission is anchored on 2 foundational components:
  - **AgriStack (Farmer-Centric Digital Infrastructure):** It forms the foundation of **Digital Agriculture** by creating a unique **Farmer ID** linked to land, crop, and livestock data, as well as scheme benefits. The goal is to issue **digital IDs to 11 crore farmers by FY 2026–27**.
  - **Krishi Decision Support System (DSS):** It is a **geospatial intelligence system** integrating remote sensing data with **crop, soil, weather, and water** information to enable **crop mapping, disaster monitoring, yield assessment**, and **accurate crop insurance**.
  - **DAM** has 2 additional Critical Components such as **Soil Profile Mapping** and **Digital General Crop Estimation Survey (DGCES)**.
- **Significance:** It promotes **data-driven decision-making**, **transparency**, and **efficiency** in resource use while empowering farmers through **digital identities** and targeted services.
  - It also enhances **climate resilience** and **economic inclusion**, ensuring equitable access to credit, markets, and technology for **small and marginal farmers**.

Challenges to Technology-Driven Agricultural Transformation in India

- **Data Integration and Governance Gaps:** **Lack of unified digital agri-infrastructure**, despite initiatives like **Digital Crop Survey** and **AgriStack**, along with **data privacy** and **farm data ownership** concerns, remain key challenges.

- **Market Linkage and Financial Access:** Despite **e-NAM**, many farmers still depend on **local mandis**, while **limited credit access** hinders **smallholders' adoption of frontier technologies**.
- **Digital and Infrastructure Divide:** **Poor internet access, inadequate infrastructure, limited workforce,** and **weak digital literacy** hinder the effective integration of **digital tools**, with only about **45% of rural households** having internet access (NFHS-5).
- **Ecosystem Fragmentation:** **Disjointed coordination** among **industry, academia, policymakers, and regulators** restricts collective progress and slows ecosystem-wide transformation.
  - About **86% of Indian farmers** are **small and marginal**, restricting **mechanisation** and **technology adoption**.
- **Talent Shortage:** A **lack of skilled, interdisciplinary professionals**, including **technicians, entrepreneurs, and tech-ready farmers**, weakens the foundation for innovation and deployment of frontier technologies.
- **Capital Constraints:** **Limited funding** for **high-risk, slow-scaling AgTech innovations** and **restricted credit access** for farmers impede investment in transformative agricultural technologies.

Steps for the Inclusive Agri-Tech Transformation

- **ENHANCE Foundational Systems:** Develop a **360° Agri Kosh data ecosystem** using **data-mesh architecture** for better decisions and **AI-powered, multilingual last-mile advisory** with **two-way communication**.
  - Provide **subsidies** for **tech-enabled farm inputs**, and link **DBT** to **digital farming adoption** and **yield gains**.
- **REIMAGINE Research & Talent:** Shift from **siloed research** to **mission-oriented, translational R&D** focused on **national priorities** like **climate-resilient seeds**.
  - Cultivate **interdisciplinary talent** through a **national skills framework, industry-aligned curricula,** and **mass entrepreneurship programs**.
  - Train **1 lakh+ Krishi Sakhis, agri-extension workers,** and **progressive farmers** as **digital champions**, and embed **technology literacy** in **agriculture curriculums**.
- **CONVERGE Public-Private Efforts:** Establish a **national network of Frontier Technology Centres of Excellence (CoEs)** to **co-develop and pilot solutions**.
  - Promote **pilots** between **start-ups, state governments,** and **FPOs**, replicating models like **Karnataka's crop survey app** and **Andhra Pradesh's digital FPOs**.
  - Institutionalise **Policy Foresight Units** and **Regulatory Sandboxes** to create **agile and anticipatory governance**.

Need for Early Warning Systems in the Himalayas

The **rising frequency of disasters** in the Himalayan region has underscored the **urgent need for robust Early Warning Systems (EWS)** to predict and mitigate such events.

Early Warning System (EWS)

- **About:** An Early Warning System (EWS) is a framework designed to **detect, predict, and communicate** the risk of hazards in advance, allowing timely action to reduce loss of life and property.
- **Multi-Hazard Early Warning System:** Multi-hazard early warning systems address several hazards that may occur alone or simultaneously.
  - Increasing the availability of multi-hazard early warning systems and disaster risk information is one of seven global targets set by the **Sendai Framework for Disaster Risk Reduction** 2015-2030.
- **Key Components:**
  - **Risk Knowledge:** Understanding hazard-prone areas.
  - **Monitoring & Forecasting:** Using sensors, satellites, and AI for real-time data.
  - **Dissemination:** Rapid communication of warnings to authorities and communities.
  - **Response Capability:** Local preparedness and evacuation measures.

Need for EWS in the Himalayas

- **Rising Disaster Vulnerability:** A Down To Earth report notes that of 687 disasters recorded in India (1900–2022), about 240 occurred in the Himalayas - up from just five between 1902 and 1962.
  - The region frequently faces landslides, **flash floods, cloudbursts, earthquakes, and glacial lake outburst floods (GLOFs)**, affecting millions across 12 Himalayan states and UTs.
- **Impact of Climate Change:** There is a **rapid glacial retreat** and permafrost melt, which increases flood and slope instability.
  - A 2024 Climate Change Journal study warns that 90% of the Himalayas could face **year-long droughts** if global warming reaches **3°C.**
- **Tectonic and Geological Fragility:** The Himalayas remain tectonically active as the Indian and Eurasian plates continue to collide.

- Major fault lines (Dhaulagiri, Indus-Ganga) in Seismic Zones IV and V trigger frequent earthquakes, landslides, and avalanches like the 2005 Kashmir earthquake.
- **Glacial, Hydrological, and Rainfall Hazards:** Thousands of glaciers and glacial lakes pose risks of GLOFs, as seen in the 2023 South Lhonak Lake disaster in Sikkim.
  - Cloudbursts and extreme rainfall events cause flash floods, e.g., Chamoli and Uttarkashi (2021).
  - Deforestation, hydropower projects, and unregulated construction (e.g., Joshimath subsidence, Char Dham project) further weaken slope stability.

> ### Initiatives for Strengthening Early Warning Systems (EWS)
>
> - **Ministry of Environment, Forest and Climate Change (MoEFCC) Pilot Project:** Deployment of **Artificial Intelligence (AI)-based hailstorm alert** systems in Uttarakhand and Himachal Pradesh, providing sub-kilometre scale forecasts for farmers.
> - **India Meteorological Department (IMD) and National Centre for Medium Range Weather Forecasting (NCMRWF):** Integration of models for rainfall and cloudburst prediction.
> - **National Disaster Management Authority (NDMA):** Development of regional frameworks for Himalayan disaster resilience.
> - **Technology-Driven Monitoring Systems:** ISRO and the **National Remote Sensing Centre (NRSC)** conduct real-time surveillance of glaciers, unstable slopes, and river basins.
> - **Community-Based Disaster Management:** The **Disaster Management System–Himalaya (DMS-Himalaya)** empowers local communities through training in pre-disaster preparedness, hazard mapping, and post-disaster response with inclusion of schools, panchayats, and local governance.
> - **Google's Android Earthquake Early Warning System:** Launched in 2023 with **NDMA and the National Centre for Seismology (NCS)**, using smartphone sensors to detect seismic activity. Alerts are based on the **Modified Mercalli Intensity (MMI) Scale**, which measures perceived earthquake effects.
> - **Early Warnings for All Initiative:** Co-led by the **World Meteorological Organization (WMO) and the United Nations Office for Disaster Risk Reduction (UNDRR),** this global program supports India in ensuring every Himalayan community is protected by timely and reliable warnings.

Challenges in Implementing EWS in the Himalayas

- **Complex Terrain:** The **rugged and glaciated landscape of the Himalayas** makes it extremely challenging to deploy and maintain technologies such as **drones, radars**, and sensors for effective early warning coverage.
- **Limited Data Infrastructure:** There is a **scarcity** of **ground-based observation stations,** and many existing monitoring systems are outdated, leading to **data gaps**.
- **High Costs:** Setting up and operating satellite-based communication systems and **Artificial Intelligence (AI)-**

driven forecasting tools require significant financial investment, which often limits large-scale implementation.

- **Institutional Silos: Poor coordination** among key agencies such as the **NDMA**, **India Meteorological Department (IMD),** Indian Space Research Organisation **(ISRO),** and respective State governments hampers integrated disaster management efforts.

- **Community Awareness Gaps: Local communities often lack adequate understanding** of early warning alerts and response protocols, reducing the effectiveness of the systems in preventing casualties.

- **Funding Constraints:** Preventive and preparedness measures like **EWS often receive less financial priority** compared to **post-disaster relief** and rehabilitation efforts.

- **Cross-Border Data Sharing Issues:** Limited **cooperation with neighboring countries** such as Nepal, Bhutan, and China hinders real-time sharing of transboundary hazard data, affecting timely regional warnings.

Measures

- **Integrated National Mission and Research Support:** Establish a **National Mission** for Himalayan Early Warning Systems under the NDMA with dedicated funding and a research institute.

- **Leverage Technology:** Utilise **AI and machine learning** to analyse real-time satellite data and set up automatic weather stations across valleys and glacial basins.

- **Community-Based EWS:** Involve **local volunteers** and panchayats to ensure quick dissemination and understanding of alerts.

- **Cross-Border Cooperation:** Create **regional data-sharing mechanisms** with Nepal, Bhutan, and China to monitor transboundary hazards, like the **Indian Tsunami Early Warning Centre (ITEWC)** created for tsunamis.

- **Hazard Mapping:** Develop district-level **hazard zonation maps** for scientific land-use planning.

- **Recommendations:** The government can restrict construction in geologically unstable zones and prioritise vegetation conservation in landslide-prone areas, as recommended by the **Mishra Committee in 1976.**
    - Disaster Management can be integrated into the **Seventh Schedule** of the Constitution as recommended by the **J.C. Pant Committee.**

- **Global Case Study:** Successful mountain EWS initiatives like **Cirenmaco Lake in the Central Himalayas (China),** where unmanned boats monitor lake levels and ice collapses through satellite data, and **Blatten Village in the Swiss Alps,** where early alerts prevented glacier-collapse fatalities can offer valuable insights.
    - Likewise, global examples such as **Japan's Earthquake EWS, Indonesia's Tsunami EWS, and Switzerland's**

Alpine Radar Network show that combining robust infrastructure with community participation can make the Himalayas safer and more resilient.

> Discuss the increasing vulnerability of the Himalayan region to climate-induced disasters. How can Early Warning Systems (EWS) strengthen India's disaster preparedness?
>
> **Drishti Mains Question**

Pradhan Mantri Kaushal Vikas Yojana (PMKVY)

India's flagship skilling programme, **Pradhan Mantri Kaushal Vikas Yojana (PMKVY)**, is under scrutiny after the **Ministry of Skill Development and Entrepreneurship (MSDE) blacklisted 178 training partners (TPs) and training centres (TCs)** over serious irregularities such as fake trainees, forged documents, and non-existent centres.

Issues Highlighted Regarding PMKVY

- **Widespread Corruption & Fund Misuse:** Several Training Partners inflated bills, **diverted funds, and manipulated record**s. Many Training Centres **existed only on paper, with no real training activity.**
    - Attendance records were manipulated to show students who never attended the programme.

- **Poor Monitoring And Transparency:** Oversight has been inconsistent, **National Skill Development Corporation (NSDC)** refused to disclose details of defaulting centres under **Right to Information Act 2005** citing confidentiality.
    - In many cases, **Training Partner and Training Centre identities did not match**, weakening accountability.
    - State agencies reported lack of clarity on inspections, documentation, and next steps, slowing corrective action.

- **Training Disruptions:** With 178 TPs/TCs blacklisted (highest in UP, then Delhi, MP, Rajasthan), training in several areas came to a standstill.

- **Skill–Industry Mismatch:** Training programs **often fail to align with current industry requirements due to weak collaboration** between training institutions and employers, insufficient labour market forecasting, and inadequate practical exposure for trainees.

- **Infrastructure and Accessibility:** Many training centres, particularly in rural and semi-urban areas, suffer from inadequate facilities, limited access to digital tools, and poor internet connectivity.
    - Financial constraints and logistical challenges further restrict participation and outreach.

Pradhan Mantri Kaushal Vikas Yojana (PMKVY)

- **About:** PMKVY is the flagship skill-development scheme of the MSDE, launched in July 2015. It aims to provide **free**

short-duration training, certify skills through **Recognition of Prior Learning (RPL),** and enhance youth employability across India.

- Training is delivered through approved Training Centres under a standard quality framework aligned with the **National Skills Qualification Framework (NSQF).**
- Under the Scheme, every certified candidate is given a reward of Rs. 500 for clearing the exam as encouragement.
- It has trained candidates across sectors like **manufacturing, construction, healthcare, IT and retail,** and has expanded to future-focused areas such as **Artificial Intelligence, Drone Technology, Robotics, Mechatronics and Internet of Things (IoT).**

- **Inclusivity**: Inclusivity was a key pillar of the scheme with **45% of the candidates being** women and a significant share coming from **Scheduled Castes (SCs), Scheduled Tribes (STs), and Other Backward Classes (OBCs).**

- 3**Progress:** Over the years, **more than 1.63 crore candidates** have been trained under PMKVY in diverse sectors, such as manufacturing, construction, healthcare, IT, electronics, retail and more.
  - **PMKVY 1.0:** During its pilot phase in 2015-16, 19.85 lakh candidates were trained.
  - **PMKVY 2.0 (2016–20):** 1.10 Crore candidates were trained/oriented.
  - **PMKVY 3.0 (2021–22)**: 7.37 lakh trained.
  - **PMKVY 4.0 (2022–26):** As of July 2025, over 25 lakh candidates have been trained under this phase.

- **Innovative initiatives by PMKVY:**
  - **Special Projects:** Trained **Bru-tribe youth**, jail inmates, and women under PANKH to expand skilling access for marginalised groups.
  - **Traditional Crafts & Upskilling:** Supported **Namda artisans and weavers in J&K** and Nagaland through targeted RPL training.
  - **Mainstreaming Skilling:** Integrated skill development into major national missions like **PM Surya Ghar and Vibrant Villages.**
  - **Covid-19 Response:** Provided crash-course training to over 1.2 lakh health workers during the pandemic.
  - **Skill Hub Initiative:** Used schools and colleges as vocational training hubs under **NEP 2020 (National Education Policy).**
  - **Recognition of Prior Learning (RPL):** Certified informal workers' existing skills to improve employability.
  - **Skill India Digital Hub:** Introduced the **Skill India Digital Hub** for digital tracking and Aadhaar-based verification.
  - **Academic Mobility:** Linked PMKVY qualifications with the **Academic Bank of Credits** for transferable learning credits.

Measures to Enhance the Effective Implementation of PMKVY

- **Strengthen Monitoring & Accountability:** Use **real-time digital attendance**, **geo-tagged centres**, and **biometric verification** to curb fake enrolments.
  - Link performance ratings of TPs with continuation of funding and empanelment.
  - Incentivise TPs based on **placement outcomes**, not enrolment numbers.
  - Support candidates with **post-placement tracking**, transport allowances, and workplace counselling.

- **Promote Regional & Sectoral Customisation:** Tailor courses to match **local economic needs**, such as agro-processing, tourism, or green energy. Encourage state-specific Skill Plans to reflect labour supply and demand.

- **Strengthen Digital Infrastructure:** Scale up the **Skill India Digital Hub (SIDH)** for training delivery, assessments, credentialing, and job matching.
  - Integrate with ABC (Academic Bank of Credits) for **portability of qualifications**.

- **Better Convergence:** Link PMKVY with **MUDRA, PM-Vishwakarma, and Start-Up India** for credit and mentoring. Provide enterprise-management modules to help youth start micro-businesses.

> Critically evaluate Pradhan Mantri Kaushal Vikas Yojana (PMKVY) transition from enrolment-driven delivery to outcome-based skilling.
>
> **Drishti Mains Question**

Right to Vote Different from Freedom of Voting

The Union government recently told the **Supreme Court (SC) of India** that the **right to vote** is different **from freedom of voting.**

- This submission was made while responding to a petition challenging **Section 53(2) of the Representation of the People Act (RPA 1951)** and **Rule 11 along with Forms 21 and 21B of the Conduct of Elections Rules 1961,** which govern uncontested elections.

Difference Between the Right to Vote and the Freedom of Voting

- **Nature:**
  - **Right to Vote:** It is a **statutory right granted under the RPA, 1951** and is not a **Fundamental Right.**
  - **Freedom of Voting:** It is considered part of **Article 19(1)(a)** (guarantees all citizens the right to freedom of speech and expression).
    - ❖ It covers the voter's ability to **express preference, including choosing a candidate or selecting NOTA**

(None of the Above), but this expressive freedom exists only **when an actual poll occurs.**

- **Issue of Uncontested Elections:** Under Section 53(2) of the RPA, 1951, if the number of contesting candidates is equal to the number of seats to be filled, no poll is conducted. Instead, the Returning Officer declares the candidates elected uncontested using Form **21 (for general elections) or Form 21B (for by-elections).**
  - With no poll, **voters cannot exercise freedom of voting or use NOTA.** The petitioners argue that this **denies voters the opportunity to express dissatisfaction through NOTA,** thereby violating their Article 19(1)(a).
  - The Union government said that NOTA is not a candidate under Section 79(b) of the RPA, 1951. Therefore, NOTA cannot be used to demand a poll in uncontested elections.
- **Election Commission of India Stance:** The **ECI** states that treating NOTA as a contesting candidate would require amending RPA 1951 and the 1961 Rules.
  - The EC noted that uncontested elections are rare (only nine in 20 General Elections (1951–2024), and just one since 1991).
  - ECI said that as **democracy has evolved, more parties and candidates contest elections**, making uncontested wins uncommon.
- **Judicial Interpretation:** In *Civil Liberties (PUCL) versus Union* **(2003)**, SC held that the **right to vote is not a fundamental right,** but once a voter casts a ballot, it becomes an **act of expression reflecting their opinion and preference.**

Right to Vote

- **About:** The right to vote allows eligible citizens to participate in choosing their representatives.
  - In India, it is central to representative democracy and enables accountability and public participation.
  - While **guaranteed through universal adult franchise,** its nature has largely been interpreted as statutory, not fundamental.
- **Constitutional Basis:** Article 326 of the Indian Constitution provides that every citizen of India, **not less than 18 years of age is entitled to be registered as a voter** for Elections to the House of the People and Legislative Assembly of every State on the **basis of adult suffrage.**
  - The **61ˢᵗ Constitutional Amendment Act (1988)** lowered the voting age from **21 to 18.**
- **Statutory Framework:** Under the **RPA, 1950, Section 16** bars non-citizens from being enrolled, while **Section 19** requires voters to be 18 or above and ordinarily resident.
  - The **RPA, 1951,** through **Section 62,** allows every enrolled person to vote unless disqualified, such as on grounds of imprisonment.

- Together, these laws define voter eligibility, making the right to vote statutory and subject to legal regulation.
- **Judicial Interpretation of the Right to Vote:**

Case	Judicial Interpretation
N.P. Ponnuswami (1952)	SC held that the right to vote is **statutory** and subject to limitations imposed by it.
Jyoti Basu (1982)	SC reaffirmed that voting is **not a fundamental nor a common law right but a simple statutory right.**
Kuldip Nayar (2006)	SC held that the right to vote is **statutory**.
Raj Bala (2015)	SC supported the view that the right to vote is **constitutional**.

Universal adult franchise under Article 326 is a constitutional mandate, yet the act of voting is statutory. Discuss the implications of this classification for electoral democracy.

Drishti Mains Question

Information Technology (IT) Amendment Rules, 2025

The Ministry of Electronics and Information Technology (MeitY) has issued the **Information Technology (Intermediary Guidelines and Digital Media Ethics Code) Amendment Rules, 2025,** updating the **Information Technology (Intermediary Guidelines and Digital Media Ethics Code) Rules, 2021,** particularly Rule 3(1)(d).

- These 2025 rules effective from 15ᵗʰ November 2025, aim to tighten procedural safeguards around the removal of unlawful online content.
- **Rule 3(1)(d) of the IT Rules, 2021** requires **internet intermediaries to remove or disable access to unlawful content** upon receiving a government order or notification.
  - This process operates alongside **Section 79(3)(b) of the IT Act, 2000, which removes safe-harbour protection** if intermediaries fail to take action after receiving "actual knowledge," and **Section 69A** which empowers the Central Government to block public access to online information if necessary for **national security, sovereignty, or public order.**

Key Features of IT Amendment Rules, 2025

- **Key Features of the Amendment Rules 2025:** It introduces new safeguards under **Rule 3(1)(d) of the IT Rules, 2021** to **ensure transparency, accountability, and fairness in the process** and more precise, actionable notices for content takedowns.
  - **Senior-Level Authorisation:** Only senior officials can issue takedown directions (an officer of at least Joint Secretary rank (or equivalent/Director if JS is not appointed)), and for police, only a specially authorised Deputy Inspector General of Police (DIG)-level officer.

- **Reasoned and Specific Intimation:** Takedown orders must clearly mention the legal basis, the nature of the violation, and the exact link/identifier of the content.
  - ❖ This replaces vague notices and aligns with **Section 79(3)(b) of the IT Act.**
- **Monthly Review:** All takedown directions will be reviewed every month by a Secretary-level officer to ensure they remain necessary, proportionate, and lawful.

Information Technology (Intermediary Guidelines and Digital Media Ethics Code) Rules, 2021

- **About:** The IT Rules, 2021 were notified by the **Ministry of Electronics & Information Technology** (**MeitY**) in 2021 and later amended in 2022 and 2023.
  - These rules emerged from **continuous engagement with the public and stakeholders** to strengthen **digital governance.**
- **Obligations on Intermediaries:** The Rules place obligations on intermediaries to ensure they do not host, share, upload, or transmit prohibited content.
  - This includes **misinformation, patently false information, impersonation,** and **deepfakes**.
- **User Complaint Mechanism:** Users can report unlawful content by submitting a complaint to the **platform's Grievance Officer.**
  - Once a complaint is received, the intermediary must act promptly within the timelines prescribed under the IT Rules, 2021.
  - The **Grievance Appellate Committee** (**GAC**) deals with the appeals of users (Digital Nagriks) aggrieved by decisions of **Grievance Officers.**
- **Advisories:** MeitY also issues advisories under the IT Rules, 2021 to ensure platforms comply when using **AI models, LLMs, generative AI tools, or related software**.

Securing Data Privacy in the Era of Generative AI

The rapid adoption of **generative AI (GenAI)** in India has raised **government concerns** over **data privacy, inference risks, and national security**, especially with **foreign AI** in official tasks, prompting an evaluation of its use in **sensitive governance.**

- **Inference Risk** is the possibility that AI models may **reveal sensitive information** or **deduce user roles, priorities, and strategic intent** from prompts, even when the data is meant to be confidential.

Generative AI (GenAI)

- **About: Generative AI (GenAI)** is a type of **artificial intelligence (AI)** that creates **original content** such as **text, images, audio, or code** based on the data it has been trained on.
  - Unlike traditional AI, which primarily **analyzes, classifies, or predicts** from existing data, GenAI **produces new, human-like outputs**, demonstrating **creative generation** beyond mere data processing.
- **Working: GenAI** learns from large datasets (text, images, code, music) to identify **patterns and relationships**. Given a **prompt**, it generates new content based on these patterns.
  - Modern GenAI mainly uses **Transformer architecture**, powering **Large Language Models (LLMs)** like **ChatGPT, Gemini, and Claude**, which excel at understanding context in sequential data.
- **Key Examples:** Common examples include **ChatGPT and Gemini** for text, **DALL-E and Midjourney** for images, **GitHub Copilot** for code, **Suno and ElevenLabs** for audio, and **Runway Gen-2** for video.

Measures Taken by the Indian Government to Mitigate the Risks of Generative AI

- **Restrictions on AI Use in Government Work:** The Indian government has started to **restrict the use of foreign GenAI tools** on official devices. E.g., **the Ministry of Finance** directed employees to **avoid using ChatGPT and DeepSeek** on office devices to protect **confidential government data and documents**.
- **Internal Monitoring and Policy Discussions:** Various ministries are debating GenAI use in official functions, focusing on **data privacy, inference risks**, and whether to **restrict or air-gap (keeping them disconnected from foreign AI platforms)** official systems until domestic alternatives are ready.
- **Indigenous AI Development:** The government is **investing heavily in homegrown AI** through the **Rs 10,372-crore India AI Mission**.
  - It aims to develop at least **12 Indian LLMs** and smaller **domain-specific models**, with startup **Sarvam** expected to launch an LLM by **end-2026** targeting **governance and public sector applications**.
- **Subcommittee for AI Governance Guidelines:** A subcommittee under the **Ministry of Electronics and Information Technology (MeitY)**, under the IndiaAI Mission, recommended creating an **India-specific AI Risk Assessment Framework** to address local challenges and harms.
  - It also proposed a **whole-of-government approach** to ensure coordinated and consistent AI governance across all sectors.
- **Push for Digital Sovereignty:** The government urged the use of **Indian-built digital platforms** in sensitive areas like communication and governance, with senior officials shifting to **Zoho Office Suite and Zoho Mail** to enhance digital sovereignty and limit foreign data exposure.
- **Strengthening Security Frameworks:** The government is developing **standards for secure AI deployment**, covering

data protection, ethical use, and model transparency, with the IndiaAI Mission framework guiding safe adoption in sensitive areas.

- AI usage discussions are aligned with **national security and technological sovereignty**, echoing past measures like the **2020 Chinese app ban** and promotion of domestic platforms like **Koo** and **UPI**.

Building Sovereign AI Capabilities in India and Mitigating Foreign Platform Risks

- **Strengthen Indigenous AI Capabilities:** The top priority must be the **fast-tracking of 12 indigenous LLMs** for governance, alongside supporting domestic AI through **grants, incubation, collaborations, and adoption incentives** to reduce reliance on **foreign platforms**.

- **AI Prompt Sanitization Gateways:** All official AI prompts must go through a **secure gateway** that removes **metadata, context, and identifiers**, while every query is **logged in a secure internal registry** for audit and pattern analysis, ensuring **sovereign AI governance**.

- **Creation a National Synthetic Data Fabric for AI Training:** A key challenge for Indian AI is the lack of **high-quality, culturally relevant datasets**; the government can address this through a **National Synthetic Data Generation Project** using Indian LLMs to create **diverse, privacy-preserving datasets** for startups and researchers

- **Incentivize 'Niche Domain LLMs':** Rather than competing with giants like GPT-4, India should focus on **specialized, domain-specific LLMs**, such as **Nyaya-Shastra** trained on Indian law, to deliver **high-impact, strategic utility**.

- **Foster Strategic Collaboration:** Collaborate with **friendly nations** on secure AI, set **global AI governance standards**, and prioritize **domestic innovation** to ensure **technology sovereignty** while managing foreign AI risks.

- **Enforce Data Localization:** Mandate all AI platforms in India to **store, process, and train data domestically** with strict **encryption and privacy**, and establish a **National AI Security Framework** for data handling, inference protection, and model transparency, aligned with the **Digital Personal Data Protection (DPDP) Act, 2023.**

- **Restrict AI Use in Sensitive Domains:** Issue unified **Standard Operating Procedures (SOPs)** across ministries **banning foreign GenAI tools** for official tasks and implement **secure, air-gapped AI systems** to **protect sensitive** government data

> The proliferation of foreign Generative AI platforms presents a dual challenge of data privacy and strategic vulnerability. Analyze this statement in the Indian context and suggest a way forward.
>
> **Drishti Mains Question**

Shah Bano Case 1985 & Muslim Women's Rights in India

An upcoming **Bollywood film** inspired by the *Shah Bano case, 1985*, has renewed public attention on one of India's most debated **legal judgments** concerning **Muslim women's rights**, and the **Uniform Civil Code (UCC)**. The case remains a **milestone** in balancing **personal laws** with **constitutional principles**.

Impact of the Shah Bano Verdict on the Legal Landscape for Muslim Women in India

- **Case Background:** In 1978, **Shah Bano Begum**, a **62-year-old Muslim woman**, sought **maintenance** under **Section 125 of the CrPC (now Bharatiya Nagarik Suraksha Sanhita, 2023)** after being divorced by her husband. This section ensures **maintenance for dependents** irrespective of religion.

- Husband contended that under **Muslim personal law**, his obligation ended after the **iddat period (3 months after divorce)**, but the **Madhya Pradesh High Court** increased her maintenance, prompting him to appeal to the **Supreme Court (SC)**.

- **Supreme Court Verdict (1985):** A **5 judge SC constitution bench** unanimously ruled in **Shah Bano's favour**, declaring **Section 125 CrPC** a **secular law** applicable to all, including Muslim women.

- The Court held she was entitled to **maintenance beyond the iddat period** and lamented that **Article 44 (UCC)** remained a "dead letter." SC criticized the non-implementation of Article 44, which calls for a Uniform Civil Code.

- It referenced the **Quran** to support continued **maintenance post-divorce**.

- **Backlash and Legislative Response (1986):** Facing protests from conservative Muslim groups, the government passed the **Muslim Women (Protection of Rights on Divorce) Act, 1986**.

- This act diluted the **SC's ruling** by limiting the husband's responsibility to the **iddat period**, shifting long-term support to the woman's **relatives** or **Waqf Board.**

- **Reaffirmation in Daniel Latifi Case (2001):** In 2001, the **SC** upheld the **1986 Act** after **Danial Latifi** (Shah Bano's lawyer) challenged its validity in the **Daniel Latifi Case, 2001**.

- It ruled that husbands must make a **one-time payment within the iddat period** to cover a woman's **future needs**, preserving the **spirit of the Shah Bano verdict**.

- ***Mohd. Abdul Samad v. State of Telangana Case, 2024***: The **SC** ruled that the **1986 Act** does not override **Section 125 CrPC**, allowing divorced Muslim women to seek maintenance under **either or both laws**.

- **Significance of the Shah Bano Case 1985:** It **restored legal clarity**, strengthened **access to justice**, ensured **constitutional parity** for Muslim women, and reinforced the **secular character** of Indian maintenance law.
  - The case continues to influence India's constitutional journey, highlighting tensions between **faith vs. equality, law vs. politics,** and **religion vs. reform**.

> "Judicial intervention can further constitutional morality without overriding religious freedoms." Critically analyze.
>
> **Drishti Mains Question**

Legal Aid in India

The Chief Justice of India stressed that "legal aid is not charity but a moral duty" and "a crucial aspect of governance, ensuring the rule of law reaches every corner of the country". He made these remarks at the *National Conference on Strengthening Legal Aid Delivery Mechanisms.*

- The event was held on **National Legal Services Day (9ᵗʰ November 2025),** which marks the enactment of the **Legal Services Authorities Act, 1987**, that came into force on **9ᵗʰ November 1995** and led to the creation of institutions providing free legal aid.

Legal Services Authorities Act, 1987

- **Constitutional Responsibility, not Mere Charity:** The Legal Services Authorities Act, 1987 puts into action the constitutional vision of equal justice and free legal aid.
  - It draws strength from the **Directive Principles of State Policy (DPSP) under Article 39A,** which directs the State to provide legal aid so that justice is not denied on economic grounds, and complements the guarantee of equality before the law under **Article 14.**
  - It also reflects the spirit of **Article 21**, where the right to life and personal liberty includes fair legal procedures, and **Article 22,** which protects the rights of arrested persons with access to legal counsel.
  - Together, these provisions reinforce the Act's purpose of **making justice accessible for individuals facing poverty, social marginalisation, or other disadvantages.**
- **Eligibility:** Free legal services under the Act are available to **members of Scheduled Castes (SC) and Scheduled Tribes (ST) communities,** victims of trafficking or begar, **all women and children,** persons with mental illness or disabilities, and those affected by disasters or caste and ethnic violence.
  - **Industrial workmen and individuals** in custody, including in protective homes, juvenile homes, or mental health institutions, are also covered.
  - People with **annual income below the notified limit** (generally between Rs 1 lakh and Rs 3 lakh for lower

courts), and below Rs 5 lakh for cases before the Supreme Court are also eligible.

Institutional Framework

- **Legal Services Authorities:** The Act establishes a three-tier structure of legal aid authorities:
  - **National Legal Services Authority (NALSA)** (headed by the Chief Justice of India).
    - ❖ The **National Legal Aid Fund** supports NALSA through central grants and donations.
  - **State Legal Services Authorities** (headed by the Chief Justice of the High Court).
    - ❖ The **State Legal Aid Fund** receives central or state contributions.
  - **District Legal Services Authorities** (headed by the District Judge).
    - ❖ The **District Legal Aid Fund** is supported by state funding and local donations.
  - Between **2022-23 and 2024-25, more than 44.22 lakh people** received free legal **aid and advice through these authorities.**
- **Lok Adalats:** The Legal Services Authorities Act, 1987 gives the statutory recognition to **Lok Adalats and Permanent Lok Adalats** to facilitate amicable and speedy settlement of disputes at both pre-litigation and pending stages.
  - From **2022–23 to 2024–25, more than 23.5 crore cases were settled through national, state and permanent Lok Adalats,** reflecting their central role in clearing pendency and reducing litigation costs.

Key Initiatives Supporting the Vision of Accessible Legal Aid

- **Legal Aid Defense Counsel System (LADCS) Scheme:** The LADCS scheme by NALSA provides free legal defense in criminal cases for eligible beneficiaries under the Legal Services Authorities Act, 1987.
  - As of September 2025, it operates in 668 districts, disposing of 7.86 lakh of 11.46 lakh assigned cases.
- **Designing Innovative Solutions for Holistic Access to Justice (DISHA):** The Department of Justice is implementing the **five-year DISHA scheme (2021–26)** to advance the constitutional promise of justice through programmes like the **Legal Literacy and Legal Awareness Programme (LLLAP).**
  - Its key components include **Tele-Law, Pro Bono Legal Services (Nyaya Bandhu), and legal literacy initiatives,** while leveraging technology and simplified Information, Education and Communication (IEC) material to improve legal awareness and outreach.
  - About **2.10 crore people** (as of February 2025) received pre-litigation advice, pro bono services, legal representation, and awareness under DISHA.

Institutions Supporting the Vision

- **Fast-Track Courts (FTCs):** Created to speed up trials in heinous offences and sensitive civil matters involving women, children, senior citizens, persons with disabilities, and long-pending property cases.
  - **14ᵗʰ Finance Commission** recommended 1,800 FTCs during 2015-20, 865 FTCs are currently functional as of June 30, 2025.
- **Fast-Track Special Courts (FTSCs):** Established under a **Centrally Sponsored Scheme (2019)** to try serious sexual offences, including cases under the **Protection of Children from Sexual Offences (POCSO) Act, 2012**.
  - **725 FTSCs**, including **392 exclusive POCSO courts**, functional across **29 States/UTs** (June 2025).
- **Gram Nyayalayas:** Established under the **Gram Nyayalayas Act, 2008** as grassroots courts for quick, affordable justice in rural areas.
  - **488 Gram Nyayalayas** functional as of **March 2025**.
- **Nari Adalats:** It is a component of the **"Sambal" sub-scheme under Mission Shakti,** it aims to provide women with an **alternate Grievance Redressal Mechanism.**
  - They function at the **Gram Panchayat** level to resolve domestic and gender-based violence through negotiation, mediation, and reconciliation.
  - Operating in **Assam and J&K**, and being piloted across multiple states and UTs.
- **Exclusive Special Courts (SC/ST Act):** Created under the **Scheduled Castes and Scheduled Tribes (Prevention of Atrocities) Act, 1989** to deal exclusively with offences against SC/ST communities.

Rules for Sustainable Harnessing of Fisheries in the Exclusive Economic Zone

India has notified the **Rules for Sustainable Harnessing of Fisheries in the Exclusive Economic Zone (EEZ)**. This major step supports **India's Blue Economy vision** and fulfills the **Union Budget 2025–26** announcement to build a **sustainable deep-sea fisheries framework**.

- The EEZ Rules aim to unlock India's underused deep-sea resources, especially **tuna.** So far, fleets from Sri Lanka, Maldives, Indonesia, and Iran have taken most of tuna catch in the **Indian Ocean**, while Indian boats are limited to the nearshore waters.

Rules for Sustainable Harnessing of Fisheries in the EEZ

- **Empowering Cooperatives and Community-Led Models:** The rules prioritise **Fishermen Cooperative Societies and Fish Farmer Producer Organisations (FFPOs)** to conduct **deep-sea fishing** and manage modern vessels.

- They also encourage the **mother–child vessel model to enable mid-sea trans-shipment** under **Reserve Bank of India monitored procedures.**
- The Budget 2025–26 noted **India's position as the world's second-largest fish and aquaculture producer** with seafood exports of about Rs 60,000 crore.
  - ❖ Prioritising cooperatives, value addition, and stronger traceability and certification is expected to **further boost high-value exports.**
- **Promoting Sustainable Fishing and Mariculture:** The rules prohibit harmful practices such as **LED-light fishing, pair trawling, and bull trawling.**
  - They set minimum **legal size limits for fish** and mandate **Fisheries Management Plans with states** to protect biodiversity and rebuild declining stocks.
  - The rules promote **mariculture activities** like **sea-cage farming and seaweed cultivation to provide alternative livelihoods** and reduce nearshore fishing pressure.
- **Digital Access Pass Mechanism:** Under the EEZ Rules, an **Access Pass** is required for **mechanized and large-sized motorized vessels,** which can be obtained free of cost through the online **ReALCRaft portal.**
  - Traditional and small-scale fishers using motorised or non-motorised craft are exempt. Foreign vessels are barred from obtaining passes.
- **Regulatory Reforms:** Fish caught beyond the **contiguous zone** in the **Indian EEZ is treated as Indian origin** under customs and revenue norms.
  - This prevents such catches from **being classified as imports** when landed in Indian ports and enables smoother export accounting.
- **Security Measures:** The rules improve safety and security through mandatory transponders and **QR Coded Aadhaar Card / Fishers ID Card.**
  - ReALCRaft is integrated with the **Nabhmitra app** for safe navigation and transponder use, helping the Coast Guard and Navy strengthen coastal security.
  - To safeguard small-scale fishers, the rules call for a **National Plan of Action to curb illegal, unreported, and unregulated (IUU)** fishing in the EEZ.

ReALCRaft Portal

- It is a national online platform of the **Department of Fisheries** that enables vessel **registration, licensing, ownership transfer, and related services,** improving ease of doing business for fishers and coastal States/UTs.
- ReALCRaft is being integrated with **Marine Products Export Development Authority** (**MPEDA**) **and the Export Inspection Council** (**EIC**) to issue catch and health certificates, enabling traceability, sanitary compliance, and eco-labelling for high-value seafood exports.

Transplantation of Human Organs and Tissues (Amendment) Rules, 2025

The Union Ministry of Health and Family Welfare has notified the **Transplantation of Human Organs and Tissues (Amendment) Rules, 2025** under the **Transplantation of Human Organs and Tissues Act (THOTA), 1994** to simplify **corneal transplantation protocols** and **promote equitable access to organ and tissue** transplantation services across India.

Key Highlights of the Transplantation of Human Organs and Tissues (Amendment) Rules, 2025

- **Eases Equipment Requirements:** The mandatory requirement for **clinical specular microscopes in corneal transplantation centres** has been removed.
  - These microscopes, used to assess **corneal cell health**, were often expensive and difficult to procure for smaller centres.
  - The amendment will **ease infrastructure and operational hurdles** for smaller eye centres, improving access to corneal transplant services nationwide.

Significance

- **Promotes Equitable Healthcare:** Expands access to organ, tissue, and eye donation services across regions, aligning with the goals of the **National Organ Transplant Programme (NOTP)**.
- **Boosts Eye Donation Efforts:** Encourages more institutions to participate in **eye donation and corneal transplantation**, increasing the availability of donor tissue.
- **Addresses Corneal Blindness:** Helps tackle one of India's leading causes of visual impairment by improving access to timely treatment.
  - **Corneal Blindness** is vision impairment or blindness caused by **damage or disease of the cornea** (the transparent part of the eye that covers the iris and the pupil and allows light to enter the inside), often due to infection, injury, malnutrition, or genetic disorders.
  - According to the *Indian Journal of Ophthalmology*, corneal blindness is the **second-leading cause of blindness** after cataract among Indians, affecting **1.2 million people**, with 25,000–30,000 new cases each year.

Transplantation of Human Organs and Tissues Act, 1994

- **Background:** Before 1994, India lacked a unified law on organ transplantation, relying on scattered state acts like the Bombay Corneal Grafting Act (1957) and Maharashtra Kidney Transplantation Act (1982).
  - Rising illegal organ trade, especially in kidneys, led to public and expert demand for national regulation. The 1994 Act was framed on the recommendations of a committee led by **Dr. L. M. Singhvi (1991)** to ensure ethical and transparent transplantation.

- **THOTA, 1994:** It was enacted to regulate the **removal, storage, and transplantation of human organs and tissues** for therapeutic purposes, and to **prevent commercial dealings** in human organs.
  - The Act **facilitates the ethical retrieval of organs from brain-dead individuals and tissue transplantation** in India by establishing a clear legal framework for donation and medical procedures.
  - It promotes transparency and accountability in the retrieval, storage, and transplantation of human organs and tissues**.**

- **Major Provisions of the Act:** Defines the **terms donor, recipient, and near relative** to prevent misuse.
  - It specifies that organ removal can be done **only for therapeutic purposes** and with informed consent.
  - **Establishes Authorization Committees** to regulate transplantation activities.

- **Amendments and Rules:** The 2011 Amendment expanded the scope of the Act through the Transplantation of Human Organs (Amendment) Act, 2011, broadening coverage to include more organs and tissues.
  - The **Transplantation of Human Organs and Tissues Rules, 2014** were notified to operationalize the provisions of the Act.

- **Implementation and Adoption by States:** Since **health is a State subject,** states must adopt the Act for it to be applicable.
  - The 1994 Act applies to all States and Union Territories, except Andhra Pradesh and Telangana, which have their own laws.

National Organ Transplant Programme (NOTP)

- **Achievements:** India's organ transplants increased from 4,990 in 2013 to 18,911 in 2024. India ranks **3rd globally in total organ transplants,** behind the US and China, and **1st in living donor transplants**.

Gati Shakti Transport Planning and Research Organisation (GTPRO)

The Central Government is planning to restructure the **PM Gati Shakti governance framework** by dissolving the existing **Network Planning Group (NPG)** and establishing a new high-level body, the **Gati Shakti Transport Planning and Research Organisation (GTPRO)**.

- The **NPG**, established under **DPIIT** to coordinate inter-ministerial projects within the **PM Gati Shakti National Master Plan**, faced several internal challenges.

PM Gati Shakti National Master Plan (NMP)

■ The **PM Gati Shakti National Master Plan** (**NMP**) is the digital command centre for infrastructure planning in India.

■ Built on a **GIS-based platform**, it hosts over **550 layers of live data**, including economic clusters, logistics hubs, forests, rivers, and social infrastructure.

■ As of 2025, the **entire 1.46 lakh km National Highway network** has been mapped onto the NMP portal.

■ This enables **geo-intelligent planning**, reducing project delays, environmental conflicts, and cost overruns.

India's Initiatives for New-Age Highways

■ **India's Standing:** India has the **second-largest road network** in the world, spanning over 63 lakh km as of March 2025, with National Highways expanding by **60% from 91,287 km in 2014 to 1,46,204 km in 2025.**

■ **FASTag & NETC Ecosystem:** Developed by **NPCI**, the **National Electronic Toll Collection** (**NETC**) ensures seamless toll payments via **FASTag** — an RFID-based system with over **98%** coverage with **8 crore users**.

■ **MLFF Tolling System (2025):** First **Multi-Lane Free Flow** (**MLFF**) toll launched at **Choryasi Fee Plaza, Gujarat** — a camera and RFID-based tolling system that reads vehicles in motion.

■ **Rajmargyatra:** The **Rajmargyatra app**, launched by the Government, is a **citizen-centric mobile platform** for highway travellers.

■ **NHAI One App:** The NHAI One app unifies project operations and uses real-time geo-tracking to enhance efficiency and transparency across highways.

■ **Technology Driving Intelligent Transport Systems (ITS):** ITS integrates ATMS and V2X technologies, deployed on key corridors such as Delhi–Meerut, Trans-Haryana, Eastern Peripheral, and Bengaluru–Mysuru Expressways.

GTPRO

■ **About:** The **Integrated Transport Planning Authority,** likely named Gati Shakti Transport Planning and Research Organisation (GTPRO), will create **medium- to long-term roadmaps** for each transport ministry, including roads, railways, shipping, and aviation.

● It will develop **integrated 5- and 10-year plans,** aligning with India's goal to create world-class infrastructure and become a developed **nation by 2047**.

■ **Structure:** Headed by a **Cabinet Secretary.**

■ **Functions:**

● **Project Appraisal:** Review and approve transport sector projects **valued above ₹500 crore.**

● **Monitoring & Evaluation:** Track project progress and assess economic and environmental outcomes.

● **Data Repository:** Maintain a **unified national database** to support future infrastructure planning.

● **Policy Research:** Recommend strategies to **lower logistics costs** and improve operational efficiency.

■ **Institutional Model:** Inspired by unified transport planning bodies in the **US, UK, and Germany**, GTPRO will function as an **integrated think tank** for infrastructure strategy and research.

■ **Implementation Timeline:** Expected to be operational from the **next financial year**.

DCGI Directives on Global Standard GMP

The **Drugs Controller General of India (DCGI)** has instructed **state drug regulators** to **enforce revised Good Manufacturing Practices (GMP)** under **Schedule M** of the **Drugs and cosmetic act 1940 and rules 1945**, by **January 2026**, aligning **India's pharmaceutical** manufacturing norms with **global standards**.

■ The move comes amid heightened scrutiny following incidents of contaminated cough syrups that caused several child deaths in India and abroad.

Schedule M of the Drugs and Cosmetic Act 1940

■ **About:** The Schedule M under the Drugs and Cosmetics Act, 1940 (and the corresponding Drugs and Cosmetics Rules, 1945) serves as the **statutory framework that ensures all medicines produced in the country are safe, effective, and of consistent quality,** both for domestic use and export.

● In 2023, the Centre revised **Schedule M requirements** wherein **"GMP"** was upgraded to "*good manufacturing practices and requirements of plan and equipment for pharmaceutical products"* to align India's drug manufacturing standards with **World Health Organization (WHO) -GMP norms**.

■ **Key Provisions of Schedule M:** Good Manufacturing Practices; Premises & Equipment; Personnel & Hygiene; Quality Control & Assurance; Documentation & Record Keeping ; Validation & Calibration

Current State of India's Pharmaceutical Sector

■ **India as Pharmacy of the World:** India is the **world's 3rd largest producer of medicines by volume and 14th by value.**

● It is also the **largest supplier of generic drugs, accounting for about 20% of global exports**, and a major source of affordable vaccines worldwide, reinforcing its status as the **"Pharmacy of the World."**

● India's pharma sector supplies **55-60% of UNICEF's vaccines,** meeting **99% of WHO's DPT (Diphtheria, Whooping cough and Tetanus) vaccine** demand, **52% for BCG (Bacillus Calmette-Guérin** is a vaccine primarily used against tuberculosis (TB)), and **45% for measles.**

❖ From Africa to America, Indian vaccines save millions.

- **India's Biotechnology Sector:** India's biotech industry expanded from USD 10 billion (2014) to over USD 130 billion in 2024 (a 13-fold increase). It is projected to reach **USD 300 billion by 2030.**

- **Economic Potential:** Drug and pharma exports rose from USD 15.07 billion (2013–14) to USD 27.85 billion in 2023–24. The **US, Belgium, South Africa, the UK, and Brazil** are the top five export destinations.
  - The Indian pharmaceutical industry is projected to grow at a **CAGR of over 10%** to reach a size of USD 130 billion by 2030.
  - India has become a **global hub for medical tourism**, offering **affordable, high-quality treatment** enabled by major reforms in the healthcare sector.

Challenges Faced by India's Pharmaceutical Industry

- **Quality Control and Compliance Issues;** India has witnessed several incidents of **substandard and contaminated drugs**, including cough syrup tragedies in India and abroad.
  - Many small and medium manufacturers struggle to fully comply with **GMP**.
  - Several countries have flagged contamination and safety issues, and repeated **quality lapses along with WHO warnings** have hurt India's credibility as a dependable drug producer.
    - ❖ Compliance with global certifications such as the **US Food and Drug Administration's (FDA)** has become more expensive, putting financial strain on small exporters.

- **Regulatory Weaknesses:** The Indian regulatory system remains **fragmented**, divided between the **Central Drugs Standard Control Organisation (CDSCO)** and state-level drug authorities.
  - This overlap leads to inconsistent enforcement and delays in approvals.
  - Despite the introduction of revised **Schedule M (2023)** to align with global norms, the pace of implementation has been slow, creating uneven standards across regions.

- **Dependence on Imported Raw Materials:** India imports nearly **70% of its Active Pharmaceutical Ingredients (APIs)**, mainly from **China**, which poses major risks to **supply chain security** and **price stability**.
  - The Covid-19 pandemic exposed this overdependence, disrupting domestic production.
  - Although the government launched the **PLI Scheme for Bulk Drugs** to promote local manufacturing, progress remains limited.

- **Price Controls and Low Profit Margins:** Strict price caps imposed by the **National Pharmaceutical Pricing Authority (NPPA)** keep essential medicines affordable but reduce profit margins for companies.
  - This leaves little room for **investment in R&D or technological upgrades**. As a result, firms often prioritise cost efficiency over innovation and quality improvements.

- **Weak R&D:** Most Indian pharmaceutical companies focus on **generic production** rather than developing new drugs or molecules.
  - Limited collaboration between academia, industry, and government further restricts innovation and slows the creation of high-value, patented drugs.

- **Emerging and Technological Challenges:** The industry also faces new issues such as **antimicrobial resistance (AMR)**, which is linked to excessive antibiotic use.
  - The rise of **biopharmaceuticals**, **AI-driven drug discovery**, and **green manufacturing** requires rapid technological adaptation.
  - Companies must upgrade facilities and expertise to remain globally competitive and environmentally sustainable.

Measures to Strengthen India's Pharmaceutical Sector

- **Strengthen GMP Compliance:** Upgrade infrastructure of **MSME pharma units** through subsidised loans and technology grants.
  - Mandatory third-party audits and surprise inspections to ensure **strict Schedule M and WHO-GMP compliance**.

- **Modernise Drug Regulation:** Establish a **single, centralised national drug authority to streamline** approvals and avoid CDSCO–state overlaps.
  - Introduce uniform digital platforms for licensing, batch tracking, and adverse drug reaction reporting.

- **Reduce Dependency on Imported APIs:** Fast-track the Bulk Drug Parks and PLI schemes to revive domestic API and intermediate manufacturing. Provide long-term purchase guarantees or **viability-gap funding** for critical APIs.

- **Boost R&D, Innovation & Drug Discovery:** Increase public investment in pharma R&D to **at least 2% of GDP**, with grants for start-ups and academia.
  - Strengthen **National Institutes of Pharmaceutical Education and Research,** biotech parks, and Centres of Excellence under the PRIP Scheme.

- **Improve Export Competitiveness:** Support small exporters in meeting USFDA, and EU-GMP standards through training and financial subsidies.
  - Negotiate regulatory harmonisation agreements with Africa, Latin America, and ASEAN markets.

- **Strengthen Waste Management Standards:** India should tighten pharma effluent **norms to curb AMR, promote green manufacturing and solvent recover**y, and develop zero-liquid-discharge clusters for cleaner, sustainable production.

> "Revised Schedule M marks a major step towards global-standard manufacturing, but India's pharma sector needs deeper structural reform." Discuss.
>
> **Drishti Mains Question**

Protection of Plant Varieties and Farmers' Rights (PPV&FRA) Act, 2001

India celebrated the **Silver Jubilee of the PPV&FRA Act, 2001, and its 21st Foundation Day** with the **Plant Genome Saviour Awards Ceremony** in New Delhi, honoring individuals who conserve & preserve the genetic diversity of important plants and their wild relatives.

- **About:** PPV&FRA Act, 2001, under the Ministry of Agriculture and Farmers Welfare, establishes a **sui generis system** for protecting plant varieties: aligns with **India's TRIPS obligations & International Union for Protection of New Plant Varieties (UPOV Convention)**.

- **Rights under the Act:**

  - **Breeders' Rights:** Exclusive **rights to produce, sell, market, import/export**, and distribute protected varieties; may appoint agents or licensees and can seek legal action for infringement

  - **Researchers' Rights:** Researchers can use registered varieties for experiments or to develop new varieties, but need permission for repeated use.

  - **Farmers' Rights:** Farmers can register new varieties and use, save, or sell farm produce, but not as branded seed.

- **Implementing Authority:** Protection of **Plant Varieties and Farmers' Rights Authority (PPV&FRA)**.

- **Significance:** Promotes agricultural innovation, protects traditional knowledge, ensures seed sovereignty for farmers, supports both **public & private sector plant breeding**, while **complying with global IPR norms**.

Protection of Plant Varieties and Farmers' Rights Authority (PPV&FRA)

- **About:** Formally set up on **11 November 2005**; it is a statutory body established under the PPV&FRA, 2001, under the Ministry of Agriculture & Farmers' Welfare. It is headquartered in New Delhi.

- **Composition:** It is led by a **Chairperson** and has **15 members**. The **Registrar General serves as the ex-officio Member Secretary**.

- **Objectives**: The PPV&FRA provides **breeders' rights**, rewards farmers for **conserving traditional varieties**, protects farmers' rights to **use and share farm-saved seed**, supports **research and innovation**.

  - It maintains the **National Register of Plant Varieties**, helping preserve biodiversity and traditional knowledge.

PMFBY Expansion to Cover Wildlife Damage and Paddy Inundation

The **Ministry of Agriculture and Farmers Welfare** has announced that the **Pradhan Mantri Fasal Bima Yojana (PMFBY)** will now cover crop losses due to **wild animal attacks** and **paddy inundation** from the **Kharif season 2026**.

- In 2018, **paddy inundation** (damage caused by floods and heavy rainfall) was removed from the **localised calamity category** due to assessment challenges, but it has now been **re-included**.

Pradhan Mantri Fasal Bima Yojana (PMFBY)

- **About:** PMFBY is a **Central Sector Scheme** launched in **2016** by the **Ministry of Agriculture & Farmers Welfare**.

  - It provides **financial protection** to farmers against crop losses caused by **natural disasters, pests, or diseases** and aims to **support farmers financially**.

- **Eligibility & Coverage:** All farmers, including **sharecroppers** and **tenant farmers** cultivating **notified crops** in **designated areas**, are eligible for coverage under PMFBY.

  - Participation is **voluntary**, with **non-loanee farmers** making up **55% of the total beneficiaries**.

  - The number of **farmer applications** has risen from **371 lakh in 2014-15** to **1510 lakh in 2024-25**, while **non-loanee farmer applications** grew from **20 lakh** to **522 lakh** over the same period.

- **Risk Protection:** PMFBY offers **comprehensive protection** against a range of risks.

  - **Natural Disasters:** Covers losses from **floods, droughts, cyclones, hailstorms, landslides**, and **unseasonal rainfall**.

  - **Pest & Disease Protection:** Safeguards crops against **pest infestations** and **diseases**.

  - **Post-Harvest Losses (Individual Farm Basis):** Provides **compensation for damages within 14 days of harvest**, particularly for crops in a **"cut and spread" condition**.

  - **Localised Calamities:** Offers **individual farm-based compensation** for **localized disasters** e.g., hailstorms, landslides etc.

  - **Prevented Sowing (Notified Area Basis):** Farmers who cannot sow due to **adverse weather** despite **intent and incurred costs** can claim up to **25% of the sum insured**.

- **Premium Rates:** Farmers contribute affordable premium**s** of **2% for Kharif crops**, **1.5% for Rabi crops**, and **5%** for annual **commercial or horticultural crops**.

  - The **government provides full premium subsidies** for farmers in the **Northeast, Jammu & Kashmir, and Himachal Pradesh**.

- **Technology Deployment for Loss Assessment:**
  - **Satellite Imagery & Drones:** Employed to **estimate crop areas**, resolve yield disputes, and assess crop losses.
  - **Crop Cutting Experiments (CCEs):** The **CCE-Agri App** allows direct data uploads to the **National Crop Insurance Portal (NCIP)**, ensuring transparent yield evaluations.
  - **YES-TECH (Yield Estimation System Based on Technology):** It enables **remote sensing-based crop yield estimation** for **fair and accurate assessments**.
  - **Additional Tools:** The scheme also leverages **DigiClaim**, **CROPIC (Collection of Real-Time Observations and Photographs of Crops)**, and **WINDS (Weather Information Network Data Systems)** for accurate and timely assessments.
- **Quick Settlement:** PMFBY guarantees **claim settlement within two months of harvest**, offering **timely compensation** to help farmers **prevent falling into debt**.

Unlocking India's Green Hydrogen Production Potential

India launched the **National Green Hydrogen Mission (NGHM)** in 2023 to reduce fossil fuel dependence, achieve **Net Zero by 2070**, and enhance energy security through a **green hydrogen(GH$_2$)** ecosystem.

Green Hydrogen (GH$_2$)

- **About**: Green hydrogen refers to hydrogen **produced using renewable energy** sources, such as **solar or wind power,** through the **process of electrolysis,** where water is split into hydrogen and oxygen.
  - It can also be produced by **converting biomass,** like agricultural waste, into hydrogen, provided the emissions remain below the safe limit.
- **Emissions Standard**: India classifies hydrogen as "green" if the total emissions from its production process **do not exceed 2 kg of CO₂ equivalent** per 1 kg of hydrogen produced.
- **Key Applications:**
  - **Steel Industry Innovation**: Green hydrogen is being **explored in the steel industry** for **carbon-based fuels in iron reduction** and other steelmaking processes to **reduce carbon emissions** and enhance sustainability.
    - ❖ Currently, **five pilot projects** are underway to test its feasibility and integration into steel production.
  - **Road Transport**: The NGHM has launched **five major pilot projects** involving **37 hydrogen-powered vehicles** (buses and trucks) across **10 routes**, supported by **₹208 crore** in financial aid.

- **Shipping and Maritime Operations**: A **Green Hydrogen Pilot Project** at **V.O. Chidambaranar Port** (₹25 crore) and a **megawatt-scale** green hydrogen facility at **Deendayal Port Authority, Kandla,** are being developed to support cleaner maritime operations.
- **High-Altitude Mobility**: In **November 2024**, **NTPC** launched the world's highest altitude **Green Hydrogen Mobility Project** in **Leh** (3,650 m), featuring **5 hydrogen buses** and a fueling station.

India's First
Green Hydrogen Hubs
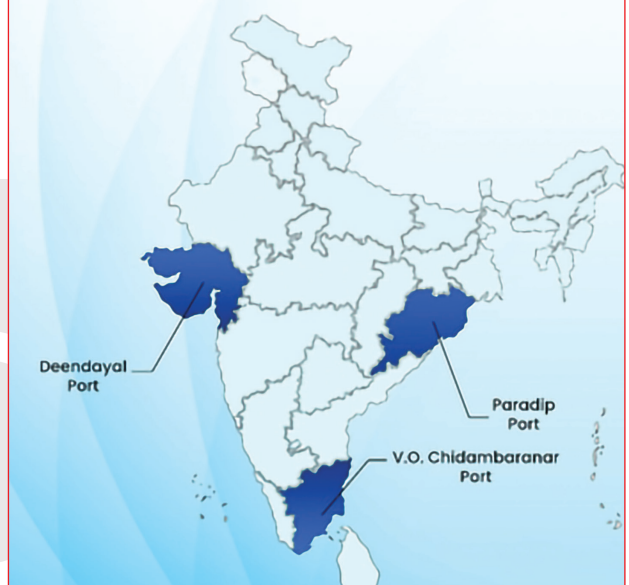
Global Partnerships

- **EU-India Collaboration**: Under the **EU-India Trade and Technology Council**, over **30 joint proposals** on hydrogen production from waste have been received.
- **India-UK Partnership**: In **February 2025**, India and the UK strengthened their cooperation on hydrogen standardization through a dedicated **Standards Partnership Workshop**.
- **Partnership with H$_2$Global**: In **November 2024**, India's **Solar Energy Corporation** (SECI) signed an MoU with **H$_2$Global Stiftung** (Germany) to facilitate market-based mechanisms for the export of Indian green hydrogen.
- **Singapore Collaboration**: In **October 2025**, **Sembcorp Industries** signed MoUs with **V.O. Chidambaranar** and **Paradip Port Authorities** to develop integrated green hydrogen and ammonia hubs for production, storage, and exports.

Jal Sanchay Jan Bhagidari (JSJB) Initiative

The **Jal Shakti Ministry** announced the **1st Jal Sanchay Jan Bhagidari (JSJB) Awards** under the **JSJB initiative**, with

Telangana topping the list for **5.2 lakh water conservation structures**. This initiative **aligns** with the PM's vision of **Jan Shakti for Jal Shakti.**

Jal Sanchay Jan Bhagidari (JSJB) Initiative

- **About:** Launched in **September 2024 in Surat, JSJB is a community-driven program** under **Jal Shakti Abhiyan: Catch the Rain (JSA: CTR)** and **integrates** the Whole-of-Government and Whole-of-Society approach.
  - It promotes **rooftop rainwater harvesting** and **reviving traditional water bodies** like **lakes, ponds, and stepwells**.
- **Objective & Approach:** It encourages the construction of **artificial recharge and storage structures**.
  - It follows the **3Cs mantra – Community, corporate social responsibility (CSR), and Cost**, ensuring **long-term water security** and resilience against water stress.
  - **States** divided into **five zones** for implementation i.e., **Northern, Eastern, Southern, Western and North-Eastern Zone & Hilly States**.
- **Inter-Ministerial Collaboration**: The **Ministry of Jal Shakti** serves as the **nodal agency** and has partnered with the **Ministry of Housing and Urban Affairs** to **enhance urban water conservation efforts**.
- **Decentralized Targets**:
  - **Districts (General)**: Minimum 10,000 artificial recharge structures.
  - **Hilly/North-Eastern districts**: 3,000 structures.
  - **Municipal Corporations**: 10,000 structures.
- **Achievement:** Against an overall target of **10 lakh structures**, a remarkable **27.6 lakh structures** were reported within the **timeline**, indicating **widespread participation**.

India's Water Management Strategy
■ **Jal Shakti Abhiyan:** Promotes nationwide water conservation efforts.
■ **Atal Bhujal Yojana:** Focuses on sustainable groundwater management.
■ **Urban Guidelines:** Mandates rainwater measures in urban areas.
■ **Pradhan Mantri Krishi Sinchai Yojana:** Enhances irrigation efficiency.
■ **National Water Policy:** Addresses water resources planning, harvesting, and conservation.

Digital Personal Data Protection (DPDP) Rules, 2025

India notified the **Digital Personal Data Protection (DPDP) Rules, 2025**. This marks the full operationalisation of the **Digital Personal Data Protection (DPDP) Act, 2023.**

- Together, the Act and the Rules form a **clear and citizen-centred framework** for the **responsible use of digital personal data.**

Digital Personal Data Protection (DPDP) Rules, 2025

- **About:** The DPDP Rules, 2025 operationalise the DPDP Act by creating a clear, practical system for personal data protection.
  - They **strengthen citizen rights, ensure responsible data use** by organisations and curb unauthorized use of data.
  - The Rules reduce **digital harms, support innovation** and help build a secure, trusted digital economy for India.
  - The DPDP framework **puts citizens at the centre of data protection**, giving them clear control over how their personal data is used.

Core Provisions

- **Phased and Practical Implementation:** The Rules allow an **18-month compliance window**, giving organisations time to update systems and adopt responsible practices.
  - **Data Fiduciaries** must issue simple, purpose-specific consent notices, and all Consent Managers must be India-based companies.
- **Personal Data Breach Notification:** Data breaches must be reported to affected individuals **without delay**, using plain language that explains the incident, potential impact and steps taken, along with clear contact details for assistance.
- **Transparency and Accountability:** Data Fiduciaries must display clear contact information for data-related queries.
  - Significant **Data Fiduciaries must undergo independent audits**, conduct impact assessments and follow stricter rules, including government directions on restricted or locally stored data.
- **Digital-First Data Protection Board:** The Rules set up a fully digital **Data Protection Board** with four members, allowing citizens to file and track complaints online through a portal and app.
  - Appeals against the Board's decisions will be heard by the **Appellate Tribunal, TDSAT.**
- **Strengthening Rights of Data Principals:** Individuals can access, correct, update or request deletion of their personal data, and may nominate someone to act on their behalf. All such requests must be resolved within **90 days**.

Digital Personal Data Protection (DPDP) Act, 2023

- **About:** The DPDP Act, passed in August 2023, sets out India's framework for **protecting digital personal data**.
  - It explains the **duties of organisations handling such data** and follows the **SARAL (Simple, Accessible, Rational and Actionable)** approach so that the **rules remain simple, clear and easy to follow.**
  - The DPDP framework also aligns with the **Right to Information (RTI) Act, 2005** by balancing privacy rights with the public's right to information.

- **Core Principles:** The law rests on seven core principles. These include **consent and transparency, purpose limitation, data minimisation, accuracy, storage limitation, security safeguards and accountability.**
  - These principles guide every stage of data processing. They also ensure that personal data is used only for lawful and specific purposes.
- **Data Protection Board of India:** The Act sets up the **Data Protection Board** as an **independent body** to oversee compliance, investigate breaches and ensure corrective steps.
  - It helps protect individual rights and strengthens trust in India's digital environment.
- **Key Terms Under the DPDP Act, 2023:**
  - **Data Fiduciary:** An entity that decides why and how personal data is processed, either alone or with others.
  - **Data Principal:** The individual to whom the personal data relates.
    - ❖ In the case of a child, **this includes a parent or lawful guardian.**
    - ❖ For a **person with a disability** who cannot act independently, this includes the lawful guardian acting on their behalf.
  - **Data Processor:** Any entity that processes personal data on behalf of a Data Fiduciary.
  - **Consent Manager:** An entity that provides a single, transparent and interoperable platform through which a Data Principal may give, manage, review or withdraw consent.
  - **Appellate Tribunal:** The **Telecom Disputes Settlement and Appellate Tribunal (TDSAT),** which hears appeals against decisions of the **Data Protection Board.**
- **Penalties Under the DPDP Act, 2023:** The Act imposes strict penalties on Data Fiduciaries, including fines up to Rs 250 crore for failing to maintain security safeguards.
  - Not reporting data breaches or violating child-related provisions can lead to penalties up to Rs 200 crore, while other violations may attract fines up to Rs 50 crore.
- **Significance:** DPDP increases **privacy rights** but still keeps the RTI Act working as before. It ensures both privacy and access to information can work together.
  - The amendment to **Section 8(1)(j) of the RTI Act** through the DPDP Act balances the **fundamental right to privacy,** as affirmed by the *Supreme Court in Justice K.S. Puttaswamy v. Union of India (2017),* with the right to information.
    - ❖ This amendment aligns with established judicial reasoning on reasonable restrictions, codifies existing jurisprudence, and **helps avoid potential conflicts between the laws.**

- ❖ However, Section 8(2) of the **RTI Act still permits disclosure of Information when public interest is more important than privacy harm.** This keeps the core purpose of RTI intact promoting openness and accountability in public life.
- The amendment removes legal uncertainty and **prevents clashes between privacy protection and information access.** It maintains the essence of the RTI Act while strengthening privacy under DPDP.

Rights and Protections for Citizens under India's DPDP Framework

Right / Protection	Description
Right to Give or Refuse Consent	Citizens can allow or deny use of their personal data. Consent must be clear and can be withdrawn anytime.
Right to Know How Data is Used	Individuals can ask what data is collected, why it is used and how it is processed, and organisations must provide this information in a simple form.
Right to Access Personal Data	Citizens may request a copy of their personal data held by a Data Fiduciary.
Right to Correct Personal Data	Individuals can get inaccurate or incomplete data corrected.
Right to Update Personal Data	Citizens can update changed details like address or contact number.
Right to Erase Personal Data	Individuals can request deletion of their personal data in specific situations, and the Data Fiduciary must act on the request within the allowed timeframe.
Right to Nominate Another Person	Individuals can nominate someone to exercise their data rights on their behalf, helpful in cases of illness or other limitations.
Mandatory 90-Day Response	Fiduciaries must act on access, correction, update or erasure requests within **90 days**.
Protection During Data Breaches	Citizens must be informed quickly about breaches, their impact and the steps to take.
Clear Contact for Queries	A Data Fiduciary must provide a designated officer or Data Protection Officer for data-related questions.
Special Protection for Children	Processing a child's data requires **verifiable parental/guardian consent**, except for essential services such as **healthcare, education or real-time safety.**
Special Protection for Persons with Disabilities	A lawful guardian must give consent if a person with a disability cannot make decisions, as per relevant laws.

Revisiting Gender Neutrality in POCSO Act, 2012

The **Supreme Court** issued notice in a case where a **woman** is accused of **'penetrative sexual assault'** on a **minor boy** under **Section 3** of the **POCSO Act, 2012**.

- The case has renewed debate on the Act's **gender neutrality**, especially whether it covers **female perpetrators** of child sexual abuse.

POCSO Act, 2012

- **About:** POCSO Act, 2012 was enacted by the Ministry of Women and Child Development to address the **heinous crimes of sexual abuse and exploitation of children**.
  - It was amended in 2019 that increased **punishments**, including the **death penalty** for **aggravated penetrative sexual assault** of a **child**.

- **Salient Features:**
  - **Gender Neutrality:** The **Act** is **gender-neutral** and safeguards **all children**, irrespective of **gender**.
  - **Definition of a Child:** It defines a child as any person **below 18 years of age**.
  - **Coverage of Abuse:** The **Act** covers **penetrative and non-penetrative assault**, **sexual harassment**, and **pornography**. Offences are **aggravated** if committed by someone in **trust or authority** or against a **mentally ill child**, and **child trafficking** for sexual purposes is also **punishable**.

- **Graded Punishments: Punishments** range from **10 years to life imprisonment** for **penetrative sexual assault** and **20 years to life** for **aggravated cases**, with stricter terms if the **child is under 16**.
  - **Use, possession, attempt, and abetment** of offences, including **child pornography**, are also punishable, with fines or imprisonment up to **7 years** depending on severity and intent.

- **Judicial Process:** The **Act** requires **Special Courts** to try offences. It ensures that the **evidence of the child is recorded within 30 days**, and the **trial is completed within 1 year**, wherever possible.

- **Scope and Overriding Effect:** The POCSO Act has an **overriding effect over other laws** if there is inconsistency. It applies only to **child survivors and adult offenders**, while cases of child-on-child offences or child-on-adult offences are governed by the **Juvenile Justice Act, 2000**.

Gender Neutrality in the POCSO Act, 2012

- **Statutory Interpretation:** Section 3 of **POCSO act** defines **penetrative sexual assault** using **gender-neutral terms** and does not explicitly limit the offence to male perpetrators.
  - The use of the pronoun **'he'** in statutory language is governed by **Section 13(1) of the General Clauses Act, 1897**, which states **masculine words include the feminine** unless the context specifies otherwise.

- **Scope of Offences:** The definition includes **oral**, **digital**, and **object-based penetration**, which can be committed by individuals of any gender.
  - **Section 3(d)** also criminalises **inducing a child to perform a sexual act on another person** — expanding applicability.

- **Legislative Intent:** The **Ministry of Women and Child Development**, in a written response to a question in the Lok Sabha, stated unambiguously that **POCSO 'is a gender neutral Act'**.
  - The **Statement of Objects and Reasons** of the **POCSO Amendment Bill, 2019** explicitly confirms that the **POCSO Act is gender-neutral**.

Ensuring a Balanced Legal and Policy Framework for Child Protection

- **Strengthening the Legal Framework:** Resolve **definitional gaps** in the POCSO Act, 2012 especially regarding **gender neutrality**, to ensure uniform and fair application of the law.
  - Additionally, **harmonize POCSO, JJ Act, and BNS** while introducing **nuanced sentencing guidelines** that balance stringency with reformative justice.

- **Robust Institutional Capacity:** Mandate **specialized training** for all stakeholders and strengthen **infrastructure**, including Special Courts and Forensic Science Laboratory (FSL) capacity, to ensure faster and child-sensitive case handling.

- **Proactive and Preventive Policies:** Mandate **strict child protection policies**, including annual **Personal Safety Education (PSE)** for students. Use technology to enhance monitoring through a **national child-protection database**, **data analytics**, and **safe, anonymous reporting platforms** for children.

- **Address Digital Age Challenges:** Strengthen responses to **Online Child Sexual Abuse and Exploitation (OCSAE)** through updated protocols, specialized **cyber cells**, and collaboration with **tech companies** to remove content and identify victims.

Shaping India's AI-Driven Economy

Artificial Intelligence (AI) is set to drive India's **next phase of economic growth**, with **NITI Aayog estimating** that AI could add **USD 500–600 billion to GDP by 2030.**

- **Roadmap for Job Creation in the AI Economy:** This report presents India's strategic plan to address the disruptions caused by **AI**, aiming to position the country as the global hub for **AI-driven workforce development**.
  - It introduces the **3W framework** for AI and outlines its potential impact on **work**, **workers**, and the **workforce.**

- **Roadmap on AI for Inclusive Societal Development:** This report focuses on utilizing **cutting-edge technologies** to transition **informal workers** into a more **formal**, **empowered**, and **future-ready labor force**.
  - It emphasizes **AI's potential** to enhance **inclusivity** and foster **sustainable development.**

- **AI as Both a Challenge and Opportunity for India:** AI presents both **challenges** and **opportunities** for India's economy.
  - While it disrupts traditional **formal jobs**, it simultaneously provides a unique opportunity to **formalize** and significantly improve the **productivity** of the vast **informal workforce.**

Potential of AI for India's Economic Transformation

- **Job Creation in New, High-Value Sectors:** India could create **up to 4 million new jobs by 2031**, especially in tech and customer service, with jobs ranging from **Prompt Engineers** to **Quantum ML Engineers** and **advanced AI model developers**.

- **Enhanced Global Economic Standing:** India can become the **"AI workforce capital of the world"** by shifting from traditional IT services to **AI-driven work and innovation**, using its strong digital talent base.
  - The proposed **India AI Talent Mission** can also help **reverse brain drain**, similar to efforts in **Singapore and the UAE**.

- **New Revenue Pools and Industries:** It opens new avenues like **AI-driven drug discovery** and **smart manufacturing**, while its convergence with **Quantum Computing, IoT, and 5G** is creating opportunities in **smart cities** and **logistics optimization**.

- **Productivity Gains:** AI boosts efficiency and global competitiveness, delivering **10–20% productivity gains** in software development and reducing costs in customer service through **chatbots** and **real-time translation**.

- **Foundation for a Future-Ready Economy:** Creating an open-source **India AI Commons** will provide datasets, models, and benchmarks to democratize innovation, while India's **AI Compute Grid** will offer shared high-performance computing access to boost local R&D and retain talent.

Challenges Posed by AI to the Indian Economy

- **Job Losses in the Tech Sector:** As per Niti Aayog, the **IT services workforce** may drop from **7.5–8 million (2023)** to **6 million by 2031**.
  - Overall, **60% of formal jobs** in India face automation risk by 2030, with the **IT and BPO sectors** especially vulnerable due to routine, scalable tasks.

- **Education System Gaps:** India faces gaps in **computer science education**, with limited access and outdated AI curricula that miss emerging concepts like **Retrieval Augmented Generation (RAG)**.
  - These weaknesses contribute to **low research output**, with AI patent shares dropping to **under 5%,** and fewer than **500 AI-related PhDs** produced each year.

- **AI Talent Supply-Demand Gap:** AI talent demand is rising at **25% CAGR** (from **800,000 to 1.25 million by 2026**), while supply grows at only **15% CAGR**.
  - India also faces **net negative talent migration**, losing top AI researchers at a rate of **1.55 per 10,000**.

- **Broader Systemic Risks:** India risks **losing competitiveness and strategic ground** to countries like China, Saudi Arabia, the UAE, and Singapore, while socially, limited protection for **400 million informal workers** and uneven impacts across regions and groups create major challenges.

Recommendations of NITI Aayog

- **Embed AI in the Education System:** Integrate **AI learning** from schools, expand **AI-focused higher education**, and increase **AI PhD fellowships** to strengthen research, while ensuring curricula stay updated through **faculty–industry collaboration**.

- **Become a Global AI Talent Magnet:** Offer **competitive grants**, **high salaries**, and **priority access** to the **national computer grid** to retain and bring back Indian AI researchers, and introduce a dedicated **AI talent visa** to attract **global experts**.

- **Building an AI Skilling Engine:** Launch **national reskilling programs** by scaling **NAPS (National Apprenticeship Promotion Scheme)** and **PMKVY (Pradhan Mantri Kaushal Vikas Yojana)** for widespread **AI literacy**, and introduce **flexible AI master's and doctoral pathways** for working professionals to upgrade into **high-skill roles.**

- **Establishing India Open-source AI Commons:** Create a **central AI commons** with high-quality **datasets**, **models**, and **benchmarks**, incentivize **data contribution** from universities and ministries, and ensure **trust and transparency** through reliable **validation tools**.

- **Federated National Compute & Innovation Grid:** Consolidate fragmented **HPC resources** into a unified

compute grid, and provide **tiered, affordable access** for students, startups, and researchers to support advanced **model training** and reduce dependence on foreign infrastructure.

> Artificial Intelligence is a double-edged sword for the Indian economy. Critically analyze this statement and suggest a strategic roadmap for India to become a global leader in inclusive AI.
>
> **Drishti Mains Question**

Efficient Water Management in Agriculture

At the **6ᵗʰ National Water Awards**, President Droupadi Murmu urged for urgent **innovation in agricultural water use,** reminding the country that water is a **sacred and finite national resource.**

National Water Awards

- **About:** The National Water Awards launched in 2018, under the **Department of Water Resources, River Development and Ganga Rejuvenation, Ministry of Jal Shakti**.
  - The awards were conceived as a platform to honour individuals, organisations, and states that demonstrate innovation, leadership, and dedication in the field of water conservation.
- **Purpose:** To support the national vision of **"Jal Samridh Bharat"** - a water-secure and water-enriched India.
  - They promote **water-use efficiency, recycling and reuse, and broader public awareness.**
  - The awards aim to strengthen people's participation, build capacity and support the long-term sustainability of groundwater resources.
- **6ᵗʰ National Water Awards:** The 6ᵗʰ National Water Awards 2024 selected 46 winners, including joint awardees, across **10 categories**.
  - **Maharashtra topped the Best State category, followed by Gujarat and Haryana.**

Need for Efficient Water Use in Agriculture

- **Mismatch Between Irrigation and Cropping Cycles:** Large **irrigation projects** often take years to complete and **miss peak sowing periods,** reducing their usefulness.
  - Canal repairs and desilting often finish after the monsoon, reducing their usefulness for the **kharif season**, and **ageing canal networks lose up to 40% of water due to seepage**, leakage, theft and poor maintenance.
  - Policies promoting **paddy and sugarcane** have increased pressure on stressed aquifers, while some states providing **free electricity** for agriculture has encouraged excessive borewell pumping, worsening groundwater depletion.

- The lack of **integration of traditional water harvesting structures** weakens groundwater recharge and increases dependence on pumping.
- **Minimal Use of Real-Time Data and Technology:** Most **irrigation** decisions are made **without using weather forecasts, soil moisture data or crop water requirement models.**
  - Only a few states, such as **Andhra Pradesh and Karnataka**, have begun applying remote sensing or crop analytics.
- **Limited Adoption of Micro-Irrigation:** Drip and sprinkler systems cover only about 12% of India's irrigated area.
  - Small farmers struggle with **high installation costs,** inconsistent electricity supply and limited technical support, slowing the shift toward efficient water use.
- **Waterlogging and Soil Salinity:** Poor drainage planning has placed nearly 13 million hectares of irrigated land at risk of **waterlogging.**
  - These conditions sharply reduce crop yields and damage soil health.
- **Groundwater Extraction and Contamination:** India extracts about **25% of the world's groundwater**. Since groundwater supports 62% of irrigation and a major share of rural and urban water needs, overexploited blocks with **declining recharge demand urgent innovation.**
  - Excessive use of fertilisers and pesticides has led to **nitrate contamination in 56% of districts**. In coastal belts, over-extraction has caused salinity **intrusion, reducing agricultural productivity** and harming ecosystems.
- **Climate Change and Erratic Monsoons:** Since the monsoon provides nearly 60% of groundwater recharge, unpredictable rainfall patterns directly affect irrigation security.
  - In 2023, a 5.6% rainfall shortfall across more than 200 districts pushed states like Tamil Nadu to over-extract deep aquifers.

Innovative Measures to Support India's Long-Term Water Security

- **AI-Driven Piped Irrigation Systems:** Building on **Microsoft's Project FarmVibes,** integrating piped irrigation with **Artificial Intelligence, Internet of Things (IoT) sensors** and satellite data enables precise, need-based water delivery to crops.
  - This reduces transmission losses, prevents over-pumping and ensures equitable distribution, especially to tail-end farmers directly addressing India's water loss and chronic groundwater stress.

- **Digital Twin Models for Irrigation Command Areas:** Creating virtual, real-time **replicas of irrigation networks helps track canal releases,** soil moisture, crop stress and groundwater levels.
  - These models support **dynamic water allocation and minimise mismatch between irrigation scheduling and crop cycles**.
- **Village-Level Water Budgeting:** Preparing annual water budgets for villages and aligning cropping patterns with actual water availability reduces over-extraction and prevents cultivation of high-water crops in stressed regions.
  - This approach strengthens local accountability and directly addresses aquifer depletion.
- **Aquifer Recharge Using Modern and Traditional Systems:** Combining recharge shafts, percolation tanks and treated wastewater with restored **traditional structures like baolis and johads** can rebuild depleted aquifers.
  - This hybrid recharge strategy is essential for states that have crossed safe extraction limits.
- **Smart Micro-Irrigation:** Solar-powered drip and sprinkler systems linked to automated valves allow farmers to irrigate based on soil moisture and weather forecasts.
  - This ensures major water savings, lowers energy use and reduces dependence on erratic electricity supplies.

> Examine the need for innovation in agricultural water use in the context of India's groundwater depletion.
>
> **Drishti Mains Question**

Digital Initiatives to Modernize Public Distribution System (PDS)

The **Ministry of Consumer Affairs, Food & Public Distribution** has launched a series of **digital initiatives** aimed at modernizing the **Public Distribution System (PDS)**, improving **supply chain efficiency**, and enhancing transparency in food storage and logistics.

Digital Initiatives Aimed at Modernizing the PDS

- **Bhandaran 360:** It is a new **Enterprise Resource Planning (ERP) platform** for the **Central Warehousing Corporation (CWC)** that is linked to **35 external systems** like **ICEGATE, Food Corporation of India (FCI)**, and **NAFED**.
  - It offers **single sign-on**, **data encryption**, **real-time dashboards**, and **predictive analytics** to standardize operations, and speed up decision-making.
- **Smart EXIM Warehouse System:** It streamlines **container and cargo management** by using **AI**, **IoT**, and **FASTag**, enabling **real-time tracking**, and **quicker cargo movement**.
- **ANNA DARPAN:** The Food Corporation of India launched **ANNA DARPAN** that brings together **procurement, storage, movement, sales, quality checks**, and **contract monitoring** into one integrated and reliable information system.
- **ASHA (Anna Sahayata Holistic AI Solution):** It is an **AI platform** that uses automated calls to collect feedback on **ration entitlement, grain quality, and shop issues** to manage grievances and improve oversight.
- **Modern Steel Silos:** A new **Hub Silo Complex** in Malout, Punjab, with a **capacity of 1.5 lakh metric ton**, has been inaugurated to minimize **wastage and spoilage.**

Public Distribution System (PDS)

- **About:** PDS is a food security system under the **Ministry of Consumer Affairs, Food, and Public Distribution**, providing essential **food items and non-food items** at **subsidized rates**.
- **Target Beneficiaries:** Under the **National Food Security Act, 2013**, **Priority Households (PHH)** receive **5 kg of foodgrains** per person per month at highly subsidized rates- **Rs 3/kg for rice**, **Rs 2/kg for wheat**, and **Rs 1/kg for coarse grains**.
  - **Antyodaya Anna Yojana (AAY)** provides **35 kg of grains** per household per month to the **poorest families**.
- **Commodities:** Under **PDS**, **wheat, rice, sugar, and kerosene** are allocated to States/UTs, with some also distributing additional items like **pulses, edible oils, iodized salt, and spices**.

Challenges Concerning PDS in India (F-A-I-L)

- **F - Faulty Targeting:** The PDS's **Below Poverty Line (BPL)** criteria leave out many vulnerable groups, so **12%** of poor households **miss out**, while some **Above Poverty Line (APL)** households and **ghost cardholders** benefit.
- **A - Accessibility Issues:** **Storage capacity** is concentrated in **procuring states** like **Punjab** and **Haryana**, causing **shortages** in **consuming states** such as **Rajasthan** and **Maharashtra**, while **bureaucratic delays** worsen **regional disparities**, especially in **remote areas**.
- **I - Inefficiency and Quality Gaps:** **Food grains** are often **rotten, infested, or impure**, causing **spoilage** (over **62,000 tonnes** in 2020), and the focus on **rice and wheat** overlooks **malnutrition** and **nutritious local crops** like **millets**.
- **L - Lack of Awareness & Redressal:** Many **beneficiaries**, especially **illiterate** ones, lack knowledge of their **entitlements**, and weak **grievance redressal** leads to **denied or delayed rations**.
  - **World Bank** and **Right to Food Campaign** reports highlight **Aadhaar-related exclusions** due to poor **grassroots accountability**.

Reforms Required to Improve the Efficiency of PDS (G-R-O-W)

- **G - Grain Supply Modernization:** Phase out traditional godowns and expand **modern steel silos** to reduce post-harvest losses and improve grain quality.
  - Use the **PM Gati Shakti National Master Plan** to optimize the food logistics network, minimizing transport time and cost.
- **R - Real-Time Digital Integration:** Integrate **Bhandaran 360, ANNA DARPAN, and ASHA** with state PDS databases and **One Nation One Ration Card (ONORC)** system to create a unified system for **real-time tracking** of foodgrains and identifying bottlenecks from central warehouses to **Fair Price Shops (FPS)**.
- **O - Optimized Last-Mile Delivery:** Expand **ASHA** to send **voice alerts** on entitlements and FPS timings, with automatic escalation of unresolved grievances.
  - Use **GPS-enabled, tamper-proof seals** on foodgrain trucks for **real-time tracking** and pilferage prevention.
- **W - Wider & Nutritious Food Basket:** Diversify the **PDS food basket** with **millets, pulses, edible oils**, and fortified grains to combat malnutrition.
  - Promote **localized procurement** of regional crops and involve **women's SHGs** in supplying nutritious foods.

> What challenges hinder PDS last-mile delivery, and how can food basket and nutrition reforms enhance food security and reduce malnutrition?
>
> **Drishti Mains Question**

SC Recalls Verdict Blocking Retrospective Environmental Clearances

In a **2:1 ruling, the Supreme Court of India** struck down the **2025 Vanashakti judgment banning ex post facto or retrospective Environmental Clearances (ECs)**, stating that its continuation would cause "devastating" consequences and put thousands of crores of **public investment at risk.**

- This ruling was based on the idea that it allowed violators of environmental laws to circumvent legal requirements, undermining efforts to protect the environment.

Ex Post Facto Environmental Clearances

- **Meaning:** Approvals granted after a project has **already begun construction,** expansion, or operation without obtaining the mandatory **prior Environmental Clearance (EC).**
- **Purpose:** Intended for rare, exceptional cases but often used to regularise violations by allowing developers to "legalise" work already carried out illegally.
- **Legal Framework:** The **Environment (Protection) Act, 1986** and the **Environmental Impact Assessment (EIA)**

Notifications of 1994 and 2006 are built on the **principle of prior environmental clearance,** requiring major industrial and construction projects to **begin only after their environmental impacts** have been assessed and approved.

- **SC's *Vanashakti Judgment, 2025* on Ex Post Facto ECs**: The Vanashakti judgment struck down the **2017 notification and 2021 office memorandum (OM)** issued by the MoEFCC that allowed **ex post facto (retrospective) environmental clearances.**
  - The Court held that retrospective ECs are a **"gross illegality"** and an **"anathema"** to environmental jurisprudence, as they **violate the precautionary principle** that demands environmental harm be prevented before it occurs.
    - ❖ It criticised attempts to let projects begin without approval and barred the Centre from **issuing any future notifications permitting retrospective ECs.**

Reason for the SC's Recall of the 2025 Vanashakti Judgment

- **Need for a Larger Bench Review:** The CJI held that the Vanashakti ruling was *per incuriam* (through lack of care) because it overlooked earlier coordinate-bench judgments such as D*. Swamy (2021),* which allowed post-facto ECs in exceptional cases, and *Alembic Pharmaceuticals (2020),* where the SC discouraged such ECs but still regularised them with monetary penalties.
  - Because of this conflict, the issue must be **reconsidered by a larger Bench**.
- **Principle of Proportionality:** The court noted that strict prior-approval enforcement should not lead to outcomes that harm public interest.
  - **Heavy penalties and compliance mechanisms** already exist to deter violations without requiring demolition.
- **Practical Realities of Development:** Many **projects began without EC due to procedural delays,** not deliberate evasion.
  - Retrospective ECs, **used only in rare cases,** help bring ongoing projects into compliance without unnecessary reconstruction. The Court made it clear they are **exceptional, not routine, and must come with strict penalties.**

> **Dissenting View:** Justice Ujjal Bhuyan argued that the recall dilutes the precautionary principle and rewards violators, calling ex post facto ECs "an anathema" to environmental jurisprudence and rooted in Article 21 (right to a clean and healthy environment) and Article 51A(g) (duty to protect the natural environment). However, the majority view ultimately prevailed.

*Balancing Environmental
Protection with Developmental Needs*

- **Strengthen Prior EC Compliance:** Enforce rigorous EIAs, public hearings and scientific appraisal before approvals.
- **Use Technology for Monitoring:** Strengthen deployment of satellite monitoring and digital platforms like **PARIVESH**, and **National Geographical Information System (GIS)-based Violations Portal** to track projects and prevent illegal construction.
- **Apply Polluter-Pays + Restoration Measures:** Impose strict penalties and mandate ecological restoration using mechanisms like **Compensatory Afforestation Fund (CAMPA)**, **Environmental Compensation (EC)** under **National Green Tribunal (NGT)** guidelines, and **Polluter Pays Principle**.
- **Promote Green Infrastructure:** Expand sustainable infrastructure through schemes like **Smart Cities Mission**, **National Solar Mission**, and push for low-carbon mobility.
- **Empower Local Communities:** Strengthen public participation via **Gram Sabhas**, **Forest Rights Act (FRA), 2006 consultations**, and improved transparency through **public hearing reforms** in the EC process.

> Evaluate the role of the precautionary principle and the polluter-pays principle in India's environmental jurisprudence.
>
> **Drishti Mains Question**

SC Struck Down Key Provisions of the Tribunal Reforms Act, 2021

The **Supreme Court of India** has struck down key provisions of the **Tribunal Reforms Act, 2021**, ruling that they gave the Union government excessive control over the appointment, tenure and functioning of tribunals.

- The Court held that such provisions undermine **judicial independence** and violate constitutional principles.
- It also directed the Centre to set up a **National Tribunal Commission** within four months to ensure autonomy and transparency in tribunal administration.

*Key Provisions of the Tribunals
Reforms Act, 2021 Struck Down by the SC*

- **Minimum Age of 50 Years for Appointment:** Struck down for being **arbitrary** and excluding competent younger advocates and experts.
  - It violated earlier SC rulings that allowed advocates with **10 years of practice** to be eligible.
- **Four-Year Tenure for Chairpersons and Members:** Invalidated it because short tenure undermines **judicial independence** and institutional continuity, and SC reinstated the **minimum five-year tenure**.

- **Panel of Two Names per Vacancy for Government:** SC struck down as it restored **executive dominance** over appointments.
  - The court directed that **only one name per post** must be recommended by the **Search-cum-Selection Committee (SCSC)** to curb excessive executive discretion in appointments.
- **Service Conditions Equated with Civil Servants:** Invalidated it because tribunal members perform **judicial functions**, not executive functions. Equating them with civil servants violated **separation of powers**.
- **Legislative Override of SC Judgments:** The Act simply repackaged provisions from the **2021 Tribunal Ordinance**, which the SC had already invalidated.
  - The Court emphasised that **judicial review is part of the Basic Structure**, and Parliament cannot override a **binding judgment** by reenacting the same flawed law.
  - Parliament must **remedy the defect, not restate invalidated provisions.** This attempt to bypass judicial directions violated constitutional supremacy.

Tribunals

- **About:** Tribunals are **quasi-judicial bodies** meant to reduce the burden on regular **courts** and bring technical expertise to specialised disputes.
- **Constitutional Provision:** The **42nd Amendment Act of 1976** inserted **Part XIV-A** into the Constitution of India, which consists of **Articles 323A and 323B**, providing for the establishment of Tribunals.

Issues Associated with India's Tribunal System

- **Threat to Judicial Independence:** The Tribunals Reforms Act, 2021 gave the Union Government dominant control over **appointments, tenure, salaries and service conditions** of tribunal members.
  - Since the government is the **largest litigant** before tribunals, this executive dominance destroys the requirement of **impartial and independent adjudication** and violates constitutional principles of **judicial independence**, a basic feature of the Constitution.
- **No Centralised Oversight Mechanism:** Unlike the courts (which have the **National Judicial Data Grid**), tribunals lack real-time performance statistics.
  - Absence of a supervisory body undermines transparency, reform, and evidence-based policymaking.
- **High Pendency:** Several tribunals are burdened with large backlogs. For instance, **Income Tax Appellate Tribunal** alone had Rs 6.7 trillion stuck in disputes (as of 2024), affecting revenue mobilisation and investor confidence.
  - **Chronic vacancies and slow appointments** worsen delays, undermining efficiency.

- **Short Tenure:** Tribunal members often **serve short with the possibility of reappointment.** This increases executive influence, as members may feel pressured to align with the government to secure extensions.

- **Non-Uniform Procedures:** Different tribunals follow different rules, formats and processes. This **lack of uniformity leads to inconsistency in justice delivery** and creates confusion for litigants.

- **Overlapping Jurisdictions:** In some cases, tribunal powers overlap with those of regular courts. This results in **jurisdictional conflicts, delays and confusion** about where certain matters should be heard.

- **Lack of Tribunals-Specific Data and Research:** Tribunals lack a dedicated data and research system, making reforms ad hoc and slow. This gap weakens planning, resource allocation, and evidence-based policy evaluation.

Measures to Strengthen India's Tribunal System

- **National Tribunal Commission:** The Supreme Court directed the Centre to establish a **National Tribunal Commission** as an **essential structural safeguard** to ensure autonomy, transparency, and uniformity in the appointment, administration, and functioning of tribunals.

- **Leverage Technology:** Expand **e-filing, virtual hearings, digitised records**, and AI-based case management to enhance efficiency and transparency.

- **Streamline Procedures:** Standardise procedural rules across tribunals to ensure uniformity, reduce delays, and improve user experience.

- **Clarify Jurisdictional Boundaries:** Avoid overlapping powers between tribunals and courts through clear legislative guidelines to reduce confusion and forum shopping.

- **Enhance Training & Capacity Building:** Provide regular legal and technical training for both judicial and expert members to improve quality and consistency of decisions.

> Examine the constitutional and institutional challenges in India's tribunal system. How would a National Tribunal Commission address these issues?
>
> **Drishti Mains Question**

First-ever Individual Entitlement Survey for PVTGs

The Centre is set to conduct the **first-ever 'Individual Entitlement Survey'** of 10 lakh **Particularly Vulnerable Tribal Groups (PVTGs)** households to assess the reach of 39 government schemes at the grassroots level.

Individual Entitlement Survey

- **About:** The **Ministry of Tribal Affairs** has identified **39 schemes across 18 central government departments** for monitoring.

  - These include the **MGNREGS**, social security for **unorganised workers**, pensions, financial assistance for meritorious **Scheduled Tribe students**, and various flagship programs.

  - The survey will be conducted with the **cooperation of state governments**, which may involve **NGOs** or panchayat officials to help carry out the process.

- **Scope and Coverage:** The survey will cover 10 lakh households across 1,000 blocks, predominantly inhabited by approximately **48 lakh PVTGs.**

  - These groups are spread across **75 recognized PVTGs** in 18 states and the **Union Territory of Andaman and Nicobar.**

- **Methodology:** Surveyors will input data directly into a mobile application developed by the **National e-Governance Division (NeGD)**.

  - Post survey completion, the government will issue a **'Universal Entitlement Card'** to each tribal member from a vulnerable group, outlining their entitlement status for the tracked government schemes.

Particularly Vulnerable Tribal Group (PVTG)

- **About:** PVTGs is a **sub-classification of Scheduled Tribes** that are more vulnerable than regular **Scheduled Tribes** due to **their limited access to education, healthcare, and modern infrastructure.**

  - These groups are often referred to as **"primitive"** because of their traditional lifestyles and limited exposure to modern amenities.

  - **Article 342(1)** allows the President, after consulting the Governor (in the case of a state), to specify tribes or tribal communities as Scheduled Tribes in a State/UT.

- **Population:** Odisha has the highest **number** of PVTGs (13), followed by Andhra Pradesh and Telangana (12).

Key India's Initiatives Related to PVTGs

- **PM-JANMAN:** PM JANMAN aims to **protect and nurture tribal groups**, especially those on the verge of extinction, by providing them with **necessary support, development,** and connectivity to mainstream services and opportunities.

  - The initiative **covers 75 PVTGs** residing in 18 states and union territories, spread across 22,544 villages in 220 districts.

- **Janjatiya Gaurav Divas:** The Janjatiya Gaurav Divas is celebrated every year on the **Birth Anniversary of Birsa Munda,** to recognize the efforts of the tribals in the preservation of cultural heritage and promotion of Indian values of national pride, valour, and hospitality.

  - These tribal communities include **Tamars, Santhals, Khasis,** Bhils, Mizos, and Kols to name a few.

- **PM PVTG Mission:** The PM-PVTG Development Mission program aims to improve the socio-economic status of Vulnerable Tribal Groups (PVTGs).
  - The mission includes providing **basic facilities like safe housing,** clean drinking water and sanitation, education, health and nutrition, better access to roads in settlements for backward scheduled tribes.

Gaps in Juvenile Justice System in India

A **first-of-its-kind study** by the **India Justice Report (IJR)**, titled **"Juvenile Justice and Children in Conflict with the Law,"** highlights significant challenges in India's **juvenile justice system**, delaying justice for **children in conflict with the law**.

Gaps Highlighted by the India Justice Report in the Juvenile Justice System

- **High Pendency of Cases:** Over **55%** of cases before **Juvenile Justice Boards (JJBs)** were pending as of October, 2023.
  - Pendency ranged from **83% in Odisha** to **35% in Karnataka**. On an average, 154 cases remained pending with each JJB annually.
- **Structural Gaps in JJB Constitution: 24% of JJBs** were **not fully constituted**, affecting quorum, decision-making, and timely hearings. **30% of JJBs lack a legal services clinic**, weakening timely **legal representation** for children in conflict with law.
- **Weak RTI Response Culture:** Of the **500+ RTI responses**, **11% were rejected**, **24% received no reply**, and only **36%** provided complete information, revealing a **weak transparency ecosystem**.
- **Systemic Administrative Weaknesses:** Lack of **inter-agency coordination**, weak **data-sharing**, and poor **monitoring mechanisms** weaken the decentralised architecture of the **Juvenile Justice (Care and Protection of Children) Act, 2015**.
- **Absence of a Child-Centric Data Grid:** Experts highlighted the need for a **National Data Grid** for juvenile justice to ensure timely data flow and effective oversight across **police**, **Department of Women and Child Development**, **State Child Protection Society (SCPS)** and the **State Legal Services Authority (SLSA).**

Juvenile Justice (Care and Protection of Children) Act, 2015

- **Background:** Enacted in **2015**, the Act replaced the **Juvenile Delinquency Law and the Juvenile Justice (Care and Protection of Children Act) 2000** to create a **child-centric justice system** for both **children in conflict with the law (CICL)** and those **in need of care and protection (CNCP)**.
  - It replaces earlier adoption laws—the **Hindu Adoptions and Maintenance Act, 1956** and the **Guardians and Wards Act, 1890**—to establish a **uniform and accessible adoption system** for all communities.

- **Juvenile Justice Boards (JJBs):** JJBs, constituted under **Section 4 of JJ Act, 2015**, must be established by state governments in every district to handle all cases involving **children in conflict with the law**.
  - Each JJB includes a **Metropolitan or Judicial Magistrate** and **two social workers (one woman)**, ensuring child-friendly procedures focused on **rehabilitation over punishment.**
- **Trial of Juveniles for Heinous Crimes:** Allows juveniles aged **16–18 years** to be **tried as adults** for **heinous offences**, after assessment by the **Juvenile Justice Board (JJB)** ensuring a balance between **child rights** and **public safety.**
- **Empowering CARA:** The Act makes the **Central Adoption Resource Authority (CARA)** a **statutory body** responsible for regulating and monitoring both **in-country and inter-country adoptions**.
- **Child Care Institutions (CCIs):** All **Child Care Institutions**, whether run by the government or NGOs, must be **compulsorily registered within six months** of the Act's commencement.
- **Juvenile Justice (Care and Protection) Amendment Act 2021:** Crimes against children under the **"Other Offences Against Children"** section of the JJ Act, 2015 that carry **3–7 years of imprisonment** will now be treated as **non-cognisable**.
  - To speed up adoption cases, the power to issue adoption orders has been shifted from courts to the **district magistrate**.

Measures to Reform the Juvenile Justice System in India

- **Strengthening Institutional Infrastructure:** Mandate **timely filling of vacancies** in **JJBs** and **CWCs** to ensure quorum, and link each **JJB** with a dedicated **Legal Services Clinic** to provide **free legal representation** from the start.
- **Focusing on Rehabilitation and Reintegration:** Shift focus from custody to rehabilitation through better **vocational training**, **education**, and **mental health support** in CCIs, and strengthen **post-care systems** to ensure successful reintegration and prevent recidivism.
- **Enhancing Data Transparency:** Create a centralized, public-facing data portal to track **JJB cases**, monitor **pendency**, and follow each child's progress, ensuring stronger **accountability**.

> The Juvenile Justice (Care and Protection of Children) Act, 2015, was a paradigm shift from a welfare-based to a rights-based approach. Critically examine the challenges that hinder the realization of its objectives.
>
> **Drishti Mains Question**

PM-Ayushman Bharat Health Infrastructure Mission (PM-ABHIM)

The **Pradhan Mantri Ayushman Bharat Health Infrastructure Mission)** was launched in **October 2021** to address the gaps in India's healthcare system exposed by the **COVID-19 pandemic** and to enhance preparedness for future health crises.

- The mission advances **universal health coverage goals** and aligns with **SDG-3 targets.**

PM-ABHIM

- **About:** The **PM-ABHIM** is one of the largest nationwide health initiatives and aims to build a **resilient, accessible, and self-reliant public health system** capable of responding effectively to current and future health emergencies.

- **Aim & Implementation:** It aims to bridge the service delivery gaps between urban and rural areas.
  - It operates under a **Centrally Sponsored Scheme (CSS)** component, and focuses on strengthening health infrastructure at all levels- from primary and secondary to tertiary - during **FY 2021–22 to FY 2025–26.**

- **One Health Approach:** It emphasises **disease surveillance**, **research**, and the adoption of the **One Health approach**, which recognises the interconnection between human, animal, and environmental health.

- **Major Components of PM-ABHIM:**
  - **Ayushman Arogya Mandirs (AAMs)**: upgrading Sub-Health and Primary Health Centres into rural (R-AAMs) and urban (U-AAMs) units for comprehensive care.
  - **Block Public Health Units (BPHUs)**: strengthen local health administration and services.
  - **Integrated Public Health Laboratories (IPHLs):** district-level labs for advanced diagnostics and disease tracking.
  - **Critical Care Hospital Blocks (CCBs):** New tertiary-care units in high-population districts.
  - **Health Surveillance & IT Systems**: real-time digital network connecting labs nationwide.
  - **Health Research & Innovation** support for studies on infectious diseases and One Health initiatives.

- **Significance**:
  - **Comprehensive Healthcare System Strengthening**: By upgrading and establishing **AAMs, IPHLs**, and **CCBs**, the mission ensures that healthcare services are accessible to all, especially in underserved areas.
  - **Expansion of Surveillance Systems**: PM-ABHIM strengthens India's disease surveillance network, providing real-time data integration from block, district, regional, and national levels.
  - **Support for Universal Health Coverage (UHC)**: By building infrastructure and improving service delivery,

PM-ABHIM aligns with India's commitment to achieving **Universal Health Coverage** and advancing **Sustainable Development Goal 3 (SDG-3)**, ensuring access to quality healthcare for all citizens.
  - **Decentralized Healthcare Delivery**: PM-ABHIM emphasizes local healthcare delivery by upgrading **Sub-Health Centres** and establishing **Urban Health and Wellness Centres (U-AAMs)** in slum and underserved urban areas, improving access to primary care services.

India's Various Health Care Initiatives

- **National Health Mission:** The **National Health Mission** aimed to create **community-owned and decentralised healthcare systems** to make services **accessible, affordable, and equitable**, particularly for vulnerable groups.

- **National Health Policy (2017):** It laid the groundwork for transforming India's healthcare delivery system.
  - It emphasised the importance of community-based health systems, highlighting the role of **trained first responders, local self-government institutions**, and community organisations in improving healthcare access and disaster preparedness.

- **Ayushman Bharat Scheme (2018):** Building on NHM's success, the **Ayushman Bharat Scheme (2018)** marked a major leap in India's journey towards Universal Health Coverage (UHC).
  - It integrates preventive, promotive, and curative health interventions through **four major pillars:**
    - ❖ **Ayushman Bharat – Pradhan Mantri Jan Aarogya Yojana (AB–PMJAY)**
    - ❖ **Ayushman Arogya Mandirs (AAMs)**
    - ❖ **Ayushman Bharat Digital Mission (ABDM)**
    - ❖ **PM–Ayushman Bharat Health Infrastructure Mission (PM–ABHIM)**

WHO's Global Pandemic Agreement

- WHO adopted the first **Global Pandemic Agreement** at its 78th World Health Assembly under Article 19 of the WHO Constitution.
- It aims to strengthen global health security and ensure equitable pandemic responses.
- Adopted on **20th May 2025**, it promotes international cooperation for timely access to diagnostics, vaccines, and therapeutics.
- It is the **second** global legal instrument after the **2003 Framework Convention on Tobacco Control**.

Discuss how the PM-Ayushman Bharat Health Infrastructure Mission (PM-ABHIM) enhances India's health resilience and complements existing national health programs.

Drishti Mains Question

Internal Party Democracy in India

Internal party democracy in India is eroding, as **dynastic politics and power concentration within political families** have become prevalent **across both national and regional parties**.

Internal Party Democracy

- **About:** It refers to the **organization**, **structure**, and **functioning** of **political parties** in alignment with **democratic values**, directly influencing how **candidates are chosen**, **leaders are elected**, **policies are formulated**, and **finances are managed**.
- **Legal and Institutional Framework:**
  - **Representation of the People Act, 1951: Section 29A** mandates that all political parties must commit to the principles of **secularism**, **socialism**, and **democracy**—with "democracy" understood to imply **internal democracy**, though it remains undefined.
  - **Election Symbols (Reservation and Allotment) Order, 1968:** The **Election Commission of India (ECI)** settles disputes between rival party factions during a split, usually giving the **party symbol** to the group with majority support from **elected legislators** and **office-bearers**, rather than to heirs of political dynasties.
  - **255th Law Commission Report:** It stresses **internal democracy** through rules on **party structure, elections, and candidate selection**, empowering the **ECI** to **de-register parties** for **non-compliance**.
  - **National Commission to Review the Working of the Constitution (NCRWC):** It called for a **comprehensive law** to regulate the **registration and functioning** of **political parties and alliances** in India.

Need for Internal Party Democracy in India

- **Checks Dynasticism & Nepotism:** Reduces the **concentration of power** within a single family or a small clique and keeps checks on dynastic politics.
  - **Dynastic politics** refers to a system where **power and leadership** are inherited within a **single family** across generations, allowing relatives of political leaders to **succeed and dominate key positions**.
  - As per a study, there are **1,174 dynasts** from **989 families** among the **5,294 current legislators (MPs, MLAs, MLCs)** in India. The trend is present in **every major party**.
- **Strengthens Democracy:** Acts as a school for democracy, fostering a **democratic culture** among citizens.

- **Promotes Meritocracy:** Allows dedicated and popular **grassroots workers** to rise through the ranks based on **merit** and **member support**.
- **Enhances Representation:** Ensures the party remains connected to the **aspirations** of its members and the public, making it more **representative**.
- **Promotes Party Unity:** Inclusive decision-making can lead to greater **consensus** and reduce **factional fights.**

Factors Contributing to the Lack of Internal Party Democracy

- **Concentration of Power:** Power is centralized in a single **leader** or small **"High Command,"** undermining **local units** and fostering a culture of **loyalty over ideology**, which suppresses **dissent** and **internal debate**.
- **Nepotism & Favouritism:** Political parties often function as **family enterprises**, where **leadership is inherited**, **party access is controlled by established dynasties**, and the **party's identity merges with a single family**.
- **Legal Loopholes:** India lacks a legal framework mandating **internal democracy** in political parties, with **no requirement for democratic internal elections** in candidate selection — a major **legal gap**.
- **Electoral Considerations:** Parties justify **centralized control**, claiming that **strong dynastic leaders** offer a **clear brand** and **unity**, while avoiding **internal elections** prevents **factionalism** and protects **electoral prospects**.
- **Lack of Demand from Within:** **Feudal culture** reinforces loyalty to **dominant families**, while **reform advocates** risk **suspension or expulsion**.

Ways to Foster Internal Party Democracy in India

- **Institutional Reforms within Parties:** Parties should adopt a **transparent constitution**, ensure **regular internal elections** with **independent oversight**, and promote **deliberative forums** for genuine **member participation** in decision-making.
  - The **Dinesh Goswami (1990)** and **Indrajit Gupta (1998) Committees** urged for **greater transparency in political party functioning**.
- **Legislative Reforms:** Amend the **Representation of the People Act, 1951** to mandate **transparent, democratic candidate selection** through internal elections and impose graded **penalties** like fines, **de-recognition**, or **symbol withdrawal** for non-compliance.

- **Civil Society Interventions:** Civil society needs to regularly **track and rank parties** on internal democracy, **raise public awareness** through campaigns, and **leverage voter opinion** to make **party democracy** an **electoral issue**.
- **Behavioral Shifts:** Parties should **reward grassroots workers** based on **performance and member support**, not lineage, and **empower members** to **demand democratic rights** and **ensure leadership accountability**.

> "Dynastic politics is both a cause and a consequence of weak intra-party democracy in India." Critically examine this statement
>
> **Drishti Mains Question**

Celebrating State/UTs Formation Day

On **1st November**, eight Indian states including **Andhra Pradesh, Chhattisgarh, Haryana, Karnataka, Kerala, Madhya Pradesh, Punjab and Tamil Nadu,** along with five Union Territories (UTs) namely **Andaman and Nicobar Islands, Chandigarh, Delhi, Lakshadweep and Puducherry,** celebrate their **Formation Day**.

- This marks as a key milestone in India's administrative evolution, shaped by the **States Reorganisation Act, 1956,** and later state bifurcations.

Provisions Related to Formation of States/UTs in India

- **Part I of the Indian Constitution:** It is titled *"The Union and Its Territory"* and comprises **Articles 1 to 4**.
  - It defines India as a **"Union of States",** specifies the names and territories of States and Union Territories, and empowers Parliament to admit or establish new States and to alter the area, boundaries, or names of existing States.
- **Article 1:** It declares India as a Union of States, which includes all States, Union Territories, and any territories that may be acquired in the future.
  - This reflects the idea of a strong Union with an indestructible centre but flexible units.
- **Articles 2:** Empowers **Parliament to admit new States into the Union** or establish new States on such terms and conditions as it deems fit.
- **Article 3:** It gives Parliament the authority to form a new State by separating territory from any existing State or by merging two or more States or Union Territories.
  - It also allows alteration of the area, boundaries, or name of any existing State.
  - However, a Bill for this purpose can be introduced only with the **prior recommendation of the President**, who must refer it to the concerned State Legislature for its **views**.
    - ❖ The **State Legislature's opinion is not binding on Parliament**, and **no such reference is required in the case of a Union Territory**.

- ❖ This provision has enabled major reorganisations such as the creation of **Chhattisgarh, Jharkhand, Uttarakhand (2000) and Telangana (2014).**
- **Articles 4:** Any law made under **Articles 2** or 3 may amend the **First Schedule** (list of States and UTs) and the **Fourth Schedule** (Rajya Sabha seat allocation).
  - Such a law **is not treated as a Constitutional Amendment** under Article 368.

Countering Terrorism and Protecting India's Internal Security

A deadly car blast near **Delhi's Red Fort** has renewed concerns over **India's internal security,** with investigators suspecting the involvement of an **organised terror module.**

- The **First Information Report (FIR)** has been filed under the **Unlawful Activities (Prevention) Act, 1967** and the incident underscores the need for a robust, and coordinated counterterrorism strategy.

Terrorism's Ongoing Threat to India's Internal Security

- **Cross-Border Terrorism and Proxy Warfare: State actors** like **Pakistan** continue to sponsor **cross-border terrorism** through **non-state actors** such as **Lashkar-e-Taiba (LeT)** and **Jaish-e-Mohammed (JeM)**.
  - These groups have orchestrated several attacks, such as the **2001 Parliament Attack** and the **2016 Uri attack** in **Jammu & Kashmir**.
  - **Proxy warfare** from **Pakistan-based groups** continues to be a persistent threat, as demonstrated by the **2025 Pahalgam attack**. The ISI has long used **religious extremism** to radicalize and recruit youth, particularly in Kashmir, by exploiting Islamic radicalization and separatist sentiments to advance its agenda.
  - The **China-Pakistan nexus** continues to pose a strategic threat to India through hybrid warfare.
- **Urban Terrorism: Urban terrorism** is on the rise, urban centers have become prime targets for terrorists seeking to **cause mass casualties, instill psychological fear, and gain widespread media attention**.
  - High-profile attacks, such as the **2008 Mumbai terror strikes** and the rise of **lone-wolf incidents** illustrate a growing shift toward targeting civilian spaces, making urban areas increasingly vulnerable. The **use of ammonium nitrate** explosives and **urban anonymity** expose vulnerabilities in India's **civil security infrastructure**.
  - **White-collar terrorism**, involving educated professionals using **technical expertise** for terror activities, highlights the need for stronger **counter-terrorism** frameworks in urban areas.

- **Internal Insurgencies and Ethno-Nationalist Movements:** India faces multiple **internal insurgencies** fueled by local grievances. Groups in **Jammu & Kashmir** and the **Northeast** seek greater autonomy or independence, often with external support.
  - Similarly, **Maoist insurgencies (Left-Wing Extremism)** continue to destabilize regions in central India, exploiting socio-economic disparities.
- **Cyber Terrorism:** Terrorist groups have increasingly turned to **technology** for **recruitment**, **funding**, **radicalization**, and **planning**.
  - **Cyberterrorism** poses a significant threat to India's **critical infrastructure**, while online platforms are exploited to spread extremist ideologies.
  - The use of **cryptocurrencies** and **dark web** networks makes it harder for authorities to track financial flows supporting terrorism.
- **Organised Crimes:** Terrorism in India is funded through illicit activities such as drug trafficking, fake currency, and smuggling.
  - Pakistan's ISI is known to use these channels to fund terrorist operations, while India's proximity to **drug production hubs in Afghanistan and Myanmar** facilitates the movement of narcotics.
- **Maritime Security and Coastal Vulnerabilities:** India's extensive 7,500 km coastline is vulnerable to maritime terrorism. Groups such as LeT and JeM, along with drug cartels and smuggling networks, exploit coastal security gaps to infiltrate India via the Arabian Sea.
  - The **1971 PNS Ghazi submarine incident and interceptions by the Indian Navy reveal** attempts to infiltrate Indian waters for smuggling arms & explosives.

India's Counterterrorism Doctrine

- **India's New Counterterrorism Doctrine:** India's Counterterrorism Doctrine unveiled after **Operation Sindoor** marks a decisive shift from earlier restraint to a more assertive and punitive security posture.
  - It is built on three principles: **decisive retaliation, zero tolerance for nuclear blackmail, and no distinction between terrorists and their state sponsors.**
  - **Decisive Retaliation:** It means **India will hit back firmly and on its own terms** after any terror attack, targeting terror hubs at the source to raise the costs for states backing such groups.
    - ❖ This approach, seen in strikes on major Lashkar-e-Taiba and Jaish-e-Mohammed bases across Pakistan and Pakistan-occupied Jammu and Kashmir (PoJK).
  - **Zero Tolerance for Nuclear Blackmail:** India will not be deterred by nuclear threats and will strike terrorist

safe havens even if they hide under a nuclear shield, asserting **its right to self-defence and moving away from earlier strategic restraint.**

- **No Distinction Between Terrorists & their Sponsors:** India now treats both terror groups and the states sheltering or supporting them as the same target.
  - ❖ Operation Sindoor reflected this shift by striking deep inside Pakistan, signalling that state-backed terrorism will be met as a direct act of war.
- **Doval Doctrine:** Shaped by **National Security Adviser Ajit Doval**, it blends hard power, intelligence, diplomacy, and psychological warfare into a unified national security approach.

Core Principles

- **Proactive National Defense:** India asserts the right to strike first or strike back decisively, reflected in the 2016 surgical strikes and the 2019 Balakot airstrikes.
- **Whole-of-Government Coordination:** Military, intelligence, police, and diplomatic institutions operate in an integrated framework.
- **Security Linked with Development:** Security operations are paired with welfare and governance initiatives, especially in Kashmir (Abrogation of Article 370) and Left-Wing Extremism zones.
- **Defensive–Offense Strategy:** Instead of waiting to be attacked, India signals readiness for calibrated offensive action to raise the cost for adversaries.

Measures to Build a Comprehensive Counterterrorism Policy for India's Internal Security

- **Strengthening Intelligence and Coordination:** Convert the **MAC into a statutory, 24×7 national fusion centre** with mandatory data-sharing by all agencies.
  - Implement **artificial intelligence (AI)** and **big data analytics** to analyze and **predict terrorist activity patterns**, including **online radicalization** and the **movement of terror groups**.
  - Improve intelligence coordination with neighboring countries, particularly **Bangladesh**, **Sri Lanka**, and **Afghanistan**, to counter cross-border terrorism.
- **Modernise Policing and Forensic Capabilities:** Equip state police with modern **surveillance tools, cyber-forensics, drone-detection systems** and predictive policing software.
  - Establish fast-track anti-terror courts to expedite trials and improve conviction rates.
- **Stronger Anti-Terror Financing Laws**: Strengthen laws targeting **terrorist financing**, including tracking **cryptocurrency transactions**, **hawala operations**, and **illegal charities**.

- Enhance international partnerships through **'No Money for Terror' (NMFT)** and bilateral intelligence exchanges.

■ **Coastal Surveillance**: Enhance **coastal security** by deploying **automated drones**, **radar systems**, and **marine surveillance technologies** to prevent **maritime terrorism** and smuggling.

■ **Diplomatic Pressure**: Push for greater **international cooperation** through forums like the **UN** to curb state-sponsored terrorism, particularly **Pakistan's support for cross-border terrorism**.

- Increase the efforts for the **Comprehensive Convention on International Terrorism (CCIT) at the UN** to criminalize all forms of international terrorism and cut off resources for terrorists

■ **Psychological and Informational Warfare:** Develop a national strategy for **information warfare** to combat **terrorist propaganda** and **counteract radical ideologies** spread via social media and extremist websites.

- Develop a nationwide Counter-Radicalisation Framework based on global models (like Singapore, UK).

- Institutionalise the post–Operation Sindoor doctrine, strengthen India's deterrence posture with a mix of **precision strikes, cyber capabilities, and information warfare tools.**

> Discuss the changing nature of urban terrorism and propose institutional measures to secure Indian cities against high-impact attacks.
>
> **Drishti Mains Question**

Restoring Fiscal Power for the States

The **Goods and Services Tax (GST) regime** enters a new phase with **restructured tax slabs** and the abolition of the **GST compensation cess**, expected to transfer **Rs 2 lakh crore** in benefits to consumers and boost demand.

■ **However**, several **States** have raised concerns over **revenue losses** and **fiscal centralization**, seeking a review of the **tax-sharing framework** to preserve **cooperative federalism**.

Key Challenges in Centre-State Fiscal Relations

■ **End of GST Compensation Cess:** GST compensation cess, introduced to protect **States** from **revenue losses (2017–22)** and extended during the **pandemic**, is now **abolished**, which **states argue** disproportionately impacts those with **low manufacturing capacity**.

■ **Erosion of Fiscal Autonomy:** The **GST introduction** shifted **taxation power** from **state legislatures** to the **GST Council**, where the **Centre** dominates, reducing **states' tax revenue autonomy**.

■ **Skewed Revenue Sharing:** Although the **14th Finance Commission** raised the **devolution share** to **42%** (later adjusted to **41%**), actual **transfers** have declined in percentage terms of **Gross Tax Revenue (GTR)**.

■ **Cess and Surcharge Mechanism:** These are outside the **divisible pool** under **Article 270**. **Cesses and surcharges** constituted **Rs 4.23 lakh crores in 2025–26**, reducing the **effective devolution** to **States**.

■ **Heavy Dependency on Central Transfers: States** rely on **central transfers** for about **44%** of revenue, with some like **Bihar** up to **72%**, weakening **fiscal autonomy** and causing **liquidity issues.**

■ **Vertical Fiscal Imbalance:** A **structural mismatch** exists as **resource-raising powers** are **centralized** while **expenditure responsibilities** are **decentralized**.

- **States** bear **52% of expenditure** but collect only **33% of tax revenue**, creating a **fiscal gap**.

■ **Political and Administrative Frictions:** The **central transfer system**, including **Finance Commission grants** and **Centrally Sponsored Schemes (CSS)**, is **perceived** as lacking **fairness** and **transparency**, creating fears of **political vendetta.**

Regulation of Central-State Fiscal Relations in India

■ **Part XII (Articles 264–300A):** It contains **financial provisions** including those related to **taxation, definition of various Funds**, the **right to hold property**, and **borrowing by Union and State governments**.

- Under **Article 275**, the **central government** can transfer **funds to states** for specific schemes or purposes to provide necessary financial support.

■ **Article 269A (GST): Article 269A** states that **GST on inter-state trade** will be **levied and collected by the central government** and **shared between the Union and States** as determined by **Parliament** based on **GST Council recommendations**.

■ **Division of Taxation Powers:** The **Seventh Schedule** of the Constitution defines taxation powers:

- **Union List**: Includes customs, income tax (except on agricultural income), excise on goods, corporate tax.

- **State List**: Includes taxes on agricultural income, land, buildings, and excise on alcohol.

- **Concurrent List**: Both can tax items in the **Concurrent List**.

■ **Finance Commission (Article 280)**: The **Finance Commission** advises the President on:

- **Distribution of tax proceeds** between **Centre and states**, and among states.

- Principles for **grants-in-aid** to states (**Article 275**).

- Measures to **augment state funds** for **Panchayats and Municipalities**.

- **Other financial matters** referred by the President.

Measures that can be Taken
to Restore the Fiscal Autonomy of States

- **Reviewing Finance Commission Mandates:** Ensure **consistent application** of **devolution criteria** and greater **transparency** in **weights used**. Consider **performance-based incentives** beyond **income distance** and **population**.

- **Sharing Personal Income Tax (IT) Base:** Adopt **50:50 sharing** of the **Personal Income Tax base** between the **Centre** and **State** to help high **tax base** states benefit from **economic growth** and reduce **central transfer dependence**.

- **Surcharge on Central Taxes:** Allow **states** to levy a **surcharge** on **central income tax** to boost **revenue-raising capacity** and provide **immediate fiscal relief**.

- **Strengthening Institutional Mechanism:** Bring **petroleum**, **real estate**, and **alcohol** under the **GST regime** for a **unified market** and higher **revenue**.

  - Strengthen the **Inter-State Council** under **Article 263** for ongoing **fiscal consultation** and **grievance redressal**.

- **Adopt International Models:** India can consider **Canada's fiscal federalism model**, where the **federal government collects 46% of taxes** and spends 40%, while **sub-national governments collect 54% and spend 60%**, providing greater **financial autonomy and flexibility** to states.

> Discuss the constitutional provisions governing financial relations between the Centre and the States. What measures can be adopted to enhance the fiscal autonomy of States in the spirit of cooperative federalism?
>
> **Drishti Mains Question**

Self-Reliance in Defence Sector

India has reached a **new peak** in its defence sector with the country's **highest-ever defence production** of **Rs 1.54 lakh crore** in **FY 2024-25**. This marks a **significant leap**, underlining the success of the government's **Aatmanirbhar Bharat** initiative.

Current Status of India's Defence Sector

- **Record Production:** Defence production is projected to reach **Rs 1.75 lakh crore** this fiscal year, up from **Rs 46,429 crore in FY 2014-15**. India aims to achieve **Rs 3 lakh crore** in defence production by **2029**.

- **Defence Procurement:** Defence Acquisition Procedure **(DAP 2020)** and **Defence Procurement Manual (DPM 2025)** have brought **speed, transparency, and innovation** to defence procurement, with **65% of equipment now produced domestically**, reducing import dependence.

- **Boost in Defence Exports:** Defence exports reached a record **Rs 23,622 crore in FY 2024-25**, from less than Rs 1,000 crore in 2014. India now exports to **over 100 countries**, including the US, France, and Armenia. India aims to achieve **Rs 50,000 crore in exports** by 2029.

- **Supportive Industrial Ecosystem:** Establishment of **Defence Industrial Corridors** in Uttar Pradesh and Tamil Nadu attracted over **Rs 9,000 crore in investments**.

  - **16,000 MSMEs** are active in defence production, along with start-ups and private companies.

Factors Responsible for India's
Growth in Indigenous Defence Production

- **Policy Reforms:** DAP 2020 and DPM 2025 enable **faster, transparent procurement**, supported by **Positive Indigenisation Lists**, **liberalised FDI up to 74%**, and **simplified licensing**.

- **Rising Defence Budget:** Defence budget increased from **Rs 2.53 lakh crore in 2013-14** to **Rs 6.81 lakh crore in 2025-26**, providing ample funds for modernisation and domestic production.

- **Public-Private Partnership:** Defence DPSUs (DPSUs) contribute **~77%** of production, while the **private sector share increased to 23%**, reflecting growing industry participation.

- **Global Market Integration:** Simplified export processes, digital systems, and Open General Export Licences (OGEL) have boosted global competitiveness, with **defence exports rising to Rs 23,622 crore in FY 2024-25**, a **12% increase** from the previous year.

- **Technological Advancements:** Emphasis on **indigenously designed, developed, and manufactured systems (IDDM)** across AI, robotics, cyber, space, and advanced warfare systems. DRDO-led projects and funding through **Technology Development Fund (TDF)** supporting deep-tech innovation.

Challenges in India's Defence Indigenisation

- **Critical Technology Gap:** Critical technologies like **jet engines, hypersonics, advanced sensors, and missile guidance** remain underdeveloped, causing reliance on **foreign Original Equipment Manufacturers (OEMs)** for core components. E.g., the **Kaveri engine** project for **Tejas LCA** faced delays, necessitating continued use of **American GE F404 engines**.

- **Inefficient Defence PSU Ecosystem:** DPSUs have historically enjoyed a **monopsony** (a single buyer, the **Ministry of Defence**), leading to a lack of **competitive urgency**, **cost overruns**, and **delays**. **E.g., INS Vikrant** is 12 years late and 13 times the budgeted cost.

- **Developed Abroad Syndrome:** The military often prefers proven **foreign equipment**, slowing the use of **indigenous systems**. E.g., the induction of the **Dhanush artillery gun** was delayed despite **successful trials**.

- **Bureaucratic Hurdles:** Despite **DAP reforms**, defence procurement remains **slow, complex, and risk-averse**. Fear of **CAG, CVC, and CBI** causes bureaucratic inertia, as seen in the cancelled **126 MMRCA acquisition.**

- **Inadequate R&D and Innovation Funding:** India's **defence R&D budget** is much smaller than the **US** or **China**.
  - Most of the defence budget goes to **salaries and pensions**, leaving under **1% for research**, compared to **20% in China** and **12% in the US**.

India's Initiatives Related to Defence Indigenisation
■ Defence Production and Export Promotion Policy (DPEPP) 2020
■ Technology Development Fund (TDF)
■ SRIJAN Portal
■ Positive Indigenisation Lists (PILs)
■ Innovations for Defence Excellence (iDEX)
■ Defence Acquisition Procedure (DAP) 2020

Discuss the key challenges and constraints in India's defence indigenisation and suggest measures to overcome them.

Drishti Mains Question

Women Soldiers to Join Territorial Army Battalions

The **Directorate General of Territorial Army** has decided to **induct women soldiers** into **Territorial Army (TA) Home & Hearth (H&H) Infantry battalions** for the **first time,** marking a major step in expanding **women's roles in the defence forces.**

Territorial Army

- **About:** The Territorial Army (TA) is a **part-time voluntary military force that supports and augments the Regular Indian Army**. It is based on a **Citizen Soldiers' army ('Sons of Soil') concept** and officers undergo **Annual Training on basic military skills.**
  - It functions under the **Territorial Army Act, 1948** and allows trained civilian volunteers to serve in uniform while continuing their regular professions.
- **Background:** The roots of the TA trace back to the **Volunteer Forces of 1857** formed after the First War of Independence in 1857.
  - The **Indian Defence Force Act of 1917** made universities raise defence units, with **Netaji Subhas Chandra Bose and Jawaharlal Nehru** joining the Calcutta University Corps in 1918. The Force had two parts, the **European Auxiliary Force** and the **Indian Branch**, which later became the **Indian Territorial Force.**
  - After Independence, the Territorial Army Act, 1948 was passed, The TA was formally inaugurated on **9th October 1949 by first Indian Governor General Shri C Rajagopalachari** (now celebrated as Raising Day of Territorial Army).
- **Evolution:** The TA began with many unit types, but most were later merged or disbanded. It now includes Infantry Battalions, Home & Hearth units in J&K and NE, Ecological Battalions, Engineer units for Line of Control fencing,

departmental units like Railway, and the Composite Eco Task Force for the **National Mission for Clean Ganga.**

Significance of Inducting Women into Territorial Army H&H battalions

- **The Territorial Army** began commissioning women officers in 2019, allowing them to serve in Ecological Task Force units, oil sector TA units and the Railway Engineer Regiment.
- With the positive experience gained, the Army has now decided to expand their roles further and is preparing to induct women soldiers into **Home & Hearth battalions,** opening the **door to wider operational responsibilities.**
- It expands operational opportunities for women, enhances human resources for **internal security and disaster response**.

Women in Defence Forces
■ **Early Military Roles:** Women first joined through the **Military Nursing Service (1888)** and later as doctors in the **Indian Army Medical Corps (1958)** with regular commissions.
■ **Non-Medical Entry:** In 1992, the **Women Special Entry Scheme (WSES)** opened non-combat roles in branches like the **Army Education Corps, Signals, Intelligence, and Engineers** for Short Service Commission (SSC). **Army Act, 1950** restricted women's roles, allowing them only in notified branches such as **Army Postal Service, Judge Advocate General's (JAG) department, Army Education Corps (AEC), Ordnance Corps, and Service Corps, and Service Corps**.
■ **Short Service Commission (SSC):** In 2005, the SSC system was introduced, offering a 14-year tenure to women officers and marking a more formalized career structure.
■ **Permanent Commission Milestone:** Women were first granted Permanent Commission in 2008 in limited branches like JAG and AEC. The Supreme Court of India in 2020 Babita Puniya judgment, mandated Permanent Commission in all arms where SSC exists.
■ **Women in Combat Roles:** IAF inducted women fighter pilots in 2016, making combat roles a permanent scheme in 2022.
■ **Agnipath Scheme (2022):** Women included as **Agniveers** across the **Army, Navy, and Air Force**, expanding soldier-level opportunities.
■ **Current Representation:** Women constitute **about 4% of the Army.** Since 2022, the Navy has opened all branches, including submarines and aviation, to women officers, with several already serving onboard ships and in combat aviation roles.
■ **Key Achievements: Col. Sofiya Qureshi** and **Wg Cdr. Vyomika Singh** led roles in **Operation Sindoor**. **Lt. Cdr. Dilna K** and **Lt. Cdr. Roopa A** completed **Navika Sagar Parikrama II**, a 25,600-nautical-mile global expedition.

Breaking gender barriers in the armed forces is not only a question of equality, but also operational necessity. Discuss.

Drishti Mains Question

India's First National Policy on Geothermal Energy

The **Ministry of New and Renewable Energy (MNRE)** has launched **India's first National Policy on Geothermal Energy 2025,** aiming to tap India's vast but underutilized geothermal potential to advance the nation's **Net Zero 2070 commitment,** ensure energy security, and diversify its renewable energy mix.

Key Features of the National Geothermal Energy Policy 2025

- **Broad Scope of Application**: The policy encompasses all major aspects of geothermal energy development, including:
  - Geothermal Resource Assessment
  - Power Production Systems
  - Direct-use Applications
  - Ground (Geothermal) Source Heat Pumps (GSHP)
  - Utilization of **abandoned oil and gas wells** for geothermal energy extraction is encouraged.
  - **Extraction of valuable mineral** by-products like silica, borax, cesium, and lithium will be regulated under the **Mines and Minerals (Development and Regulation) Act (MMDR Act),** 1957, with applicable royalties.
- **Promotion of Emerging Tech:** It also promotes **emerging and innovative technologies**, such as:
  - Enhanced Geothermal Systems (EGS)
  - Advanced Geothermal Systems (AGS)
  - Geothermal energy storage
  - Offshore geothermal wells
- **Geothermal Resource Data Repository:** Establishment of a comprehensive geothermal resource data repository through inter-ministerial collaboration with agencies such as the **Ministry of Mines, Ministry of Earth Sciences, Geological Survey of India (GSI), and National Data Repository (NDR).**
  - Permission for resource assessment surveys will be granted to developers for R&D and feasibility studies.
- **Fiscal & Financial Support:** Under the Renewable Energy Research and Technology Development Programme (RE-RTD):
  - Up to **100% financial support** for government and non-profit research institutions.
  - Up to **70% support for private sector entities** including start-ups and manufacturing units.

- **Additional support mechanisms:**
  - ❖ Inclusion under the Indian **Carbon Credit Trading Scheme.**
  - ❖ Waiver of open access charges.
  - ❖ Eligibility under **Renewable Purchase Obligations (RPOs).**
- **State-Level Guidelines: State/UT governments** will have the authority to issue:
  - **Exploration leases** (valid for 3–5 years)
  - **Development leases** for power generation or direct-use (valid for up to 30 years)
  - Establishment of a **single-window clearance mechanism** through designated **state nodal agencies**.

Geothermal Energy

- **About:** Geothermal energy refers to the **heat derived from the Earth's interior,** which can be used for heating buildings, and generating electricity.
  - It is considered a renewable energy source because the Earth continuously produces heat within its core.
- **India's Geothermal Potential:**
  - India's geothermal potential-spread across **381 hot springs and 10 geothermal provinces including Ladakh(Puga valley), Himachal Pradesh, Gujarat, Odisha, and Chhattisgarh.**
  - A potential of about **10,600 MW of geothermal power** has been estimated in the country.
  - Globally, geothermal energy contributes 15.4 GW (2019), led by the U.S., Indonesia, and the Philippines.
- **Sources:**
  - **Deep reservoirs:** Hot water or steam found deep within the Earth is accessed through drilling.
  - **Surface reservoirs:** Geothermal reservoirs located near the surface, especially in western U.S., Alaska, and Hawaii, are more easily accessible.
  - **Shallow ground:** The shallow layers of the Earth maintain a constant temperature (50–60°F), which can be used for direct heating and cooling applications.
- **Benefits:**
  - **Renewable Source:** With proper management, the **rate of energy extraction can be balanced with the natural heat recharge** rate of the reservoir.
  - **Continuous Supply:** Geothermal power plants **can operate 24×7**, providing a consistent energy supply unaffected by weather conditions.

- **Small Land Footprint:** Geothermal plants **occupy less land area per GWh** compared to coal, solar, or wind energy installations.
- **Less Water Consumption:** Additionally, geothermal systems consume **less water than most conventional energy sources.**

Significance of the National Geothermal Energy Policy 2025

- Facilitates **baseload renewable power generation,** reducing reliance on fossil fuels.
- The policy significantly boosts **geothermal energy adoption** by offering **long-term concessional loans, Sovereign Green Bonds, and Viability Gap Funding (VGF),** alongside fiscal incentives like **GST/import duty exemptions and tax holidays,** thereby enhancing project viability and attracting private investment.
- Supports remote **Himalayan and Northeastern regions** with clean heating and power.
- Encourages **industrial decarbonization** by reusing existing oil infrastructure.
- Strengthens India's position in global renewable innovation alongside nations like Germany and Iceland.
- Complements national initiatives such as the **National Green Hydrogen Mission and the RE-RTD Programme for renewable R&D.**

> Discuss the significance of India's National Geothermal Energy Policy (2025) in advancing the country's Net Zero 2070 goals and ensuring energy security.
>
> **Drishti Mains Question**

RBI Gold Reserves Surpass USD 100 Billion

RBI has stepped up its **gold repatriation efforts,** bringing back nearly **64 tonnes of gold** from abroad between **April and September 2025,** raising India's **gold reserves** to **USD 108 billion.**

- Over the past decade, **India** saw its **gold share** in **foreign exchange reserves** almost **double** from **less than 7%** to **nearly 15%.**
- As of **September 2025,** the **RBI** held **880.8 tonnes of gold** — **575.8 tonnes in India,** **290.3 tonnes abroad** (Bank of England & **Bank for International Settlements**), and **14 tonnes as deposits.**

Reasons Behind the RBI's Increase in Its Gold Reserves

- **Diversification of Forex Reserves:** India's **forex reserves** are mainly in **US dollars, euros,** and other currencies. Increasing **gold holdings diversifies risks,** protecting reserves from **currency volatility.**

- **Hedge Against Global Uncertainty:** During **global crises** like **wars, inflation spikes,** or **financial instability, gold** acts as a **safe-haven asset.**
  - Rising **geopolitical tensions** and **market uncertainty** drive the **RBI** to boost **gold holdings** as a **safety buffer.**
- **Strong Returns: Gold prices** show **long-term appreciation,** often outperforming currencies in uncertainty. The **RBI's increased gold holdings** ensure **asset gains** and **reserve security.**
- **De-dollarization Trend:** Many **central banks** like **China, Russia, Turkey,** and **Poland** are buying **gold** to cut **US dollar dependence.**
  - The **RBI's gold purchases** align with this **de-dollarization trend,** boosting **monetary autonomy.**
- **Domestic Factors and Management: Part of the RBI's gold accumulation** comes from **domestic banks** that import gold, adding to reserves **without using foreign currency.**
  - This marks a **return to prudent reserve management,** reflecting lessons from the **1991 crisis** and **2008 Global Financial Crisis.**

India's Foreign Exchange Reserve

- **Foreign Currency Assets (FCA)** are held in currencies such as the US dollar, euro, pound sterling, and Japanese yen.
- The reserves of gold maintained by the Reserve Bank of India.
- The Reserve Bank's financial holdings with the International Monetary Fund.
- **Special Drawing Rights (SDR), a** reserve asset created by the IMF to enhance the reserve assets of its member countries, earning interest.
- **Reserve Tranche Position (RTP):** The difference between a member's IMF quota and the IMF's holdings of the member's currency, which can be withdrawn without stringent conditions.
- **Total Reserves: India's foreign exchange reserves** stand at **USD 702.28 billion** as of **October 2025.**
- **Composition of Reserves:**
  - **Foreign Currency Assets (FCA):** USD 570.411 billion.
  - **Gold Reserves:** USD 108.546 billion
  - **Special Drawing Rights (SDRs):** USD 18.722 billion.
  - **Reserve Position with IMF:** USD 4.602 billion

RBI's Reasons for Storing Part of India's Gold Reserves Abroad

- **Geopolitical Risk Mitigation:** RBI diversifies gold storage across **London, New York, and Zurich** to avoid over-concentration and ensure access during disruptions.
- **International Liquidity:** Gold in global hubs enables **quick conversion to cash** and access to **international markets** when needed.

- **Economic Resilience: Overseas gold reserves** can be **pledged or swapped** with global institutions like the **IMF** or **BIS** to quickly raise **foreign currency** and help **India meet financial obligations** during **crises**.
- **Trusted Custodians:** The **Bank of England** and **BIS** provide **secure, reliable frameworks** for gold storage.
- **Advanced Security:** Vaults in **London, Switzerland, and New York** feature **reinforced structures, biometric access, and 24/7 monitoring** for maximum protection.

Analyse the strategic rationale behind the RBI's gold repatriation drive since 2023 and its implications for India's financial sovereignty.

Drishti Mains Question

8th Session of the International Solar Alliance (ISA)

President Droupadi Murmu addressed the **8th Session of the International Solar Alliance (ISA) Assembly** in New Delhi, urging the Global South to lead an inclusive solar revolution and reaffirming India's commitment to a solar-powered world.

Key Highlights of the 8th Session of the ISA Assembly

- **SUNRISE Network:** ISA launched the **SUNRISE (Solar Upcycling Network for Recycling, Innovation & Stakeholder Engagement)** initiative to promote a circular economy in the solar sector.
  - It focuses on recycling, innovation, and creating green jobs through sustainable solar waste management.
- **One Sun One World One Grid (OSOWOG):** A dedicated **OSOWOG** programme was introduced to build regional solar interconnections across continents.
  - The plan identifies key transmission links between **Asia, the Middle East, Europe, and Africa,** with feasibility studies to be conducted in the next 2–3 years.
- **SIDS Solar Procurement Platform:** Sixteen **Small Island Developing States (SIDS)** signed an MoU with ISA and the **World Bank** to collaborate on joint solar procurement, digital integration, and capacity building for stronger energy resilience.
- **Global Capability Centre and ISA Academy:** ISA announced the **Global Capability Centre** in India as a "**Silicon Valley for Solar,**" connecting global centres of excellence.
  - The **ISA Academy**, an AI-based e-learning platform, will offer training and resources to strengthen global solar skills and knowledge.

ISA Reports on Global Solar Trends

- The Assembly launched **Five ISA Reports**: **Ease of Doing Solar 2025, Solar PV Skills and Jobs in Africa, Solar Compass, Global Floating Solar Framework, and Global Solar Trends & Outlook 2025**, highlighting key global solar trends.

- **Ease of Doing Solar 2025:** Global energy transition investments in 2024 reached **USD 2,083 billion**. ISA Member Countries contributed **USD 861.2 billion**, showing the Global South's growing leadership.
  - **Solar power drew USD 521 billion**, making it the leading force in renewable investments.
- **Global Solar Trends & Outlook 2025:** Confirms that **solar is now the dominant force driving clean energy growth worldwide.**
- **Solar Compass-Integrated PV Applications:** Highlights opportunities in **Building-Integrated Photovoltaics (BIPV)**, as 70% of future buildings in developing countries are yet to be built. ISA aims to lower **BIPV costs to rooftop solar levels** and promote **solar-ready housing policies** across the Global South.

International Solar Alliance (ISA)

- **Origin and Membership:** The **ISA w**as launched in **2015** by **India and France** during the **UN Climate Change Conference (COP21) in Paris**. It is the first international intergovernmental organisation headquartered in India.
  - It currently has **125 Member and Signatory Countries**, working together to expand access to clean, affordable, and reliable solar energy worldwide.
- **Core Mission:** ISA aims to **enhance global energy access and security** by promoting **solar power** as a key driver of the world's transition to a sustainable energy future.
- **Strategic Pillars:**
  - **Catalytic Finance Hub:** It aims to mobilise USD 1 trillion in investments by 2030.
  - **Global Capability Centre & Digitisation:** Promotes innovation, capacity building, and digital platforms across Member Countries.
  - **Regional & Country-Level Engagement:** Drives tailored interventions through partnerships and local cooperation.
  - **Technology Roadmap & Policy:** Supports deployment of emerging solar technologies through practical policies and knowledge resources.
- **Significance:** ISA seeks to **transform lives** by bringing **clean, reliable, and affordable energy** to communities, promoting **sustainable growth** and improving **quality of life** globally.

India's Leadership in the Solar Energy Transition

- **Record Renewable Energy Achievements:** As per **IRENA Renewable Energy Statistics 2025**, India ranks **4th globally in Renewable Energy Installed Capacity**, **4th in Wind Power, and 3rd in Solar Power capacity.**
  - Solar capacity has increased more than 39 times, from **2.82 GW in 2014 to 110.9 GW in 2025**, including a record 23.83 GW added in 2024–25 alone.

- India achieved **50% of its installed capacity from non-fossil sources five years ahead of its 2030 target**, reflecting strong policy and institutional commitment.
- **Manufacturing Boost (2014 to March 2025):** Solar PV module capacity surged from 2.3 GW to 88 GW, a 38-fold increase. Solar PV cell capacity grew from 1.2 GW to 25 GW, a 21-fold increase.
- **Flagship Initiatives:**
  - **National Solar Mission :** Part of the **National Action Plan on Climate Change,** it aims to establish India as a global leader in solar energy.
  - **PM-Surya Ghar Muft Bijli Yojana: Promotes rooftop solar adoption for households.**
  - **PM-KUSUM Scheme:** Supports farmers in installing solar pumps and grid-connected systems.

- **Solar Parks Scheme:** Enables large-scale solar project development across states.
- **Production Linked incentive (PLI) for Solar Manufacturing:** Boosts domestic production of high-efficiency solar modules.
- India's initiatives like **PM Surya Ghar Muft Bijli Yojana** and **PM-KUSUM** are now being replicated across **Africa and SIDS** through ISA partnerships.
- **Sustainable and People-Centric Approach:** India's renewable journey balances **growth with ecological preservation**, focusing on technology sharing and inclusive development.
  - Progress is measured not just in megawatts, but in **lives improved and communities empowered.**

Aspect	Challenges	Opportunities
Challenges and Opportunities for India's Solar Energy Development		
Import Dependence	India relies on China for over 50% of its solar cells and modules, and its high dependence on critical minerals creates supply chain and energy security risks.	Boost local manufacturing through the **PLI scheme** and mineral recycling to cut import dependence.
Employment	Job creation limited by import-heavy value chains.	Scaling domestic production can expand green employment.
Land Use Conflicts	Solar projects require vast tracts of land, often competing with agriculture and biodiversity.	Promote **agrivoltaics** (dual land use) and floating solar projects like **Omkareshwar (600 MW)** to minimise trade-offs.
Grid and Storage Deficits	Transmission losses and costly storage systems hinder solar integration.	Invest in **smart grids**, **National Logistics Policy**, and hybrid (solar-hydro-battery) models for stability.
Manufacturing Gaps	Weak R&D and lack of infrastructure for upstream components (polysilicon, wafers).	Develop full solar manufacturing ecosystem and incentivise **research in perovskite & next-gen PV tech**.
Solar Waste Management	Lack of recycling norms poses future environmental hazards.	Implement **solar recycling guidelines** and develop circular economy models (e.g., **SUNRISE network**).
Energy Demand Growth	Energy demand is projected to reach **73 exajoules by 2050**, increasing fossil dependence if unmet.	Scaling solar under schemes like **PM-KUSUM**, **Solar Parks**, and **ISA cooperation** can meet rising demand sustainably.

Critically examine the role of the International Solar Alliance in promoting South–South cooperation for energy transition.

Drishti Mains Question

Small Finance Banks (SFBs)

RBI has **returned Jana Small Finance Bank's (SFB)** application for **transition into a universal bank**, citing **non-fulfilment of eligibility criteria** outlined under its **2024 guidelines for SFBs.**

Small Finance Bank

- **About:** SFBs are private institutions created to enhance **financial inclusion** in India. They offer **basic banking facilities**, including deposits and credit, to **unserved and underserved groups** like small farmers, micro industries, and informal sector enterprises.

- **Origin:** Announced in **Union Budget 2014–15** to boost **financial inclusion**, the idea stems from the **2009 Raghuram Rajan Committee's** *A Hundred Small Steps report*.
- **Eligibility Criteria: Resident individuals/professionals** with **10 years of experience** in banking and finance.
  - **NBFCs, Micro Finance Institutions (MFIs), and Local Area Banks (LABs)** owned and controlled by residents can convert into SFBs.
  - Only **resident-controlled entities** can promote SFBs.
- **Capital Requirements:** For Primary (Urban) Co-operative Banks transiting into SFBs, **initial requirement of net worth**

shall be ₹100 crore, which will have to be increased to **₹200 crore. Minimum paid-up voting equity capital / net worth requirement shall be ₹200 crore.**

- **Promoter's initial contribution: 40%**, to be reduced to **26% within 12 years**.
- **Foreign investment** permitted as in other **private sector banks**.

- **Regulatory and Prudential Norms:** SFBs are **full-fledged banks**, unlike **Payments Banks**, and follow **RBI's prudential norms** such as **CRR and SLR maintenance**.
  - Regulated under the **Banking Regulation Act, 1949** and supervised by the **RBI**.

- **Operational Mandates:** Must allocate **75% of Adjusted Net Bank Credit (ANBC)** to **Priority Sector Lending (PSL)**.
  - At least **50% of loans** should be of value **up to Rs 25 lakh**.
  - No **geographical restrictions**, but **25% of branches** must be in **unbanked rural centres**.
  - Preference to banks setting up in **under-banked states/districts**.

- **Permissible Activities:** It can distribute **mutual fund units**, **insurance**, and **pension products** with **RBI and sectoral regulator approval**.
  - May become a **Category II Authorised Dealer** in **foreign exchange**. **Cannot establish subsidiaries** for non-banking financial activities.

RBI's 2024 Guidelines for Converting SFBs into Universal Banks

- **Eligible Applicants:** Only **listed Small Finance Banks** (**SFBs**) are eligible to apply for **conversion into a Universal Bank**.
- **Financial Requirements:** Must have a **minimum net worth of Rs 1,000 crore, scheduled bank status**, and a **profitable operational record** for at least **five years**.
- **Asset Quality Criteria:** Must maintain **gross NPAs below 3%** and **net NPAs below 1%** consistently for the **previous two years**.

Transit-Oriented Development for Urban Sustainability

The **48-storey 'Towering Heights'** in **East Delhi** is India's **first transit-oriented development (TOD) project**, marking a shift from **car-centric planning** to **integrated, sustainable urban living**.

Transit-Oriented Urban Development

- **About:** TOD is an **urban planning strategy** that promotes **high-density, mixed-use development** around public transport hubs such as metro or railway stations.
  - It aims to make **public transport** the **focal point** of city development, contrasting with car-centric urban sprawl.

- **Objective:** Reduce dependence on personal vehicles.
  - Shorten travel distances and time.
  - Lower pollution levels and commuting costs.
  - Encourage **walkable, pedestrian-friendly** neighbourhoods.

- **3V Framework by World Bank for TOD:**
  - **Node Value:** It refers to a station's **importance within the public transit network**, determined by **passenger traffic, intermodal connections**, and its **central position** in the network.
  - **Place Value:** It reflects the **quality and appeal** of the **station area**, based on **land use diversity, access to services, nearby amenities, walkability**, and **urban block size**.
  - **Market Potential Value:** It indicates the **market potential** of **station areas**, assessed by **job density, transit accessibility, housing density, development land, zoning scope**, and **market activity**.

National Transit Oriented Development (TOD) Policy, 2017

- **About:** The **Ministry of Housing and Urban Affairs** (**MoHUA**) launched the **National Transit-Oriented Development Policy** (**2017**) to guide **states and cities** in adopting **TOD-based urban growth**.
- **Vision:** Promotes **public transport and green mobility**, reducing pollution and congestion.
  - **Encourages compact, walkable, and affordable neighbourhoods** with dense infrastructure.
  - **Shifts focus from private vehicles to public transport-oriented development. Integrates inclusive and affordable housing** for all income groups.
  - **Enhances recreation, safety, and environmental sustainability** through eco-friendly travel options.
- **Initiatives Taken for TOD Development in india:**
  - **Metro Rail Policy 2017**
  - **Urban Infrastructure Development Fund** (**UIDF**)
  - **Multi-Modal Transport Hub** (**MMTH**)

Significance of Transit-Oriented Development (TOD) for Urban Development

- **Combating Traffic Congestion and Pollution:** Road-centric planning causes **traffic jams, fuel waste**, and **pollution**, harming **public health**. **TOD** creates **walkable, transit-linked neighborhoods**, cutting **commutes**, reducing **car use**, and **improving air quality**.

- **Managing Urban Sprawl:** Urban sprawl causes **inefficient land use** and high **infrastructure costs**. **TOD** encourages **vertical, compact growth** around **transit stations (500–800 m radius)**, preserving **open spaces** and optimizing **urban land use**.

- **Financial Viability of Public Transport:** Metro system is **capital-intensive**, but **TOD** ensures **high ridership** through **dense development** near stations. It also enables **Value Capture Financing**, using **rising land values** to fund **construction and maintenance**.

- **Reducing Carbon Footprint: TOD** cuts **car use**, **commute times**, and **carbon emissions** while boosting **productivity**. In **Stockholm**, transit-based growth raised **economic value by 41%** and cut **emissions by 35%** (1993–2010).

- **Boosting Economic Competitiveness: TOD** promotes **higher densities** and **job clustering**, enhancing **city competitiveness**—doubling **job density** can raise **economic productivity** by **5–10%**.

Steps Needed to Implement
TOD for Sustainable Urban Development

- **Policy and Regulatory Reforms: Integrate TOD** into **city plans**, **zoning laws**, and **regulations**, with **uniform norms** for **land use**, **density norms**, and **parking**. Make **TOD implementation mandatory** for all **new metro** and **mass transit corridors**.

- **Institutional Coordination:** Set up a **Unified Metropolitan Transport Authority (UMTA)** in major cities to **coordinate transport, housing, and urban planning**, with **formal protocols** for **inter-agency coordination** and **synchronized execution**.

- **Financing and Incentives:** Adopt **Value Capture Financing (VCF)** tools like **land value tax**, **development charges**, or **extra Floor area ratio (FAR)** to fund **TOD projects**.
  - Provide **developer incentives** and promote **PPP models** for **infrastructure** and **mixed-use development**.

- **Inclusive and People-Centric Design:** Reserve **Economically Weaker Sections (EWS)** and **Low-Income Groups (LIG) housing** in **TOD zones** for **social inclusivity** and offer **rental or hostel accommodations** near **transit hubs** for workers and students.

- **Data-Driven Planning and Monitoring:** Use **GIS mapping** and **data analytics** to plan **TOD zones** and set **performance metrics** (e.g., reduced travel, higher ridership, walkability, social mix) for regular monitoring.

> Transit-Oriented Development (TOD) is often hailed as a solution to India's urban woes. Critically examine its potential in ensuring sustainable and inclusive urban growth.
>
> **Drishti Mains Question**

Rising Household Debt in India

The **Reserve Bank of India (RBI)** notes that since 2019-20, Indian households have been taking on **financial debt far more quickly than they are building financial assets.**

- The trend reflects evolving savings behavior, especially with **mutual funds** gaining traction, and raises concerns about household financial health and macroeconomic stability.

Trends in India's Household Financial Health

- **Debt Outpacing Asset Creation:** Household financial liabilities grew **102%** between 2019-20 and 2024-25, compared with a **48%** rise in assets.
  - Borrowing is **expanding almost twice as fast as saving**, reflecting higher credit dependence.

- **Weaker Savings Relative to GDP:** Fresh financial assets fell from **12% of GDP (2019-20)** to **10.8% (2024-25)**.
  - **Liabilities as a share of GDP** increased from **3.9% to 4.7%**, peaking at **6.2% in 2023-24** before easing.
  - The divergence highlights weaker household balance sheets and reduced capacity to absorb shocks.

- **Deposits Remain Dominant:** Deposits in **commercial banks** made up 32% of total household financial assets added in 2019-20, which grew marginally to **33.3% by 2024-25.**
  - This shows households are adding other investment options like mutual funds while still keeping bank deposits as their main choice.
  - Other avenues like life insurance, provident and pension funds, equity, and small savings kept a **largely stable share between 2019-20 and 2024-25**.

- **Rise of Mutual Fund Investment:** Mutual funds jumped from 2.6% in 2019-20 to 13.1% by 2024-25. This shift reflects growing risk appetite, better access, and a search for higher returns as financial literacy improves.

- **Shift away from Cash:** Currency share in new assets dropped from 11.7% in 2019-20 to 5.9% in 2024-25.
  - It suggests a broader move toward financial instruments and greater digital adoption.

Challenges in Household Asset Creation in India

- **Low and Unstable Incomes:** Slow wage growth and income insecurity, especially in the informal sector (80–85% of workers are employed informally), limit regular saving.

- **High Cost of Living:** Rising expenses on essentials, healthcare, and education reduce money available for long-term investments.

- **High dependence on Borrowing:** Increasing use of loans for consumption leaves less room to build assets.

- **Weak financial Literacy:** Limited understanding of savings products, risk, and long-term planning restricts participation in financial markets.

- **Behavioural factors:** Aspirational spending and low willingness to take calculated investment risks hinder steady asset creation.

- **Rural–Urban Disparity: Periodic Labour Force Survey (PLFS)** data shows rural households spend a larger share of income on essentials, leaving less for investment compared to urban families, widening asset inequality.

Implications of Rising Household Debt	
Economic	**Financial Sector**
■ Boosts short-term growth but slows it 3–5 years later. ■ A 5% rise in household debt to GDP leads to a **1.25% decline** in GDP growth with **higher unemployment** (IMF). ■ **Limits long-term wealth creation** and capital formation.	■ Debt is ~**42% of GDP**, lower than the 49.1% EMEs average (SBI). ■ 2/3rd of loans are prime or above-prime, but rising unsecured consumption loans raise vulnerability. ■ **1% increase in debt-to-GDP** raises the risk of a banking crisis (IMF).
Household-Level	**Macroeconomic Stability**
■ More borrowing for consumption than asset creation is concerning. ■ Increased consumption borrowing **reduces income multiplier effect**. ■ Unsecured loans for poorer households lead to financial marginalisation.	■ High debt increases **sensitivity to inflation & interest-rate shocks**. ■ In downturns, indebted households cut spending, increasing macroeconomic volatility. ■ **Rising defaults can lead to NPAs** and stress the banking system.

Steps to Strengthen Household Asset Creation and Manage Debt Risks

- **Expand Financial Literacy Access:** Expand financial literacy through **National Centre for Financial Education (NCFE) under the National Strategy for Financial Education,** RBI, and **Securities and Exchange Board of India (SEBI)**, integrate basic financial planning into education and skilling.
  - Promote low-cost fintech advisory and simplified savings products to help small households build diversified portfolios.
- **Strengthen Social Security Coverage:** Broaden social security for informal workers through schemes like **Pradhan Mantri Shram Yogi Maan-dhan (PM-SYM) and PM-SVANidhi**, and promote **automatic enrolment in pension and insurance plans** to strengthen safety nets and cut emergency borrowing.
- **Promote long-term savings instruments:** Promote wider use of **Sovereign Gold Bonds (SGB)**, and **Equity-Linked Savings Scheme (ELSS)**, and **systematic investment plan (SIPs)** to build long-term wealth.
- **Borrowing for Asset Creation:** Incentivise credit for housing, education, and small business over unsecured consumption loans. Expand credit guarantee frameworks to reduce informal borrowing.
- **Macroprudential Monitoring:** RBI should closely monitor household leverage trends for signs of systemic risk. Create early warning systems for excessive credit accumulation.
- **Enhance Income Stability:** Support labour-intensive sectors, MSMEs, and skilling initiatives to boost steady earnings and improve saving capacity.

> Discuss the impact of consumption-led borrowing on the income multiplier and inclusive growth. What targeted reforms can raise asset creation among low-income households?
>
> **Drishti Mains Question**

Amul Ranks as the World's Top Cooperative in GDP Per Capita

Gujarat Cooperative Milk Marketing Federation (GCMMF), which markets **Amul**, has been ranked the **No. 1 cooperative** globally based on **GDP per capita**, according to **International Cooperative Alliance (ICA) World Cooperative Monitor 2025**.

Cooperatives

- **About**: A cooperative is a voluntary, democratic association based on the "**one member, one vote**" principle, addressing shared **economic**, **social**, and **cultural** needs.
  - In India, the movement started in late **19th century** to address rural debt and exploitation, marked by **Cooperative Acts of 1904 & 1912**.
- **Constitutional Framework**: **97th Constitutional Amendment Act (2011)** gave cooperatives constitutional status, adding **Article 19(1)(c)** and **Article 43B** under **DPSP**.
  - **Part IXB** (Articles 243ZH–243ZT) governs cooperative structure.
- **Legal Backing**: State cooperatives are under the **State List**, multi-state ones under Union list are regulated by **MSCS Act, 2002**; **Central Registrar** oversees multi-state cooperatives & **State Registrars** manage state-level ones.
  - **Ministry of Cooperation** was formed in 2021 to consolidate cooperative functions.
- **Cooperative Coverage**: India has ~**8.42 lakh cooperatives** with **29 crore** members (27% of the global total); **Amul** & **IFFCO** rank among the top 10 cooperatives globally.
- **National Cooperation Policy 2025**: Aims to establish **2 lakh new M-PACS**, leverage schemes like **DIDF, PMMSY & NPDD**, and promote cooperative education through **Tribhuvan Sahkari University**.
- **International Year of Cooperatives 2025**: **UNGA designated** year with the theme "**Cooperatives Build a Better World**".

Revitalizing Special Economic Zones (SEZs)

A **government panel**, comprising officials from the **Commerce and Industry Ministry** and **NITI Aayog**, is currently working on **revised norms** for **Special Economic Zones (SEZs)** to help **exporters leverage the domestic market**, as **US tariffs** have made exports less competitive.
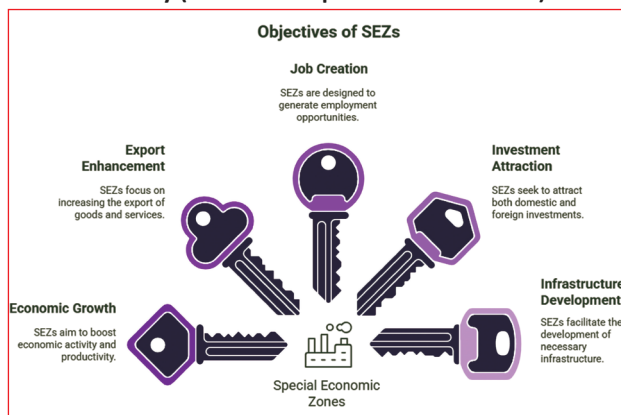
Need for Revised SEZ Norms in India

- **Countering US Tariffs:** High **US tariffs** have made **Indian SEZ exports uncompetitive**, reducing **export competitiveness**.
  - **Despite these challenges, exporters have attempted** to sustain their presence by absorbing **losses**, highlighting the need for **structural reforms**.
- **Enhance Operational Viability:** A key recommendation from exporters is the **introduction of a reverse job work policy**, allowing **SEZ units** to serve the **domestic market**.
  - This is expected to **optimize labor and equipment use**, often underutilized due to **seasonal export fluctuations.**
- **Low Investments:** Limited **Foreign Direct Investment (FDI)** in **Indian SEZs** restricts **technology access**, **global linkages**, and **branding** due to **no investment treaties (unlike Vietnam)**, **poor perception**, and **weak promotion**.
  - **Low R&D investment**, particularly in **gems and jewellery**, leading to a decline in units (~500 to ~360) and reduced **export contribution.**
- **Globally Uncompetitive:** Despite early success, **India's SEZs** lag behind **China's**, facing **productivity issues** and the exit of **gems and jewellery units** due to **policy uncertainty** and superior **incentives abroad**.
  - With the **Net Foreign Exchange (NFE) criterion removed**, experts call for a **comprehensive trade performance review**.

Special Economic Zones (SEZ)

- **About:** A **SEZ** is a geographically delineated **duty-free area** deemed to be **foreign territory** for the operations of **trade, duties, and tariffs**.
  - They can be established by the **private**, **public**, or **joint sectors**, as well as **State Government agencies**, to boost **economic activity** through a **conducive and competitive business environment.**
  - As of 2023–24, **276 SEZs** are operational in India, recording exports worth **USD 163.69 billion.**
- **Legal Backing:** Introduced in 2000 under the **Foreign Trade Policy**, replacing **Export Processing Zones (EPZs)**, SEZs are governed by the **SEZ Act, 2005** and **SEZ Rules, 2006**.
  - The **Special Economic Zone (SEZ) Amendment Bill, 2024** seeks to replace the **SEZ Act, 2005** and create flexible **Development Hubs** that promote **exports** and **domestic investment** as **integrated trade centers**.

- **Types of SEZs:** The SEZ framework includes various types such as **Export Processing Zones (EPZs)**, **Free Trade Zones (FTZs)**, **Industrial Estates**, and **Free Ports**, with examples like **GIFT City (India's first operational smart SEZ).**

Objectives of SEZs

Job Creation — SEZs are designed to generate employment opportunities.

Export Enhancement — SEZs focus on increasing the export of goods and services.

Investment Attraction — SEZs seek to attract both domestic and foreign investments.

Economic Growth — SEZs aim to boost economic activity and productivity.

Infrastructure Development — SEZs facilitate the development of necessary infrastructure.

Special Economic Zones

Baba Kalyani Committee (2018)

- In **June 2018**, the **Ministry of Commerce and Industry** formed a committee chaired by **Baba Kalyani** to review India's **SEZ policy** and recommend strategic reforms.
- **Key Recommendations:**
  - **Reform SEZ focus**: Rename as **3Es** (Employment & Economic Enclaves), target **domestic demand**, and **delink from NFE performance**.
  - **Incentive restructuring**: Base incentives on **investment**, **job creation**, **women employment**, **value addition**, and **technology differentiation**.
  - **Sector-specific frameworks**: Create **separate rules** for **manufacturing** and **services SEZs**.
  - **Infrastructure & EoDB**: Develop **high-quality infrastructure** and **walk-to-work zones**, with a **single online portal** for investment, operations, and exits.

Reforms to Revitalize India's Special Economic Zones

- **Allow Reverse Job Work:** Allow **SEZ units** to undertake **manufacturing for domestic firms** and sell **finished goods** in the **DTA** with a **transparent mechanism** to **neutralize the duty advantage** enjoyed by SEZs on inputs used for domestic sales.
- **Develop Zone-Specific Industrial Corridors:** Develop **SEZs as nodes** along **industrial corridors** (e.g., **Delhi-Mumbai Industrial Corridor**) to enhance **connectivity** and reduce **operational costs**. Encourage **residential infrastructure** near SEZs to **attract skilled talent** in remote locations.
- **Regulatory Reforms:** Enact **Special Economic Zone (SEZ) Amendment Bill, 2024**, simplify **exit policies**, and implement **Baba Kalyani Committee (2018)** recommendations, renaming SEZs as **Employment & Economic Enclaves (3Es)** with separate **manufacturing and services rules**.

- **Global Economic Convergence:** Strengthen **export infrastructure** with **customs hubs**, **e-commerce zones**, and **fast-track approvals**, and pursue **mutual recognition agreements (MRAs)** for **standards and inspections** with SEZs in countries like **UAE, Singapore, and Europe**.
  - India can boost SEZ competitiveness by adopting **China's mega-cluster model (Shenzhen)** and **UAE's tax-free zones with 100% foreign ownership (Dubai)**.
- **Dispute Resolution Mechanism:** Set up **commercial courts** and **international arbitration centers** in SEZs to ensure **swift, reliable dispute resolution** and boost **investor confidence**.

> Discuss the challenges faced by India's Special Economic Zones (SEZs) in maintaining export competitiveness amid global trade disruptions.
>
> **Drishti Mains Question**

Diversification of India's Export Markets

India's exports are diversifying, with **non-US markets** like the **Middle East, Africa,** and **Southeast Asia** helping **balance out losses** to the US, reflecting a successful **trade diversification strategy**.

- Despite a **12% drop in exports to the US**, India's **merchandise exports** grew **6.7%** to **USD 36.38 billion**, reflecting **resilient diversification.**
- **Export diversification** expands a country's **products and markets** to reduce dependence on a few partners, enhancing **economic stability, trade resilience, and innovation**.

Trends in India's Export Diversification Strategy

- **Decline in US Exports:** India's **exports to the US** fell due to **reduced demand** and **trade tensions**, as tariffs rose from **10% to 50%** between April–August 2025, reducing exports from **USD 8.8 billion to 5.5 billion**.
  - Even **tariff-free exports** dropped **47% to USD 1.8 billion** from **USD 3.4 billion**, though overall exports remain **resilient through alternative markets.**
- **Rise of Non-US Markets: Africa, Southeast Asia, and the Middle East** have become key markets for India, importing **pharmaceuticals, textiles, engineering products, and machinery**.
  - **Marine exports** rose **60%** to **China, Vietnam, and Thailand, Basmati rice exports** to **Iran** grew six-fold, and **tea exports** expanded to the **UAE, Iraq, and Germany**.
- **Government and Policy Initiatives:** The **Indian government** has strategically implemented **policies** aimed at **boosting exports** to these **non-US regions**. Programs like the **Foreign Trade Policy 2023** and **Market Access Initiative (MAI)** focus on **strengthening trade ties** with **new partners**, offering **incentives**, and easing **logistics barriers**.

Key Factors Driving the Diversification of India's Exports

- **Regional Free Trade Agreements (FTAs):** India's **participation** in various **regional FTAs** has been a crucial factor in **diversifying its export base**. **FTAs** with countries like the **UAE, Japan, and South Korea** have opened new **avenues for trade**.
- **Supply Chain Management:** India has emerged as a **reliable alternative in China-plus-one strategies**, attracting **global companies** and promoting **value addition** and **diversification beyond traditional markets.**
- **Government Outreach:** Identification of **40 key importing nations** across **Europe, Asia, Africa, and Latin America** that account for **three-fourths of global textile and apparel demand**. **Production-Linked Incentive (PLI) Schemes boost** competitiveness in **manufacturing and exports** across high-growth sectors.
- **Long-Term Goals:** India aims to **reduce dependence on the US market** and **expand its global export footprint** through diversification.
  - The goal is to **build resilient, sustainable trade systems** aligned with **Viksit Bharat 2047** and the vision of becoming a **top 3 global exporter**.

> ### India's Export Basket (FY 2024-25)
>
> - **Engineering Goods:** Largest contributor at **26.67%**, totaling **USD 116.67 billion**. Key export destinations: **US, UAE, Saudi Arabia, UK, Germany**. Exports consistently **above USD 100 billion** since 2021-22.
> - **Agriculture & Allied Products:** Contributed **11.85%** to total exports, totaling **USD 51.86 billion**. Key commodities: **spices, coffee, tea, tobacco, rice, fruits & vegetables, marine products**.
>   - Major destinations for spices: **China, US, UAE, Bangladesh, Thailand**; coffee: **Italy, Russia, Germany, UAE, Belgium, USA**.
> - **Pharmaceuticals:** India exports medicines to **over 200 countries**, continuing a trend of steady growth since 2014-15.
> - **Electronics: Computer hardware & peripherals** doubled from USD 0.7 billion to USD 1.4 billion. Major export markets: **UAE, US, Netherlands, UK, Italy**.

> How have US tariff hikes impacted India's export profile, and what strategies has India adopted to mitigate these effects?
>
> **Drishti Mains Question**

India's Top 1% Grew its Wealth by 62% Since 2000: G20 Report

The **G20 Committee** set up by the **South African G20 Presidency**, found that the world's richest **1% accumulated 41% of global wealth** between 2000 and 2023.

Key Findings of the G20 Report on Global Inequality

- **Global Income Inequality: 83%** of countries have high income inequality **(Gini coefficient > 0.4)**. These countries account for **90% of the world's population**.

- Since 2000, **global gaps** have **slightly narrowed** due to growth in **China** and **India**, but major **disparities** persist—especially between **rich regions** and **Sub-Saharan Africa**—with a **Gini coefficient of 0.61**.
- **Wealth Inequality:** Between 2000 and 2024, global **wealth inequality** surged, with the richest **1% capturing 41%** of new wealth, while the bottom **50% received just 1%**.
  - In **India**, the **richest 1% grew their wealth share by 62%** between 2000 and 2023.
- **Global Food Insecurity:** Globally, **1 in 4 people (2.3 billion)** face moderate or severe food insecurity, with **335 million more** regularly skipping meals since 2019.

Key Factors Driving Global Inequality

- **Economic Liberalisation: Financial deregulation (price volatility)**, **labour market deregulation** with **weakened trade unions**, and **privatisation of public services** disproportionately impact the **poor**, widening **income** and **economic inequality**.
- **International Factors:** Trade patterns and capital flows generate **disproportionate income gains** for **corporate elites**, while **real wages** for workers—especially the less skilled—remain suppressed; meanwhile, **IP regimes** and **monopolies** benefit developed countries and restrict access to essential health and technology.
  - **International tax rules** and **external shocks** allow MNCs and elites to avoid fair taxation and expose developing countries to financial crises and global recessions.
- **Structural Factors: Colonial legacies** of extraction-based economies, **unequal land ownership**, and social discrimination, combined with **industrial revolution**-driven regional growth and **intergenerational wealth transfer**, have perpetuated **economic inequality** today.
- **Unequal Distribution of Incomes:** Unequal **asset ownership** and gaps in **skills**, **education**, and **social capital** boost income for some while leaving others behind.
- **Social and Cultural Factors:** Inheritance and marriage patterns, **social discrimination** (gender, caste, race), and **weak public support** perpetuate **elite wealth** and trap **low-income populations** in **poverty**.

Various Implications of Inequality

- **Perpetuation of Poverty:** High **inequality** creates **poverty traps**, limiting access to **education**, **healthcare**, and **nutrition**, and perpetuating **intergenerational disadvantage**. It also wastes **human potential**, reducing workforce **productivity** and **innovation**, and hindering overall **economic growth**.
- **Economic Instability:** Concentrated **wealth** drives speculation in **financial assets** and **real estate** over productive investments, while limited **consumer demand** from the majority slows **economic growth.**
- **Health Crises: Out-of-pocket health spending** has pushed **1.3 billion people** into poverty, reducing **productivity** and earnings, while **food insecurity** affects **2.3 billion**, causing **hunger, malnutrition**, and impaired **cognitive and societal health**.
- **Erosion of Democracy: Extreme wealth concentration** grants elites **political influence** and **rule of law capture**, making **countries with high inequality seven times more likely** to face **democratic decline** as trust in institutions erodes.
- **Interconnected Vicious Cycle:** These consequences form a **vicious cycle**: **economic inequality** fuels **political inequality**, leading to **policies favoring the wealthy**, which further **increases economic inequality** and weakens the **middle class**, causing **political instability** and **slower economic growth**.

Recommendations of the G20 Report to Tackle Inequality

- **Establish International Panel on Inequality (IPI):** The report recommends creating an **IPI**, modeled on the **IPCC**, to **monitor global inequality**, provide **data to policymakers**, and guide **government interventions.**
- **Progressive Taxation:** Implement **progressive income, wealth, and inheritance taxes** and increase **social spending** on **healthcare, education, and social protection** to make an **equitable society** and reduce **wealth concentration.**
- **Social Protection Policies:** Strengthen **workers' power** via **collective bargaining, trade union protection, and minimum wages**, and curb **corporate monopolies** through **antitrust enforcement** for fair wages and competition.
- **Reforming Global Trade and IP Rules**: Allow **Intellectual Property (IP) waivers and compulsory licenses** for critical **health and climate technologies** and promote **fair trade and investment agreements** that help developing countries advance up the **value chain**.
- **Reforming Global Financial Systems**: Introduce a **robust global minimum corporate tax** and explore a **minimum tax on ultra-wealthy individuals**, while reforming **International Financial Institutions (IFIs)** by replacing **austerity mandates** with growth-focused policies, and recognizing **capital controls** for macroeconomic stability.
- **Expand Capacities of Developing Countries:** Offer **debt relief** to over-indebted developing countries, allocate **IMF Special Drawing Rights (SDRs)** based on need (not quota), and secure **climate finance** for adaptation and loss, while enhancing **food security** and bridging the **digital divide**.

> Examine the impact of economic liberalization, structural factors, and international trade rules on inequality in developing countries.
>
> **Drishti Mains Question**

Demonetisation and Money Supply

Currency with the public (total currency in circulation (CIC) minus cash held by banks) has **more than doubled** since the **2016 demonetisation**, rising from **Rs 17.97 lakh crore** (Nov 2016) to **Rs 37.29 lakh crore** (October 2025), according to RBI data.

- However, despite the increase in absolute terms, the **currency-to-GDP ratio has fallen below pre-demonetisation levels**, indicating stronger economic growth and rising digital payments adoption.

2016 Demonetisation

- **About:** On **8th November, 2016**, PM declared that **Rs 500 and Rs 1,000 notes**—constituting **86% of total currency**— would cease to be legal tender from midnight to address **black money**, counter **fake currency**, boost **digital payments**, and formalise the economy.
  - The **Rs 2000 banknote** was introduced in **November 2016** after the withdrawal of **Rs. 500** and **Rs 1000 notes**. **Rs 2000 banknote** were withdrawn from circulation in **May 2023**, but remain **legal tender** (legally valid money that people are obligated to accept when settling financial transactions).
  - **Demonetisation** is the process by which a country **withdraws a currency unit's status as legal tender** — meaning the banknotes or coins are no longer officially accepted for transactions.
- **Legal Backing:** The notification declaring **Rs 500** and **Rs 1,000** notes invalid was issued under **Section 26(2) of the RBI Act, 1934**, which empowers the **central government** to declare that "any series of bank notes of any denomination shall cease to be legal tender" based on a **recommendation from the RBI's central board**.
- **Judicial Stand:** In the *Vivek Narayan Sharma v Union of India Case, 2023*, the Supreme Court, in a **4:1 split verdict**, upheld the Union's 2016 demonetisation, ruling that it was **proportionate** to its stated objectives and implemented in a **reasonable** manner.
- **Impact:**
  - **Economic Disruption:** It caused major disruption e.g., **demand fell**, businesses struggled, GDP dipped by **1.5%**, **SMEs** were hit hard, and the public faced **long queues** to exchange invalid notes.
  - **Deepening Digital Penetration:** UPI has boosted **digital transactions**, reaching **185.9 billion** in **FY25**. UPI transactions grew at a **49% CAGR** between **FY23–FY25**, showing rapid adoption and deeper penetration in **tier 2 and tier 3 cities.**
  - **Low CIC to GDP Ratio:** The **CIC-to-GDP ratio** has declined to **11.11% in 2025** from **12.1% in 2016**,

indicating that the economy—**growing over 6% annually**—has reduced its reliance on cash.
  - However, India's **currency-to-GDP ratio (11.11%)** is significantly higher than the **US (7.96%)**, **China (9.5%)**, **Eurozone (8–10%)**, and **Japan (9–11%)** due to its **large informal economy** and **cultural preference for cash**.
- The **currency-to-GDP ratio** measures the value of **physical cash** in circulation compared to a country's **total economic output.**

Wholesale Price Index Slips Into Deflation

India's **Wholesale Price Index (Base Year: 2011–12)** fell to a **27-month low** in October 2025, slipping into **deflation** at **−1.21%**, compared to **−0.13%** in September. The drop was driven by lower prices of food items and crude petroleum, softer fuel and manufactured goods prices, and the impact of **2025 Goods and Services Tax (GST) reforms.**

- Deflation is the opposite of **Inflation**. It refers to a sustained and general decrease in the overall price levels of goods and services in the economy.

Wholesale Price Index

- **About WPI:** WPI tracks the **average change in prices at the wholesale level for a fixed basket of goods.**
  - The prices tracked are **ex- factory price** for manufactured products, **agri-market (mandi) price** for agricultural commodities and **ex-mines prices** for minerals.
  - Weights given to each commodity covered in the WPI basket is based on the value of production adjusted for net imports. **WPI basket does not cover services.**
- **Composition of WPI Basket:** It covers commodities falling under the three Major Groups namely **Primary Articles, Fuel and Power and Manufactured products.**
  - **Primary Articles (Base Year: 2011–12):** Includes food articles, non-food articles, minerals, and crude petroleum and natural gas.
    - **Primary Articles** hold the **second-highest weight (22.62)** in the WPI basket.
  - **Fuel and Power (Base Year: 2011–12):** Covers coal, mineral oils, and electricity.
    - **Fuel and Power** have the **lowest weight (13.15)** in the WPI basket.
  - **Manufactured Products (Base Year: 2011–12):** Comprises 22 industrial sub-groups.
    - **Manufactured Products** carry the **highest weight (64.23)** in the WPI basket.
  - The **WPI Food Index (weight 24.38)** tracks price changes of food items at the producer level. It consists

of **Food Articles from the Primary Articles group** and **Food Products from the Manufactured Products group.**

- **Compilation:** Provisional monthly WPI for All Commodities is released on 14th of every month (next working day, if 14th is holiday).
  - The WPI is compiled and released by the **Office of the Economic Adviser under the Department for Promotion of Industry and Internal Trade, Ministry of Commerce and Industry.**
- **Treatment of Imports and Exports:** WPI covers all transactions **at the first point of bulk sale,** with item weights based on domestic production plus net imports.
  - The **only exception is crude oil,** where only domestic production is counted because imports are far larger, crude itself isn't traded in India's wholesale market, and its petroleum derivatives are already included under fuel and power.
- **Importance of WPI:** WPI helps monitor price movements across the economy and acts as a **key deflator for converting nominal GDP and other variables into real values.**
  - It guides trade, fiscal and economic policies and is widely used in escalation clauses for **long-term contracts** in sectors like construction and machinery. Businesses and analysts also rely on it for price adjustments.
- **Difference Between WPI and CPI:** WPI captures wholesale price changes, while **consumer price index (CPI)** measures **retail-level price changes faced by consumers.**
  - WPI signals early shifts in commodity prices, whereas CPI is more relevant for assessing the cost of living.
  - CPI is released by the **Ministry of Statistics & Programme Implementation (MoSPI),** while WPI is published by the **Ministry of Commerce and Industry.**

Regulating Cryptocurrency in India

A global investigation, titled *The Coin Laundry,* conducted by the **International Consortium of Investigative Journalists (ICIJ)**, has uncovered how **cryptocurrency exchanges** have become a new hotspot for **global money laundering.**

Use of Cryptocurrency Exchanges as Channels for Money Laundering

- **Placement:** Cryptocurrencies are **borderless, pseudonymous, and fast,** offering limited traceability in the absence of strict KYC norms**.**
  - Crypto **"mixers" and "wallet hops"** obscure ownership trails, making them ideal for laundering illicit proceeds.

- They may also use **mule or pooled accounts** to deposit cash and buy crypto like Bitcoin, taking advantage of the system's **pseudo-anonymity**.
- **Layering:** In this stage, criminals hide the origin of funds by using **multiple exchanges**, **privacy coins**, **KYC-free Decentralised Exchanges (DEXs)**, and **chain-hopping** (moving cryptocurrency across multiple blockchains in quick succession).
  - These tactics break the audit trail, making transactions very hard to trace.
  - Actors involved include **ransomware groups, drug syndicates, cyber fraud rings**, and **sanction evaders**.
- **Integration:** In the final stage, the **"cleaned" funds** are converted back into **fiat currency** and moved into the legitimate economy.
  - The criminal sells the obscured crypto on a **laxly regulated foreign exchange** and withdraws the **fiat** to a bank account, posing it as **legitimate investment returns**.

Cryptocurrency

- **About:** A **cryptocurrency** is a **digital currency** secured by **cryptography** and operates in a **decentralized** system without government control. Examples include **Bitcoin**, **Ethereum**, and **Litecoin**.
- **Working of Cryptocurrency:** Cryptocurrency transactions are recorded on a **blockchain**, a **public digital ledger** maintained by a **global network of computers** that verify and add each transaction.
  - Users need a **digital wallet** that stores **public and private keys** used to send, receive, and verify transactions.
- **Legal Status of Cryptocurrency in India:** Cryptocurrency in India is **unregulated but not banned**.
  - The government does **not recognize it as legal tender** and aims to restrict its use for **illegal activities** or as a **payment method**.

Regulatory and Institutional Gaps in India's Crypto Ecosystem

- **Regulatory Gaps**
  - **Lack of Clear Policy Framework:** The government faces a **paradox**. Establishing **clear crypto regulations** may appear as endorsement and **attract millions of new, risk-prone investors**, while officials remain cautious about integrating a **volatile, decentralized asset** into the formal financial system due to potential **systemic risks**.

- **Unclear Legal Definition:** There is **no legal clarity** on whether crypto is a **commodity, currency, asset, or new digital class**, creating confusion over which regulator—**RBI, SEBI,** or a new body—should oversee it.
- **Taxation and Compliance Issues:** The **1% TDS** on virtual digital assets, has led to an exodus of users, funds and trades to offshore platforms and complicating oversight, while unclear tax rules for **staking**, **mining**, and **airdrops** create confusion for users.
- **Technological Oversight Gaps: Crypto evolves faster than policy**, with tools like **mixers**, **privacy coins**, **cross-chain bridges**, and **Decentralised exchanges (DEXs)**, making **real-time enforcement** extremely challenging.

- **Institutional Gaps**
  - **Jurisdictional Enforcement Issues:** Cryptocurrencies operate on a **global, borderless network**. Enforcing **Indian laws** on **offshore exchanges** that are accessible to Indian users is extremely difficult.
    - ❖ In **21 months (Jan 2024–Sept 2025)**, Indian authorities flagged **27 crypto exchanges** for laundering cybercrime proceeds, with about **Rs 623 crore** stolen from **2,872 victims** routed to **transnational syndicates.**
  - **Operational Hurdles:** The **pseudo-anonymous** nature of **blockchain** makes it hard for agencies like the **Enforcement Directorate (ED)** and **I4C** to **trace funds**, **identify beneficiaries**, and **prove wrongdoing**.

Steps to Strengthen Cryptocurrency Governance

- **Clear Legal and Regulatory Frameworks:** Cryptocurrencies should be legally classified as a distinct **asset class** (e.g., Crypto Assets or Digital Assets) to clarify laws and designate a lead regulator (e.g., **SEBI for exchanges, RBI for stablecoins**).
  - A comprehensive **Crypto Asset Regulation Bill** should define regulator powers, illegal activities, and consumer protection measures.
- **Robust Oversight of Intermediaries:** All exchanges serving Indian users, domestic or offshore, should **register with the regulator** and follow strict **Know Your Customer (KYC), Anti-Money Laundering (AML), and Combating the Financing of Terrorism (CFT) norms**.
  - They should also use **advanced blockchain analytics** to monitor transactions, flag suspicious activity, and report it to the **Financial Intelligence Unit (FIU)**.
- **Prioritize Consumer Protection:** Launch **awareness campaigns** on crypto risks, mandate strict **security protocols** for exchanges and wallets—including **proof of**

reserves and **insurance**, and establish a **regulator-backed grievance redressal** system for investors.

- **Rationalize the Tax Regime:** Reducing **TDS** could shift crypto activity back to **Indian exchanges** and improve transparency, while allowing investors to **offset and carry forward losses** would make the **30% tax on gains** more equitable.
- **Inter-Agency Coordination:** Create specialized **crypto units** in agencies like **ED, Income Tax, and CBI** with blockchain forensic experts and collaborate with **global regulators** to track cross-border flows.

> What is cryptocurrency? Discuss the key challenges associated with regulating cryptocurrencies in India and suggest a way forward.
>
> **Drishti Mains Question**

Floating Rate Bonds (FRBs)

RBI's Floating Rate Bonds (FRBs) are witnessing a sharp rise in demand as investors shift from **equities**, **gold**, and traditional **deposits** toward safer, higher-yielding **government-backed debt instruments**.

- The demand is due to their **higher returns**, which are linked to the **National Savings Certificate (NSC) rate + 35 basis points**.

RBI's Floating Rate Bonds (FRBs)

- **About:** First issued in 1995 in India, RBI's FRBs are **government securities** with a **variable coupon rate** instead of a fixed one.
  - The rate is **reset at pre-announced intervals** (typically every 6 months or 1 year) based on a **pre-selected benchmark**, distinguishing them from traditional fixed-rate bonds.
- **Eligibility:** The bonds are open to **individuals (including joint holders)** and **Hindu Undivided Families (HUFs)**.
  - **Non-Resident Indians (NRIs) are not eligible** to invest in these bonds.
- **Interest Rate Mechanism:** The **interest rate** on **FRBs** is tied to a **market-based benchmark**, typically the **average yield** of the last three auctions of **182-day Treasury Bills** or a **base rate** plus a **fixed spread** decided through auction.
  - In some cases, such as **RBI's retail FRBs**, the **coupon** is linked to the **NSC rate**, making the **returns** adjust automatically with changes in **broader interest rates**.
- **Significance:** **FRBs** protects investors from **interest-rate risk**—when rates rise, **coupon payment** also rises.
  - It serves as a **diversification** and **hedging tool** for portfolios dominated by **fixed-rate debt instruments.**

- **About:** NSC Scheme was launched by the **Department of Economic Affairs, Ministry of Finance** to encourage a culture of **long-term savings** among individuals.
- **Tenure and Interest:** The scheme has a **5-year maturity period** and offers an **attractive interest rate of 7.7%**, compounded annually.
- **Eligibility:** Any **resident Indian** can invest under the NSC scheme. Guardians are eligible to apply on behalf of **minors** (**minimum age 10 years**) or individuals of **unsound mind.**
- **Deposits:** Investors can deposit a **minimum of Rs 1,000**, with subsequent deposits in multiples of Rs 100. There is **no maximum limit** for deposits, and an individual can open **multiple accounts** under the scheme.
- **Additional Benefits:** Investors can **secure loans** by **pledging NSC certificates** with banks, and the **absence of a maximum deposit limit** makes it ideal for **substantial, long-term savings**.

Tier II Bonds

Several banks are actively issuing **Tier II bonds** to bolster their **capital adequacy ratios (CAR)** as required under **Basel III norms**, with total issuances expected to reach **Rs 25,000 crore** in FY **2025–26**.

Tier II Bonds

- **About: Tier II bonds** are **subordinated debt** instruments banks issue to **boost capital** and support operations. They count as **Tier II (supplementary) capital** under **Basel-III** and help improve the **CAR.**
  - **CAR** indicates a bank's **financial strength**, with a higher ratio providing a stronger **buffer against distress**. **CAR = (Eligible Capital ÷ Risk-Weighted Assets) × 100%.**
  - Tier II Bonds are different from **Tier I Bonds** as they strengthen a bank's **supplementary capital**, whereas **Tier I (AT1) Bonds** strengthen its **core capital (equity and retained earnings)**.
- **Key Features of Tier II Bonds:**
  - **Maturity:** They are typically **long-term instruments** with original maturities of at least **5 years**.
  - **Subordination: Tier II bondholders** are paid after all **depositors, senior debt holders**, and **general creditors** in the event of a **liquidation**. However, they rank above **equity holders**.
  - **Coupon Payments:** They pay regular **interest (coupons)** and generally offer **higher coupon rates** than senior bonds due to **higher risk**.
  - **Call Options:** Most **Tier II bonds** include a **call option**, allowing the bank to **redeem the bonds** after a specified period (e.g., **5 or 10 years**).
  - **Loss Absorbency (Gone-Concern Capital):** Tier II capital is considered **"gone-concern" capital**, meaning it is

intended to **absorb losses** if a bank fails and is in the process of being **wound up**.
    - ❖ This is in contrast to **Tier I capital**, which absorbs losses on a **"going-concern"** basis while the bank is still **operational.**
- **Issued By:** Both public and private banks issue **Tier II bonds** to meet **regulatory capital requirements**, support **business expansion**, and comply with **CAR norms** without issuing new equity and diluting shareholders.
- **Investors in Tier II Bonds: Institutional investors** such as insurance companies, pension funds, mutual funds, and hedge funds, as well as **retail investors** through platforms or public issues, invest in Tier II bonds.

Basel Norms

- **About:** Basel Norms are a set of international **banking regulations** developed by the **Basel Committee on Banking Supervision (BCBS)** to strengthen the **global financial system** by ensuring that banks hold enough **capital** to absorb **unexpected losses**.
- **Pillars of Basel Norms:** The Basel framework rests on **three pillars**:
  - **Pillar 1 – Minimum Capital Requirements:** Banks must hold capital proportional to their **risk-weighted assets (RWA)**, with riskier assets requiring more capital.
  - **Pillar 2 – Supervisory Review:** Regulators assess each bank's **internal risk processes** and ensure capital stays **above minimum requirements**.
  - **Pillar 3 – Market Discipline:** Banks must **disclose** their risk profiles and capital levels to promote **transparency** and encourage prudent behavior through market scrutiny.
- **Evolution:** Basel has evolved from **Basel I, II, III, and now IV** to strengthen the banking system and respond to financial crises.
  - **Basel I (1988)** introduced a capital measurement system focused on **credit risk** and **risk-weighted assets**, setting minimum capital requirements for banks.
  - **Basel II (2004)** refined this by adding the three-pillar framework of **minimum capital**, **supervisory review**, and **market discipline**.
  - **Basel III (2010)**, developed after the 2007–08 crisis, strengthened banks' **capital base**, **liquidity**, and **leverage standards**.
  - **Basel IV (2017)** aims to tighten remaining gaps by making **RWA calculations** more consistent across banks and limiting the misuse of internal models to reduce capital requirements.

Strengthening India-Germany Partnership

India's **Union Commerce and Industry Minister** met the **German Federal Minister for Economy and Energy** to commemorate **25 years of the India-Germany Strategic Partnership** and enhance cooperation in **trade, investment, technology, green energy, and skilling.**

Significance of the 25th Year of the India-Germany Strategic Partnership

- **25 Years of Strategic Partnership: Institutionalised in 2000,** the **Indo–German partnership** spans **economic, technological, environmental,** and **educational domains,** reflecting the strength and resilience of bilateral ties.
  - It focuses on enhancing **economic cooperation, industrial collaboration,** and **investment** in **technology, manufacturing,** and **sustainability.**
- **Economic & Commercial Relations:** In 2023–24, **Germany ranked 12th among India's trading partners** (**2.37%** to India's foreign trade), with the **trade balance favouring Germany** and total trade hitting a record **USD 33.33 billion.**
  - **Germany ranks 9th** among foreign investors in India, with a cumulative **FDI of USD 14.5 billion** from **April 2000 to December 2023.**
- **Strategic Cooperation:** Both countries support **UNSC reforms** under the **G4 framework,** emphasize the **Indo-Pacific** and **ASEAN centrality,** and maintain diplomatic alignment via **Track 1.5 dialogues.**
- **Technology, Digitalization, and Innovation:** It covers **emerging technologies** like **semiconductors, AI, and quantum tech,** with **digital cooperation** through **Digital Public Infrastructure (DPI) knowledge sharing** and the **Indo-German Digital Dialogue (IGDD).**
- **Green and Sustainable Development Partnership(GSDP):** Cooperation includes the **International Solar Alliance (ISA),** biodiversity **(Global Biodiversity Framework), waste management,** and the **circular economy,** including **solar waste recycling.**
- **Defence and Security Collaboration: Military ties** include joint exercises **(TARANG SHAKTI), port calls, negotiations for a mutual logistics support,** and **counter-terrorism cooperation** via the **Delhi Declaration on Countering the use of New and Emerging Technologies for Terrorism Purposes 2022.**
- **Skilled Migration and Mobility:** Cooperation is structured around the full implementation of the **Migration and Mobility Partnership Agreement (MMPA),** aiming to **facilitate legal labor migration, curb irregular migration,** and **promote skilled and green workforce development,** including through Germany's new strategy for Indian migrants.

Steps that can be Taken to Strengthen India-Germany Bilateral Partnership

- **Foreign Policy Alignment:** Establish a **dedicated, regular strategic dialogue** involving **diplomats, defense, and intelligence officials** to share **threat assessments regarding regional security challenges.**
  - **Diversify India's defense supplies** by accelerating **co-development projects** to reduce reliance on Russian hardware.
- **Deepening Economic & Trade Ties:** Both countries should treat the **EU–India FTA** as a **strategic priority, not just a trade one,** requiring **high-level political will** to resolve disputes on **GIs, data rules, and market access.**
  - Identify **3–5 critical sectors** (e.g., **pharmaceuticals, automotive semiconductors**) and establish **targeted partnerships and incentives** to build **complementary, resilient supply chains.**
- **Accelerating Technological & Green Collaboration:** Include a **commercialization track** in the **Innovation and Technology Partnership Roadmap** and **operationalize the Green Hydrogen Roadmap** with **time-bound targets** for **pilot projects, electrolyzer joint ventures, and common trade standards.**
- **Enhancing Defence & Security Cooperation:** Finalize the **mutual logistics support agreement** for a sustained **Indian ocean presence** and **operationalize the Joint Working**

Group on Counter-Terrorism for **real-time intelligence sharing** on **cyber-terrorism, and terror financing.**

- **Building Trust:** Support and expand **Track 1.5 dialogues** to include **journalists, young politicians, and civil society** for a **broader, resilient understanding**.
  - Germany should see **India's strategic autonomy** as a **shared multipolar goal**, helping manage disagreements on Russia.

> Discuss the key areas of cooperation between India and Germany and their significance for India's strategic autonomy.
> **Drishti Mains Question**

22nd ASEAN-India Summit

The **22nd ASEAN–India Summit**, held in Kuala Lumpur, saw India declare **2026 as the ASEAN-India Year of Maritime Cooperation** and marked a major step forward with the adoption of the **ASEAN-India Plan of Action (2026–2030)** under the Comprehensive Strategic Partnership (CSP).

Key Highlights of the ASEAN-India Summit 2025

- **ASEAN Outlook on the Indo-Pacific (AOIP):** India reaffirmed its **commitment to ASEAN Centrality, Unity**, and the **ASEAN Outlook on the Indo-Pacific (AOIP)**.
  - India welcomed **Timor Leste (East Timor)** for becoming the **11th Member of ASEAN**, welcoming its participation as a full member for the first time.
- **ASEAN-India Plan of Action (2026–2030):** Endorsement of the **ASEAN-India Plan of Action (2026–2030)** to implement the **Comprehensive Strategic Partnership (CSP)** announced in 2022.
  - 2025 announced as the ASEAN–India Year of Tourism.
  - The year **2026** was designated as the **"ASEAN–India Year of Maritime Cooperation"** to enhance collaboration in the **Blue Economy**.
- **Cooperation in Capacity Building:** Proposal to set up a Centre for Southeast Asian Studies at **Nalanda University,** enhancing academic and cultural exchange.
  - India and ASEAN to deepen cooperation in education, energy, S&T, fintech,with focus on infrastructure, semiconductors, emerging tech, rare earths, and critical minerals.
- **Cultural and Maritime Heritage:** India to host the **East Asia Summit Maritime Heritage Festival at Lothal, Gujarat,** and a Conference on Maritime Security Cooperation to promote safe, sustainable maritime governance.

Strategic Significance of India-ASEAN Relations

- **Economic and Trade Linkages:** ASEAN, with a GDP of USD **3.2 trillion** and a population of **650 million**, is India's 4th largest trading partner.
  - Bilateral trade reached USD 122.67 billion in 2023–24, reflecting strong economic interdependence.
  - **ASEAN-India Trade in Goods Agreement (AITGA)** is a Free Trade Agreement (FTA) signed in 2009 to boost trade ties.
- **Strategic & Security Engagement:** ASEAN provides a strategic counterbalance amid regional tensions, reinforcing **India's Act East Policy** and **Indo-Pacific vision** while supporting ASEAN Centrality.
  - India engages through East Asia Summit and ASEAN Regional Forum, ASEAN Maritime Forum, and joint exercises like the **ASEAN-India Maritime Exercise (South China Sea, 2023).**
  - Cooperation spans anti-piracy measures, disaster management, and promoting a rules-based regional order aligned with India's SAGAR doctrine.
- **Defence and Security Cooperation:** The **BrahMos missile deal with the Philippines** and regular maritime exercises demonstrate growing trust and collaboration.
- **Connectivity and Technology Integration:** Key projects like the **India–Myanmar–Thailand Trilateral Highway** enhance regional connectivity.
  - Cooperation in 5G, fintech, AI, and clean energy strengthens digital and technological partnerships.
- **Cultural and People-to-People Ties:** Tourism, academic exchanges, and diaspora networks foster deeper social and cultural connections.

> Discuss how India can leverage its partnership with ASEAN to enhance its strategic and economic leadership in the Indo-Pacific region.
> **Drishti Mains Question**

United Nations Convention against Cybercrime

The **United Nations Convention against Cybercrime (UNCC),** the world's first global framework to tackle **cybercrime**, moved closer to becoming legally binding after **72 of 193 UN member states** signed the treaty.

> **NOTE:** The Convention was opened for signature in Hanoi, Vietnam in October 2025, where 72 countries signed it during the high-level conference. It will enter into force 90 days after 40 countries ratify or accede to it.

United Nations Convention against Cybercrime (UNCC)

- **About:** The **UNCC** officially called the Convention on Cybercrime: Strengthening International Cooperation to Combat Crimes Committed Through Information and Communication Technology (ICT) Systems, is the first international criminal justice treaty to have been negotiated in over 20 years.

- The convention, developed by the **UN Office on Drugs and Crime (UNODC)**, was **adopted by consensus** under **UN General Assembly Resolution 79/243 in December 2024.**

- **Key Provisions: UNCC** provides **legal measures** to address crimes committed via **ICT** systems.

  - It facilitates **cross-border sharing of electronic evidence** in serious crimes crimes such as **illegal data interception**, **hacking**, **money laundering**, and **online child sexual abuse material**.

  - The convention promotes **capacity building and technical assistance** for developing nations.

  - UNCC also includes **human rights protections** while enabling digital law enforcement.

- **Implementation Mechanism:** UNCC establishes a **Conference of the States Parties** to monitor and review implementation.

  - **UNODC serves as the secretariat for the Convention,** providing technical support, training, and assistance for national implementation, along with guidance through its Global Programme on Cybercrime.

  - States that did not sign may later **accede** by depositing an **instrument of accession**.

- **India and UNCC:** India has not signed the UNCC as of October 2025, despite being an active participant in its drafting. Earlier India also declined to sign the **Budapest Convention on Cybercrime**, consistent with its approach of wanting a greater role in shaping global digital frameworks.

Challenges and Opportunities for India Under the UN Cybercrime Convention	
Challenges	**Opportunities**
■ **Privacy Concerns:** The Convention's surveillance provisions may conflict with India's **constitutional right to privacy** as highlighted in Justice K.S. Puttaswamy v. Union of India, 2017. ■ **Data Sovereignty Issues:** India opposition to data-sharing without prior written consent from the originating country may clash with the treaty's cross-border data-sharing clauses. ■ **Strategic Caution:** India's hesitation to sign the treaty protects autonomy but risks limiting its influence in future digital rule-making.	■ **Stronger Global Cooperation:** Enables India to work more closely with other countries on cybercrime investigations and evidence-sharing. ■ **Capacity Building Support:** Offers access to UN-led training and technical aid to strengthen national cybercrime units. ■ **Policy Alignment:** Could push India to update its **National Cybersecurity Strategy** and modernize data protection and cyber laws.

Examine the objectives and key provisions of the United Nations Convention against Cybercrime (UNCC).

Drishti Mains Question

US Orders Resumption of Nuclear Weapon Testing

The US President has ordered the **resumption of US nuclear weapon testing** after a gap of **33 years (1992)**, marking a major shift in global nuclear policy.

Status of Global Nuclear Weapon Testing Facility

- **Beginning:** The **nuclear era** began in **1945** with the **US atomic tests and bombings of Hiroshima and Nagasaki**, ending **World War II**, while the **Soviet Union's 1949 test** soon **intensified Cold War tensions**.

- **Frequency of Nuclear Testing:** From **1945 to 1996**, over **2,000 nuclear tests** were conducted worldwide, with **India and Pakistan** testing twice in **1998** and **North Korea** six times between **2006–2017**.

  - The **US** last tested in **1992**, **China and France** in **1996**, and the **Soviet Union** in **1990**; **Russia**, inheriting the Soviet **Union's** arsenal, has **never conducted a test**.

- **Reasons For Halting Nuclear Tests:** Nuclear tests by the **Soviet Union** in **Kazakhstan and the Arctic** and by **Western nations** in the **Pacific islands** caused **radiation exposure**, **land contamination**, and lasting **health and environmental harm**.

- The **Comprehensive Nuclear-Test-Ban Treaty (CTBT) (1996)** bans all **nuclear explosions** to curb tensions; **Russia** ratified it in **2000** but **revoked it in 2023**, while the **US** has **signed but not ratified** it.

- **Drivers of Nuclear Test Resumption:** Nuclear testing may be resumed to **confirm the effectiveness of existing and new weapons** and to **send strategic messages to rival nations**.

Nuclear Arms Control Treaties
■ **Treaty on the Non-Proliferation of Nuclear Weapons (NPT), 1968:** Seeks to **prevent the spread of nuclear weapons**, **promote disarmament**, and **encourage peaceful use of nuclear energy**, recognizing **five nuclear-weapon states** — the **US, Russia, UK, France, and China**. (India is not a member)
■ **Comprehensive Nuclear-Test-Ban Treaty (CTBT), 1996:** Bans all **nuclear explosions** for testing purposes, though it has **not yet entered into force**. (India has not signed CTBT)
■ **Treaty on the Prohibition of Nuclear Weapons (TPNW), 2017:** Prohibits the **use, possession, testing, and transfer** of nuclear weapons under **international law**.

India's Stand on the Use of Nuclear Weapons

- **Nuclear Testing:** India upholds a **voluntary moratorium** on nuclear testing but chooses not to make it a **legally binding treaty commitment**.

- **No First Use (NFU) Policy:** India adheres to a **No First Use policy**, reaffirmed in the **2003 Nuclear Doctrine**, maintaining **credible minimum deterrence**.

- **Commitment to Non-Proliferation:** Though not an **NPT signatory**, India upholds its **non-proliferation goals.**

- **Peaceful Nuclear Applications:** India promotes **peaceful nuclear energy use** in power, medicine, and industry as a **sustainable, low-carbon solution** and is a **signatory to the 1994 Convention on Nuclear Safety**.

- **Balancing Civilian and Strategic Needs:** India balances its **civilian nuclear energy program** and **strategic arsenal**, with its **three-stage thorium-based program** promoting **self-reliance** in nuclear energy.

Steps to Preserve Nuclear
Peace and Prevent Nuclear Escalation

- **Reinforce Non-proliferation Instruments:** Renew **verifiable arms limits** through **New START–style agreements** and enforce the **CTBT** to curb nuclear testing and arms races.

  - Strengthen **export controls** and **Nuclear Suppliers Group (NSG) guidelines** to prevent the spread of **weapons-grade materials** and **sensitive technologies.**

- **Reduce Accidental or Hasty Use:** Secure and harden **command systems** with stronger **cybersecurity** and **fail-safe controls** to prevent accidental escalation.

  - **De-alert nuclear forces** and **lengthen decision timelines** to reduce "use-now" pressure and allow cooling-off time.

- **Revive Arms Control Dialogues:** Strategic dialogues involving U.S., Russia, and China should be reinitiated under UN or G20 frameworks to ensure transparency and restraint.

- **Confidence Building Measures:** Implement **mutual inventories** and **reciprocal inspections** to verify force levels, and impose **freezes on weapon upgrades or deliveries** as interim confidence-building steps.

- **Sustained High-Level Diplomacy:** Nuclear risk reduction must remain a **top global priority**, fostering **dialogue and cooperation** to ensure **security without reliance on nuclear deterrence.**

> Examine the implications of resumption of nuclear testing by a major power on global arms control regimes.
>
> **Drishti Mains Question**

India Secures Six-Month US Waiver for Chabahar Port

India has received a **6-month US sanctions waiver** for **Chabahar Port**, allowing operations until at least **April 2026**.

Chabahar Port

- **About:** A **deep-water port** in **Sistan-Baluchistan, Iran**, on the **Makran coast** near the **Gulf of Oman**, outside the **Strait of Hormuz**.

  - Iran's only **deep-sea port** with **direct open-ocean access**, providing **India** secure & direct access for **large cargo ships**.

  - Two main terminals—**Shahid Beheshti** & **Shahid Kalantari**—with India actively involved in developing the **Shahid Beheshti Terminal.**

  - Lies **170 km west** of **Gwadar Port**, developed by China under **CPEC**.

- **Strategic & Economic Importance for India:**

  - Provides **direct access to Afghanistan & Central Asia**, bypassing Pakistan

  - Part of **INSTC**, linking India–Iran–Caspian Sea–Russia–Europe; enhances **maritime connectivity** & **energy security in IOR**

  - Counters **China's BRI** & **Gwadar Port/CPEC**

  - Diversifies trade routes to **Russia, Eurasia, Europe**; reduces **cost/time**

  - Supports **"Connect Central Asia"** and **"Extended Neighbourhood"** policies

- **India–Iran Cooperation:** India has been involved in development since **2003–2005**

  - **2015:** MoU to develop **Shahid Beheshti Terminal**

  - **2016: Trilateral Agreement** with Iran & Afghanistan for transit corridor

  - **2018:** India took over terminal operations via **India Ports Global Ltd. (IPGL)**

- **Current Status (2025)**: **Taliban** supports Chabahar for trade; Integration with **INSTC** and **Chabahar–Zahedan–Mashhad rail link** underway; Remains key to India's **westward outreach** despite geopolitics

Asia-Pacific Economic Cooperation (APEC) Summit 2025

The **Asia-Pacific Economic Cooperation (APEC) Summit 2025**, held in **Gyeongju, South Korea**, concluded with the adoption of the **APEC Leaders' Gyeongju Declaration (2025),** reaffirming regional cooperation, digital transformation, and inclusive economic growth.

Outcomes of APEC Summit 2025

- **Adoption of the Gyeongju Declaration (2025):** The declaration reaffirmed APEC leaders' commitment to **inclusive economic growth**, recognising the **transformative impact of Artificial Intelligence (AI) and demographic shifts** on labour markets.
  - It outlined three priorities:
    - ❖ **Building** the world's most dynamic and interconnected regional economy.
    - ❖ **Preparing** the region for digital and AI transformation
    - ❖ **Addressing** shared challenges and ensuring growth benefits all
- **APEC Artificial Intelligence (AI) Initiative (2026-2030):** The AI initiative seeks to drive inclusive, resilient growth by boosting innovation, cooperation, capacity building, and sustainable, energy-efficient **AI development.**
- **Framework for Demographic Changes:** Adopted by APEC, it addresses the region's challenges of **ageing populations, declining birth rates, and rapid urbanisation.**
  - It urges **people-centred, intergenerational policie**s for resilient and inclusive growth, and promotes shared policy responses, social innovation, stronger employment, fiscal resilience, and a **"silver economy" for ageing populations.**
- **Strengthened Economic and Technological Cooperation:** China–South Korea renewed a currency swap and signed a cybersecurity MoU, **US–China talks** on the sidelines of the summit signaled easing tensions with plans to **restart trade talks and cut select tariffs.**
- **Support for Inclusive, Rules-Based Multilateralism:** Leaders reaffirmed the **Putrajaya Vision 2040**, stressing free and fair trade, predictable investment, and cooperation through multilateralism over fragmentation.
  - Putrajaya Vision 2040 is a long-term strategic plan adopted by the APEC in 2020 to foster an **open, dynamic, resilient, and peaceful Asia-Pacific community.**

Asia-Pacific Economic Cooperation (APEC)

- **About:** APEC founded in **1989**, is a regional forum of **21 economies** that promotes balanced, inclusive, sustainable, and innovative growth while advancing regional economic integration across the Asia-Pacific.
  - It uses the term *"economies"* instead of *"countries"* to stress economic cooperation over political representation. APEC works to **ease the movement of goods, services, investments, and people** by streamlining customs, improving business conditions, and aligning regional regulations and standards to boost trade and integration.
- **Members:** Australia, Brunei Darussalam, Canada, Chile, China, China, Indonesia, Japan, Republic of Korea, Malaysia, Mexico, New Zealand, Papua New Guinea, Peru, the Philippines, Russia, Singapore, Chinese Taipei, Thailand, US, and Viet Nam.
  - Its 21 member economies are home to **around 2.95 billion people** and represent approximately **62% of world GDP** and **48% of world trade in 2021.**
  - **India is not a member of APEC,** however it does have close political, economic, and strategic ties with many of its members.
- **APEC Process:** It operates on **consensus and voluntary participation**, with all members having an **equal voice** and decisions made through dialogue. The APEC process is supported by a **permanent secretariat based in Singapore.**
- **India's Interest in APEC:** India views APEC as a gateway to deeper trade, investment, and regional integration in the Asia-Pacific.
  - Membership would help India align with global trade standards, simplify procedures, and attract more foreign investment and complement national initiatives like 'Make in India' and 'Digital India'.
- **Reasons for the Decline in India's Bid for APEC Membership:** India's bid for APEC membership declined due to the **forum's consensus-based admission process,** a **freeze on new members**, and concerns over India's **protectionist trade policies and regulatory complexity.**
  - Geopolitical factors, including **China's quiet opposition**, has kept India out of the forum despite its applications in 1991 and 1997.
  - While India has joined APEC meetings as a guest or observer, its membership remains off the table.

APEC and India's Indo-Pacific Vision

- **Shared Vision:** Both APEC and **India's Indo-Pacific strategy** emphasise a **free, open, and inclusive regional order**, rooted in transparency, connectivity, and respect for international rules.

- **Focus on Connectivity and Integration:** APEC's agenda on **supply-chain resilience, infrastructure, and digital connectivity** complements India's efforts under the **Act East Policy** and initiatives like **MAHASAGAR** and the **Indo-Pacific Oceans Initiative (IPOI)**.

- **Digital and Innovation Synergy:** APEC's new emphasis on **AI, digital economy, and innovation-driven growth** aligns with India's domestic programmes like **Digital India**, **Startup India**, and **IndiaAI** strengthening India's role as a digital bridge in the region.

  - As APEC expands its agenda beyond trade, it offers India opportunities to engage informally with regional economies and **shape the Indo-Pacific's economic architecture**.

> Examine how Asia-Pacific Economic Cooperation (APEC) evolving agenda reflects the transformation of global economic governance.
>
> **Drishti Mains Question**

Indo-Pacific Regional Dialogue 2025

The **Indo-Pacific Regional Dialogue 2025 (IPRD 2025)**, the **Indian Navy's** annual apex-level strategic conference, concluded in New Delhi on 30th October 2025.

- The **seventh edition**, themed **"Promoting Holistic Maritime Security and Growth: Regional Capacity-Building and Capability-Enhancement,"** brought together representatives from over thirty Indo-Pacific and partner nations to discuss cooperative strategies for regional maritime stability and development.

Significance of the Indo-Pacific Region for India

- **Maritime Security & Strategic Autonomy:**
  - Over 95% of India's trade by volume passes through the Indian Ocean, making the region essential to India's sovereignty and security.
  - **India's SAGAR (Security and Growth for All in the Region) and** MAHASAGAR doctrines stress inclusive maritime prosperity and security.
  - India has intensified naval presence near chokepoints like Strait of Hormuz and Strait of Malacca to ensure energy and trade flow security.

- **Economic Growth & Trade Integration:** The Indo-Pacific is key to **"China+1" strategy,** enabling manufacturing diversification and resilient supply chains.
  - India's participation in the **Indo-Pacific Economic Framework (IPEF)** and FTAs with Australia and UAE enhance trade resilience.
  - The **India-Middle East-Europe Economic Corridor (IMEC)** strengthens connectivity through the Indo-Pacific.

- **Logistics and Connectivity:**
  - Maritime infrastructure projects like **Sagarmala and Chabahar** Port aim to improve logistics and connectivity across the Indo-Pacific.

- **Climate Change & Blue Economy:**
  - The region faces severe **climate threats** - rising sea levels, cyclones, coral degradation.
  - India champions **Blue Economy** cooperation via IORA, the **Coalition for Disaster Resilient Infrastructure (CDRI),** and partnerships for sustainable ocean governance.

- **Diplomatic and Normative Leadership:**
  - India uses the Indo-Pacific to project itself as a civilizational democracy and leader of the Global South.
  - Through the **IORA Chairmanship (2025–27) and initiatives like Voice of Global South Summit (2024),** India reinforces inclusive and rules-based maritime governance.

Steps that India can Take to Enhance Its Role in the Indo-Pacific

- **Legal and Security Reforms**
  - The **Maritime Anti-Piracy Act (2022)** provides legal backing for anti-piracy missions.
  - India is enhancing **naval logistics, deep-sea port infrastructure, and mission-based deployments**.

- **Maritime Policy & Regional Cooperation**
  - **MAHASAGAR Policy** aims for security and prosperity across the Indo-Pacific.
  - India partners with **AIMS 2050, Quad, IORA, IPOI, and ASEAN** for maritime security and climate resilience.
  - Initiatives like **IMEC, Project MAUSAM, and INSV Kaundinya** strengthen maritime traditions and awareness.

- **Blue Economy & Strategic Diplomacy**
  - India promotes the **Blue Economy and seabed infrastructure** for sustainable fisheries, ocean energy, and island livelihoods.
  - **Soft power outreach** through education, culture, and diaspora engagement enhances regional influence.

- **Comprehensive Indo-Pacific Strategy**
  - Integrates **SAGAR, IPOI, Act East, and IPEF** to boost connectivity and strategic partnerships.

> Discuss the strategic and economic significance of the Indo-Pacific region for India. How can India strengthen its role amid evolving geopolitical challenges?
>
> **Drishti Mains Question**

5th High Joint Commission of India-Bahrain

India and Bahrain, at the **5th High Joint Commission (HJC)** in New Delhi, agreed to strengthen **counter-terrorism cooperation** through intelligence sharing, capacity building, and cyber security, while condemning the **Pahalgam attack(2025).**

Key Outcomes of the 5th HJC of India-Bahrain

- **Counter-terrorism and Security:** Both countries strongly condemned terrorism in all forms, including **cross-border terror**. Reaffirmed commitment to work together against terror networks. Both expressed optimism about expanding cooperation in defence and security.

- **Trade and Economic Engagement:** Bilateral trade between **India-Bahrain reached USD 1.64 billion (FY 2024-25)** and highlighted that India is among Bahrain's top five trade partners. The two sides noted progress on establishing a Joint Working Group on Trade and Investment and on negotiations for a **Comprehensive Economic Partnership Agreement (CEPA).**
  - They also recorded advances in talks on a **Bilateral Investment Treaty** and agreed to move toward launching negotiations on a **Double Taxation Avoidance Agreement (DTAA)** to prevent double taxation and support investment.

- **Gaza Peace Plan:** India reiterated its support for the **Gaza peace plan**, presented by US President Donald Trump, as a path to a lasting and durable resolution in West Asia.

Significance of India-Bahrain Relations

- **Strategic Location:** Bahrain sits in the Persian Gulf along key shipping routes like **Strait of Hormuz** that **carry oil and goods to India**, giving it strategic value.
  - Its location strengthens India's ability to engage with **West Asia and maintain a presence in this vital region.**

- **Defence & Security:** India partners with Bahrain through the **Combined Maritime Forces** and exercises like **Passage Exercise (PASSEX)**, helping secure major sea lanes and support regional stability.
  - Bahrain's close ties with the US 5th Fleet Naval Forces Central Command (NAVCENT/C5F) help India strengthen naval coordination and support regional security.

- **Trade & Investment:** Bilateral trade reached USD 1.7 billion in 2023–24 and USD 1.64 billion in 2024–25.
  - India is among Bahrain's top five trading partners, and **two-way investments have risen by about 40% since 2019,** with cooperation expanding across multiple sectors.

- **Multilateral diplomacy:** Bahrain will hold a **United Nation Security Council (UNSC)** non-permanent seat in 2026–27, giving India an aligned partner in the region.

- **Indian Community:** Nearly 332,000 Indians live in Bahrain (about a quarter of its population).
  - They contribute significantly to Bahrain's economy and help deepen social and cultural connections between the two countries.

- **Link and ACT West Policy:** Bahrain is an important partner in India's Link and ACT West policy, which focuses on building stronger ties with West Asia.
  - The partnership supports India's broader political and economic outreach in the Gulf region.

Bahrain

- **Geography:** Bahrain is a small Arab island country situated in a bay on the **southwestern coast of the Persian Gulf.** The country is an archipelago of around 30 islands, with Bahrain Island being the largest.
  - It is situated to the east of **Saudi Arabia** and west of **Qatar**. Bahrain also shares a maritime border with the **Islamic Republic of Iran** and is connected to Saudi Arabia via the **King Fahd Causeway**.
  - Most of Bahrain consists of desert with low, rocky and sandy plains. Its highest point is **Jabal ad Dukham**.

Examine how India–Bahrain ties advance India's Link and ACT West policy across security, economy, and diaspora diplomacy.

Drishti Mains Question

BRICS Pay: A Bid to Reduce SWIFT Dependence

BRICS is seeking to reduce Western dominance in global financial architecture by developing **BRICS Pay,** a cross-border payments framework intended to reduce reliance on the US–led **Society for Worldwide Interbank Financial Telecommunication (SWIFT) system.**

BRICS Pay

- **Background for BRICS led Financial System:** BRICS began pursuing financial autonomy at the **2014 Fortaleza Summit** by creating the **New Development Bank and the Contingent Reserve Arrangement.**
  - US and EU sanctions on Russia in 2015 pushed members to explore greater **use of local currencies,** leading to **currency-swap and settlement cooperation** by 2017.
  - This effort culminated at the **2024 Kazan Summit** with the launch of **BRICS Pay** to boost local-currency cross-border settlements and strengthen **intra-BRICS banking networks.**

- **BRICS Pay:** It is a proposed **cross-border payment system** to **facilitate trade and financial transactions** among BRICS member nations **using local currencies**, thereby reducing dependence on systems like **SWIFT** and the **USD**.
  - It is part of the **BRICS Cross-Border Payments Initiative**, aimed at increasing **financial sovereignty**, **economic cooperation**, and **resilience against sanctions**.

- **Interoperability:** BRICS Pay envisions interoperability between national payment platforms, including:
  - **Russia's System for Transfer of Financial Messages (SPFS)** alternative to SWIFT.
  - **China's Cross-Border Interbank Payment System (CIPS)**, which has participants in 120+ countries.
  - **India's Unified Payments Interface (UPI)**, a digital payments platform, gaining global traction.
  - **Brazil's Pix**, a real-time payment system widely used across Latin America.

Reasons for BRICS Challenging SWIFT

- **Desire for Financial Sovereignty:** SWIFT, as a key global financial infrastructure, is heavily tied to the USD and it is **controlled by the G10 nations**, which limits BRICS countries' influence in global financial systems. A BRICS-led alternative would ensure that **member states have a greater say in the rules** governing international finance.
- **Protection from US Sanctions:** SWIFT has been used by the US and its allies to impose **economic sanctions** on countries like **Russia** and **Iran**, limiting BRICS ability to access global financial markets.
- **Geopolitical Motivations and Diversification:** Rising geopolitical tensions with the West, especially involving **Russia and China,** have pushed BRICS to reduce vulnerability to Western financial pressure. BRICS also aims to deepen **South–South cooperation** by boosting economic ties with developing countries in Africa, Latin America, and Asia through alternative payment systems.
  - This creates a **strategic imperative** to build a financial system less reliant on Western institutions.

Challenges in the Implementation of BRICS Pay

- **Competing National Payment Priorities:** BRICS members are **promoting their own systems** (China's CIPS, India's UPI) which can create friction when deciding whose framework should lead.
  - China's economic weight and the wider reach of CIPS (120+ countries) may raise concerns that **BRICS Pay could effectively become China-led,** making others more cautious.
- **Political Rivalries:** Tensions between India and China, particularly over India's **reluctance to adopt CIPS in favor of UPI,** may hinder cooperation. These geopolitical differences must be resolved for BRICS Pay to succeed.
- **Technical Interoperability:** These platforms currently operate differently. Aligning **infrastructure, messaging standards, security protocols**, and settlement mechanisms is complex and resource-intensive.
- **Lack of Coordinated Monetary Policy:** A shared payment architecture requires **longer-term coordination on capital flows, exchange rates, and liquidity management,** an area where BRICS countries have divergent priorities.
- **External pressure:** Threats of retaliation from the US such as tariff warnings, could deter some members from fully committing.
- **Trust Deficit:** Countries outside the BRICS bloc may be reluctant to adopt BRICS Pay due to geopolitical concerns, **fear of retaliation from the West, or unfamiliarity with the new system**.
  - For BRICS Pay to succeed globally, it will need to secure partners beyond BRICS and convince other countries of its security and benefits.

Measures to Accelerate the Adoption of a BRICS Pay

- **Strategic Roadmap:** A phased **strategic roadmap** for BRICS Pay should start with **bilateral local currency settlements**, then evolve into a **digital payment network**, expanding through **regional partnerships** in Africa, Latin America, and Central Asia to boost adoption.
- **Incentivizing Participation:** Offering benefits like reduced transaction costs compared to SWIFT and faster payments to countries and institutions will encourage adoption of BRICS Pay.
- **Strengthening Interoperability:** Ensuring **compatibility** between national payment systems (CIPS, UPI, Pix, SPFS) is crucial for smooth cross-border transactions.
- **Political Consensus and Cooperation:** Overcoming **geopolitical rivalries** (e.g., India-China tensions) and aligning national interests will help create a unified approach.

India-Latin America Trade Engagement

India has strengthened its **Latin America** trade engagement by completing the **9th round of trade talks with Peru** and the **3rd round of Comprehensive Economic Partnership Agreement (CEPA) negotiations with Chile**.

Key Areas of Cooperation Between India and Peru

- **Economic & Trade Relations:** Peru is **India's 3rd-largest trading partner in the Latin America–Caribbean (LAC) region**, with bilateral trade rising from USD 66 million in 2003 to about USD 3.68 billion in 2023.
  - India is a major importer of **Peruvian gold and copper.** The ongoing trade agreement is expected to deepen cooperation and unlock new opportunities across key sectors. 9th Round of India-Peru Trade Agreement negotiations covered critical topics such as **Trade in Goods and Services, Rules of Origin, Technical Barriers to Trade and Critical Minerals, etc.**
- **Development Partnership:** India has provided medical support during emergencies (COVID-19, Guillain-Barré outbreak 2023)

- India provides technical collaboration through initiatives like the **India–Peru Centre for Excellence in IT (since 2015).**
- India has extended financial assistance for disaster relief and cultural/educational initiatives.

Chile

- Chile, located in South America, is a long, narrow nation bordered by **Peru and Bolivia** to the north, **Argentina** to the east, and the **Pacific Ocean** to the west and by the **Drake Passage to the south.**
- Geographically, the **Andes Mountains** pass through Chile (the world's longest continental range), the **Atacama Desert** (the driest non-polar desert), and **Ojos del Salado** (the world's highest active volcano) located on the Argentina–Chile border.
  - Situated on the **Pacific Ring of Fire,** Chile frequently experiences earthquakes and tsunamis.
- Economically, it is the **world's largest copper producer** and part of the "Lithium Triangle" with Argentina and Bolivia.

India-Chile Relations

- **Economic:** Bilateral trade between India and Chile grew from **USD 1.54 billion in 2020** to **USD 3.84 billion in 2024**.
  - India's key exports include **motor vehicles, pharmaceuticals, iron and steel products, textiles, electrical machinery, and leather goods**, while major imports from Chile are **copper, pulp, fruits, and minerals**.
- **Trade:** India and Chile's **Preferential Trade Agreement (PTA)** has expanded market access and boosted trade diversification, while the **Double Taxation Avoidance Agreement (DTAA)** has strengthened investment confidence and improved ease of doing business.
  - The partnership forms part of India's broader **"Act Latin America"** policy, deepening **South–South cooperation.**

Significance of India-Latin America Relations

- **Economic and Trade Diversification:** India's trade with Latin America reached USD 35.7 billion in 2023–24, with exports worth over USD 14 billion.

- **Latin America** helps diversify India's trade and investment portfolio, reducing dependence on traditional partners like the US, EU, and China.
- **Energy and Critical Minerals Security:** Latin America is central to India's **energy diversification**, supplying **15–20% of India's crude oil** from **Brazil, Mexico, and Venezuela**.
  - The **Lithium Triangle** (**Chile, Argentina, and Bolivia**) holds **over 75% of global lithium reserves**, vital for India's **EV and clean energy sectors**.
  - India's **KABIL–CAMYEN agreement** in Argentina marks the country's **first overseas lithium exploration project**, ensuring access to key minerals.
- **Food and Agricultural Security:** The region has become a **reliable supplier of food commodities**, including **edible oils, pulses, and grains**. **Argentina and Brazil** are major exporters of **soybean oil** to India, helping maintain price stability and food security.
  - India's edible oil imports from Latin America rose to **USD 5.6 billion in 2022**, showing its growing dependence on the region's agri-exports.
- **Geopolitical and Strategic Alignment:** Collaboration in multilateral platforms such as **G20, BRICS, and IBSA** enhances India's **global leadership**.
  - Both regions advocate for a **multipolar world** and **Active Non-Alignment**, often coordinating positions on global issues like climate change and global governance reform.
  - Engagement helps India **counter China's growing presence** in the LAC region, which currently dominates trade and infrastructure investments.
- **Climate Cooperation and Sustainable Development:** Both regions share commitments to **renewable energy, biodiversity conservation, and green transition**.
  - India extended a **USD 140 million Line of Credit to CARICOM** for solar and climate resilience projects.
  - Latin America's participation in the **International Solar Alliance (ISA)** strengthens leadership in climate diplomacy.

Major Challenges in India–Latin America Relations

- **Connectivity Constraints:** The vast **physical distance** between India and Latin America leads to **high transport costs** and longer shipping times. The absence of **efficient logistics and air freight corridors** limits trade expansion and people-to-people mobility.
- **Limited Engagement:** India's trade is **concentrated in a few countries** (Brazil, Mexico, Argentina, Chile), while smaller economies like **Panama and Guatemala** remain under-engaged.
- **Competition from China: China dominates** Latin American trade and investment, with its trade volume exceeding **USD 400 billion**, compared to India's **USD 35 billion**.

- Beijing has secured large **infrastructure and mining deals**, including projects like the **Central Bi-Oceanic Railway Corridor**, which India has yet to match.
- China's **financial power and diplomatic presence** in the region challenge India's outreach efforts.

- **Weak Regional Integration in Latin America:** Regional organizations like **MERCOSUR** face **internal divisions** and slow decision-making.
  - Some members (e.g., Brazil, Uruguay) pursue independent trade deals, diluting regional cohesion.
  - This complicates India's effort to engage Latin America through a **single unified economic platform**.
- **Limited Multilateral and Institutional Engagement:** India's engagement in regional bodies like **Community of Latin American and Caribbean States (CELAC)** and the **Pacific Alliance** has been occasional. Lack of consistent participation in multilateral dialogues prevents India from influencing regional policy frameworks.

Steps to Strengthen India–Latin America Relations

- **Enhance Connectivity and Logistics:** Develop **logistics hubs and port partnerships** to facilitate smoother trade and cargo movement. Explore a **dedicated India– Latin America and the Caribbean (LAC) maritime corridor** or air freight route to improve supply chain efficiency.
- **Strengthen Political and Diplomatic Engagement:** Set up an **"India–LAC Dialogue Mechanism"** within the Ministry of External Affairs for coordinated engagement.
  - Increase India's participation in **regional organizations** like **CELAC**, **CARICOM**, and the **Pacific Alliance**.
- **Deepen Economic and Trade Integration:** Expand PTAs into **comprehensive Free Trade Agreements (FTAs)** with **MERCOSUR** and other regional blocs.
  - Simplify **tariff structures and regulatory procedures** to make trade more accessible.
- **Boost Technological Collaboration:** Establish **India–LAC Innovation Hubs** for start-ups and MSMEs focused on sustainable technology.
  - Promote **research and technology transfers** in agriculture, climate resilience, and clean energy.
  - Build cooperation under **South–South frameworks** for knowledge exchange and low-cost technology sharing.
- **Engage the Indian Diaspora and Private Sector:** Empower the **Indian diaspora** in Latin America, especially in **Guyana, Trinidad and Tobago, and Suriname**, to serve as cultural and economic bridges.

Assess India's trade and investment performance in Latin America and suggest sector-specific measures to increase bilateral flows and technology cooperation.

Drishti Mains Question

Strengthening India-Bhutan Partnership

India's Prime Minister undertook a **State Visit to Bhutan to** attend the **70th birthday celebrations** of Bhutan's **4th king (Druk Gyalpo), Jigme Singye Wangchuck**, father of the current monarch.

Key Highlights of India's State Visit to Bhutan

- **Economic and Developmental Assistance:** India reaffirmed its support for Bhutan's **13th Five Year Plan** and **Economic Stimulus Programme**, and announced backing for the **Gelephu Mindfulness City project** and an **Immigration Check Post at Hatisar, Assam**.
  - India and Bhutan signed **3 New MoUs** on **renewable energy, health, and mental health**.
- **Hydropower Diplomacy:** India and Bhutan inaugurated the **1020 MW Punatsangchhu-II Project** and resumed work on the **1200 MW Punatsangchhu-I Project**, strengthening their hydroelectric partnership.
  - India also extended a **Line of Credit of Rs 40 billion** for new energy projects in Bhutan.
- **Connectivity and Infrastructure:** Both sides reaffirmed commitment to strengthen **cross-border connectivity** and **infrastructure**, building on initiatives like the **Darranga Check Post** and **Jogigopha Multimodal Terminal**. They acknowledged progress on the **Cross-Border Rail Links** connecting **Gelephu–Kokrajhar** and **Samtse–Banarhat**.
- **Trade and Agriculture Cooperation:** India institutionalised the **supply of essential commodities and fertilisers** to Bhutan, with the **first consignment** ensuring **uninterrupted agricultural inputs**.

Key Areas of Cooperation Between India and Bhutan

- **Trade and Economic Ties:** India and Bhutan maintain a **free trade regime** under the **India-Bhutan Trade Agreement** (1972, revised 2016).
  - Since 2014, India's trade with Bhutan has **more than tripled**—from USD 484 million in 2014–15 to **USD 1,777.44 million in 2024–25** and is the leading **source of investments** (50% of total).
- **Development Partnership:** India has been Bhutan's **key development partner** since the 1960s, providing **Rs. 4,500 crore** (73% of external grants) during the **12th Five-Year Plan** for agriculture, ICT, health, industry, transport, energy, urban development, and education**.**
  - 4 hydropower projects (2,136 MW) are operational and **Punatsangchhu-I & II (2,220 MW) are under construction**; India imported **INR 2,448 crore** of electricity from Bhutan in 2022.
- **Cultural Ties:** India provides **1,000+ scholarships annually** to Bhutanese students, offers **Indian Technical and Economic Cooperation (ITEC) training**, and promotes

cultural, educational, and scientific exchanges through the **India-Bhutan Foundation (2003)**. **Bhutanese pilgrims** visit sites like **Bodh Gaya, Rajgir, Nalanda, and Sikkim**, while India supports **Bhutanese cultural projects** including **Lhakhang (temple) construction.**

- **Emerging Areas of Cooperation:** Bilateral ties cover **digital, financial, and space technology**, with Bhutan using **RuPay, BHIM, and Digital Drukyul**, launching the **India-Bhutan SAT (2022)**, opening a **Ground Earth Station (2023)**, and getting help to address **STEM teacher shortages.**

Challenges in India-Bhutan Relations

- **China Factor and Geopolitical Balancing:** Bhutan's **border talks with China**, especially over **Doklam**, impact **Indian security**, as shown by the **2017 standoff**. Seeking **strategic autonomy**, Bhutan aims to balance relations and diversify partnerships, which may affect its exclusive ties with **India**.

- **Economic Dependency:** Bhutan's economy relies heavily on **India** as its top **trade partner, donor, and hydropower market**, creating a **power asymmetry** and perceptions of dominance. Bhutan's **tourism policy**, with a high **Sustainable Development Fee**, limits **Indian visitors**, affecting **people-to-people ties** and **border economies**.

- **Environmental Concerns:** Multiple **dams** on Bhutanese rivers raise concerns in **downstream Indian states** over **water flow, siltation, and extreme weather impacts e.g.,** Bhutan's **Tala dam** overflow floods **Dooars region** in West Bengal.

Measures to Strengthen India-Bhutan Partnership

- **Economic Diversification:** Promote **joint ventures, MSMEs, and technology-driven industries** to reduce Bhutan's dependence on **India** and explore sectors like **renewable energy, IT, pharmaceuticals, and eco-tourism**.
  - Expand collaboration from **hydropower** to **solar and wind energy** for a diversified and resilient energy portfolio.

- **Strengthening Strategic Ties:** India should maintain **quiet but firm diplomatic support** for a swift resolution of **Bhutan-China border talks**, safeguarding all parties' **security interests**.

- **Expand Technological Cooperation:** Deepen India's role in **space, satellite, and digital projects** like **telemedicine, education networks, and internet gateways**, and provide **STEM and ICT capacity-building** as Bhutan's main source of technical expertise.

- **Cultural and Soft Power:** Launch **Himalayan Cultural Corridor** with **Nepal** to preserve Buddhist heritage via **digital archives** and create a **Young Leaders Fellowship** for **Bhutanese professionals** to gain experience in **Indian institutions**.

> "Beyond hydropower, the future of India-Bhutan ties lies in cooperation in digital, space, and green technologies." Elaborate on this statement and discuss the way forward.
>
> **Drishti Mains Question**

What Pakistan's 27th Constitutional Amendment Means for India

The Pakistani President has signed the **27th Amendment** to the **Constitution**, marking a historic move that **undermines democracy** and formally **establishes military supremacy** over the state.

- It signifies a **more aggressive adversary** for India, raising the risks of **proxy warfare** and **nuclear escalation**, demanding **enhanced vigilance** and **strategic preparedness**.

Key Provisions of Pakistan's 27th Constitutional Amendment

- **Establishment of Chief of Defence Forces:** It establishes a **Chief of Defence Forces**, a position permanently held by the **Army Chief**, granting him **command** over the **Navy** and **Air Force**.

- **Legal Immunity for Five-Star Officers:** It grants complete **legal immunity** to **5-star officers (Field Marshals)**, a protection that is **more extensive** than that available to the President or Prime Minister..

- **Federal Constitutional Court:** Federal Constitutional Court **replaces the Supreme Court**, taking over constitutional jurisdiction and limiting judicial checks on the military.

- **Military Heads Foreign Policy:** The Army now directs Pakistan's diplomacy, **meeting foreign leaders independently** of civilian leadership.

Implications of Pakistan's 27th Constitutional Amendment for India

- **Terrorism with Impunity:** With increased military control, Pakistan's **terror groups** like **Jaish-e-Mohammed** and **Lashkar-e-Taiba** may gain greater **operational freedom**, carrying out **bolder attacks** against India under **state protection**.
  - The presence of **Pakistani Army officers** at **terrorist funerals killed** during **Operation Sindoor** raised concerns about the military's involvement with terror groups.

- **Risk of Military Escalation:** The risk of another **Kargil-like conflict** rises, as a unified military command, without civilian oversight, may take risks, assuming India's response will be limited due to **nuclear threat concerns.**

- **Increased Nuclear Risk:** Centralizing **nuclear authority** with a military commander instead of a civilian could make decision-making more opaque and potentially riskier. A regime hostile to India may **showcase nukes** and lower their **use threshold** to deter retaliation.

- **Hardened Positions: Kashmir** is the central pillar of the **Pakistani military's ideology**. Any possibility of a **political solution** or **back-channel deal** is now extinguished. The official **state position** will be permanently and irrevocably **hardline**.

- **Weakened Diplomatic Engagement:** With the **military directing foreign policy**, traditional **diplomatic back-channels** and **Track-II dialogues**, which often rely on **civilian intermediaries**, would become less effective or irrelevant. The room for **negotiation** and **de-escalation** would shrink dramatically.

India's Approach to Addressing such Scenario

- **Intelligence Overhaul:** Prioritise **HUMINT (human intelligence)** and **TECHINT (technical intelligence)** to **monitor any key changes** into Pakistan military decision-making. Strengthen **satellite monitoring, and signal intelligence (SIGINT)** to track its military activities and communications to prevent any Pakistani misadventure.

- **Preemptive Disruption:** India should refine its **border management protocols** to address **cross-border terrorism**, **militant incursions**, and **refugee influxes** through **smart fencing**, **drones**, and **AI-based surveillance**.
  - It should also strengthen **quick-response teams** and improve **coordination with local authorities** for faster, more effective security operations.

- **Rapid and Punitive Strike Capabilities**: Showcase the capability for **swift, high-impact conventional strikes** that stay below the **nuclear threshold** but cause significant damage. Fast-track **unified commands** to ensure a quicker, coordinated response to Pakistan's CDF structure.

- **Nuclear Clarity:** India should clearly spell out its **nuclear red lines**, stating that any **tactical nuclear weapon (TNW)** use against Indian forces will trigger a **massive strategic retaliatory strike**. This exposes Pakistan's TNW strategy as a bluff and makes escalation unavoidable.

- **Diplomatic Offensive:** India must strengthen its **narrative-building efforts**, as geostrategists like **Brahma Chellaney** highlight that the country's **"sluggish response time"** in shaping global discourse has cost it valuable **diplomatic capital**. During **Operation Sindoor**, for instance, India's delayed rebuttal of **US claims** about brokering a ceasefire allowed that narrative to gain unnecessary traction.

> Discuss the strategic and diplomatic measures India should adopt to counter the threats posed by Pakistan's military-dominated governance.
>
> **Drishti Mains Question**

G20 Johannesburg Summit 2025

The 20th G20 Summit 2025, held in Johannesburg, South Africa, was the first G20 summit on the African continent. Under the theme "Solidarity, Equality, Sustainability," it focused on Global South priorities and resulted in the adoption of the G20 Johannesburg Leaders' Declaration.

Highlights of the G20 Summit 2025

- **G20 Johannesburg Leaders' Declaration:** Consensus on a 122-paragraph declaration covering climate action, multilateral reform, and equitable governance.
  - **UNSC Reform:** Support for expanding UNSC representation to reflect current geopolitical realities, including Africa, Asia-Pacific, and Latin America.
  - **Condemnation of Terrorism:** Unwavering condemnation of all forms of terrorism, aligning with India's position.
  - **Expanded Climate Action:** Commitment to scaling global climate finance and operationalizing a more equitable transition under the Paris Agreement.
  - **Women's Empowerment:** Focus on removing barriers and ensuring equal participation in decision-making.

- **Debt Crisis & Financial Reform:** Launch of a **Cost of Capital Commission** and recognition of Africa's growing debt burden (USD 1.8 trillion).

- **Mission 300:** Initiative to provide electricity to 300 million people in **Sub-Saharan Africa by 2030.**

- **Critical Minerals Framework:** Focus on sustainable mineral value chains, investment in exploration, and local beneficiation.

- **Youth & Gender Targets:** Nelson Mandela Bay Target to reduce youth NEET by 5% by 2030 and 25% gender parity in the labour force by 2030.

- **Troika:** Current G20 troika includes Brazil (previous), South Africa (current), and the United States (next).

Spirit of Ubuntu
About: An African philosophy emphasizing shared humanity, captured by "I am because you are." It focuses on collective responsibility, compassion, and mutual support, highlighting that individual progress relies on community well-being.   **Nelson Mandela's Example:** Mandela embodied Ubuntu by leading South Africa's peaceful transition from apartheid through reconciliation and unity.   **Relevance to Global Goals:**   **Sustainability:** Promotes development that protects the environment.   **Equitable Growth:** Advocates fair access to technology, skills, and opportunities for the Global South.   **Global Security:** Encourages collective action against transnational threats.   **Knowledge Preservation:** Supports safeguarding traditional knowledge and cultural heritage.

Adaptation Gap Report 2025

The **United Nations Environment Programme (UNEP) Adaptation Gap Report (AGR) 2025** notes that **climate adaptation efforts remain severely underfunded** even as climate impacts intensify, highlighting the need for urgent global cooperation to achieve resilience and sustainable development goals.

Key Highlights of the Adaptation Gap Report (AGR) 2025

- **Rising Adaptation Finance Needs:** Developing countries will require **USD 310–365 billion annually by 2035** for climate adaptation. Adjusted for inflation to 2035, needs could reach **USD 440–520 billion annually**.
  - This estimate reflects rising rapid-onset and slow-onset climate impacts risks and escalating costs of implementing adaptation measures.
- **Widening Adaptation Finance Gap:** Current international public adaptation finance stands at only **USD26 billion (2023)**. The resulting **finance gap is USD 284–339 billion per year**, making current funding highly inadequate.
- **Missed Global Targets:** The **Glasgow Climate Pact goal** of **doubling 2019 adaptation finance to USD40 billion by 2025** will likely be **missed**.
  - The **New Collective Quantified Goal (NCQG)** of **USD 300 billion by 2035** is insufficient and not inflation-adjusted.
- **Funding through Climate Mechanisms:** Support via the **Adaptation Fund, Global Environment Facility**, and **Green Climate Fund** rose to USD 920 million in 2024, an 86% increase over the 2019–23 average.
  - UNEP notes that this may be a temporary spike amid growing fiscal constraints.
- **Unequal Burden and Slow Progress in Adaptation:** Developing nations face an **unequal burden of adaptation finance**, with about **58% of funds coming as debt instruments**, mostly **non-concessional loans**, deepening long-term debt and **climate injustice**.
  - At the same time, while **172 of 197 countries** have national adaptation plans, **36 of them are outdated**, weakening their ability to respond to evolving climate risks.
  - **Small Island Developing States (SIDS)** show the strongest integration of adaptation into national policies.

Recommendations

- **Baku to Belém Roadmap:** Fast-track **Baku to Belém Roadmap** adopted at **9th Conference of the Parties (COP 29) to the UN Framework Convention on Climate Change (UNFCCC).**
  - It calls for scaling up climate finance for developing nations to **USD 1.3 trillion annually by 2035**.
- **Enhance Private Sector Participation**: Current private adaptation finance is around **USD 5 billion annually**. With supportive policy and blended finance, it could rise to **USD 50 billion per year,** still only a fraction of total needs.
  - Encourage **blended finance** and **public-private partnerships** to de-risk investments.
- **Prioritise Grants and Concessional Finance:** Avoid **new debt traps** by focusing on non-debt-creating instruments. Emphasize **grants, concessional support**, and the **phase-out of fossil fuel subsidies** to redirect resources toward adaptation.
  - Integrate resilience into finance systems by encouraging banks, investors, and insurers to embed climate-risk assessment in decision-making.
- **Strengthen Mitigation:** The report notes that reducing emissions can contain adaptation costs by limiting the intensity of future impacts.

India's Approach to Balancing Climate Commitments with Development Needs

- **Adaptation-Centric Focus:** India's climate strategy is shifting from **mitigation-focused to adaptation-driven action** by prioritising **climate resilience** (strengthening agriculture, water systems, and disaster preparedness) over emission cuts.
  - This shift stems from **concerns over global inequity in climate finance** and the understanding that adaptation provides **immediate, local benefits, unlike mitigation,** which relies on global cooperation.
  - Adaptation aligns with India's **National Adaptation Fund for Climate Change (NAFCC)**.
- **Development Before Decarbonisation:** As per the **Economic Survey 2024–25,** achieving **"developed nation" status by 2047** is seen as essential before **aggressive deep decarbonisation efforts.**
  - It echoes the principle of **"Common But Differentiated Responsibilities and Respective Capabilities (CBDR-RC)"** under the UNFCCC.

- **Pragmatic Global Posture:** India's likely delay in submitting its **2035 Nationally Determined Contributions (NDCs)** underscores discontent with weak global progress.
  - The **withdrawal of the US from the Paris Agreement (2025) and Loss and Damage Fund** further eroded trust in multilateral climate commitments.
  - India continues to advocate **climate justice**, pushing for a balance between growth, equity, and responsibility.
- **Long-Term Vision:** India views adaptation is seen as the immediate priority, but **mitigation remains the long-term goal**.
  - India remains committed to achieving **Net Zero by 2070**, aligning with its **NDCs** and **Long-Term Low Emissions Development Strategy (LT-LEDS)**.

> Critically examine the scale and causes of the global adaptation finance gap. What institutional and policy reforms are needed to bridge it?
>
> **Drishti Mains Question**

Threat to Dugong Population in India

A recent report launched at the **International Union for Conservation of Nature (IUCN) Conservation Congress** in Abu Dhabi highlights the **growing threat** to the dugong population in India.

Dugongs

- **About:** Dugongs are **marine mammals**, related to manatees, with a **plump appearance** and a **dolphin-like fluke tail**. They grow up to **10 feet** in length and weigh around **420 kilograms**.
  - Manatees are large, herbivorous aquatic mammals of the *Sirenia group*, found in coastal regions of South America, West Africa, and the Caribbean.
- **Diet:** Dugongs are **herbivorous marine mammals,** feeding primarily on seagrass meadows like **Cymodocea, Halophila, Thalassia, and Halodule**, earning them the nickname "sea cows" and "farmers of the sea."
  - They require 30-40 kg of seagrass daily for sustenance and live in shallow, warm coastal waters, such as **bays, lagoons, and estuaries,** usually less than 10 meters deep.
- **Distribution:** They are primarily found in the **Gulf of Kutch**, the **Gulf of Mannar–Palk Bay** region (between India and Sri Lanka), and the **Andaman and Nicobar Islands**.
  - The report, titled *'A Global Assessment of Dugong Status and Conservation Needs'*, indicates that the survival of dugongs in the **Gulf of Kutch** and the **Andaman and Nicobar Islands** is uncertain and highly challenged, while the population in the **Gulf of Mannar–Palk Bay** has significantly decreased.

- **Behaviour:** The dugong is a **long-lived species**, capable of living up to 70 years. Typically **solitary or found in small mother-calf pairs,** large herds common in Australian waters are rare in India.
- **Reproduction:** They reach reproductive maturity at **nine to ten years** and give birth every **three to five years**, resulting in a slow reproductive cycle that limits their population growth rate to approximately **5% per year**.
- **Protection:**
  - The Dugong is listed as Vulnerable on the **IUCN Red List of Threatened Species; Appendix I (CITES); Schedule I of the Wildlife (Protection) Act, 1972.**
- **Significance:**
  - **Ecosystem and Climate Benefits**: Their role is so crucial that they are called **ecosystem engineers,** as they play a vital part in maintaining seagrass meadows.
    - ❖ These meadows, in turn, **promote biodiversity,** enhance **carbon sequestration,** and support marine life by releasing nutrients that benefit fish, shellfish, and invertebrates.
  - **Economic Impact**: Seagrass beds with dugongs contribute at least **Rs 2 crore** per year in additional fish production, highlighting their significant ecological and economic value.

Conservation Measures

- **Convention on Migratory Species (CMS):** India is a signatory to the **Convention on Migratory Species (CMS)** since 1983 and to the **CMS Dugong Memorandum of Understanding since 2008.**
  - In **2010**, the Ministry of Environment, Forest, and Climate Change (MoEFCC) constituted a **Task Force for Conservation of Dugongs**.
- **Dugong Conservation Reserve:** It was established in **Palk Bay** in **2022** by the Tamil Nadu government, covering an area of **448 square kilometers** to protect seagrass meadows and dugongs.
- **Dugong Recovery Programme:** It is a national programme launched in collaboration with the state governments of **Tamil Nadu**, **Gujarat**, and the **Andaman and Nicobar Islands**.
- **Seagrass Habitat Protection**: Protecting and restoring seagrass meadows is crucial for dugong conservation, requiring the mapping and monitoring of these habitats, as well as restricting harmful activities, with a focus on **community involvement**, particularly local fishers.
- **Regulating Harmful Fishing Practices**: Implementing regulations to limit destructive fishing methods, such as **gill nets** and **trawling**, in dugong habitats is essential to reduce accidental harm and safeguard the species.

- **Increased Research and Technology**: Additional funding for long-term dugong studies is necessary, with a focus on **citizen science** and **traditional knowledge**, while technologies like **tagging** and **drones** can help in tracking and identifying key habitats.

Cheetah Translocation- From Botswana to Bharat

During the **1st-ever Presidential visit from India to Botswana**, the **President of India** announced the **translocation of 8 cheetahs** to **India**, marking a major milestone in **Project Cheetah**.

- **Botswana** symbolically handed over the cheetahs, with **5 quarantined** at the **Mokolodi Nature Reserve (Botswana)**.

Project Cheetah

- **About:** Launched in **2022** under **Project Tiger**, **Project Cheetah** aims to **reintroduce cheetahs** extinct in India since **1952**, as the **world's 1st intercontinental wild carnivore translocation**.
- **Objective:** It aims to **restore cheetah populations**, **revive savanna ecosystems**, **promote ecotourism and livelihoods**, and **reduce human-wildlife conflict** through community awareness.
- **Governance Structure:** The **National Tiger Conservation Authority (NTCA)** implements **Project Cheetah** alongwith **Madhya Pradesh Forest Department** and the **Wildlife Institute of India (WII)**, and in **2023** formed a **Steering Committee** to oversee and guide its implementation.
- **Status of Cheetah Population and Habitat:** Currently, India has 27 cheetahs, including 16 that were born in the country.
  - **Kuno National Park**, **Gandhi Sagar wildlife sanctuary** (WLS) along with **Nauradehi WLS** (proposed), serves as the habitat for **translocated cheetahs**.
  - The project is supported by **over 350 'Cheetah Mitras'** working to raise local awareness and reduce human-wildlife conflict.

Australia's Northern Rainforests Become Carbon Source

A **study** published in **Nature** has found that the **tropical forests** in **northeastern Australia** are the first globally to shift from being a **carbon sink** to a **net carbon source**.

- This reversal is driven mainly by **increased tree mortality due to climate stressors, including cyclones**, which can reduce carbon storage for **up to 6 years.**
- Key climate extremes causing this include **rising temperatures, atmospheric dryness, and drought conditions.** This highlights how climate change can threaten global carbon budgets.

Carbon Sink

- **About:** A **carbon sink** is anything that **absorbs more carbon** from the atmosphere than it releases.
  - It acts like a **natural or artificial reservoir** that soaks up and stores **carbon dioxide (CO_2)**, a primary **greenhouse gas**, thereby **mitigating climate change**.
- **Key Examples:** Forests; Oceans.
  - **Soil & Peatlands: Soils** contain vast amounts of **carbon** stored in **organic matter** from decomposed plants and animals.

Carbon Source

- **About:** The opposite of a sink is a **carbon source**. This is anything that **releases more carbon** into the atmosphere than it absorbs.
- **Key Examples:**
  - **Natural Carbon Sources:** Respiration; Volcanic Eruptions; Wildfires; Ocean Release and Soil Decomposition.
  - **Human-Induced (Anthropogenic) Carbon Sources:** Fossil Fuel Combustion; Deforestation and Land-Use Change; Industrial Processes; Agriculture and Waste Management.

Consequences of Forest Turning into a Carbon Source	Measures Needed
Vicious Feedback Loop: Climate change damages forests, causing tree death and carbon release, which further **intensifies climate change** via more fires and droughts.	**Aggressive Global Emission Cuts:** Prioritize **deep, rapid, and sustained reductions in fossil fuel emissions** and strictly implement enhanced carbon budgets under the Paris Agreement.
Social and Cultural Impacts: Degradation **threatens the livelihoods, food, medicine, and culture of Indigenous communities**, risking displacement and conflict.	**Proactive Forest Management:** Implement large-scale strategies like **assisted species migration, controlled burns for fuel reduction,** and integrated pest management to break the cycle of dieback.
Ecosystem Collapse: Biodiversity loss and extinction risk as forest degradation and a changing climate make areas **unsuitable for native species.**	**Climate-Adaptive Policies:** Invest in water-efficient irrigation, promote **drought-resistant crops, diversify rural economies,** and strengthen public health systems.
Impacts on Human Systems: Endangers **water security, agriculture, and food production;** causes economic losses and increases public health risks.	**Empowerment of Local Communities:** Integrate **Indigenous knowledge** into forest governance, secure land tenure rights, and ensure their active participation in sustainable management.

What are carbon sinks and carbon sources? Examine the consequences of the transformation of forest ecosystems from sinks to sources and suggest a framework for its mitigation.
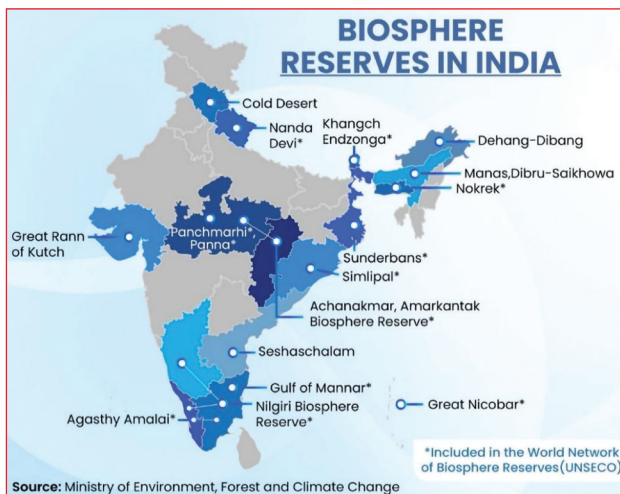
Drishti Mains Question

Biosphere Reserves in India

India celebrated the **International Day for Biosphere Reserves**, reaffirming its commitment to biodiversity conservation and sustainable development. The day highlights how biosphere reserves serve as spaces where **people and nature coexist** through scientific research, ecological protection, and community participation.

International Day for Biosphere Reserves
■ Observed on **3rd November**, this day was established by the **United Nations Educational, Scientific and Cultural Organization** (**UNESCO**) in 2022 to highlight the role of biosphere reserves in conserving biodiversity and promoting sustainable development.   ■ It aims to raise awareness, share best practices, and showcase achievements of the **World Network of Biosphere Reserves** (**WNBR**).

BIOSPHERE RESERVES IN INDIA

Cold Desert
Nanda Devi*
Khangchendzonga*
Dehang-Dibang
Manas,Dibru-Saikhowa
Nokrek*
Great Rann of Kutch
Panchmarhi*, Panna*
Sunderbans*
Simlipal*
Achanakmar, Amarkantak Biosphere Reserve*
Seshaschalam
Gulf of Mannar*
Nilgiri Biosphere Reserve*
Agasthy Amalai*
Great Nicobar*

*Included in the World Network of Biosphere Reserves (UNSECO)

Source: Ministry of Environment, Forest and Climate Change

India's Efforts in Promoting Biosphere Reserves

■ **Policy Framework:** The **Biosphere Reserve Division** of the Ministry of Environment, Forest and Climate Change implements a Centrally Sponsored Scheme namely **Conservation of Natural Resources and Ecosystems (CNRE),** under which a dedicated sub-scheme for **Biosphere Reserves** provides funding support.

● It follows a **60:40 Centre–State model** (90:10 for NE and Himalayan states) and prioritises local communities through alternative livelihoods and eco-development, focusing on buffer and transition zones to reduce pressure on core areas.

■ **Integration with National Initiatives:** India's BRs conserve biodiversity and support communities, complementing initiatives like **Project Tiger, Project Elephant, Green India Mission**, **Integrated Development of Wildlife Habitats (IDWH) Scheme**, and **National Biodiversity Action Plan (NBAP)** for balanced, sustainable development.

Measures for Effective Management of Biosphere Reserves

■ **Deepen Community-Led Conservation:** Expand **Joint Forest Management (JFM)** and strengthen **Gram Sabha** roles under **Forest Rights Act, 2006** and Promote sustainable NTFP management through **Van Dhan Vikas Kendras**.

■ **Strengthen Sustainable Livelihoods:** Scale up eco-development and green jobs under **Green India Mission (GIM) in Buffer & Transition Zones of BRs.**

● Promote nature-based tourism, agroforestry, and value-chain development to reduce forest dependence.

■ **Enhance Funding & Institutional Capacity:** Increase CNRE allocations and enable multi-year funding. Strengthen State BR Authorities and invest in trained ecological and social science personnel.

■ **Improve Scientific Monitoring & Data Systems:** Mandate long-term ecological research in BRs through partnerships with **Indian Council of Agricultural Research, and Zoological Survey of India.**

● Scale use of remote sensing and GIS through **National Remote Sensing Centre (NRSC)** for habitat and wildlife monitoring.

■ **Better Zonation & Enforcement:** Digitally map core–buffer–transition boundaries. Boost anti-poaching and enforcement through tech-enabled patrolling (**M-STRiPES style**).

■ **Climate-Resilient Management Strategies:** Integrate BR plans with State Action Plans on Climate Change (SAPCC). Restore degraded landscapes and mangroves (especially in coastal BRs like **Sundarbans**).

Critically evaluate India's use of Biosphere Reserves as "living laboratories" to reconcile conservation with development.   **Drishti Mains Question**

Tropical Forest Forever Facility (TFFF)

The **Tropical Forest Forever Facility (TFFF)** initiative was launched on the sidelines of the **COP30 climate summit** in **Belém, Brazil**, aiming to raise and invest **USD 125 billion** to conserve **tropical forests**.

■ **India** has joined the **Brazil-led TFFF** as an **observer**, reaffirming its commitment to **multilateral climate action** under the **Paris Agreement**.

TFFF Initiative

■ **About:** TFFF is a **permanent, self-financing investment fund** aimed at conserving tropical forests. It will reward up to **74 developing tropical forest countries** for keeping old-growth forests intact.

● Payments will be based on **annual satellite remote sensing data** for transparent forest monitoring.

- **Purpose and Rationale:** It aims to shift **economic incentives** by making **standing forests** more valuable than cleared land, countering **deforestation** driven by higher returns from **land conversion**. It also recognises tropical forests' **ecosystem services**, including **carbon storage**, **temperature regulation**, and **biodiversity support**.

- **Funding Structure:** It aims to raise **USD 125 billion**, with **USD 25 billion** from wealthy governments and philanthropists and **USD 100 billion** from private investors.
  - The fund will invest in a **mixed portfolio of public and corporate market bonds**, and **annual returns** will be given to tropical forest nations as **incentives for forest conservation.**

- **Funding Commitments:** Countries pledging contributions include **Brazil (USD 1 billion)**, **Colombia (USD 250 million)**, **Indonesia (USD 1 billion)**, **Norway (USD 3 billion over 10 years), the Netherlands (USD 5 million)**, and **Portugal (1 million Euros)**.

- **Significance of TFFF:** It is described as an **unprecedented initiative** giving the **Global South** leadership in forest conservation, offering **permanent incentives** to protect forests and repositioning tropical forests as **high-value ecological capital**.

Concerns Associated with TFFF

- **Market Volatility Risk:** The TFFF's reliance on **bond investments**, especially in **developing nations**, makes it vulnerable to **market volatility**; a **financial crash—like in 2008-09 or during Covid-19** could wipe out returns and disrupt payments to forest-conserving countries.

- **Undermine Developed Countries' Obligations:** Critics argue that the TFFF may weaken developed countries' **legal responsibilities** for climate and nature finance, as it operates outside the **UNFCCC framework** and is not bound by the rules that hold wealthy nations accountable.

- **Weakening UNFCCC Financial Mechanism:** Experts warn that the **TFFF** may weaken **UNFCCC** and **Paris Agreement** financial mechanisms by shifting focus from **guaranteed public finance** to **voluntary, market-based funding**, potentially diluting efforts to secure **predictable finance** for developing countries.

- **Risk of Greenwashing:** There is concern that the **TFFF** may let wealthy nations and corporations claim credit through **voluntary donations** while avoiding **legally mandated emissions cuts**, and it remains unclear whether payments will ensure **additional conservation** or simply reward forests that were never at risk.

- **Fear of Inequitable Distribution:** Unclear **payment criteria** and **governance** raise concerns of **powerful countries** dominating decisions, while funds may not reach **local and indigenous communities who best protect forests**, leaving **poverty** and **land rights** issues unresolved.

Improving Protection of Tropical Forests

- **Market Reforms:** Governments should redirect subsidies driving deforestation for **cattle ranching, soy, and palm oil** toward **sustainable agroforestry**, and promote **deforestation-free supply chains** through strong laws like the **EU's Deforestation Regulation.**

- **Enforce Legal Frameworks:** Formally recognize and protect **Indigenous land rights** to empower **forest guardians**. Strengthen **law enforcement** against **illegal logging** and **mining** using **satellite monitoring**.

- **Leverage Technology for Transparency:** Fund and use **satellite monitoring** (e.g., **Global Forest Watch**), **drone mapping**, and **real-time data tracking** to provide accessible **forest cover** information, enable rapid response to **deforestation alerts**, and support **transparent, accountable forest management**.

- **Integrate Conservation with Climate Goals:** Incorporate **forest conservation** into **National Determined Contributions (NDCs)** under the **Paris Agreement** and promote **sustainable development** that prevents **forest conversion**, focusing on **green infrastructure** and a **transition to a bio-economy**.

- **Increase International Cooperation:** A key step is to strengthen **international cooperation** by aligning voluntary funds like the **TFFF** with **UNFCCC obligations**, ensuring they **complement** rather than undermine existing **climate finance commitments**.

> Enumerate the key strategies required for the conservation of tropical forests. How can community participation and traditional knowledge enhance these efforts?
>
> **Drishti Mains Question**

Intergenerational Equity & Conservation of Endangered Species

The **Supreme Court (SC) of India** reviewed the conservation status of the **Great Indian Bustard (GIB) and the Lesser Florican**, questioned the relevance of Western **principles like intergenerational equity** for protecting species close to extinction, and stressed the need for an eco-centric approach to biodiversity governance.

Principle of Intergenerational Equity

- **About:** It is the idea that each generation has **both the right to use and enjoy natural resources and the responsibility to conserve them** for future generations.
  - It treats the environment as a shared inheritance, not something one generation can exhaust at the cost of the next.

- **Recognition in International Law:** This principle is embedded in several major international agreements,

including the **United Nations Framework Convention on Climate Change (UNFCCC), and the Convention on Biological Diversity, the World Heritage Convention.**

- It also appears in foundational global declarations like the **Stockholm Declaration(1972) and the Rio Declaration(1992),** highlighting its long-standing acceptance in environmental governance.

■ **Role in Biodiversity and Sustainability:** The **Kunming-Montreal Global Biodiversity Framework** reinforces this principle by encouraging active involvement of younger generations in environmental decisions.

SC's Observation on the
Principle of Intergenerational Equity

■ **Anthropocentric Nature of the Principle:** The Court noted that intergenerational equity is **human-centred,** focusing on conserving resources mainly for the benefit of future human generations.

- SC noted that, it treats nature as a resource to pass down, ignoring the intrinsic value of species and ecosystems beyond human use.

■ **Limited Protection for Endangered Species:** The Court observed that the principle offers **weak conservation support** when a species is already close to extinction.

- This limits its usefulness in biodiversity law, especially for critically endangered species like the GIB and Lesser Florican.

Great Indian Bustard

■ **About:** The Great Indian Bustard is a critically endangered grassland bird. It is one of the four bustard species in India, along with the **Lesser Florican, Bengal Florican and Macqueen's Bustard.**

- The **GIB is omnivorous** and highly vulnerable to power line collisions due to its **poor frontal vision.**

■ **Distribution and Habitat:** Found in India and the eastern regions of Pakistan. It lives in **arid and semi-arid grasslands, open landscapes** with thorny scrub and tall grasses mixed with cultivation.

- In India it is present mainly in Rajasthan, with smaller populations in Karnataka, Maharashtra, and Madhya Pradesh

■ **Breeding and Behaviour:** Males remain solitary during the breeding season but may form flocks in the non-breeding period.

■ **Ecological Importance:** GIB acts as an indicator species, it reflects the health of grassland ecosystems. Their decline signals degradation of native grasslands.

■ **Protection Status:** IUCN Red List (Critically Endangered); **CITES** (Appendix 1); **Convention on Migratory Species** (CMS) (Appendix I); **Wildlife (Protection) Act, 1972** (Schedule I).

- There are around 70 Bustards in captivity and 150 in the wild.

■ **Threats:** The species faces severe threats from habitat loss, power line collisions, hunting, and predation by free-ranging dogs.

Lesser Florican

■ **About:** The Lesser Florican is the **smallest bird in the bustard family.** It has a small body with longish bill and legs.

■ **Distribution and Habitat:** Breeds in Gujarat, Rajasthan, Maharashtra, and Madhya Pradesh.

- They are found in productive **lowland grasslands** (below 250 m), **dry grasslands** with scattered scrub, and sometimes in cotton and millet fields.

- It is a rare summer visitor to the Terai region of Nepal.

■ **Conservation Status:** IUCN Red List (Critically Endangered); **Wildlife Protection Act,1972** (Schedule I); CITES (Appendix II)

SC's Recommendations for Biodiversity Conservation

■ **Shift Toward an Eco-Centric Approach:** In *T.N. Godavarman Thirumulpad vs Union of India (2012),* the SC affirmed an **eco-centric approach,** stating that the Constitution requires **compassion for all living beings** and that species have intrinsic value beyond human use.

- The Court urged a shift away from anthropocentric thinking toward an eco-centric philosophy.

■ **Stronger Protection for Critically Endangered Species:** Calls for **focused, science-based conservation action** for species like the Great Indian Bustard and the Lesser Florican.

■ **Fair treatment extends to animals :** In *Animal Welfare Board of India v. Nagaraja (2014),* the SC held that **Article 21's guarantee of dignity and fair treatment extends to animals,** reinforcing the constitutional duty to protect their well-being.

- The Court urged that environmental and wildlife laws be consistently interpreted to support long-term ecological balance and sustainable conservation.

> Examine the limitations of intergenerational equity principle for conserving critically endangered species in India. Suggest alternatives with legal and policy measures.
>
> **Drishti Mains Question**

Climate Risk Index (CRI) 2026

The **Germanwatch Climate Risk Index** 2026 report, presented at **COP30 in Belém, Brazil,** ranks India as the **9th most affected country** by **extreme weather events (EWEs)** over the past three decades (1995-2024).

Key Findings of CRI 2026 Report

■ **Globally Most Affected Countries:** The **top 10 CRI countries** are all in the **Global South,** highlighting **unequal climate vulnerability.**

- High-risk countries like **Dominica, Myanmar, Honduras, and Libya** have faced extreme events, e.g., **Cyclone Nargis (2008) in Myanmar** killed around 1,40,000 people.

- Between 1995–2024, **9,700 extreme weather events** worldwide caused over **832,000 deaths** and **USD 4.5 trillion** in economic losses.
- **India's Vulnerability: India's position** in the CRI 2026 emphasizes its growing vulnerability to climate-related disasters**.** In 2024, India ranked **15th** among countries most affected by climate change.
  - Over three decades, **430 extreme weather events (EWEs)** caused **USD 170 billion losses**, affected **1 billion people**, led to **80,000+ deaths**, placing India under **"continuous threats"** with **Philippines, Nicaragua, and Haiti**. India ranked **3rd globally in 2024** for the number of people affected by extreme weather, after Bangladesh and the Philippines.
- **Specific EWEs:** In 2024, **floods** were the deadliest globally (~50 million affected), followed by **heatwaves** (~33 million) and **droughts** (~29 million); India's **monsoon** adversely affected **8 million people**.
  - **CRI** ranks countries by **extreme weather impacts**, focusing on **rapid onset events** like **floods, storms, heatwaves, wildfires, glacial lake outbursts**, and excluding **slow onset events** such as **rising temperatures, sea-level rise, and ocean acidification**.
- **Long-Term Vulnerability: Repeated disasters** cause accumulating losses, keeping India's **30-year CRI ranking high**, as continuous exposure hinders recovery and raises **long-term socio-economic risk**.

Climate Risk Index

- The **Climate Risk Index**, published annually by the **environmental think tank Germanwatch** since 2006, tracks the **human** and **economic impacts** of **extreme weather events** worldwide.
- **Indicators:** The index uses six key **indicators**, including **fatalities**, **economic losses**, and the **number of people affected** by **climate-related disasters**. **Data** for the index is sourced from reputable organizations like the **EM-DAT International Disaster Database**, **World Bank**, and **IMF**.

Impacts of Climate Change on India

- **Water Crisis:**
  - **Melting Glaciers:** Rising temperatures are shrinking **Himalayan glaciers**, threatening river flows of the **Ganga, Brahmaputra, and Indus**.
  - **Depleting Groundwater:** Groundwater use rose from ~10–20 km³ to **240–260 km³** over 50 years; Gangetic aquifers are falling ~**4 cm/year**, making many perennial rivers seasonal.
  - **Water Quality Degradation:** Groundwater pumping brings **arsenic contamination**, ranking India **120th of 122 countries** on the **global water quality index**.

- **Disruption in Mountain Ecosystems:**
  - **Increased Disasters:** Events like **GLOFs** (e.g., **2023 Sikkim disaster**), **cloudbursts**, and **forest fires** are becoming more frequent.
  - **Accelerated Melting: Black carbon** from vehicles and fossil fuel use, especially along the **Char Dham route**, speeds up **Himalayan ice melt**.
  - **Threat to Biodiversity:** The **Himalayas**, one of India's **four biodiversity hotspots** (with the **Western Ghats, Sundaland**, and **Indo-Burma**), face **severe ecological stress**.
- **Threat to Coastal Areas:**
  - **Rising Sea Levels:** Global seas are rising **3.6 mm/year**, with **Mumbai** seeing a **4.44 cm rise (1987–2021)**; projections show a **0.4–0.8 m rise by 2100**, endangering **coastal cities**.
  - **Salinisation: Seawater intrusion** is damaging **farmland** and **freshwater**, affecting over **250 million** coastal residents.
  - **Loss of Natural Defenses: Mangroves** and **coral reefs**, vital **cyclone and erosion buffers**, are increasingly at risk.
- **Socio-Economic Costs:**
  - **Economic Losses:** The **World Bank** warns the **climate crisis** could cut **India's GDP by 6.4–10% by 2100** and push **50 million into poverty**.
  - **Agricultural Distress: Erratic weather** and **water scarcity** are lowering **farm productivity** and threatening **food security**.
  - **Public Health Risks:** The **urban heat-island effect** heightens **heat stress** and **health risks** in densely populated slums.

Measures to Address the Impacts of Climate Change

- **Climate Change Mitigation:** Drastically **cut emissions** to limit warming to **1.5°C** and extreme weather, support **National Adaptation Plans**, and secure **USD 300 billion by 2035** for climate adaptation and mitigation.
- **Securing Water Resources:** India must renew its **National Water Policy 2012** for sustainable **aquifer management** and **climate-resilient farming** using **drip irrigation** and **zero-tillage**, while **reviving traditional water systems** and **scaling up artificial recharge** through **pits, shafts, and trenches.**
- **Build Coastal Resilience**: Restore **mangrove forests** and **coral reefs** as **natural barriers**. Develop **early-warning systems** for **cyclones** and **storm surges**, and create **social safety nets** for **affected communities**.
- **Decarbonize Economy:** Ramp up **solar** and **wind capacity** to exceed **500 GW of non-fossil fuel power** by 2030, while promoting **green hydrogen** and **battery storage**.

- Promote **sustainable urbanization** with **green buildings**, **urban greenery**, and **permeable surfaces**, while enforcing **eco-friendly land-use policies** to curb **deforestation** and ensure **sustainability**.

■ **Governance and Social Measures:** Mainstream **climate adaptation** in all development planning, promote **community-led resource management** through participatory models like **Jal Sanchay Jan Bhagidari**, and boost **green R&D** in technologies, carbon capture, and resilient crops.

> Examine the threats posed by global warming to India's Himalayan and coastal ecosystems. Suggest sustainable measures for building resilience in these regions.
>
> **Drishti Mains Question**

India's Carbon Emission Growth Slows in 2025

India's **carbon dioxide emissions** from **fossil fuels** are projected to rise by only **1.4% in 2025**, a sharp slowdown from the **4% increase recorded in 2024**, according to the **Global Carbon Project (GCP)** 2025 study.

■ GCP, is an international collaborative program established in 2001 to study and integrate knowledge of the global carbon cycle and human activities affecting it.

Key Findings of the Global Carbon Project 2025 Study

■ **India's Emissions Trends:** Emissions are expected to increase from **3.19 billion tonnes in 2024** to **3.22 billion tonnes in 2025**.

- **India's per-capita emissions** stand at 2.2 tonnes/year, the **second lowest** among the 20 largest economies. Coal remains the primary source of India's CO_2 emissions.

- **India is the third largest emitter of carbon at 3.2 billion tonnes annually (2024)**, led by the US (4.9 billion tonnes) and China (12 billion tonnes).

- India's annual emission growth averaged **6.4% between 2005–2014**, but has dropped to **3.6% during 2015–2024**, reflecting improvements in carbon intensity and expanding renewable capacity.

■ **Global Emission Trends:** Global CO_2 emissions from fossil fuels are expected to rise **1.1%**, reaching a **record 38.1 billion tonnes** this year. Global fossil CO_2 emissions in 2025 are rising across all major fuels, with **coal up 0.8%, oil up 1%, and natural gas up 1.3%**.

- Despite years of climate action, **global emissions have not begun to decline**.

- CO_2 emissions from **land-use change** (deforestation, degradation) are expected to **fall slightly**. However total global CO_2 emissions (fossil fuels + land use) are **flat at around 42 billion tonnes**, similar to 2024.

■ **Carbon Budget and Climate Risks:** The study warns that the **carbon budget** (the maximum CO_2 we can emit while still keeping warming below 1.5°C) is almost **exhausted**, with only 170 billion tonnes of CO_2 remaining (about four years of emissions at 2025 levels).

- Scientists say **staying below 1.5°C is no longer realistic at the current pace of emissions, and climate change** is already weakening land and ocean carbon sinks, reducing their ability to absorb CO_2.

India's Emissions Profile

■ **India's 4th Biennial Update Report (BUR-4)**, submitted to the UNFCCC in 2024, recorded a **7.93% fall in total GHG emissions in 2020 compared to 2019**.

- Excluding **Land Use, Land-Use Change, and Forestry (LULUCF)**, India's emissions were **2,959 million tonnes of CO_2e** (carbon dioxide equivalent, a way to measure the impact of GHG).

- Including LULUCF, net emissions were **2,437 million tonnes of CO_2e**.

- The **energy sector contributed 75.66%** of total emissions, while land-related activities **sequestered about 522 million tonnes of CO_2**, offsetting **22%** of national emissions.

India's Long-Term Low Emission Strategies (LT-LEDS)

India has devised **LT-LEDS** to chart a sustainable path forward in addressing "**CLIMATE**" change. India's LT-LEDS involves **seven key strategic transitions,** namely:

■ **C – Clean Electricity:** Low-carbon development of electricity systems aligned with national development needs.

■ **L – Low-Carbon Transport:** Building an integrated, efficient and inclusive low-carbon transport system.

■ **I – Inclusive Urban Adaptation:** Promoting climate-resilient urban design, energy-efficient buildings and sustainable urbanisation.

■ **M – Manufacturing & Industry Decarbonisation:** Decoupling economic growth from emissions through efficient, innovative, low-emission industrial systems.

■ **A – Atmospheric CO_2 Removal:** Scaling CO_2 removal and engineering solutions to tackle hard-to-abate sectors.

■ **T – Tree & Vegetation Enhancement:** Expanding forest and vegetation cover with ecological and socio-economic considerations.

■ **E – Economic Path to Net-Zero:** Strengthening economic and financial frameworks for low-carbon development and the transition to Net-Zero by 2070.

> Discuss how India's rapid renewable energy expansion is reshaping its emission trajectory and helping meet long-term climate commitments.
>
> **Drishti Mains Question**

Towards Long-Term Clean-Air Strategy

The **Supreme Court India** told the Centre that enforcing a perennial **Graded Response Action Plan (GRAP)** across the year is not practical for the National Capital Region (NCR) air pollution and stressed the need for a long-term pollution strategy.

- At the same time, China's offer to share its **urban pollution control experience** has renewed the discussion on lessons India could adopt from international best practices.

Short-Term Effectiveness

- GRAP offers a **structured, graded system of interventions when Air Quality Index (AQI) breaches specific thresholds**. This helps authorities react quickly when pollution spikes.
- Restrictions on construction, traffic, truck entry, and industrial activity **temporarily lower particulate emissions** during severe pollution episodes.
- By reducing physical classes, outdoor work, and vehicle movement during hazardous AQI levels, GRAP offers temporary relief to vulnerable groups.

Long-Term Limitations

- GRAP is **reactive and episodic;** it only activates after pollution crosses set limits, not before. It does not comprehensively prevent **long-term sources like stubble burning, vehicular growth, or construction dust.**
- Frequent bans on construction, restrictions on transport, and shutdowns disproportionately **affect daily-wage earners, migrant labourers and small businesses, making perennial enforcement impractical.**
- Pollution arriving from Punjab-Haryana stubble burning, dust storms, and neighbouring industrial belts cannot be solved by **Delhi-centric restrictions.**
- Once GRAP restrictions are lifted, **pollution levels tend to rebound quickly** because systemic reforms in transport, waste, agriculture, and industry remain incomplete.

Supreme Court's Stance on Enforcing GRAP

- **Rejection of Year-round GRAP:** SC noted that a permanent GRAP would impose harsh restrictions that harm daily wagers, migrant workers, and construction labourers.
  - It reiterated that short-term, reactive measures do not address the long-term structural causes of air pollution.
- **SC Directions:** The court directed the government to bring all key stakeholders (the Centre, States, farmers, and urban bodies) together to frame a long-term pollution strategy.
  - It urged authorities to **avoid knee-jerk actions that fail to address the structural causes of pollution** and instead focus on **gradual, sustainable measures** that improve air quality without harming livelihoods.

China's Response to 'Airpocalypse'

- **Airpocalypse in China:** Rapid industrialisation with economic liberalisation in 1978 caused a sharp rise in emissions. By the 2000s, major cities were covered in thick smog, with **PM2.5** emerging as the key pollutant.
  - Public health worries, global scrutiny during the **2008 Beijing Olympics**, and growing citizen pressure pushed the government to act, leading to major reforms that helped **almost 80% of China see improved air quality since 2013.** Experts say India today resembles China's situation from the late 2000s.

Steps Taken by China to Tackle Air Pollution:

- **Strong Political Focus:** Air quality was highlighted as a key concern in **China's 11th Five-Year Plan (2006–10).**
- **Cadre Evaluation System:** Promotions of governors and mayors were tied to meeting pollution targets, creating strong accountability.
- **Shutting Outdated Factories:** Old and highly polluting units such as power plants, smelters, and paper mills were closed.
- **Industrial Investment:** China pushed for large-scale investment in pollution control equipment across industries.
- **Push for Electric Mobility:** Shenzhen electrified most of the buses by 2017, setting the pace for other major cities to expand electric mobility. Alongside this, China tightened vehicle emission norms, introduced strict controls on coal boilers, and shifted to cleaner residential heating systems, all of which helped cut urban pollution.

Long-term Clean Air Strategies for India

- **Continuous action:** Move beyond seasonal, trigger-based responses like GRAP and adopt year-round pollution management.
- **Strengthen Accountability:** Link air-quality targets to the performance of local and state authorities, similar to China's cadre evaluation pressure.
- **Tighten Industrial Emissions:** Enforce stricter norms, modernise outdated units, and push industries to adopt cleaner technologies. Prioritise **cleaner mobility in big cities** through electric buses, **better metro networks**, and disincentives for private vehicles.
- **Improve Household Energy Access:** Reduce biomass burning in rural areas by making clean cooking fuels and electricity more affordable and reliable.
- **Strong Monitoring Systems:** Use better satellite tracking, real-time sensors, and strict reporting rules to prevent undercounting of emissions.

> Discuss the measures required to scale up clean mobility in Indian cities and the likely socio-economic impacts.
>
> **Drishti Mains Question**

Cloud Seeding in Delhi

The Delhi government partnered with IIT-Kanpur to conduct **cloud seeding** experiments to combat rising **post-monsoon air pollution.**

■ However, experts from the **Ministry of Earth Sciences** have cautioned that the absence of rain-bearing clouds during the **post-monsoon season** makes the timing scientifically unsuitable, casting doubt on the effectiveness of the initiative.

Cloud Seeding

■ **About: Cloud seeding** is a **weather modification technique** aimed at enhancing precipitation (rain or snow) from existing clouds.

■ **Mechanism:** It involves dispersing substances such as **silver iodide, potassium iodide, sodium chloride, or dry ice (solid CO_2)** into clouds using aircraft.

  ● These particles act as **cloud condensation nuclei (CCN) or ice nuclei (IN),** mimicking the structure of ice and prompting supercooled **water droplets in the clouds to freeze.**

  ● As these ice crystals grow larger and heavier, they eventually coalesce and fall to the ground as **rain** or snow.

  ● Cloud seeding **cannot create clouds**, but works only when there are **naturally formed clouds** with sufficient moisture.

■ **Cloud Seeding in India & Across Globe:** The India's **Ministry of Earth Sciences (MoES)** has conducted several studies under the **Cloud Aerosol Interaction and Precipitation Enhancement Experiment (CAIPEEX).**

  ● These experiments, conducted in phases between **2009 and 2019**, showed that rainfall could be increased by **up to 46%** under favourable conditions.

  ● States like **Maharashtra, Karnataka, Andhra Pradesh, and Tamil Nadu** have experimented with cloud seeding for drought relief.

  ● **China** extensively uses cloud seeding for weather control, especially before major events (e.g., 2008 Beijing Olympics).

  ● **UAE and Saudi Arabia** regularly use cloud seeding to tackle water scarcity.

■ **Applications of Cloud Seeding: Enhancing rainfall** in drought-prone or arid regions.

  ● **Reducing air pollution** by washing out pollutants (as proposed in Delhi).

  ● **Dispersing fog** near airports or highways to improve visibility.

  ● **Suppressing hailstorms** or modifying weather for agricultural purposes.

Sustainable Solutions to Delhi's Air Pollution Crisis

■ **Emission Control:** Enforce stricter vehicle norms and promote EVs under the **Electric Mobility Promotion Scheme (EMPS) 2024** with better charging infrastructure and awareness drives.

■ **Industrial and Power Regulation:** Strengthen monitoring under the **National Clean Air Programme (NCAP)**, enforce strict **Graded Response Action Plan**, and phase out coal-based power plants near NCR.

■ **Waste Management:** Ban open waste burning, improve segregation and recycling, and follow models like **Surat's clean construction handbook and waste management strategy** (led to reduction of open waste burning from 25% to 2% between 2015 and 2020) and **Indore's waste system** for better results.

■ **Crop Residue Management:** Promote **Happy Seeder** and subsidised **Crop Residue Management (CRM) machines** to discourage stubble burning and offer incentives for sustainable farming practices.

■ **Green Infrastructure:** Expand **urban forests, parks, and green belts** to absorb pollutants and reduce heat and dust.

■ **Public Participation:** Encourage citizens to carpool, cut waste, conserve energy, and follow air-quality advisories.

> Cloud seeding offers a temporary fix but not a solution to India's air pollution crisis. Discuss.
>
> **Drishti Mains Question**

AWS Outage and the Risks of Cloud Centralisation

A recent outage at **Amazon Web Services (AWS)** disrupted over 1,000 global online services, including messaging apps and **government portals**, highlighting the risks of **centralised cloud providers.**

Amazon Web Services (AWS)

■ **About: Amazon Web Services (AWS)** is the **cloud computing division of Amazon**, launched in **2006**. It provides **on-demand IT infrastructure** such as computing power, data storage, databases, analytics, and networking tools.

  ● Instead of maintaining their own physical servers, companies **rent computing resources** from AWS data centres located across the world.

- It follows a **"pay-as-you-go" model**, offering scalability and cost efficiency.

- **Significance of AWS:** AWS is the world's **largest cloud provider**, ahead of Microsoft Azure and Google Cloud.
  - Many critical applications, financial systems, and digital services rely on AWS for hosting and data management, **any failure in AWS can lead to widespread service disruptions**, affecting communication, finance, governance, and entertainment sectors simultaneously.

- **Causes of AWS Outage:** AWS identified a **Domain Name System(DNS)** resolution failure in its **DynamoDB service endpoints** hosted in its North Virginia data center as the primary cause.
  - The **DNS** acts like the Internet's address book, converting website names into IP addresses that computers use to find and connect to servers.
    - ❖ If this system fails, browsers can't locate the right server, leading to websites or apps becoming slow, inaccessible, or showing error messages.
  - **DynamoDB service endpoints** are connection points to AWS's **database**.
    - ❖ The DNS issue blocked access to these endpoints, disrupting many apps and services globally.

Cloud Computing

- **Definition:** Cloud computing is a model for delivering **information technology services** where computing resources such as storage, processing power, databases, and applications are provided **over the Internet** instead of being hosted on local servers.
  - Users can access these resources **on-demand**, without owning or managing the physical infrastructure.

Significance of Cloud Computing for India

- **Robust Digital Infrastructure**: Cloud computing strengthens India's IT backbone through **National Data Centres (NDCs)** and regional centres, supporting large-scale storage, disaster recovery, and high-performance computing.

- **Boosting E-Governance**: Platforms like **MeghRaj and National Informatics Centre (NIC) Cloud Services** enable fast deployment and management of **government applications,** making services efficient, scalable, and reliable. Cloud platforms like **GovDrive and e-Office under the National E-Governance Plan** ensure coordinated workflows, data security, and enable paperless administration.

- **Financial and Social Inclusion**: Digital identity **(Aadhaar), payment systems (Unified Payments Interface (UPI)),** and platforms like **DigiLocker** improve accessibility, transparency, and inclusion across socio-economic groups through Cloud services.
  - **Common Services Centres (CSCs)** leverage cloud to provide 800+ government services to rural populations, bridging the digital divide.

- **Accessible Public Services**: Citizen-centric platforms such as **UMANG, e-Hastakshar, and DIKSHA** facilitate seamless delivery of education, health, and administrative services across India.

- **Economic Growth and Innovation**: Reduces infrastructure costs, supports startups and SMEs, and accelerates **India's digital economy by providing scalable and on-demand IT resources.**

- **Global Leadership**: India's cloud-enabled initiatives, including **National Knowledge Network (NKN) and India Stack,** showcase digital solutions that can be adopted by other nations, especially in the **Global South,** positioning India as a leader in **scalable digital services.**

Risks of Cloud Centralisation to Digital Sovereignty & Resilience	Suggestions
■ **Systemic Risk:** Failure disrupts **critical services** (banking, health, govt).	■ **Multi-Cloud Adoption:** Reduce dependence on single provider; mandate backup, replication, failover mechanisms.
■ **Digital Sovereignty Concerns: Foreign reliance** risks control over **national data** and **policy autonomy**	■ **Domestic Data Centres:** Promote expansion of **Tier-II/III centres** for **regional redundancy & local control**.
■ **Innovation Barrier: Dominance of a few providers** limits **startups/** domestic cloud alternatives.	■ **Data Localisation & Sovereignty:** Enforce data localisation norms for **sensitive govt/citizen data**.
■ **Geopolitical Vulnerability: Outages/policy shifts by global providers** affect nations differently.	■ **Strengthen MeghRaj & NIC Cloud:** Expand National cloud capacity for platforms like **DigiLocker, e-Office, GovDrive**.
■ **Hidden Economic Dependency:** Cloud provider's **pricing power** raises operational costs, adds **indirect risks**.	■ **Skill Development & Capacity Building:** Train cloud administrators in **resilient architecture, threat mitigation, disaster recovery planning**.

Evaluate the challenges and risks associated with centralised cloud providers for critical national infrastructure.

Drishti Mains Question

India's National Blockchain Framework

Blockchain technology has become a major **digital innovation** with the launch of the **National Blockchain Framework (NBF)** in **September 2024** to enhance **transparency**, **accountability**, and **efficiency** in **public services**.

- As of **October 2025**, **over 34 crore documents** have been **verified** using blockchain technology.

National Blockchain Framework (NBF)

It is India's **indigenous platform** to boost **blockchain-based public services**, providing a **unified architecture** for **secure**, **transparent**, and **scalable solutions** across **government sectors**.

Core Components:

- **NBF's** core components include **Vishvasya Blockchain Stack, NBFLite, Praamaanik, and the National Blockchain Portal**.
  - **Vishvasya Blockchain Stack:** It is an **indigenous**, **modular platform** providing the **technical foundation** for developing and deploying **blockchain-based governance applications**. Its key features are:
    - **Blockchain-as-a-Service (BaaS):** Offers **shared blockchain infrastructure** for easy **application deployment** by government entities.
    - **Distributed Infrastructure:** Operates via **National Informatics Centre (NIC) data centres** in **Bhubaneswar**, **Pune**, and **Hyderabad** for **scalability** and **resilience**.
    - **Permissioned Layer:** Ensures only **verified participants** can **validate transactions**.
    - **Open APIs:** Provides **application programming interface (APIs)** and **modules** for **authentication** and **data exchange.**
  - **NBFLite:** A **sandbox version** of the **blockchain stack** for **startups**, **academia**, and **researchers** to **prototype applications** in a **controlled environment**.
  - **Praamaanik:** An innovative solution that uses **blockchain** to verify the **authenticity** and **source of mobile applications**, protecting users from **fraud**.
  - **National Blockchain Portal:** A **central platform** outlining **India's strategic approach** and supporting **cross-sector adoption.**

NBF Transforming Digital Governance in India:

- **Certificates and Document Chain:** Securely stores **academic documents** and **government certificates (caste, income etc)**, with over **34 crore documents** verified through the platform.
- **Logistics Chain:** Tracks **goods movement** like Karnataka's *Aushada* system, ensuring **drug authenticity**, enabling **patient verification**, and curbing **spurious drugs**.

- **Judiciary and ICJS Chain:** Provides a **secure, immutable record of judicial data**, enabling electronic delivery of summons and orders.
  - The **Inter-operable Criminal Justice System (ICJS)** unifies the **criminal justice ecosystem** for **case records**, **evidence**, and **judicial documents**.
- **Property Chain:** Securely records **property transactions**, providing full **ownership history**, reducing **litigation**, and speeding up **dispute resolution**.

Key Initiatives Promoting Blockchain Adoption in India

- **National Strategy on Blockchain:** The **National Strategy on Blockchain** by **MeitY** outlines India's **roadmap** for **blockchain development**, addressing **challenges** and setting **short- and long-term goals** for its **integration** across sectors.
- **Centre of Excellence (CoE) in Blockchain:** **NIC** has set up a **CoE** to offer **consultancy**, **training**, and **support** for **pilot blockchain projects** before large-scale implementation.
- **TRAI's Role:** Telecom Regulatory Authority of India (TRAI) has integrated **Distributed Ledger Technology (DLT)** to curb **spam and fraud** in SMS transmission.
- **RBI's Blockchain Initiatives:** RBI conducted a pilot for **Digital Rupee (e₹)** in retail transactions to promote **traceable, instant, and inclusive payment systems** using blockchain.
- **NSDL's Adoption of Blockchain:** National Securities Depositories Limited (**NSDL**) developed the **Debenture Covenant Monitoring System** to track **asset charges** and **covenants** on a **tamper-proof ledger**, boosting **investor confidence**.

India's Efforts to Build a Blockchain-Ready Workforce

- **Skill Development:** Over **214 programs** have trained **21,000+ government officials** in emerging technologies including blockchain.
- **Post Graduate Diploma in FinTech & Blockchain:** Offers **900-hour training** on blockchain, fintech, AI, cybersecurity, and regulatory frameworks.
- **BLEND programme by C-DAC:** Blockchain Technology and Application Development (BLEND) is an online course for **engineering students and professionals** to learn blockchain architecture and real-world applications.
- **FutureSkills PRIME:** MeitY-backed initiative for **upskilling IT manpower** in 10 emerging technologies including blockchain.

> Discuss the significance of the National Blockchain Framework (NBF) in promoting trust-based digital governance in India.
>
> **Drishti Mains Question**

2nd International Bharat 6G Symposium

At the **India Mobile Congress (IMC) 2025**, India highlighted its growing leadership in **next-generation telecom** through the **2nd International Bharat 6G Symposium**, marking a key step towards building a self-reliant, innovative, and **globally connected 6G ecosystem** for **Viksit Bharat 2047**.

- The IMC is Asia's most prominent technology expos, jointly organized by the **Department of Telecommunications (DoT)** and the **Cellular Operators Association of India (COAI)**.

Key Outcomes of the Symposium

- **New Delhi Declaration on 6G:** At the Symposium, global research alliances including **Bharat 6G, 6G-IA (European organization), ATIS' Next G Alliance (North American organization)**, and others issued a **Joint Declaration** to shape **6G as a global public good.**
  - The declaration outlines five core principles for 6G networks that are **trusted and secure, resilient and reliable, open and interoperable, inclusive and affordable, and sustainable and globally connected.**
  - The declaration also calls for **skills development and global collaboration** to build a **future-ready, inclusive 6G ecosystem** aligned with **India's 6G Vision 2030.**
- **Economic Vision:** The symposium highlighted India's 6G roadmap aiming for USD **1.2 trillion GDP impact by 2035 and 10% of global 6G patents,** along with a threefold growth in satellite communications by 2033.
  - The Symposium showcased **India's indigenous 4G stack** as a milestone toward technological self-reliance and export readiness.
- **Focus on Collaboration and Inclusivity:** The symposium urged stronger global collaboration, indigenous R&D, and industry- academia synergy to build an inclusive 6G framework.
  - It highlighted **India's shift from a technology consumer to a co-creator and global leader,** backed by milestones like the **rollout of one lakh indigenous 4G towers.**

Bharat 6G Vision

- **Bharat 6G Vision:** Launched in 2023, Bharat 6G Vision aims to position India as a **global leader and co-creator in next-generation wireless communication.** It aligns with the Viksit Bharat 2047 goals, focusing on **affordability, sustainability, and universal access by 2030.**
- **Features of the Vision:**
  - **Bharat 6G Alliance (B6GA):** An **industry-led, government-facilitated** body uniting telecom operators, academia, startups, and R&D institutions.
    - ❖ It focuses on domains like **spectrum, technology, sustainability, applications, and use cases**.
    - ❖ **Bharat 6G Alliance** signed a Memorandum of Understanding **with global alliances** including **Next G Alliance (USA), 6G-IA (Europe), 6G Forum (South Korea), 6G Flagship (Finland), 6G Brazil**, and others to collaborate on research and global standards.
- As of July 2025, the alliance comprises over 80 member organizations.

- ❖ It is also working with **Telecommunications Standards Development Society, India (TSDSI)** and **National Association of Software and Services Companies(NASSCOM)** to leverage national expertise and ensure resilient, trusted supply chains.
- **Bharat 6G Mission:** Aims to make India a **global co-creator and leader** in 6G technologies by **2030.**
  - ❖ Focuses on **indigenous innovation**, **capacity building**, and **skills development**.
  - ❖ Emphasizes **sustainability, security, and inclusivity** in telecom development.
  - ❖ Seeks to ensure that **6G innovation originates in India** and benefits both national and global communities.
- **Infrastructure:** The government funded two advanced testbeds, the **6G THz Testbed** and the **Advanced Optical Communication Testbed** to promote research and innovation in next-generation telecom technologies.
  - ❖ It also sanctioned **100 5G labs** across academic institutions in FY 2023–24 to build a 6G-ready academic and startup ecosystem, and approved **104 research proposals on 6G network systems.**
- **India's Initiatives for 6G Ecosystem:**
  - **Telecom Technology Development Fund (TTDF): Launched in 2022** to fund R&D in **5G and 6G technologies**.
    - ❖ **TTDF** supports **domestic companies, startups, and academic institutions** developing telecom products for **affordable rural connectivity**. As of September 2025, **115 projects worth Rs 310.6 crore** have been approved, with durations of **1–5 years**.
  - **Technology Innovation Hub (TIH) at IIIT Bangalor:** Set up under **National Mission on Interdisciplinary Cyber-Physical Systems (NM-ICPS),** to pioneer **Advanced Communication Systems** for 5G+ and 6G.

Steps Needed to Ensure Successful Implementation of India's 6G Vision

- **Promote Indigenous Manufacturing:** Integrate 6G components under **Production Linked Initiative (PLI) Schemes** for telecom, semiconductors, and electronics to reduce import dependency and enhance domestic production.
- **Skill Development and Human Capital:** Expand **5G Labs in academic institutions** to create a 6G-ready talent pool and promote interdisciplinary courses in AI, IoT, photonics, and network engineering.
- **Spectrum Policy and Regulation:** Formulate a forward-looking **National Spectrum Strategy** for THz frequencies and encourage global harmonization through participation in ITU and global standard-setting bodies.

- **Inclusive Access and Affordability:** Align 6G rollout with **Digital India** and **BharatNet** to ensure equitable access in rural and remote regions, avoiding a new digital divide.

> India's 6G Vision aims to position the country as a global co-creator in next-generation telecom. Discuss.
>
> **Drishti Mains Question**

Google's Verifiable Quantum Advantage

Google announced that its quantum processor, **"Willow,"** has achieved the **first-ever verifiable quantum advantage** by utilizing a new algorithm called **Quantum Echoes,** which ran 13,000 times faster than the world's fastest supercomputers.

- This achievement marks a major step toward real-world **quantum applications** like **Hamiltonian learning.**

Google's Verifiable Quantum Advantage

- **Concept of Quantum Advantage:** It refers to the point where a quantum computer outperforms classical supercomputers on specific tasks.
- **Google's Verifiable Quantum Advantage:** Google's **Willow quantum processor,** featuring up to 105 qubits, successfully ran the *Quantum Echoes algorithm,* which tracks the forward and backward evolution of **entangled quantum states** to study **quantum chaos and interference.**
  - This enabled the measurement of the **Out-of-Time-Order Correlator (OTOC)** - a key indicator of how information gets "scrambled" through **entanglement** as quantum bits interact.
  - The **Willow processor** achieved the **OTOC measurement in just two hours**, a task estimated to take 13,000 times longer (equivalent to several years) on a classical supercomputer.
    - ❖ Unlike earlier demonstrations, the result can be **independently verified by other quantum or classical systems,** making it the first real-world, measurable quantum advantage
- **Practical Applications:**
  - **Hamiltonian Learning:** OTOC circuits can aid in Hamiltonian Learning, a quantum technique where a **computer simulates the behavior of a physical system (such as a molecule) and compares it with real experimental data** to accurately estimate unknown parameters like energy levels or interaction strengths.
  - **Molecular Structure Estimation:** The OTOC method, tested using **nuclear magnetic resonance (NMR) spectroscopy,** helps analyze proteins, materials, and compounds by studying quantum spin behavior, leading to better insights into molecular geometry.

India's Data Centre
Capacity Set to Reach 9 GW by 2032

India's data centre industry is projected to expand significantly, with capacity **expected to increase from 1.2 GW in 2025 to 9 GW by 2032**, registering a compound annual growth rate (CAGR) of 17%.

Data Centres

- **About:** Data centres are **specialised facilities that store**, manage, and process large volumes of electronic data.
  - They house **critical Information Technology (IT) infrastructure,** including servers, storage devices, networking equipment, and systems for cooling, power supply, and security.
  - These centres are designed to offer **reliable, scalable, and secure environments** for managing data essential to modern digital operations-ranging from cloud computing to artificial intelligence applications.
- **Market Size and Growth:** Despite **producing 20% of the world's data,** India currently holds only 3% of global data centre capacity, highlighting vast potential for expansion.
- **Geographical Distribution:** India **currently hosts around 150 data centres,** with major players such as Amazon Web Services (AWS), Microsoft Azure, Google Cloud, etc. leading the market. Mumbai accounts for over 50% of India's data centre, and emerging hubs include Ahmedabad, Pune, and Visakhapatnam (Vizag).

Key Reasons Behind the Growth Of Data Centres in India

- **Expanding Digital Infrastructure:** With **751 million internet** users and 52.4% penetration in 2024, India's growing digital ecosystem is driving massive demand for data generation, storage, and processing facilities.
- **AI, 5G, and IoT Growth:** Rapid expansion of AI applications, generative models, and 5G networks is expected to triple data consumption, necessitating faster and more efficient data centres.
- **Edge Computing:** Rising use of IoT and 5G has boosted demand for edge data centres that process data closer to users, reducing latency and improving real-time efficiency.
- **Economic and Employment Impact:** The sector could generate over ₹50,000 crore in economic activity by FY27, spurring investments, job creation, and real estate growth (Crisil Ratings).
- **Policy and Data Localisation:** Laws like the **Public Records Act (1993)**, **RBI's 2018 directive,** and the Digital Personal Data Protection Act (2023) mandate local data storage to safeguard privacy and national interests.
- **National Sovereignty:** Domestic data storage enhances India's control over sensitive information, strengthening digital security and strategic autonomy.

Government Initiatives to Promote Data Centres

- **Digital India** (**2015**): Digital India strengthens online infrastructure and digital services, laying the foundation for large-scale data handling.
- **National Informatics Centre** (**NIC**): Operates advanced National Data Centres to support e-governance.
- **Infrastructure Status for Data Centres:** Centres with an IT load above 5 MW now enjoy infrastructure status, improving access to loans and incentives.
- **State-Level Policies:** For instance, Maharashtra's IT & ITES Policy 2023 offers targeted incentives to promote regional data centre development.

Steps to Address Challenges
Related to Data Centres in India

- **Infrastructure Upgradation:** Invest in reliable, low-cost, and renewable power infrastructure by offering **subsidized electricity tariffs** and enabling direct power procurement from DISCOMs or renewable sources like solar and wind.
- **Policy Refinement:** Simplify **land acquisition** and approval processes while offering incentives such as **tax breaks for firms storing data** in India and promoting green data centers with liquid cooling and energy-efficient designs.
- **Regional Diversification:** Establish dedicated data center zones in **Tier-2 and Tier-3** cities, particularly in cooler regions like Shimla, Dehradun, and Chandigarh, to reduce cooling costs and promote balanced regional growth.
- **Human Resource Development:** Launch a **National Data Center Academy** to train professionals in AI, cloud computing, and cybersecurity, supported by collaborations with global technology companies.
- **Sustainable Practices:** Encourage **green and energy-efficient technologies,** expand undersea cable stations, and build a National Fiber Corridor to ensure connectivity and sustainability in data infrastructure.

Discuss the significance of data centres in driving India's digital economy and evaluate the challenges hindering their growth.

Drishti Mains Question

Hepatitis A

Experts argue that **Hepatitis A**, now emerging as a **major cause of acute liver failure**, should be prioritised for inclusion in the **Universal Immunisation Programme (UIP)** to strengthen national protection against the disease.

Hepatitis A

- **About: Hepatitis A** is a **viral infection** that causes **inflammation of the liver**, triggered by the **Hepatitis A virus (HAV)**. Unlike **Hepatitis B and C**, it does **not cause chronic liver disease**, though illness can range from **mild to severe**.

- Symptoms may include **fever**, **fatigue**, **nausea**, **abdominal discomfort**, **diarrhoea**, **dark urine**, and **jaundice**.
- **Transmission:** Hepatitis A spreads through the **faecal–oral route**, mainly via **contaminated food or water** or **dirty hands**.
  - Protective antibodies in India have dropped from **over 90% two decades ago** to **below 60% in many urban regions**, creating a growing pool of susceptible young people.
- **Global Burden:** Hepatitis A occurs **worldwide** and the virus can persist in the environment. In 2016, **WHO** estimated **7,134 deaths**, contributing **0.5%** of global viral hepatitis mortality.
- **Treatment:** There is **no specific antiviral treatment** for Hepatitis A. Care focuses on **symptom relief**, **hydration**, **nutrition**, and **rest**.
- **Vaccine:** Both **live-attenuated** and **inactivated** Hepatitis A vaccines provide **90–95% protection**, with immunity lasting **15–20 years or lifelong**. India's **Biological E's Biovac-A**, a live-attenuated vaccine, has been used for over **two decades** with **excellent safety and efficacy**.

Hepatitis

- **About: Hepatitis** is **liver inflammation** caused by viral infections, autoimmune disorders, or alcohol/drug toxicity.
  - It can be **acute**, with symptoms like **jaundice, fever, and vomiting**, or **chronic**, lasting over six months and potentially progressing to **fibrosis, cirrhosis, or liver cancer**.
- **Causes:** Hepatitis can result from **hepatotropic viruses** (A, B, C, D, E), other viruses like **Varicella** and **SARS-CoV-2**, as well as **non-viral factors** such as alcohol, drugs, autoimmune disorders, and fatty liver disease.
  - Hepatitis B vaccines are highly effective in preventing **Hepatitis B virus (HBV) infection**, while **no effective vaccine** is available for **Hepatitis C**.
- **Types of Hepatitis:** There are **5 main hepatitis viruses**—A, B, C, D, and E—each capable of causing liver disease but differing in **transmission**, **severity**, **geographic spread**, and **prevention**.
- **Occurrence:** Types **B and C** cause long-term infections and are the major causes of **cirrhosis, liver cancer**, and **viral hepatitis deaths**, leading to about **1.3 million deaths each year** and affecting **304 million people** worldwide.
  - Similarly, **Hepatitis A** is no longer a **benign childhood infection**; it is an **emerging public health concern**.
  - Without **urgent and sustained action**, **viral hepatitis** is projected to cause an additional **9.5 million new infections**, **2.1 million liver cancer cases**, and **2.8 million deaths** by **2030**.

- **Flagship Initiatives: WHO's Global Health Sector Strategy on HIV, Viral Hepatitis and Sexually Transmitted Infections (2022–2030):** The strategy aims to cut new **hepatitis infections** to **520,000 cases** a year and **hepatitis-related deaths** to **450,000** by **2030**, achieving a **90% drop in incidence** and **65% drop in mortality** from **2015** levels.
  - **National Viral Hepatitis Control Program (2018):** Aims to **eliminate Hepatitis C by 2030** and significantly reduce the **infected population**, **morbidity**, and **mortality** from **Hepatitis A, B, C, and E** across India.

UNESCO's Neurotechnology Ethics Framework

UNESCO issued the **first global normative framework** on the **ethics of neurotechnology,** aiming to balance innovation with human rights by protecting the brain and neural data from misuse.

- The move comes as **neurotech rapidly expands,** offering major medical benefits but also raising concerns about privacy, autonomy, and manipulation.

Neurotechnology

- **Definition: Neurotechnology** refers to **devices and procedures that access, assess, and act on neural systems, especially the human brain.**
  - It works by recording brain signals or stimulating specific brain regions to improve function, restore abilities, or enable brain–machine communication.
  - Neurotechnology is used in medicine, assistive devices, research, wellness tech, and emerging commercial applications.
- **Techniques Used in Neurotechnology:**
  - **Neuroimaging:** It involves tools such as **EEG (Electroencephalography), and MRI (Magnetic Resonance Imaging)**, and other techniques that allow scientists and doctors to **visualize brain activity in real-time**, aiding in the diagnosis of conditions like tumors, strokes, or epilepsy.
  - **Neurostimulation:** It uses electrical or magnetic methods such as **DBS (Deep Brain Stimulation)** and **TMS (Transcranial Magnetic Stimulation)** to activate specific brain regions, helping treat conditions like Parkinson's disease by delivering targeted electrical impulses.
  - **Neuromodulation:** It **alters nerve activity** by delivering targeted **electrical, electromagnetic, or chemical stimulation to the nervous system,** helping treat neurological and psychiatric disorders by correcting abnormal neural circuits.
  - **Neurofeedback:** Training the brain by giving real-time feedback on its electrical activity.

Steps to Promote the Ethical, Safe, and Responsible use of Neurotechnology

As per UNESCO Recommendations on Neurotechnology Usage:

- **Protect Human Rights and Mental Privacy:** UNESCO recommends strict safeguards to **protect human dignity, autonomy, freedom of thought, and mental privacy,** ensuring all neural data is treated as highly sensitive and protected from misuse.
- **Adopt Key Ethical Principles:** The framework calls for **beneficence, proportionality, non-maleficence, inclusivity, non-discrimination, accountability, transparency, trustworthiness, epistemic justice**, and protection of future generations in all neurotechnology use.
- **Ban Manipulative Use of Neural Data:** UNESCO explicitly **prohibits using neural or brain-related data** for manipulative, deceptive, political, commercial, or medical purposes, including profiling or influencing behaviour.
- **Strengthen Protections for Vulnerable Groups:** It calls for special safeguards for **children, older adults, and cognitively vulnerable populations**, ensuring stronger consent standards and protection from exploitation.
- **Define Neurotechnology and Neurodata Clearly:** Countries are advised to adopt clear definitions of neurotechnology, neurodata, and related tools to support consistent regulation and ethical oversight.
- **Implement Responsible Research and Innovation (RRI):** UNESCO urges nations to embed a responsible research approach that anticipates risks, weighs benefits, and aligns neurotechnology development with ethical and societal values.

> Protecting mental privacy is the next frontier of fundamental rights. Analyse this statement in the context of neurorights.
>
> **Drishti Mains Question**

WHO's GLASS 2025 Report on AMR

The **World Health Organization (WHO)** released its **Global Antibiotic Resistance Surveillance Report (GLASS) 2025**, highlighting that India has **one of the highest antimicrobial resistance (AMR) rates** globally, with **1 in 3 bacterial infections resistant** to common antibiotics.

Key Findings of the GLASS 2025 Report

- **Rising AMR Threat:** Between 2018 and 2023, **AMR** increased in 40% of monitored pathogen-antibiotic combinations, notably against critical **"Watch" antibiotics** like **carbapenems** and **fluoroquinolones.**
- **Geographically Uneven AMR: AMR** was highest in **Southeast Asia** and the **Eastern Mediterranean**, followed by **Africa**, while **Europe** and the **Western Pacific** show lower rates.

- **AMR Threat in India:** In 2023, India, with one of the highest **AMR rates**, had 1 in 3 bacterial infections resistant to common antibiotics, with **ICU infections** by **E. coli, K. pneumoniae**, and **S. aureus** highly resistant.

Initiatives Taken to Tackle AMR

India

- **Drugs and Cosmetics Rules, 1945:** It combats **AMR** by ensuring **antibiotic quality** via **Schedule M** (**Good Manufacturing Practices**) and promoting **rational use** through **prescription-only rules** under **Schedules H and H1**.
- **ICMR's AMR Surveillance and Research Network:** It tracks **drug-resistant infections** in 30 **tertiary hospitals**.
- **National Action Plan on AMR 2017:** It promotes a **One Health approach** involving multiple **stakeholder ministries**.
- **National Programme on AMR containment 2012:** AMR Surveillance Network strengthened through **labs in State Medical Colleges**.
- **Antibiotic Stewardship Program** (**AMSP**): It seeks to curb **antibiotic misuse** in **hospitals/ICUs** and has resulted in the **ban of 40 inappropriate Fixed Dose Combinations** (**FDCs**).

Global

- **WHO Global Action Plan on AMR** (2015): It is a strategic blueprint to combat AMR. It focuses on five objectives: **raising awareness, strengthening surveillance and research, reducing infections, optimizing antimicrobial use**, and **ensuring sustainable investment** in new medicines, diagnostics, and vaccines.
- **World Antimicrobial Awareness Week** (**WAAW, 18 – 24 November**): Held since 2015, **WAAW** is a global campaign to raise **AMR awareness** and promote **best practices** among the public, health workers, and policymakers.
- **Global Antimicrobial Resistance and Use Surveillance System** (**GLASS**): Launched in 2015, **WHO's GLASS** collects **AMR data** from humans, antimicrobial use, the **food chain**, and the **environment** to guide strategies.

Driving Factors Behind the Rise of AMR in India

- **Excessive Antibiotic Usage:** Widespread **antibiotics misuse** in India—including **over-the-counter sales, self-medication, and incomplete treatments**—fuels **AMR**, with 59% of 2022 use from WHO's **"Watch" category** for serious infections.
- **Poor Healthcare System:** Limited diagnostics, **weak regulatory enforcement** and **unevenness across states**, along with **overcrowded hospitals** and poor hygiene, fuel empirical antibiotic use and spread **resistant pathogens**.
- **Stagnation in Antibiotic Development:** Nafithromycin **(2024)** is the first new antibiotic in its class in over 30 years, as pharmaceutical companies prioritized **profitable chronic disease treatments**, limiting options against **resistant pathogens**.
- **Pervasive Non-Human Applications:** India is the world's **4th-largest consumer of animal antimicrobials**, with use in **animal feed** projected to rise **82% by 2030**. Indiscriminate use in **agriculture and aquaculture** spreads **resistant genes** into the **food chain** worsening **AMR**.
- **Environmental Contamination:** Environmental contamination from **pharma waste** and **untreated hospital effluents**, combined with **poor sewage and waste management**, creates **hotspots** that promote the development and spread of **AMR**.

> "Antimicrobial Resistance (AMR) is not just a health issue but also an environmental and agricultural one." Elucidate with special reference to India. What robust regulatory measures are needed across these sectors?
>
> **Drishti Mains Question**

Auroras, Solar Flares, CMEs & Solar Storms

Recent **Solar storms** and **coronal mass ejections (CMEs)** during the **heightened Solar Cycle** produced **colourful lights** in the **Northern Hemisphere**, visible far from the **Arctic region**.

- **Solar Cycle:** The **solar cycle** is an approximately **11-year cycle** of the **Sun's magnetic field**, during which its **magnetic activity** rises and falls. The **Sun** undergoes a complete **magnetic polarity flip** every cycle, with its north and south poles switching places.
  - This cycle influences **solar surface activity**, including **sunspots (small, dark, and cooler areas on the sun surface), solar flares**, and **CMEs**. The cycle is monitored by **counting sunspots**, starting with a **solar minimum** when activity is lowest and reaching a **solar maximum** when solar activity is at its peak.
- **Solar Flares:** The **magnetic field lines** around **sunspots** often become tangled, cross, and realign, triggering powerful bursts of energy called **solar flares**. These flares release intense **radiation** into space, and strong flares can **disrupt radio communications** on Earth as well as pose risks to **satellites and astronauts**.
- **Coronal Mass Ejections (CMEs):** Solar flares are often accompanied by **CMEs**, which are massive expulsions of **plasma** and **magnetic field** from the Sun's **outermost layer - corona**. CMEs are propelled into space at high speeds when the Sun's **magnetic field lines** rapidly **reorganize.**
- **Solar Storms:** Solar storms (**geomagnetic storms**) occur when a large-scale **magnetic eruption**, often accompanied by a **CME** and **solar flare**, accelerates **charged particles** in the Sun's atmosphere to high speeds.
  - When a **CME** reaches Earth, it interacts with the **magnetosphere**, compressing and agitating it, and allowing energetic **solar wind particles** to enter the atmosphere near the **poles**.
  - The **Earth's magnetosphere**, generated by its **magnetic fields**, normally shields moons from these solar particles.

History, Art & Culture

Rani Chennamma of Kittur

The Government of India marked **200 years of Rani Chennamma's historic victory at Kittur (1824)** with the release of a **special Rs 200 commemorative coin** celebrating her courage and leadership against British rule.

Rani Chennamma

- **Early Life: Rani Chennamma** was born on **23rd October 1778**, in **Kakati village** (Belagavi district, Karnataka) to a **Lingayat family**.
  - She was trained in **horse riding, sword fighting, and archery** from a young age.
  - She married **Raja Mallasarja of Kittur** and later became queen after his death in **1816**.
- **Revolt of Kittur (1824):** After her husband and son's death, she adopted **Shivalingappa** as heir to the Kittur throne.
  - The **British East India Company** refused to recognize the adoption, attempting to **annex Kittur,** an early instance of what later became the **Doctrine of Lapse**.
  - Rani Chennamma refused to surrender and led an **armed rebellion** against British officer **John Thackery**, defeating him in the first battle.
  - However, the British retaliated with a larger force under **Colonel Deacon,** captured the fort, and imprisoned her at **Bailhongal Fort,** where she died in 1829.
- **Legacy:** She is one of **India's earliest freedom fighters**, preceding the **Revolt of 1857 by over three decades.**
  - Rani Chennamma is revered as a **symbol of courage, justice, and women-led resistance against colonial rule** in Karnataka and beyond.
  - Her story lives on through **folk songs (Janapada), ballads, and theatre**, along with the annual **Kittur Rani Chennamma Utsav**.

Rashtriya Ekta Diwas 2025:
Sardar Patel @150 - A Legacy of Unity

Rashtriya Ekta Diwas 2025 (National Unity Day) marks the **150th birth anniversary of Sardar Vallabhbhai Patel,** the architect of India's political integration. Observed every year on **31st Oct,** the day celebrates his legacy through events like the Run for Unity and Unity March, reaffirming the spirit of national cohesion.

Rashtriya Ekta Diwas (National Unity Day)

- **About:** Rashtriya Ekta Diwas instituted in **2014** by the Government of India to recognise **Sardar Patel's role in unifying India**.

- It symbolises the ideals of **national integration, peace, and unity in diversity**.
- It encourages citizens to **reaffirm their commitment** to national integrity and collective strength.
- The day also serves as a platform to promote the **'Ek Bharat Shreshtha Bharat (EBSB)'** initiative, announced by PM Modi in **2015**.

Ek Bharat Shreshtha Bharat (EBSB) Initiative

- **About:** Launched on **31st October 2015**, the EBSB initiative seeks to **carry forward Patel's vision of national unity and integration** through cultural, linguistic, and social exchange among States and Union Territories.
- **Key Objectives:** Strengthen **emotional bonds** among citizens across regions.
  - Promote **cultural exchange and linguistic appreciation** between states.
  - Foster **national integration** through structured inter-state partnerships.
  - Highlight India's **diverse art, heritage, and traditions**.
  - Encourage **mutual learning and sharing of best practices**.
- EBSB Events and Initiatives Promoting Unity:
  - **State and UT Pairing:** EBSB promotes the idea of "unity in diversity" by pairing different States and Union Territories to strengthen emotional bonds through linguistic, cultural, and educational exchanges.
  - **Bhasha Sangam App:** It is an initiative of the **Ministry of Education under EBSB**, to teach basic sentences of everyday usage in 22 Indian languages, encouraging linguistic inclusion.
  - **Yuva Sangam & EBSB Clubs:** Promote **student exchanges** and inter-state youth engagement to build understanding.
  - **Kashi Tamil Sangamam:** Celebrates the cultural and spiritual bond between **Kashi and Tamil Nadu**, promoting unity through **art, language, and tradition** exchange.
  - **Cultural & Food Festivals:** Enhance inter-regional appreciation and tourism.
  - **Digital Outreach:** Platforms like **My Bharat Portal** and **EBSB Quiz** encourage civic participation and cultural awareness online.
- **Impact:** It extends the spirit of **Rashtriya Ekta Diwas** beyond a single day, transforming it into a **continuous movement for national unity**.
  - With **millions of participants**, it supports initiatives like **Dekho Apna Desh** (**Tourism**) and indigenous sports promotion, reinforcing **India's collective identity**.

- **Statue of Unity:** Inaugurated on **31st October 2018** at **Kevadia, Gujarat**, the **Statue of Unity** is the **world's tallest**

statue at **182 metres**, dedicated to **Sardar Vallabhbhai Patel**. It is located on **Sadhu Bet hillock** overlooking the **Narmada River** and the **Sardar Sarovar Dam**, it symbolises national unity and pride.

- In **2020**, it was recognised among the **"Eight Wonders of the Shanghai Cooperation Organisation (SCO)."**

> Critically examine Sardar Vallabhbhai Patel's strategy of "persuasion with firmness" in integrating the princely states.
>
> **Drishti Mains Question**

Maharshi Dayanand Saraswati

- **About:** **19th-century religious reformer**, philosopher, social thinker, and founder of **Arya Samaj**; led revival of **Vedic purity** and removal of **social evils**.
- **Formative Period:** Born as **Mool Shankar Tiwari** (12th Feb 1824, Gujarat); questioned **idol worship**, **rituals** & superstitions.
  - At **19**, he renounced worldly life, lived as an **ascetic (1845–1860)**, and under **Swami Virjanand** in **Mathura**, was inspired to **reform Hinduism** and revive **Vedic roots**.
- **Reformist Vision:** Opposed **idol worship**, **untouchability**, **child marriage**, **Sati**, **caste bias**, and **gender inequality**.
- Promoted **education**, **widow remarriage**, **Shuddhi movement**, and **equality** under the motto **"Back to the Vedas"**; authored *Satyarth Prakash* (The Light of Truth).
- **Academic Contributions:** Inspired **Gurukulas**, **Girls' Gurukulas** & **DAV institutions** (first in **Lahore, 1886** under **Mahatma Hansraj**).
- **Support for Nationalist Causes:** First to call for **"Swaraj" (1876)**; inspiring leaders like **Bal Gangadhar Tilak**, **Lala Lajpat Rai** & **Mahatma Gandhi**; supported **Swadeshi**, **cow protection**, and **Hindi** as national language.

150 Years of Arya Samaj

PM addressed the **International Arya Mahasammelan 2025** in Delhi, marking **150 years of Arya Samaj** and **200th birth anniversary** of **Maharshi Dayanand Saraswati**, under **Jyāna Jyoti Festival**, promoting **Vedic** & **Swadeshi values** aligned with **Viksit Bharat 2047**.

Arya Samaj	

- **About:** Founded by **Swami Dayanand Saraswati** in **1875**, Bombay; Hindu reform movement that upholds **Vedas** as supreme source of knowledge & truth.
- **Social Reforms:** Advocated **women's education**, **inter-caste marriage**, **widow remarriage** while establishing schools, orphanages, and relief work.
  - Led **Shuddhi Movement** (reconvert those who had embraced other faiths)
	- **Key Leaders:** Swami Virajanand Dandeesha, Shri **Shraddhanand** (founder of Gurukul Kangri University), **Pandit Lekh Ram**
	- **Split (1893):** Over **meat-eating vs vegetarianism** & **Anglicized vs Sanskrit education**
	  - **Lala Hansraj** promoted **Vedic education** via the **Gurukul system**, while **Lala Lajpat Rai** supported modern, **English-based education** through **DAV institutions**

Mughal Miniature Painting

Mughal miniature painting *A Family of Cheetahs in a Rocky Landscape* attributed to Baswan (c. 1575–80), sold for a **record £10.2 Mn** at **Christie's auction, London**. Created under **Akbar's reign**, it features **realistic fur & landscape** in **opaque pigments with gold highlights**.

Mughal Paintings

- **Origin:** Mughal School of Painting developed in **16th century**; **miniature art** blending **Persian & Indian styles;** used for **manuscript illustrations** & **album art**

Evolution	
- **Humayun (1530–1540, 1555–1556):** Introduced **Persian influences;** brought **Mir Syed Ali** & **Khwaja Abdus Samad;** notable e.g. *Princes of the House of Timur* (c.1550) - **Akbar (1556–1605):** True founder of Mughal painting; **established the Imperial Atelier &** blended **Persian techniques with Indian themes and naturalism** - Artists– **Basawan, Daswanth, Lal, Miskin, Kesu Das;** introduced **Indian colour palette** (like **peacock blue** & **Indian red**) and realistic human expressions; European influences from **Jesuit missionaries added perspective & shading.**	- **Jahangir (1605–1627):** Peak period; focus on **portraits, nature, album art;** artists– **Ustad Mansur** (known for *Red Blossoms* painting), **Abu'l Hasan**, **Bichitr** - **Shah Jahan (1628–1658):** Patronage continued with less innovation; more **ornamental, courtly**, use of **gold & decorative motifs** - **Aurangzeb (1658–1707):** He viewed painting as **un-Islamic, decline in patronage**; artists shifted to **Rajput/Deccan courts** like **Bikaner, Hyderabad, Lucknow.** - **Later Mughals (18th Century):** Brief revival under **Muhammad Shah Rangeela (1719-48)**; declined under **Shah Alam II**, rise of **Rajput & Company styles**

- **Legacy & Impact:** Mughal painting became a **classical Indian style**, influencing **Rajput** (Bikaner, Bundi, Kishangarh) and **Deccan–Company** schools in 18th-19th centuries; sustained **courtly art** and pioneered **scientific naturalism** in **Jahangir's nature studies**.

Guru Nanak Jayanti 2025:
Celebrating the Birth of the Founder of Sikhism

Guru Nanak Jayanti, also known as Gurpurab, is celebrated on 5th November 2025, marking the 556th birth anniversary of Guru Nanak Dev (1469–1539). The day commemorates the founder of Sikhism, celebrating his message of equality, and compassion.

Guru Nanak Jayanti

- It is celebrated on the day of Kartik Poornima, which is the fifteenth lunar **day in the month of Kartik** according to the **Hindu calendar**, and usually falls in the month of **November** by the Gregorian calendar.
- A day before Gurpurab, devotees take part in **Nagar Kirtan** processions led by the **Panj Pyare** carrying the **triangular Sikh flag, the Nishan Sahib**, with the **Guru Granth Sahib** placed in a palanquin, accompanied by hymn singing and **Gatka martial arts displays.**
- On Guru Nanak Jayanti, processions are followed by Langar at Gurdwaras, where volunteers serve free meals to all.
  - Langar, from a Persian word for **"almshouse,"** is the Sikh community kitchen that feeds anyone reflecting equality and service.

Guru Nanak Dev Ji

- **About:** Guru Nanak Dev Ji was born in 1469 at Talwandi (now Nankana Sahib, Pakistan) and attained spiritual enlightenment in 1496 at Sultanpur Lodhi.
  - As the **founder of Sikhism and the first of the ten Sikh Gurus,** he rejected caste discrimination, ritualism, and idol worship, advocating devotion to one formless God.
  - He passed away in 1539, after appointing Guru Angad as his successor.
- **Key Teachings of Guru Nanak Dev Ji:**
  - **Oneness of God (Ik Onkar):** He taught that there is only one, formless, eternal God who is present in all beings.
    - ❖ True worship lies in remembering God with sincerity rather than rituals.
  - **Equality of All Humans:** He rejected caste, untouchability, and religious hierarchy. All people, regardless of identity, share the same divine light.
  - **Three Pillars of Sikhism:** Guru Nanak formalised the three pillars of **Sikhism** (Naam Japna, Kirat Karna, and Vand Chhakna) to promote righteous living, dignity of labour, and social equality.
    - ❖ **Naam Japna:** Devote constant remembrance of God's name to overcome the five evils (lust, anger, greed, attachment, and ego).
    - ❖ **Kirat Karna:** Work hard and earn a livelihood through honest, ethical means to avoid exploitation and deceit.
    - ❖ **Vand Chhakna:** Share what you have with those in need. Wealth is God's gift and must be used for the welfare of society.
  - **Sarbat da Bhala (Welfare of All):** He thought to pray for the wellbeing of everyone, regardless of religion, caste, gender, or background.

Contribution of Guru Nanak's
Teachings to Societal Transformation

- **Social Equality & Inclusion:** Guru Nanak challenged caste discrimination and asserted that **dignity belongs to every individual**. This helped weaken rigid social hierarchies.
- **Women's Empowerment:** He was a strong advocate for gender equality and raised his voice against discrimination against women.
- **Institutional Reforms:** Guru Nanak strengthened social equality through key institutions.
  - **Langar** offered a free community kitchen where everyone could eat without discrimination.
  - **Pangat** encouraged people to sit together and share meals as equals.
  - **Sangat** brought people together for shared learning, spiritual growth, and collective decision-making.
- **Ethical Socio-Economic Order:** He encouraged honesty in work and fair distribution of wealth through *dasvandh* (donating a tenth of one's income). This promoted dignity of labour and reduced exploitation.
- **Interfaith Dialogue & Harmony:** Guru Nanak travelled widely across India and beyond, engaging with Hindus, Muslims, Sufis, Yogis, and others, promoting peaceful coexistence.
- **Cultural & Spiritual Integration:** His teachings blended elements of Bhakti and Sufi movements, promoting spirituality rooted in love, truth, and humanity.

Discuss the continuing relevance of Guru Nanak's "Ik Onkar" and "Sarbat da Bhala" in addressing communal harmony and social justice in India.

Drishti Mains Question

NCERT Revises Textbook to
Acknowledge Ancient Indian Contributions

The **National Council of Educational Research and Training (NCERT)** has updated its **Class 7 mathematics textbook** to more prominently feature ancient Indian achievements in **mathematics, particularly in algebra and geometry**.

- This move aligns with the **National Education Policy (NEP) 2020**'s emphasis on incorporating Indian Knowledge Systems in education.

Key Contributions of Ancient India to the Development of Mathematics

- **Ancient Indian Contributions:** The revised book credits Indian mathematicians, like **Brahmagupta (7th century CE)** and **Bhaskaracharya (12th century CE)** with foundational work in algebra.
  - It cites **Brahmagupta's Brahmasphutasiddhanta,** which articulated the first known rules for operations with **positive and negative numbers**, marking a milestone in the history of arithmetic and algebra.
  - Brahmagupta's *Brahmasphutasiddhanta* introduced the **use of zero (0)** as a number. These ideas were later translated into Arabic and influenced Islamic scholars like **Al-Khwarizmi,** whose works reached Europe and shaped modern mathematics.
  - The **Sulba Sutras (800–500 BCE)** contain knowledge demonstrating advanced geometric understanding, including principles similar to **Pythagoras Theorem.**
  - **Aryabhatta (476 CE)** introduced the **place value system and decimal notation**. This system simplified arithmetic, making calculations faster and easier, and was foundational for many practical inventions.

Significance of Including Ancient India's Contributions in the School Curriculum

- **Decolonizing Curriculum:** The changes reflect the **NEP 2020 objective of moving beyond Eurocentric narrative**s in Indian education, rebalancing the portrayal of India's intellectual legacy.
- **Impetus for Inquiry-Based Learning:** By including diverse mathematical traditions and original problems from Sanskrit sources, the new curriculum aims to foster a more **inquiry-driven approach** and engagement with historical context.
- **National Integration and Inspiration:** The renewed focus on Indian Knowledge Systems seeks to **nurture a sense of pride in India's scientific and mathematical heritage**, motivating students to pursue STEM with a deeper cultural understanding.

Challenges in Preserving Ancient Indian Knowledge

- **Physical and Conservation Challenges:** Manuscripts written on organic materials like **palm leaves and birch bark** are highly fragile and prone to ageing, insect damage, and fungal growth.
- **Scholarly and Linguistic Challenge:** Manuscripts exist in more than 80 languages and numerous ancient scripts such as *Sharada and Grantha*, which very few experts can interpret today.
  - Frequent scribal errors, missing portions, and the loss of oral nuances make accurate reconstruction and translation difficult.

- **Institutional and Legal Challenges: With millions of manuscripts** scattered across temples, private collections, and libraries, many of which remain uncatalogued or inaccessible.
  - The absence of a unified legal framework and ownership disputes hinder coordinated preservation and access.
- **Colonial Legacy:** Western historiography often **marginalized Indian scientific traditions**, portraying them as philosophical rather than empirical. This perception persists in some academic narratives.
- **Commercial Exploitation:** Cases like the **biopiracy of neem, basmati rice, and turmeric** highlight the vulnerability of traditional knowledge to misuse without proper legal protection.
- **Fragmented Institutional Efforts:** Despite initiatives like **Traditional Knowledge Digital Library (TKDL)** and **National Mission for Manuscripts (NMM)**, coordination between traditional scholars and modern scientific institutions remains limited.

Initiatives Taken by India to Preserve Ancient Indian Knowledge

- **Institutional and Mission-Based Initiatives:**
  - **National Mission for Manuscripts (NMM) (2003):** NMM was established under the Ministry of Culture to document, conserve, and digitize manuscripts written in diverse Indian languages and scripts.
  - **Indira Gandhi National Centre for the Arts (IGNCA):** Serves as a hub for research, preservation, and dissemination of India's traditional arts and knowledge systems.
- **Education and Digital Preservation:**
  - **National Education Policy (NEP) 2020:** NEP 2020 emphasizes integrating India's ancient wisdom— mathematics, astronomy, medicine, and philosophy— into school and higher education.
  - **Digital Preservation:** Sanskrit texts and manuscripts are being digitized and translated by universities and cultural bodies for global accessibility.
- **Promotion of Traditional Knowledge Systems:**
  - **Ministry of AYUSH:** Advances Ayurveda, Yoga, Unani, Siddha, and Homeopathy globally through research and scientific validation.
  - **UNESCO's Local and Indigenous Knowledge Systems (LINKS):** It is an interdisciplinary initiative that promotes indigenous and local knowledge and its meaningful inclusion in environmental policy and action.
- **Legal and Policy Measures for Protection**
  - **Traditional Knowledge Digital Library (TKDL)**
  - **Trademark Act, 1999:** Safeguards indigenous agricultural and biological products through brand differentiation.

- **Geographical Indications (GI):** Grants identity to region-specific products, preserving cultural authenticity.
- **WIPO Treaty on Intellectual Property, Genetic Resources and Traditional Knowledge (2024)**: Strengthens transparency by mandating patent disclosure of genetic resource origins and associated traditional knowledge.

> Evaluate the relevance of traditional Indian knowledge systems in the context of contemporary scientific innovation and intellectual property protection.
>
> **Drishti Mains Question**

Pandit Jawaharlal Nehru as the Architect of Modern India

Children's Day, celebrated on **14th November 2025,** marks the **125th birth anniversary of Jawaharlal Nehru.**

- The occasion also offers a moment to reflect on **Nehru's enduring contributions in shaping modern India** through his vision, institutions, and commitment to nation-building.

Role in India's Independence

- Inspired by **Mahatma Gandhi**, Nehru became deeply involved in the freedom struggle. In 1912, he attended the Bankipore Congress as a delegate and became **Secretary of the Home Rule League, Allahabad in 1919.**
- He opposed the **Rowlatt Act, 1919** joined the **Non-Cooperation Movement**, and was repeatedly jailed during the **Salt Satyagraha** and **Quit India Movement**.
- He represented India at the **Congress of Oppressed Nationalities in Brussels (1926).**
- In 1928, Nehru attended the All-Party Congress and signed the **Nehru Report on constitutional reforms** (named after his father Shri Motilal Nehru).
  - In the same year, he founded the **'Independence for India League,'** advocating complete break from British rule, and became its General Secretary.
- Jawaharlal Nehru was elected as Congress President at the landmark **Lahore Session (1929),** which adopted **Poorna Swaraj as the national goal.**
- The **Resolution on Fundamental Rights and Economic Programme** for the 1931 **Karachi Session** of the Indian National Congress was primarily drafted by **Pandit Jawaharlal Nehru.** Jawaharlal Nehru was the **second Individual Satyagrahi,** following **Vinoba Bhave**, in 1940.
- On **15th August 1947**, he became India's first Prime Minister and delivered the historic **"Tryst with Destiny"** speech.
- As Prime Minister, he worked to strengthen democracy, secularism, and scientific thinking in the new nation.

Jawaharlal Nehru as Architect of Modern India

- **Nehru's Vision of a Modern and Progressive Nation:** Nehru inherited a nation **scarred by Partition, social division and economic ruin**, yet he laid out a bold vision of a secular, democratic and forward-looking India.
  - His leadership helped stabilize the country and initiate its transformation into a modern state.
- **Building Institutions of Excellence:** Jawaharlal Nehru laid the foundation of modern India by creating **institutions of scientific and technical excellence** such as the **IITs, ISRO** (successor to the Indian **National Committee for Space Research (INCOSPAR),** which was set up under Nehru)**, AIIMS, and major research universities**. His vision strengthened **India's capability in engineering, space science, and nuclear development,** enabling the country to pursue self-reliance and large-scale industrialisation.
  - These institutions often called the **"Temples of Modern India"** continue to drive innovation, human capital formation, and technological leadership.
- **Introducing the Five-Year Plans:** Nehru introduced India's **First Five-Year Plan in 1951,** giving the nation a structured roadmap for economic development after Partition.
  - The plan focused on **agriculture, irrigation, food security, and rural development,** helping India overcome severe shortages and inflation.
  - These plans created a long-term planning framework that guided India's development for decades.
- **Strengthening India's Democratic Foundations:** Nehru deeply committed to democracy, equality, and constitutional values.
  - He advocated for **fundamental rights, equality, secularism**, and freedom of expression.
  - He oversaw the establishment of the **Election Commission of India (1950)** and guided the country through its **first general elections (1951–52),** then the **world's largest democratic exercise.**
  - His commitment to democratic institutions ensured that independent India adopted a stable, inclusive, and constitutional system of governance.
- **Shaping India's Foreign Policy:** As Prime Minister, Nehru held additional charge of the Ministry of External Affairs until his death.
  - He laid the foundation of **India's independent foreign policy** during a tense post–World War II environment.
  - He is one of the pioneers of the **Non-Aligned Movement (NAM)** to keep India out of Cold War blocs.
  - He led the **Asian Relations Conference (1947),** strengthening Asian solidarity.
  - Nehru championed the **Panchsheel Agreement**, five principles of peaceful coexistence, still central to India's diplomacy.
- **Infrastructure:** Launched major infrastructure projects such as the **Bhakra-Nangal Dam,** steel plants at Bhilai, Durgapur and Rourkela, and large public sector enterprises.

- Developed modern cities like **Chandigarh** and Jawahar Lal Nehru projected Chandigarh as the face of modern India.

- **Establishing India as a Welfare State:** Nehru envisioned **India as a welfare state** that balanced economic growth with social justice. Rejecting both **unregulated capitalism and rigid communism,** he promoted a model where the **state ensured education, healthcare, labour rights, social security, and dignity for all citizens.**

> Discuss Jawaharlal Nehru's role in framing India's democratic and constitutional ethos.
>
> **Drishti Mains Question**

Janjatiya Gaurav Diwas to Commemorate Tribal Legacy

India observes **Janjatiya Gaurav Divas** on **15th November** to honor tribal freedom fighter **Birsa Munda**, with **2024–25** marked as **Janjatiya Gaurav Varsh** for his **150th birth anniversary**.

Janjatiya Gaurav Divas and its Importance in Preserving Tribal History

- **Janjatiya Gaurav Diwas:** The day is observed each year to honor tribals' contributions in **preserving cultural heritage** and fostering **Indian values** such as **national pride, valour, and hospitality**. It was first celebrated in **2021** as part of **Azadi Ka Amrit Mahotsav.**
  - **Honouring Tribal Freedom Fighters**: Birsa Munda led the **Ulgulan (Great Tumult)** against British land policies, symbolizing tribal resistance and the demand for **self-rule**. Other tribal leaders like **Veer Narayan Singh**, **Badal Bhoi**, **Raja Shankar Shah**, and **Kunwar Raghunath Shah** are also being commemorated for their anti-colonial efforts.

- **Janjatiya Gaurav Varsh 2025:** As part of the celebrations, the government is establishing **11 Tribal Freedom Fighters Museums** to highlight tribal **valour** and **anti-colonial struggles** often overlooked in mainstream history.
  - 4 have already been inaugurated in **Chhattisgarh, Jharkhand, and Madhya Pradesh**.

- **Museums as Memory Keepers: Shaheed Veer Narayan Singh Memorial & Tribal Freedom Fighters Museum (Raipur, Chhattisgarh)**: It commemorates **Narayan Singh** of the **Binjhwar tribe**, who led an armed revolt against British famine policies in **1856–1857** and was executed on **10th December 1857**.
  - ❖ The museum chronicles tribal uprisings such as **Halba Kranti, Meria Kranti, and Bhumkal Kranti**, and highlights **women-led protests** like **Rani Cho-Ris Kranti (1878)** as well as tribal participation in **Gandhian movements**.

- **Bhagwan Birsa Munda Museum (Ranchi, Jharkhand):** It commemorates **Birsa Munda**, leader of the **Ulgulan (1899–1900)**, spiritual reformer, and freedom fighter.

- **Badal Bhoi State Tribal Freedom Fighters Museum (Chhindwara, MP):** It honours **Badal Bhoi (1845–1940)**, leader of tribal protests against British forest laws and oppression.

- **Raja Shankar Shah & Kunwar Raghunath Shah Museum (Jabalpur, MP):** It celebrates poets who resisted British rule during **1857**, using literature as a form of non-violent protest.

Key India's Initiatives Related to the Promotion of Tribal Culture and Heritage	
Initiative	**Key Features**
Adi Sanskriti Project	Offers around **100 immersive courses** on diverse tribal artforms; includes nearly **5,000 curated documents** on India's socio-cultural tribal heritage.
Adi Vaani	Provides **real-time text and speech translation** between Hindi, English, and tribal languages — **Mundari, Bhili, Gondi, Santhali, Garo, Kui.**
Tribal Digital Document Repository	Serves as a **searchable repository** of documents related to India's tribal communities.
Varnamala and Oral Literature Initiative	Publication of **local rhymes and stories** in tribal languages; collection and documentation of oral tribal literature, folklore, and folktales.
Research and Documentation of Indigenous Knowledge	Promotion of studies on **indigenous healing practices**, medicinal plants, Adivasi languages, agriculture, dance, **paintings**.
Aadi Mahotsav	Celebrates **tribal crafts, cuisine, commerce, culture, art**; provides a national platform to showcase tribal talent and entrepreneurship.
Tribal Craft Mela & Cultural Events	Organisation of **craft melas, dance festivals, art competitions**, workshops-cum-exhibitions; financial support to conduct tribal fairs and festivals across states.

> Discuss the role of digital initiatives in preserving tribal languages and cultural knowledge.
>
> **Drishti Mains Question**

Drishti IAS

India Targets 55% Female Workforce Participation by 2030

The **Ministry of Labour and Employment** has announced a strategic plan to raise India's **Female Labour Force Participation Rate (FLFPR)** from **41.7% (FY24) to 55% by 2030.** The target is aimed towards **Bridging the Gender Employment Gap.**

Importance of Raising Female Labour Force Participation

- **Major Driver of Economic Growth:** Women entering the workforce boost overall productivity, enhance innovation, and **strengthen financial stability, making India more resilient** and competitive globally.
  - As per **McKinsey report** pushing gender equality can deliver a sizable **additional economic growth** and could add Rs **46 lakh crore (USD 700 billion)** to India's GDP in 2025.
- **Diversifies Talent & Strengthens Industries:** Women bring varied perspectives that deepen the labour pool, stimulate fresh ideas, and help industries adapt to changing economic trends.
  - Sectors such as **healthcare, education, financial services, and STEM** stand to gain significantly from a balanced gender workforce.
- **Catalyst for Gender Equality:** Workforce participation empowers women through **financial independence, asset ownership, and bargaining power,** which are critical for achieving SDG 5 (Gender Equality).
- **Transforms Household & Community Welfare:** Empirical studies show that women tend to invest a greater share of their income in education, nutrition, and healthcare for their families.
  - This enhances **human capital development** and breaks intergenerational cycles of poverty.
- **Foundation for Sustainable and Inclusive Growth:** Expanding women's role across sectors—**from agriculture and MSMEs to AI and clean energy**—promotes equitable and sustainable development.
  - Women's workforce integration is not just a rights-based issue but a strategic economic imperative, crucial for **India's transition to a USD 5 trillion economy** and achievement of the Viksit Bharat 2047 vision.

Challenges to Higher Female Labour Force Participation

- **Limited Access to High-Quality Employment:** A large proportion of women remain concentrated in **low-productivity sectors** such as **agriculture and informal work**, restricting their access to stable and high-paying jobs.
- **The Double Burden of Domestic and Economic Roles:** In rural India, women often juggle **domestic responsibilities and economic activities,** blurring the distinction between household work and formal employment.
  - Women's unpaid care work contributes **3.1% of GDP,** yet this **'invisible' labour** rarely results in income generation or asset ownership.
- **Gender Norms and Mobility Constraints:** Deep-rooted gender norms, **inadequate access to safe transportation**, and the absence of reliable childcare services significantly restrict women's mobility and influence their occupational choices.
- **High Vulnerability in the Labour Market:** Over **90% of employed women are engaged in informal work** where social security, maternity benefits, and legal protections are either absent or extremely limited.
  - Such employment is often **irregular, seasonal, and dependent on family** or local networks.

Trends in FLFPR in India

- **Long-Term Decline Followed by Recent Recovery:** According to PLFS (2023–24), FLFPR declined significantly from **31.2% in 2011–12 to 23.3% in 2017–18**, indicating a withdrawal of women from the labour market.
  - However, the trend reversed sharply, rising to 41.7% in 2023–24, signalling renewed female engagement in economic activities.
- **Rural Women Driving the Increase:** The recent rise in FLFPR has been **driven primarily by rural women**, with urban participation showing limited improvement.
  - Factors such as rural distress, inflation, stagnant wages, and the need to supplement household income have pushed more women into work-related roles.
- **Rise in Unpaid and Self-Employment:** Women's participation has grown mainly in unpaid family labour and own-account work, not in salaried or wage employment.

Measures Taken by India to Improve FLFPR

- **Beti Bachao Beti Padhao (BBBP):** BBBP enhances long-term female participation in the workforce by ensuring **higher school retention and improved life outcomes** for girls.
- **National Education Policy (NEP), 2020:** NEP 2020 prioritises **gender equity in education**, ensuring inclusive and equitable access to quality education for girls from disadvantaged groups.

- **One Stop Centres (OSC) and Women Helpline: One Stop Centres** provide **immediate support services**-medical aid, legal counselling, temporary shelter, and police facilitation-to women affected by violence.
  - The Women Helpline offers **24×7 support**, enabling women to access justice and safely continue their economic activities.
- **Codification of Labour Laws:** The **four consolidated Labour Codes** simplify 29 laws to improve compliance and promote job creation.
- **Protective Provisions for Women Workers:** Policies include **26 weeks of paid maternity leave**, **mandatory crèche facilities** in establishments with 50+ employees, and **permission for night shifts with safety arrangements**.
  - The **Sexual Harassment of Women at Workplace Act, 2013** provides a robust framework ensuring safe and dignified workplace environments.

Ensuring Inclusive Female Workforce Participation in India

- **Redesign Labour Metrics for Quality Work:** India must go beyond tracking participation and incorporate indicators such as earnings, work hours, job security, and asset ownership.
  - Integrating **NSO's Time Use Survey** can help recognise unpaid care work and redefine productive labour to reflect actual economic contribution.
- **Create Gender-Sensitive Formal Employment:** Policies like **Production-Linked Incentives, Make in India,** and **MSME** support should embed women-focused incentives.
  - Expanding **labour-intensive sectors** in rural clusters and adapting **MGNREGA** for women-specific tasks can generate proximity-based, dignified wage work.
- **Strengthen Care and Social Infrastructure:** Community childcare centres, eldercare services, and shared kitchens can substantially reduce women's **unpaid workload,** enabling sustained workforce participation and smoother transition into formal jobs.
- **Skill Building and Digital Empowerment:** Region-specific, demand-driven upskilling-especially in health, education, logistics, and digital services-along with safe access to **gig/platform work** can raise productivity and income.
- **Tackle Social Norms:** Strengthening SHGs with credit, digital literacy, and market linkages, combined with behavioural campaigns promoting shared domestic roles, can create an enabling ecosystem for long-term economic inclusion.

> Examine the factors influencing female labour force participation in India and evaluate the measures taken by the government to improve it.
>
> **Drishti Mains Question**

WHO Global Tuberculosis (TB) Report 2025

The **World Health Organisation (WHO) Global Tuberculosis (TB) Report 2025** shows a sharp **21% fall in India's TB incidence**, dropping from 237 per lakh in 2015 to 187 per lakh in 2024 nearly twice the pace of the global decline and marking a major milestone in India's fight against the disease.

Key Findings of the WHO Global TB Report 2025

- **Global:** In 2024, **10.7 million people** fell ill with TB and **1.23 million** died. The **incidence rate** was 131 per 100,000 and the **case fatality rate** was 11.5%.
  - TB is among the **top 10 causes of death globally** and the **leading killer** from a single infectious agent.
  - **High-burden Countries: 30 high-burden countries** account for **87%** of global TB. The top contributors are **India (25%),** Indonesia (10%), Philippines (6.8%), China (6.5%), Pakistan (6.3%), Nigeria (4.8%), DR Congo (3.9%), Bangladesh (3.6%).
  - **Key Drivers of TB Incidence: Undernutrition, low income, Human Immunodeficiency Virus (HIV), diabetes, smoking**, and **alcohol-use disorders**.
- **India's Achievement in Sharp Decline:** India accounts for **25% of global TB cases** but has shown one of the **fastest declines among high-burden countries**. Treatment coverage improved from 53% (2015) to 92% (2024).
  - India's TB mortality rate fell from **28 per lakh in 2015 to 21 per lakh in 2024.** However, despite this progress, India still accounted for **about 28% of all TB deaths worldwide in 2024.**
  - Treatment success rate under **Pradhan Mantri TB Mukt Bharat Abhiyan is at** 90% (2024), above the global average of 88%.
  - India reports **one lakh cases remained "missing,"** meaning undiagnosed cases that continue to spread the infection. India still contributes 8.8% of the global detection gap, **second only to Indonesia (10%).**

Factors Contributing to the Decline in India's TB Incidence

- **Early Detection at Scale:** Early diagnosis has improved sharply with the rapid expansion of molecular testing facilities.
  - India now has the **world's largest TB lab network,** and 92% of patients receive **upfront Rifampicin drug-resistance testing.** This level of early detection helps cut transmission at the source.
  - India diagnosed its highest-ever **26.18 lakh TB cases in 2024**, closing much of the gap between estimated and detected cases.
- **Use of New Technologies:** Artificial Intelligence (AI) -enabled handheld X-ray devices, portable diagnostic tools, and expanded **NAAT (Nucleic Acid Amplification Testing)**

coverage have made it easier to find TB quickly, even in remote and high-burden areas.

- These technologies allow faster screening and reduce delays in starting treatment.

■ **New and Shorter Treatment Regimens:** Introduction of the **BPaLM (bedaquiline, pretomanid, linezolid, moxifloxacin) regimen** reduced DR-TB treatment duration from **18–24 months to just 6 months.**

- All-oral MDR-TB therapies improved safety, reduced dropouts and increased successful treatment outcomes.

■ **Large-Scale Community Screening:** Community screening under the **TB Mukt Bharat Abhiyan has reached unprecedented levels.**

- More than 19 crore vulnerable people were screened, leading to the detection of **24.5 lakh patients, including 8.61 lakh asymptomatic cases.** Identifying silent carriers is a major reason for reduced transmission.
- Care has moved closer to communities through 1.78 lakh **Ayushman Arogya Mandirs** and **Ni-kshay Mitras,**
    ❖ This decentralisation helps people access testing and treatment quickly, preventing long delays that allow TB to spread.

■ **Improved Nutrition and Social Support:** Under the **Ni-Kshay Poshan Yojana (NPY),** financial support for TB patients' nutrition has been increased from Rs 500 to Rs 1,000 per month, providing Rs 3,000 to Rs 6,000 per patient throughout treatment.

India's TB Elimination Target

■ In 2020, India renamed the **Revised National Tuberculosis Control Programme (RNTCP)** as the **National TB Elimination Programme (NTEP)** to align with its goal of **eliminating TB by 2025**, five years ahead of the global target of 2030.

- Elimination of TB as a public health problem is **defined as less than one notified TB case (all forms) per million population and year.**

■ The NTEP follows the National Strategic Plan (2017-2025), focusing on four key actions: **Detect – Treat – Prevent – Build (DTPB)** to control and eliminate TB in India.

■ While the **WHO's End TB Strategy seeks an 80% reduction in incidence** and a **90% reduction in deaths by 2030** (compared to 2015 levels).

■ India has achieved only a **21% decline in new cases and a 28% decline in deaths between 2015 and 2024.**

Challenges India Faces in Achieving its 2025 TB Elimination Target

■ **High TB Burden and Rapid Transmission:** India carries the world's highest TB burden, making elimination difficult.

- **Overcrowded slums, poor ventilation and dense living conditions** allow the infection to **spread quickly,** **keeping transmission levels high** despite improvements in detection.

■ **Drug-Resistant TB (MDR/XDR):** Many patients do not complete the full course of treatment, and antibiotics are often misused. This leads to **multi-drug resistant (MDR)** and **extensively drug-resistant (XDR) TB,** which are much harder and more expensive to treat.

■ **Delayed or Missed Diagnosis**: A large section of the population, especially in rural, tribal, and hard-to-reach areas, **does not have access to rapid TB tests.**

- Delayed diagnosis means the disease continues to spread silently in the community.

■ **Co-existing Diseases and Risk Factors:** High prevalence of diabetes, **HIV, undernutrition and smoking weakens** immunity and increases the risk of infection.

- Rising air pollution further harms lung health. **In 2024 alone, around 3.2 lakh TB cases were linked to diabetes.**

■ **Challenges in the Private Sector:** Nearly half of TB patients first visit private doctors. However, **many private clinics use outdated tests**, inconsistent drug regimens, and **do not report cases to the government.** This leads to missed cases and poor quality of treatment.

■ **Undernutrition and Poor Living Conditions: Malnutrition** remains one of the biggest risk factors for TB in India.

- Poor-quality diets and food insecurity weaken immunity, making people more vulnerable to infection and slower to recover.

■ **Health System Gaps:** Some areas face shortages of trained health workers, irregular drug supply, and weak follow-up mechanisms.

- These gaps reduce treatment adherence and increase the risk of drug resistance.
- TB in children often shows subtle symptoms and requires specialised tests. As a result, many cases remain undetected or are diagnosed late.

Measures to Strengthen TB Elimination Efforts in India

■ **Expand Early and Accurate Diagnosis:** Scale up rapid molecular tests such as CBNAAT and TrueNat at district and sub-district levels to ensure uniform access. Early detection cuts transmission chains, identifies drug resistance sooner and reduces the number of "missing" cases.

■ **Tackle Drug-Resistant TB With Stronger Interventions:** Scale up shorter, patient-friendly regimens like BPaL, which reduce MDR treatment duration from 18–24 months to 6 months. Faster and more tolerable treatments improve outcomes and control the spread of difficult-to-treat TB strains.

■ **Address Major Risk Factors and Co-Morbidities:** Integrate TB screening with diabetes, HIV, malnutrition, alcohol-cessation and tobacco-control programmes. Improve air-quality management, especially in high-burden cities.

- **Strengthen Preventive Therapy (TPT):** Improve awareness about preventive treatment targeting children, HIV-positive individuals and high-risk groups. Preventive therapy stops latent infections from progressing into active TB, crucial for long-term incidence reduction.

- **Restore and Strengthen Post-Covid Health Infrastructure:** Covid-19 diverted manpower, labs and resources, slowing progress in several states. Rebuild TB laboratory systems and restore manpower that was diverted during the pandemic.

- **Strengthened Public-Private Collaboration:** Encouraging public–private collaboration can strengthen R&D for new vaccines, point-of-care diagnostics and shorter drug regimens. This can lead to adoption of standardised treatment guidelines across private providers and help reduce misdiagnosis and incomplete treatment.

> Discuss how decentralised TB services and new diagnostic technologies have transformed India's TB response.
>
> **Drishti Mains Question**

Surrogacy Law in India: Rights & Limitations

The Supreme Court has agreed to examine whether the **ban on using surrogacy** for a second child under the **Surrogacy (Regulation) Act, 2021**, violates the **constitutional right** to reproductive autonomy, particularly in cases of secondary infertility.

Legal Challenges to the Limitations of India's Surrogacy Law

- **Surrogacy Act, 2021 in Question:** Section 4(iii)(C)(II) of the **Surrogacy (Regulation) Act, 2021** prohibits couples from opting for surrogacy if they already have a child—**biological, adopted, or through surrogacy**—except in cases where the existing child is affected by a **disability, life-threatening condition, or an incurable illness.**
  - Couples with secondary infertility argue that this restriction **denies them surrogacy access** and violates their **constitutional rights** to reproductive autonomy**.**

- **Arguments by Petitioners:** Secondary infertility, though less discussed, is **emotionally and medically distressing.**
  - Surrogacy should not be denied when there is **no national one-child policy**, and adoption laws already allow for second or third children (e.g., **Hindu Adoption and Maintenance Act, 1956, Juvenile Justice Act, 2015).**
  - The ban amounts to state overreach into reproductive autonomy, violating **Article 21** (right to life and personal liberty).

- **Government's Stand:**
  - **Surrogacy Not a Fundamental Right:** Surrogacy involves the **use of another woman's womb**. The Constitution does **not recognise a right over another individual's body**. Surrogacy is a **statutory right**.
  - **Restriction is Reasonable and Needed:** Prevents unnecessary surrogacy when a couple already has a **healthy, living child**. Protects surrogate mothers from undergoing pregnancy in non-essential cases.
  - **Well-Balanced Provision:** The proviso allows exceptions for **serious medical conditions**, ensuring genuine need is addressed and surrogacy is not misused.

- **Supreme Court's Observations:** The Court observed that the **restriction appears "reasonable,"** noting concerns related to **India's growing population.**
  - It nonetheless emphasized that a **detailed examination** is required to determine whether the provision infringes reproductive freedom, bodily autonomy, and the right to privacy.

Key Legal Frameworks Related to Surrogacy in India

- **Surrogacy (Regulation) Act, 2021:**
  - **Permissibility:** Surrogacy allowed only for altruistic purposes and for couples with proven infertility; commercial surrogacy is fully prohibited.
  - **Eligibility Requirements:** Only a legally married Indian man (26–55) and woman (25–50) or a widow/divorcee (35–45) can seek surrogacy, and they must not have any existing biological, adopted, or surrogate child.
  - **Criteria For Surrogate Mother:** Must be a close relative, married, have at least one child, be 25–35 years old, and act as a surrogate only once.
  - **Legal Status at Birth:** The child is legally the biological child of the intending couple; abortion requires consent and must follow the **MTP Act**.
  - **Rule 7 (Donor Egg Restriction):** Rule 7 bans donor eggs, but the Supreme Court has stayed its operation in a specific case involving **Mayer-Rokitansky-Küster-Hauser (MRKH) Syndrome**.

- **Amendment to Surrogacy (Regulation) Rules, 2022:** It allowed surrogacy with donor gametes if either spouse in the intending couple is certified by the **District Medical Board** to require donor gametes due to a medical condition.
  - This implies that **couples still cannot opt for surrogacy if both partners have medical issues**.
  - For divorced or widowed women opting for surrogacy, it **mandates the use of the woman's own eggs** alongside donor sperm.

> The Surrogacy (Regulation) Act, 2021, reinforces patriarchal notions while aiming to curb exploitation." Critically analyse.
>
> **Drishti Mains Question**

REPORTS & INDICES

Global Forest Resources Assessment 2025

India, with a **forest area of 72.7 Mn ha**, ranked **9th globally** in **total forest area** and retained **3rd position worldwide** in **annual forest area gain**, as per **GFRA 2025 (FAO)**.

- **Top Countries by Forest Area: Russia:** 832.6 mn ha; **Brazil:** 486 mn ha; **Canada:** 368.8 mn ha
- **GFRA:** Conducted every **5 years** by **FAO** using **official national data**; used for **policymaking**, **international conventions** & **sustainable forest management**.

India's Initiatives Related to Forest Conservation
National Mission for a Green India (GIM); Compensatory Afforestation Fund Management and Planning Authority (CAMPA); Ek Ped Maa Ke Naam Initiative

Foreign Liabilities and Assets (FLA) Census 2024–25

According to RBI's 2024–25 FLA census, the **US and Singapore together contributed over 1/3rd of India's total FDI**, reaffirming their status as top investment partners.

- **Top Investors:** US (20%) > Singapore (14.3%) > Mauritius > UK > Netherlands.
- **Foreign Dominance:** Over 75% of FDI-reporting firms were foreign subsidiaries, indicating strong overseas ownership and technology inflows.
- **Sectoral Focus:** Manufacturing (48.4%) > services.
  - **Non-financial companies held over 90% of total FDI equity,** highlighting dominance of core sectors.
- **Rising Inflows:** FDI stock grew by 11.1% in FY25 compared to FY24.

> **NOTE:**
> - **Outward Direct Investment** (domestic firm expands its operations to a foreign country): **ODI growth** (**17.9%**) outpaced FDI growth, reducing the inward-to-outward ratio from 6.3 to 5.9.
> - **Top Destinations:** Singapore, US, UK, and Netherlands.

National Migration Survey (2026–27)

MoSPI will conduct a year-long **National Migration Survey** from **July 2026 to June 2027**, the most comprehensive study of **migration** in nearly two decades.

- **Conducted Under: National Sample Survey**; covers all states/UTs except inaccessible A&N villages.
- **Purpose:** Estimates on migration rate, out-migration, short-term patterns, reasons, and net regional migration.
- **Need:** Last detailed survey was in **2007–08 (NSS 64th round)**; outdated post-Covid mobility trends.
- **New Features:** Short-term migration: **15 days to 6 months** (replacing earlier 1–6 months); tracks **individuals**, not households. Adds data on income change, service access, living conditions, and future migration plans.
- **Significance:** Identifies **migration hotspots** & **employment-linked mobility corridors**.
  - Aids targeted policies on **housing**, **transport & skilling**; Supports planning for **urban expansion** & **labour market needs**.
  - Offers insights for **social protection schemes** for migrants; Strengthens India's **socio-economic data architecture.**

> - **Under NSS**, a migrant is someone whose last **Usual Place of Residence (UPR) differs from the current place of enumeration**.
> - India's **migration rate** is **28.9%**, with **women migrating more than men** in both rural & urban areas; recent data– **PLFS (2020–21)** & **Multiple Indicator Survey (2020–21)**.

Index of Eight Core Industries (ICI) October 2025

ICI **remained unchanged at 162.4 in Oct 2025**, the same as Oct 2024.

- **About:** Production-volume index that measures the combined & individual performance of production of 8 core industries: **Coal, Crude Oil, Natural Gas, Refinery Products, Fertilizers, Steel, Cement & Electricity.**
  - Compiled by **Office of the Economic Adviser under the Ministry of Commerce and Industry;** base year– **2011–12**, aligned with the Index of Industrial Production (IIP). These sectors have a 40.27% weight in the IIP.
- **ICI Weightage: Fertilizers (lowest)** < Cement < Natural Gas < Crude Oil < Coal < Steel < Electricity < **Refinery Products (highest)**

> IIP– One of the key indicators used to track the pace of industrial activity in the country; compiled & published monthly by NSO (MoSPI).

75th Anniversary of National Sample Survey (NSS)

MoSPI released the National Industrial Classification (NIC) 2025 during the 'Culmination Ceremony' of the 75th anniversary of NSS.

NIC 2025	NSS
■ Key tool for **statistical surveys, censuses, economic research & policy formulation**.	■ Estd in 1950 on **recommendation of National Income Committee (1949), chaired by P.C. Mahalanobis**, to fill socio-economic data gaps.
■ It categorizes businesses & activities for consistent data collection, comparison, and analysis.	■ Headed by a Director General, it **conducts large-scale surveys on socio-economic subjects like household surveys**, ASI, and rural–urban price collection.
■ India's classification system, **introduced in 1962 and later updated as NIC 1970, 1987, 1990, 1998, 2004 and 2008**, has now been revised to reflect the evolving economic structure.	● Supports crop statistics improvement through area enumeration & crop estimation surveys.
■ NIC 2025 aligns with **International Standard Industrial Classification of All Economic Activities (ISIC) Revision 5**, developed by **UN Statistics Division**.	■ **Divisions–** Survey Design and Research Division (SDRD), Kolkata; Field Operations Division (FOD), Delhi/Faridabad; Data Processing Division (DPD), Kolkata; Survey Coordination Division (SCD), New Delhi

AWARDS & HONOURS

Rashtriya Vigyan Puraskar (RVP) 2025

Govt announced **RVP 2025** – **highest national recognition** in **science, technology, and tech-led innovation**.

Prominent Awardee

- **Vigyan Ratna (Posthumous)**: **Prof. Jayant Vishnu Narlikar (Astrophysicist)**
  - Co-developed **Hoyle–Narlikar theory of gravity**
  - Alternative to **Einstein's general relativity**; supports the **steady-state universe model.**

Rashtriya Vigyan Puraskar

- Instituted by **Ministry of Science & Technology**
- Recognizes **excellence in science, tech, and innovation** contributing to **national development**
- **Coverage: 13 disciplines** (Physics, Chemistry, Engineering, Agriculture, Environment, Atomic Energy, Space, etc.)
- **Award Categories**
  - **Vigyan Ratna (VR):** Lifetime achievement
  - **Vigyan Shri (VS):** Distinguished contributions
  - **Vigyan Yuva–SSB (VY–SSB):** Scientists below 45 years
  - **Vigyan Team (VT):** Exceptional collaborative work

Kendriya Grihmantri Dakshata Padak 2025

MHA has honoured **1,466 personnel** from States, UTs, **CAPFs**, and **CPOs** with the **Kendriya Grihmantri Dakshata Padak 2025**.

- Instituted by **MHA** in **Feb 2024**, announced annually on **31st Oct** (Sardar Vallabhbhai Patel's birth anniversary)
- Recognises excellence in **Special Operations**, **Investigation**, **Intelligence**, and **Forensic Science**
- Awarded to personnel from **Police Forces**, **Security Orgs**, **Intelligence Wings**, **CAPFs**, **CPOs**, and **Forensic institutions.**

ICFT–UNESCO Gandhi Medal

56th International Film Festival of India (IFFI) 2025 **will award ICFT-UNESCO Gandhi Medal to films** that reflect Mahatma Gandhi's values of peace, non-violence, and intercultural dialogue.

- Instituted at the **46th IFFI (2015)** in collaboration with **International Council For Film, Television And Audiovisual Communication (ICFT)-Paris under UNESCO.**
- **Honors films with high artistic & cinematic standards** that encourage ethical reflection on societal issues.

> - **ICFT**: Estd. at **1956 UNESCO General Conference in New Delhi** to encourage intercultural dialogue and peace through film, television, and digital media.
> - **IFFI**: Asia's oldest & most significant film festival, estd. in **1952**. Since 2004, **permanently hosted in Goa**, organized by NFDC, Ministry of Information & Broadcasting, and ESG, Govt. of Goa.

Booker Prize 2025

David Szalay has won the **2025 Booker Prize** for his sixth novel, **Flesh**. The novel follows a man's journey from poverty in Hungary to wealth in London, exploring themes of fate and ambition.

Booker Prize

- **About:** The world's leading literary award for a work of fiction, awarded by the Booker Prize Foundation since 1969. It recognizes excellence in original English fiction.
- **First Female Winner: Bernice Rubens** won in 1970 for _The Elected Member_.
- **Notable Winners:** Salman Rushdie (_Midnight's Children_, 1981), Arundhati Roy (_The God of Small Things_, 1997), Kazuo Ishiguro (_The Remains of the Day_, 1989), Arvind Adiga (_The White Tiger_), Samantha Harvey (_Orbital_, 2024).

> **International Booker Prize:** Established in **2005**, awarded for the best translated work into English, recognizing both the author and translator.

Sahitya Akademi – Bal Sahitya Puraskar 2025

Bal Sahitya Puraskar 2025 (estd in 2010) by Sahitya Akademi will be held on 14th Nov 2025 to promote & celebrate quality **children's literature in India's languages (24) and cultures**.

- **Eligibility:** Indian authors, with original works **for readers aged 9–16**, published within the last 5 years before the award year.

Sahitya Akademi

- **About:** Autonomous body; inaugrated in 1954 & registered in 1956 under **Societies Registration Act, 1860**.
- **Awards & Honours:** 24 Literary Awards, 24 Translation Awards each year, and Bhasha Samman for **contributions to unrecognized and classical/medieval languages**.
- **Sahitya Akademi Awards:** Started in 1954; annual awards for outstanding literary works in 22 scheduled languages, English & Rajasthani; **India's 2nd highest literary honour after Jnanpith Award**.

Ambaji Marble Earns GI Tag

Ambaji marble from Gujarat has received the GI tag, **recognising its unique white stone and enhancing its cultural, industrial & global identity**.

- **Origin:** Quarried in **Ambaji**, Banaskantha district, Gujarat; major **pilgrimage site** & **Shaktipeeth**.
- **Unique Qualities: Pure white**, **high shine**, **high calcium content**, **remarkable durability**; used in temples & sacred architecture; durability compared to stones in **Taj Mahal**.
- **Significance:** Exported to **Miami, Los Angeles, Boston, New Zealand, England** for temple architecture; mines are **~1,200–1,500 years old**; used in **Dilwara Jain Temple**, Mount Abu.

> - **GI Tag:** IPR identifying region-linked products; protects from imitation.
> - **Validity: 10 years**, **renewable**; regulated by **DPIIT**, Ministry of Commerce and Industry.

IMPORTANT DAYS

United Nations Day 2025

UN Day on **24th Oct 2025** marks **80 years** since the **UN's founding in 1945**, commemorating the entry into force of the UN Charter.

- **About:** Intergovernmental organisation **established in 1945** post-WWII; succeeded **League of Nations** to promote **peace, security, cooperation**.
  - **UN Charter** signed on **26th June 1945** (San Francisco) at the conclusion of **UN Conference on International Organization**, in force from **24th Oct 1945**.
  - **Charter was ratified by** 51 nations incl. **P5 (US, UK, USSR/Russia, China, France)**.

- **Evolution: Members (2025)** – 193; **India is a founding member**; **HQ –** New York City, US.
- **Core Goals:** Maintain **peace & security;** promote **friendly relations;** foster **international cooperation;** harmonize **global action to reach common objectives**

International Snow Leopard Day

India marked **International Snow Leopard Day (23rd Oct; declared in 2024 by UN)** with the **'#23for23' campaign**.

- **#23for23:** Initiated by **Global Snow Leopard and Ecosystem Protection Program (GSLEP)** & **Snow Leopard Trust worldwide**; encourages **23 minutes of physical activity** to honour the species.

Snow Leopard (Panthera uncia)

- **About & Habitat:** Often called the 'ghost of the mountains'; found in **high mountains of Asia**, including **India, Nepal, Bhutan, China** & several Central Asian countries.
  - Solitary animals; prefer elevations b/w **3,000–4,500 m**; breed seasonally with gestation period of **90–100 days**; genetically **closer to tigers** than leopards.
- **Conservation Status:** Listed in **CITES Appendix I**, **Convention on the Conservation of Migratory Species of Wild Animals**, and **Vulnerable in IUCN**.
- **India's Conservation Measures: Snow Leopard Population Assessment (SPAI)** reports **718 snow leopards in India (477 in Ladakh)**, marking the first scientific population survey in Indian Himalayas. Listed as **Schedule I species (WPA, 1972).**

Birth Anniversary of Batukeshwar Dutt

Birth anniversary of Batukeshwar Dutt was observed on 18th November.

- **Born:** 18 Nov 1910, Burdwan (Khandaghosh village), West Bengal
- **Associations:** Member of HSRA (influenced by Bhagat Sing) and Naujawan Bharat Sabha.
- **Central Legislative Assembly Bombing:**
  - **8 April 1929:** Threw bombs with Bhagat Singh to protest colonial bills (no harm intended)
  - Raised slogans like **"Inquilab Zindabad"**, distributed leaflets (stating *if the deaf are to hear, the sound has to be very loud*), and surrendered
- **Prison Struggle:** Sentenced to life imprisonment; joined 114-day hunger strike for prisoners' rights.
- **Later Role:** Joined Quit India Movement (1942) after release.
- **Legacy:** Remembered as a selfless revolutionary (who embodied Swami Vivekananda's ideals), and was cremated at Hussainiwala alongside Bhagat Singh, Rajguru, and Sukhdev.

Birth Anniversary of Rani Lakshmibai

The Birth anniversary of Rani Lakshmibai was **observed on 19th Nov, 2025**.

- **Early Life:** Also known as **Manikarnika**, was born on 19th Nov 1828 in Varanasi. Trained in horse riding, shooting, and fencing. Childhood companions included **Nana Sahib & Tatya Tope**; later became key leaders in 1857 uprising.

- **Rani of Jhansi:** Married Maharaja Gangadhar Rao at 14 and became Rani Lakshmibai. After losing her son, she **adopted Damodar Rao to secure succession**.

- **Role in the 1857 Revolt:** After the Maharaja's death in 1853, the **British used the Doctrine of Lapse to reject Damodar Rao's claim**. Rani Lakshmibai led resistance in the 1857 revolt and died in battle on 17th June 1858.

- **Legacy:** The Indian National Army (founded by **Subhas Chandra Bose**) named a **women's regiment after her** to honor her contributions to the freedom struggle.

108th Birth Anniversary of Indira Gandhi

India **paid tribute to former PM Indira Gandhi** on her 108th birth anniversary.

- **About:** Born on 19th November 1917 in Allahabad to Jawaharlal Nehru & Kamala Nehru, Indira Gandhi was **India's first and only woman PM, serving from 1966–1977 & 1980–1984**.

- **Role in Freedom Struggle:** As a child, she founded the **'Bal Charkha Sangh' & 'Vanar Sena'** in 1930 to support the Congress during the Non-Cooperation Movement. **She was imprisoned during the Quit India Movement in 1942**.

- **National Emergency (1975–77):** Imposed a National Emergency citing **"internal disturbances,"** suspending civil liberties and censoring the press.

- **Publications:** *The Years of Challenge* (1966–69); *The Years of Endeavour* (1969–72); *India* (1975); *Inde* (1979)

- **Recognition:** Bharat Ratna (1972); Mexican Academy Award for the Liberation of Bangladesh (1972); FAO's Second Annual Medal (1973), etc.

Contributions
Bank Nationalisation (**1969**): Nationalised 14 major banks to expand credit and support rural development.   **Green Revolution** (**1969–1974**): Promoted **High Yielding Variety seeds**, fertilizers, and irrigation to boost food production and achieve food self-sufficiency.   **Bangladesh Liberation War** (**1971**): Led India's intervention, **supporting Mukti Bahini**, resulting in the creation of Bangladesh.   **Abolition of Privy Purses** (**1971**): Ended princely entitlements (**26th Constitutional Amendment**), advancing equality and removing feudal privileges.   **Strengthening of Nuclear Programme:** Oversaw India's nuclear development, including the 1974 **Pokhran-I test**.   **Social Welfare Measures:** Launched "**Garibi Hatao**" campaign for poverty alleviation and expanded welfare access.

India Celebrates 100 Years of Hockey

Hockey India celebrates **100 years of Indian Hockey (1925–2025)** with nationwide events on **7th November**, led by a major ceremony at Major Dhyan Chand National Stadium.

Evolution of Indian Hockey

- **Origins:** Hockey dates back 4,000 years, with modern rules established in the UK in 1876.

- **Arrival in India:** Introduced in the 1850s under British rule, with the first hockey club founded in Calcutta (1855). Domestic tournaments like the Beighton Cup and Aga Khan Tournament helped popularize the sport.

- **Indian Hockey Federation (IHF):** Founded on 7th November 1925, a year after the International Hockey Federation (FIH).

- **Apex Body:** Hockey India (HI) was formed in 2009, merging the IHF and Indian Women's Hockey Federation, and recognized as a National Sports Federation in 2014. It is affiliated with FIH, IOA, and AHF, focusing on long-term development programs for national teams.

India's Hockey Achievements

- **Golden Era (1928–1956):** India won six consecutive Olympic golds (1928–1956), becoming the most successful hockey nation, with 13 Olympic medals (8 Gold, 1 Silver, 4 Bronze) as of 2025.

- **World Cup Glory (1975):** India won the Hockey World Cup in Kuala Lumpur.

- **Regional Dominance (1980s–Present):** India holds all three continental titles (Asian Games, ACT, Asia Cup), with four Men's Asia Cup wins, the latest in 2025.

- **Dhyan Chand & Legacy:** Dhyan Chand, the "Wizard of Hockey," is honored with the Major Dhyan Chand Khel Ratna Award. National Sports Day is observed on 29th August in his memory.

- **Icons:** Legends like Balbir Singh Sr, Mohammad Shahid, Dhanraj Pillay, PR Sreejesh, Harmanpreet Singh, and Savita Punia shaped India's hockey legacy.

- **Contemporary Performance:** The women's team finished 4th at the 2020 Olympics. As of July 2025, the men's team is ranked 5th, and the women's team is ranked 9th in FIH rankings.

DEFENCE & SECURITY

Defence Procurement Manual (DPM) 2025

Defence Minister released **DPM 2025**, effective from **1st Nov 2025**.

- **Guideline by Ministry of Defence** for procurement of **goods, services, equipment** for Armed Forces; ensures **transparency**, **accountability**, **efficiency**; promotes **indigenisation**, **ease of doing business** & **operational readiness**.

- **Salient Features:** Will govern **revenue procurement** of **~₹1 lakh cr** by Armed Forces & MoD establishments; **Relaxed Liquidated Damages (LD)** – max **10%** for delays; **0.1%/week** for indigenisation vs **0.5%** otherwise; **Assured orders** for indigenised items up to **5+ years; No NOC** needed for procurement outside **Ordnance Factory Board**.

Patriot Air Defense System

Ukraine has received additional **Patriot air defense systems**, mainly from **Germany**, to defend against escalating **Russian missile and drone attacks**.

- Phased Array Tracking Radar for Intercept on Target (Patriot) developed by Raytheon Technologies, US.

- Mobile surface-to-air missile system; intercepts aircraft, ballistic missiles, cruise missiles.

Tri-Services Exercise (TSE-2025) "Trishul"

India has launched **"Trishul-2025"** to enhance integrated operations across **land, air, and sea** in the **Sir Creek** & **Rajasthan-Gujarat desert sectors**, extending into the **northern Arabian Sea**.

- **Coordination & Participants:** Coordinated by **Western Naval Command (Mumbai)**, involving **Southern Command (Army)**, **Western Naval Command (Navy)**, and **South Western Air Command (IAF)**, with support from **Coast Guard**, **Border Security Force**, and other agencies.

- **Sub-exercises:** "Trinetra" & "Mahagujarat"

- **Indigenisation Focus:** Highlights the use of indigenous systems & supports Aatmanirbhar Bharat.

Malabar Exercise 2025

Annual Malabar exercise 2025, involving **India, US, Australia & Japan (Quad)**, has begun in the **Northern Pacific near Guam**, a **strategically important US territory** due to its proximity to **East Asia** and the **South China Sea**. **INS Sahyadri**, an **indigenously built stealth guided-missile frigate**, represents **India** in the exercise.

- **Background:** Started in **1992** as **India-US bilateral** drill; **Japan joined in 2015**, **Australia in 2020**.

MITRA SHAKTI-2025

The **11th edition of Exercise MITRA SHAKTI-2025**, an annual joint military drill between **India and Sri Lanka**, was held at Belagavi, Karnataka, to enhance interoperability in **counter-terrorism and peacekeeping operations.**

- The exercise has been held alternately in both countries since 2012, to rehearse Sub-Conventional and Joint Counter-Terrorist Operations under the UN Chapter VII mandate.

- **MITRA SHAKTI-2025**: Features drones and Counter Unmanned Aerial Systems (C-UAS) for enhanced operational effectiveness.

India-Sri Lanka Defence and Security Cooperation

- Sri Lanka is key to India's 'MAHASAGAR Vision' due to its location near crucial Indian Ocean shipping lanes.

- **Joint Exercises**: **MITRA SHAKTI** (Army) and **SLINEX** (Naval).

- **Humanitarian Assistance**: India has been the first responder in maritime emergencies, such as the **MV X-Press Pearl** disaster (2021) and the **MT New Diamond** fire (2020).

- **Capacity Building**: India funded and commissioned the **Maritime Rescue Coordination Centre (MRCC)** for the Sri Lanka Navy in 2024.

Nyoma Airbase

India inaugurated its **newest & one of the world's highest fighter-capable airbase** at **Nyoma in Ladakh**, built by **Border Roads Organisation (BRO)**, boosting country's air power along the northern front.

- **Location:** Lies at **13,700 feet, 35 km from the LAC**, enhancing India's rapid-response capability against China.

- **Strategic Importance:** Strengthens India's forward military posture after **Chinese People's Liberation Army (PLA)** troop buildup in eastern Ladakh (2020); will boost air infrastructure in Ladakh and **enhance the IAF's ability to respond to aerial threats** along the northern frontier.

- **Capabilities:** Supports fighter jet operations, boosts surveillance, mobility, and logistics in the region.

Mahe: Indigenous Anti-submarine Warfare Vessel

India to commission **INS Mahe** at **Naval Dockyard, Mumbai**, advancing **indigenous naval shipbuilding** & **maritime defence preparedness**.

- **Class:** First vessel of **Mahe-class Anti-Submarine Warfare Shallow Water Craft (ASW-SWC)**; built by **Cochin Shipyard Ltd**, Kochi; features over **80% indigenous components**; under **Aatmanirbhar Bharat**.

- **Role:** For **high-speed littoral ops**, **submarine hunting**, **coastal patrol**; **Capabilities**– Stealth, mobility, precision

for near-shore defence, ideal for securing India's near-shore maritime zones.

- **Symbolism:** Named after **Mahe**, Puducherry; ship's crest features **Urumi (Kalaripayattu sword)**.

Exercise Garuda 25

IAF is participating in **8th edition of 'Garuda 25',** a bilateral air exercise with **French Air & Space Force**, at **Mont-de-Marsan, France** from **16th–27th Nov 2025**.

- **About:** Started in **2003**, one of India's longest air exercises with a Western nation; held alternately in **India & France** under the **1998 India–France Strategic Partnership (1998)**.
- **Participation:** IAF deployed **6 Su-30MKI**, **IL-78**, **C-17 Globemasters**, to operate alongside **French Rafale** & multirole fighters.
- **Significance:** Boosts ties in **Rafale deal**, Indo-Pacific cooperation, space defence research.
- **Other Exercises: Varuna** (navy), **Shakti** (army), **Desert Knight** (India, France, and UAE).

SUMMITS & CONFERENCES

Co-Op Kumbh 2025

Union Minister of Cooperation **inaugurated 'Co-Op Kumbh 2025',** an international conference on **India's urban cooperative banking sector**, and adopted Delhi Declaration 2025 (Roadmap for expanding Urban Cooperative Banks (UCBs)).

- **Digital Initiatives:** Launch of **Sahkar Digi-Pay & Sahkar Digi-Loan apps** for digital payment and loan facilities.
- **Expansion Goal:** Establish **1 UCB in every city with a population over 2 lakhs** within 5 years.
- **Future Initiatives:** National Federation of Urban Cooperative Banks and Credit Societies (NAFCUB) to onboard 1,500 banks onto **Sahkar Digi-Pay within 2 years** and encourage conversion of successful credit societies into UCBs.

India Pushes Big Cat Conservation at CoP30

At the **UNFCCC CoP30 in Belém, Brazil, India called for stronger global cooperation to protect big cats** during the International Big Cat Alliance (IBCA) segment.

Importance of Big Cats

- **Apex Predators:** Regulate prey populations, **maintaining ecological balance** & ecosystem resilience to climate change.
- **Ecosystem Health Indicators:** Thriving big cat populations reflect healthy forests, grasslands & watershed systems.
- **Nature-Based Climate Solutions:** Safeguard carbon sinks, water security, biodiversity & soil stability.

- India will host **Global Big Cats Summit in New Delhi in 2026**. Released **'One Earth, One Family, One Future: A Decade of Climate Action',** highlighting progress in climate action and outlining the path to a Viksit & sustainable Bharat 2047.

2nd Regional Open Digital Health Summit (RODHS) 2025

- India hosted the **2nd RODHS 2025** in New Delhi, bringing **South-East Asian countries** together to **advance Universal Health Coverage (UHC)** through **Digital Public Infrastructure (DPI)** and open standards.
- It was organised by **National e-Governance Division (NeGD)** under the Ministry of Electronics & IT, **National Health Authority (NHA), World Health Organization South-East Asia Regional Office and UNICEF**.
- India highlighted the strength of its **DPI stack such as Aadhaar, Unified Payments Interface (UPI), CoWIN, and Ayushman Bharat Digital Mission** showcasing their role in secure, scalable health systems.
- WHO and UNICEF underlined the need for **trust, skills, interoperability, and community-centric design** for successful digital health adoption.

RODHS

- It is a key regional platform to **advance open, interoperable, and people-centered digital health systems** across the **WHO South-East Asia Region.**
- It brings together policymakers, technologists, and health experts to discuss Digital Public Infrastructure, **WHO SMART** (Standards-based, Machine-readable, Adaptive, Requirements-based, and Testable) Guidelines, and AI-enabled innovation.
- The Summit aims to strengthen regional cooperation and develop country-specific roadmaps to build scalable digital health systems that support UHC, health security, and the **Sustainable Development Goals (SDGs)**, building on the momentum of the **inaugural summit held in Nairobi**.

PLACES IN NEWS

Iceland

Iceland, once one of the **last mosquito-free places on Earth,** has recorded its **first-ever mosquitoes** after the country's **hottest spring** on record, highlighting how **global warming** is altering ecosystems even in the coldest parts of the planet.

- The arrival of mosquitoes in Iceland marks a **worrying range expansion into cold regions,** making them key **bio-indicators of climate change** and its impact on fragile ecosystems.

- Driven by **global warming, Iceland is heating up four times** faster than the **Northern Hemisphere,** with rising temperatures and humidity now creating ideal conditions for mosquito survival, and breeding.
  - Mosquitoes are **cold-blooded** and thrive in **warm, humid conditions** between **10°C and 35°C**, with peak activity when humidity **exceeds 42%.**

Iceland

Iceland is a **Nordic island country** in the **North Atlantic** known as the **"Land of Fire and Ice"** for its glaciers and volcanoes. Its capital is **Reykjavík, the world's northernmost capital city.**

Rowmari–Donduwa Wetland Complex

A demand to designate **Rowmari–Donduwa Wetland Complex in Assam** as a **Ramsar Site** for its rich biodiversity and ecological value.

- **Location:** Within **Laokhowa Wildlife Sanctuary**, part of the **Kaziranga Tiger Reserve**, floodplain–marsh system spanning **2.5–3 sq km.**
- **Biodiversity:** Hosts greater bird diversity than **Deepor Beel** and **Loktak Lake** (2 present Ramsar sites in Northeast).

Ramsar Convention

- **About:** A **1971 international treaty** (Ramsar, Iran) for wetland conservation and wise use.
- **India:** Member since **1982** with **94 Ramsar sites** (**Nov 2025**) — **highest in Asia.**
  - First site: **Chilika Lake** (**1981**).
  - **Tamil Nadu** has the most sites, followed by **Uttar Pradesh**.
  - About **10% of India's wetland area** is under the Ramsar framework.

Lucknow Declared UNESCO 'Creative City of Gastronomy'

Lucknow has officially declared a **UNESCO Creative City of Gastronomy** at the **43rd UNESCO General Conference** in **Samarkand, Uzbekistan.**

- **Reasons for Inclusion:** Recognises **Awadhi cuisine** (kebabs, biryanis, kormas, sheermal) and **culinary heritage; 2nd Indian city** after **Hyderabad (2019)** to get the title.
- **Criteria: Rich culinary heritage**, traditional skills; promote **sustainability**, **food education;** encourage **community participation** & **cultural exchange** through food, etc.

UNESCO Creative Cities Network (UCCN)

- Estd. by UNESCO in **2004** to promote **creativity for sustainable urban development**
- Comprises **408 cities** from **100+ countries;** now includes **Architecture** as a new field, alongside 7 others– **Crafts & Folk Art, Design, Film, Gastronomy, Literature, Media Arts, Music**

City	Category
Jaipur (2015)	Crafts and Folk Art
Varanasi (2015)	Music
Chennai (2017)	Music
Mumbai (2019)	Film
Hyderabad (2019)	Gastronomy
Srinagar (2021)	Crafts and Folk Art
Gwalior (2023)	Music
Kozhikode (2023)	Literature

NWS: India's Third Cheetah Site

Nauradehi Wildlife Sanctuary in MP is being developed as India's third cheetah site, where cheetahs will share space with apex predators like tigers, wolves, wild dogs, panthers, and crocodiles.

- Cheetahs were introduced into predator-free landscapes at Kuno and Gandhi Sagar.

Nauradehi Wildlife Sanctuary

- **Location:** Largest sanctuary in MP, located on the upper Vindhyan plateau.
- **Connectivity:** Connects Panna, Satpura, and Bandhavgarh Tiger Reserves via corridors.
- **Habitat & Forests:** Tropical Dry Deciduous forests of the central Indian monsoon zone.
- **Flora:** Teak, Saja, Dhaora, Mahua, Tendu, and Amla.
- **Fauna:** Home to tigers, leopards, wild dogs, sloth bears, Indian wolves (sanctuary's keystone species), nilgai, blackbuck, and over 170 bird species.
- **Rivers & Drainage:** The sanctuary falls in the Yamuna (Ganges) and Narmada basins, with tributaries of the Ken rivers (Kopra, Bamner, and Bearma).
- **Geology & Soils:** Vindhyan sandstone, red/black soils, and varied vegetation.

Bihar's Gogabil Lake is India's 94th Ramsar Site

Bihar now has 6 Ramsar sites, placing it 3rd after **TN & UP**. India has the highest number of Ramsar sites in Asia and ranks **3rd globally** after the **UK (176)** and **Mexico (144),** under the **Ramsar Convention, 1971**.

- **Gogabil Lake:** Ox-bow wetland located in Trans-Gangetic Plains of **Katihar, Bihar**, flanked by **Mahananda River (NE)** & **Ganga River (S)**.
- **Status:** Bihar's **1st Community Reserve**; **15th Protected Area** in the state; identified as an **Important Bird Area (IBA)**
- **Ecological Role:** Permanent waterbody; shrinks in summer but never dries, key **wintering site** on the **Central Asian Flyway**.
- **Flora & Fauna: Red-crested Pochard, Bar-headed Goose, Northern Pintail**, etc; **Rare/Endangered Birds**– Black-bellied Tern, Lesser Adjutant Stork, Ferruginous Duck, Darter, etc.

Singapore Introduces World's First Green Fuel Levy

Singapore has become the **first country to introduce a Green Fuel Levy on departing air passengers**, starting next year. Revenue will fund the centralised purchase of **Sustainable Aviation Fuel (SAF)** to reduce emissions in the aviation industry.

- **About:** SAF is an **alternative to conventional jet fuel** made from non-petroleum feedstocks like agricultural waste, municipal solid waste, waste oils, etc. It **can be blended with Aviation Turbine Fuel (ATF) (10–50%)** without engine or infrastructure modifications.
- **Significance:**
  - **Emission Reduction:** Can reduce emissions by up to 80%.
  - **Compatibility:** Fully compatible with existing aircraft engines and infrastructure.
  - **Renewable and Flexible:** Derived from various renewable feedstocks.
  - **Global Impact:** SAF could contribute **~65% of the emission reductions** needed for global aviation to reach net-zero CO_2 by 2050.
- **SAF Blending Targets:** 1% by 2027, 2% by 2028, and 5% by 2030 for international flights (**National Biofuel Coordination Committee**).
- **First Commercial Flight:** AirAsia operated **India's first SAF-blended flight** (Pune–Delhi) in 2023.

> - **Aviation sector produces 1.2% of global GHG emissions**, but SAF makes up only 0.3% of jet fuel in 2024, remaining costly & scarce.

India–Nepal Sign Landmark Power Agreements

India and Nepal have signed two major **power cooperation agreements** to develop new **400 kilovolt (kV) cross-border transmission lines**.

- The agreements were signed between **India's POWERGRID** and the **Nepal Electricity Authority (NEA).** They cover the development of two major 400 kV transmission systems:
  - **Inaruwa (Nepal) – New Purnea (Bihar, India)** transmission line.
  - **Lamki, Dododhara (Nepal) – Bareilly (Uttar Pradesh, India)** transmission line.
  - The projects aim to **boost power trade capacity** and strengthen **regional grid connectivity**, by promoting cleaner and more reliable energy exchange.
- **Significance:** It enhances **energy security**, strengthens **India–Nepal bilateral ties**, and supports **regional energy integration** under **India's Neighborhood First Policy.**
  - It helps Nepal tap into its **hydropower potential** while allowing India to meet rising **energy demand** sustainably.

Jharkhand's Saranda Forest

SC directed Jharkhand govt. to declare 31,468.25 ha of Saranda forest as a wildlife sanctuary, reaffirming the mining ban in national parks, wildlife sanctuaries, and 1 km buffer zones. It **upheld the 1968 state of Bihar notification declaring Saranda as a Saranda Game Sanctuary**; later came under Jharkhand's jurisdiction after the State's bifurcation (2000).

- **Location:** Near Jamshedpur, Jharkhand; largest **Sal forest** in Asia; spans ~900 sq. km; "Saranda" means *land of seven hundred hills*.
- **Significance:** Former royal hunting ground; holds **26% of India's iron ore** reserves.
- **Flora:** Dominated by **Sal (Shorea robusta)**; also has **Mahua & Kusum**; aids water cycles and carbon sequestration.
- **Fauna:** Hosts **critically endangered** and endemic species like **sal forest tortoise**, **four-horned antelope**, **Asian palm civet**, flying lizards & elephants.
- **Tribes:** Inhabited by **Ho, Munda, Uraon** & allied Adivasi communities; dependent on forest resources.

US Response on Nigeria Violence

US President criticised Nigeria for **failing to protect Christians in Plateau, Benue, and Kaduna**, warning of possible aid cuts and military action, sparking diplomatic & political debate.

- **Insecurity in Nigeria arises from terrorist insurgencies like Boko Haram**, communal land–water conflicts & criminal banditry, worsened by poverty, weak governance, and climate change.

  - Mirrors wider **Sahel instability in Mali, Burkina Faso, Niger & Chad** due to Islamist groups, ethnic tensions, and climate stress.

Nigeria

Location: Western coast of Africa; borders **Niger (N)**, **Chad** & **Cameroon (E)**, **Gulf of Guinea (S)**, and **Benin (W)**; often called *Giant of Africa* (size, population, economy).

Strait of Hormuz

Iran seized a Marshall Islands-flagged oil tanker in the **Strait of Hormuz** & **diverted** it into **Iranian territorial waters**, raising concerns over **maritime security** in a key energy chokepoint.

- **Location:** Narrow maritime chokepoint (55–95 km wide) b/w **Iran** & **Arabian Peninsula**; only sea link from **Persian Gulf to open ocean**; functions as a **critical corridor** for global shipments of **oil** & **LNG** from Persian Gulf nations.

- **Energy Significance:** Carries **20% of global oil**; used by **Saudi Arabia, Iran, Iraq, Kuwait, UAE, Qatar**; over **80%** of oil goes to **Asia** (India, China, Japan, South Korea).

- **India's Reliance:** ~**40% of crude oil imports** and ~**54% of LNG** imports pass through it.

- **Geopolitical Flashpoints:** Due to its narrow width, it is vulnerable to blockades/disruptions; past tensions (e.g., **2019 tanker attacks**, **US–Iran tensions**) spiked global oil prices; no complete shutdown to date.

- **Strategic Bypass Routes: Saudi Arabia, UAE pipelines; Iran's Goreh–Jask pipeline, Jask terminal** to send oil directly to the **Gulf of Oman**.

Senkaku Islands

China Coast Guard conducted a **"rights enforcement patrol"** near **Japan-administered Senkaku Islands**, following Japan PM's warning of military response if **China attacks Taiwan**.

- **Location:** In **East China Sea (near Japan, China, and Taiwan);** Comprises **5 uninhabited islands**, largest is **Uotsuri (1.4 sq mi)**.

- **Nomenclature:** Senkaku (**Japan),** Diaoyu (**China),** Diaoyutai (**Taiwan).**

- **Strategic Importance:** Boosted by **1969 UN report** on **potential hydrocarbon reserves**.

- **Timeline of Dispute:**

  - **1895:** Japan annexed Taiwan & Senkaku after First Sino-Japanese War
  - **1945:** US took administrative control post WWII
  - **1951:** US retained control under Treaty of Peace
  - **1971:** US returned Okinawa & Senkaku to Japan via Okinawa Reversion Agreement
  - **Post-1971:** China & Taiwan protested; Japan claims sovereignty pre-dates oil discovery.

Tiger Returns to Gujarat After Three Decades

A tiger has been spotted in **Gujarat's Ratanmahal Wildlife Sanctuary**, the first confirmed sighting since the species was declared extinct in the state in 1989. **Gujarat now hosts lions, tigers & leopards**.

- **Location & Establishment:** Also known as **Ratanmahal Sloth Bear Sanctuary, located** in Dahod district, Gujarat, bordering MP. **Declared a sanctuary in 1982**.

- **Flora:** Dry teak & mixed deciduous forests, with Mahua and Jamun trees; **Fauna:** Sloth Bears & leopards.

- **Ecological Significance:** Forms the **catchment of river Panam**, supporting water conservation & irrigation in **Dahod and Panchmahals districts.**

PORTALS & APPS

Koyla Shakti Dashboard

Under the **Digital India Mission**, the **Ministry of Coal** launched **Koyla Shakti** and **CLAMP** platforms to boost **transparency, efficiency**, and **governance** in the **coal sector**.

Koyla Shakti Dashboard

- **Type**: **Unified digital platform** for real-time **coal supply chain monitoring**
- **Purpose**: Smart **analytics dashboard** for coal production, transport, dispatch
- **Stakeholders**: **Coal companies, railways, ports, ministries, states**
- **Functions**:
  - Real-time **tracking & alerts**
  - **Data analytics**, forecasting, policy support
  - Boosts **transparency, efficiency, coordination**

CLAMP (Coal Land Acquisition, Management, and Payment) Portal

- **Purpose**: Digital system for **land acquisition, compensation**, and **R&R** in coal sector
- **Features**:
  - **Centralized land record repository** for coal PSUs
  - **Real-time monitoring** & **digitized processes**
  - Enhances **transparency** and **inter-agency coordination**

SPECIES IN NEWS

Kashmir's First Chrysanthemum Garden

J&K has launched its first **chrysanthemum garden** as part of efforts to **extend the Valley's tourist season beyond spring**, transitioning from **tulips (Gul-e-Lala)** to **chrysanthemums (Gul-e-Dawood)**.

- It is situated at **Cheshma Shahi**, between **Zabarwan mountains** and **Dal Lake**, adjacent to Srinagar's **Tulip Garden**.

Chrysanthemum (Dendranthema Grandiflora)

- **About:** It is a **perennial herbaceous plant** belonging to the **Asteraceae family**, popularly known as the "**Queen of the East**". It is **native to East Asia and Europe** and is the **national flower of Japan**.
- **Commercial Importance:** It is a major **ornamental crop** cultivated primarily for **cut flowers, loose flowers, and pot plants**.

- **Climate & Soil Requirements:** Thrives in **tropical and subtropical climates**. The optimal **temperature range** is **20-28°C during the day** and **15-20°C at night**; Prefers a **well-drained red loamy soil**.

MISCELLANEOUS

'Atomic Stencils' Enable Precision Design of Nanoparticles

Researchers have developed an **atomic stenciling** technique to precisely **apply polymer patches** onto microscopic **gold nanoparticles**, allowing unprecedented **control over their structure.**

- **Process**:
  - **Atomic Stenciling (The Masking):** The researchers use iodide atoms as an "atomic stencil" or mask. These atoms are engineered to selectively bond and stick only to specific, flat crystal faces of the gold nanoparticle.
  - **Polymer Painting (The Patching):** A polymer solution is then introduced. The polymer material only bonds to the unmasked, exposed gold surfaces, forming a precise patch exactly where intended.
    - ❖ The **patches** so formed are so **uniform** that the **nanoparticles** could spontaneously **self-assemble** into highly ordered **3D crystals (superlattices)**, representing a major milestone in **nanomaterials science** that was previously largely theoretical.
- **Benefits**: The method allows for **atomic-level control** over the **patch's size, shape, and location**, enabling the creation of over **20 distinct types** of **patterned nanoparticles** (e.g., **corner patches**, **face patches**, **web designs**).
- **Applications:** This **control** is a crucial step toward creating **metamaterials** with **properties not found in nature**.
  - Potential applications include **targeted drug delivery**, **ultra-efficient catalysts**, **advanced electronics**, and **smart materials**.

Yuge Yugeen Bharat National Museum

Yuge Yugeen Bharat National Museum, set to be the **world's largest**, will open its **first gallery by end-2026**, replacing the existing **National Museum**.

- Developed by **Ministry of Culture** under **Central Vista redevelopment project**; complements PM Museum, National Archives Digitisation & Cultural Mapping of India.
- Jointly developed with **France**, using its **museum design expertise;** designed by **Arcop Associates;** themed on **5,000 years of Indian civilization**.
- Will display rare artefacts from across India and the **existing National Museum**, e.g., **Indus Valley terracotta hourglass from Kalibangan** (2500-1700 BC), **Gupta-period sculptures** (5th century), **Chola bronzes** (10th-11th centuries).

India to Host Commonwealth Games 2030

India will host the **centenary edition of CWG in 2030** in **Ahmedabad (2026 CWG** will take place in **Glasgow, Scotland)**, supporting its bid for the **2036 Olympics**.

- **About:** World's **2nd largest multi-sports event** after Olympics; includes **71 nations/territories**; held **every 4 years**.
- **Background:** Started in **1930** (Hamilton, Canada) as **British Empire Games**; known as **British Empire and Commonwealth Games in 1954**; renamed **Commonwealth Games** in **1978**.
- **Governing Body**: Commonwealth Games Federation (CGF)

> - India is the **largest Commonwealth member by population** and the **4th largest financial contributor**.
>   - It has hosted the **Commonwealth Summit** (**1983**); the CWG in **2010** (**Delhi**), and has a **strong CWG record**, finishing **4th at Birmingham 2022**.

China's Wildlife Diplomacy

China loans **golden snub-nosed monkeys**, unique to **central China**, to **France & Belgium** under a **10-year agreement**, marking a new phase in **wildlife diplomacy** with these monkeys as potential successors to **panda diplomacy**.

- **Panda Diplomacy:** Began in **1957** with a gift to the **Soviet Union**, followed by **US in 1972**; evolved into **long-term leases** tied to **conservation** & **scientific collaboration**.
  - **India**, rich in **biodiversity**, can use **iconic species** like **Bengal tiger** & **Indian rhinoceros** in **cultural diplomacy** and **conservation partnerships**.

> - **Golden Snub-nosed Monkey** is a primate species native to mountainous forests of **central & southwestern China**, known for its **golden-orange fur**, **blue face**, and **cold-adapted coat**.
>   - Classified as **Endangered** (**IUCN**), it holds **cultural significance** in Chinese art & folklore.

Reclassification of CPSEs

Govt plans to **revise classification** of CPSEs by adding **two new 'Ratna' categories** to the existing **Maharatna, Navratna, Miniratna** statuses.

Key Aspects of Reclassification

- **Objective:** Align CPSEs with **Vision 2047** and India's **future economic strategy**.
  - Promote **performance-driven governance**, **accountability**, and **global competitiveness**.
- **New Evaluation Parameters:** Corporate governance, Succession planning & leadership development, Capital expenditure & dividend payout, Sustainability practices and Alignment with Vision 2047.

- **Re-evaluation Committee: 10-member** panel headed by **Cabinet Secretary T.V. Somanathan**
- **Current CPSE Statuses:** Maharatna (14), Navratna (26) and Miniratna (74).

Google's AI C2S-Scale

Google DeepMind's AI model, **Cell2Sentence-Scale 27B (C2S-Scale)**, has generated a groundbreaking, lab-confirmed hypothesis on cancer cell behavior.

C2S-Scale Model

- C2S-Scale is a LLM built on Google's Gemma-2 architecture with 27 billion parameters, designed to understand gene expression.
- It **translates single-cell RNA sequencing data into 'cell sentences,'** learning patterns from millions of cells to interpret cellular functions.
- A breakthrough discovery by the model was that the **drug silmitasertib could act as a conditional amplifier**, enhancing cancer cell visibility to the immune system when interferon levels are low.
- C2S-Scale enables rapid, large-scale in-silico screening, accelerating scientific discovery.

Google DeepMind

- It focuses on achieving AGI to **address challenges in science, healthcare, and climate change**. Its key achievements include AlphaFold for protein structure prediction, AlphaGo for strategic reasoning, and the Gemini large language models.

India Maritime Week (IMW) 2025

IMW 2025, **themed "Uniting Oceans, One Maritime Vision,"** was inaugurated by the Union Home and Cooperation Minister, gathering maritime experts, innovators, and leaders for the 5-day event.

India's Maritime Strength

- India's 11,000 km coastline, 13 coastal states, and a 23.7 lakh sq. km EEZ establish it as a maritime power.
- Coastal states **contribute 60% of India's GDP** and support 800 million livelihoods.
- The maritime sector handles **95% of trade by volume and 70% by value**.
- The **Maritime India Vision 2030 and Maritime Amrit Kaal Vision 2047** aim to make India a global maritime hub, balancing economic growth with sustainability.
  - **Maritime India Vision 2030:** Over 150 initiatives to modernize ports, shipping, and waterways; Doubled port capacity nearly (1,400 in 2013-14 to 2,762 MMTPA in 2024-25); Indian seafarers increased by 200%.

- **Maritime Amrit Kaal Vision 2047:** To handle 1/3rd of global seaborne trade by 2047 (up from 10%); Aim to invest Rs 80 lakh crore in green corridors, hydrogen bunkering, and methanol-fueled vessels.

National Critical Mineral Mission (NCMM)

The Ministry of Mines has recognized two additional Centres of Excellence (CoEs) under the **NCMM: IISc Bengaluru and C-MET Hyderabad.** This adds to the seven institutes already recognized.

- The CoEs will operate on a Hub & Spoke model, combining expertise from academia, R&D, and industry partners.

NCMM

- Announced in **Union Budget 2024-25** to ensure India's long-term mineral security.
- Aims to **strengthen the critical mineral supply chain** from domestic and international sources. Covers exploration, mining, beneficiation, processing, and recycling.
- Focuses on minerals essential for clean energy, electronics, and strategic sectors, including offshore mining of polymetallic nodules.
- Governed by the **Empowered Committee on Critical Minerals**, with the Ministry of Mines as the nodal authority.

8th Central Pay Commission

The Union Cabinet has approved the **Terms of Reference (ToR) of the 8th Central Pay Commission**.

- **Constituted By**: **Department of Expenditure**, Ministry of Finance (every **10 years**)
- **Chairperson**: **Justice Ranjana Prakash Desai**
- **Mandate**: Review **salary, allowances, pensions** of Central govt employees based on **inflation, cost of living, parity**
- **ToR**: Blueprint for **scope, mandate, timelines**; report in **18 months**, with possible **interim recommendations**
- **Effective From**: **1st Jan 2026** (retrospective)
- **Beneficiaries**: **49 lakh employees + 65 lakh pensioners**
- **Economic Impact**: Boosts **consumption, growth**, and **quality of life**
- **Previous CPC**: **7th CPC (2016)**, Justice A.K. Mathur; **23.55% hike** recommended
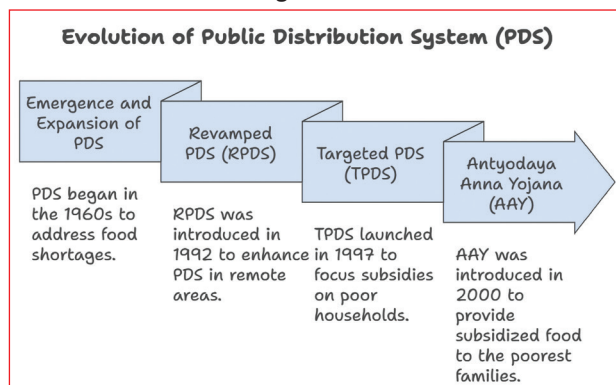
Supplemental Nutrition Assistance Program (SNAP)

Millions in the US face loss of SNAP benefits—the largest food aid program—due to funding shortages and policy changes, affecting over **40 million people**; **India's equivalents** include **PDS** and **Poshan Abhiyan**.

Public Distribution System (PDS)

- **Objective**: Provide **subsidized foodgrains** (wheat, rice, coarse grains) to vulnerable groups.

- **Legal Basis**: Operates under **NFSA, 2013**; covers **~2/3 of population** (2011 Census).
- **Convergence**: Supports **Poshan Abhiyan** by ensuring **food access**, while Poshan focuses on **nutrition outcomes** via **ICDS & data monitoring**.

Evolution of Public Distribution System (PDS)

Emergence and Expansion of PDS — PDS began in the 1960s to address food shortages.

Revamped PDS (RPDS) — RPDS was introduced in 1992 to enhance PDS in remote areas.

Targeted PDS (TPDS) — TPDS launched in 1997 to focus subsidies on poor households.

Antyodaya Anna Yojana (AAY) — AAY was introduced in 2000 to provide subsidized food to the poorest families.

Cyclone Montha

Cyclone Montha, a **severe cyclonic storm**, made landfall in **Andhra Pradesh**, causing **heavy rains, strong winds**, and **widespread damage** across **coastal Andhra, Odisha**, and **Tamil Nadu**.

- **Cyclone Montha**: Originated as a **low-pressure system** over **west-central Bay of Bengal**, intensified into a **Severe Cyclonic Storm (SCS)** with **89–117 kmph winds**.
- **Impact**: Affected **Andhra Pradesh, Odisha, Tamil Nadu** with heavy rains and damage.
- **Movement**: Driven westward by **easterly trade winds (5°–20° latitudes)**.
- **Naming**:
  - Named **"Montha"** (Thai: fragrant flower), by **Thailand**.
  - Named under **WMO–ESCAP Panel on Tropical Cyclones (PTC)**.
  - Names must be **gender-neutral, culturally neutral**, max **8 letters**.

Indi and Puliyankudi Limes

APEDA facilitated the **first-ever air shipment of GI-tagged Indi Lime (Karnataka) and Puliyankudi Lime (Tamil Nadu)** to the UK, boosting global recognition of India's GI-tagged produce.

Indi Lime (Vijayapura)

- **GI Tag**: Received in 2023, second after Assam Lime.
- **Production Hub**: Grown in Karnataka's Vijayapura district, known for its quality, aroma, and high juice yield.
- **Contribution**: Vijayapura contributes 58% of Karnataka's lime production.

Puliyankudi Lime

- **Origin**: Tenkasi, Tamil Nadu (Kadayam variety).
- **GI Tag**: Received in April 2025.
- **Features**: Thin peel, strong acidity, high vitamin C, and 55% juice yield.

India Withdraws from Ayni Airbase

India ended its presence at Tajikistan's Ayni Airbase after the **2022 expiry of the bilateral pact** to **revive the Soviet-era base**, which lost relevance following the **Northern Alliance's collapse** and **Taliban's 2021 takeover of Afghanistan**.

Ayni Airbase

- **Ayni Airbase**, ~10 km west of **Dushanbe**, was India's **2nd overseas base** after **Farkhor (1998–2008)**.
- **Farkhor base** hosted helicopters, a repair unit, and a hospital for **Northern Alliance fighters**; later replaced by Ayni.
- **Ayni's location** (~20 km from **Wakhan Corridor**) gave India **strategic access to Central Asia** and leverage over **Pakistan**.
- Built to **support the Northern Alliance** via **logistics, intelligence, and aerial aid**; no combat missions, only **Mi-17 helicopters** assisting Tajik forces.
- In **2021**, Ayni was used for **evacuation of Indians from Afghanistan** during the **Taliban takeover**.

Ayni Air Base, Tajikistan

Legal Metrology (Packaged Commodities) Amendment Rules, 2025

The **Department of Consumer Affairs** has notified the **Legal Metrology (Packaged Commodities) Amendment Rules, 2025**.

- **Amendment aligns** Legal Metrology (Packaged Commodities) Rules, 2011 with **Medical Devices Rules, 2017** for **clarity and regulatory harmony**.
- For **medical device packages**, **Medical Devices Rules** prevail on **label font size and dimensions**.
- **Principal Display Panel declarations** under Legal Metrology are **not mandatory**; follow **Medical Devices Rules, 2017** instead.

- Ensures **uniform labelling**, **consumer protection**, and **Ease of Doing Business** by removing **regulatory overlap** and enabling **consistent enforcement**.

Justice Surya Kant: 53rd Chief Justice of India

Justice Surya Kant has been appointed as the **53rd CJI**, succeeding **Justice Bhushan Ramkrishna (B.R) Gavai.**

- **Appointment:** The notification was issued by the **Department of Justice in the Union Law Ministry** under Article 124(2) of the Constitution, following the President's approval.

Chief Justice of India

- **Appointment:** A **Supreme Court** judge, including the CJI, is appointed by the **President** under Article 124 (2).
  - The outgoing CJI recommends the **senior-most Supreme Court judge** based on length of service as the next CJI (a **customary practice**, not a legal requirement).
- **Qualification:** To qualify as CJI, one must be a citizen of India, have served as a **High Court judge for 5 years or as an advocate for 10 years**, or be a distinguished jurist in the President's opinion.
- **Tenure:** The CJI holds office until the **age of 65 years,** with no fixed tenure, as it depends on the judge's date of appointment and retirement.
  - The CJI can only be removed by the President after an address by Parliament, supported by a special majority in both Houses.

Biosimilars

US FDA's draft guidelines on biosimilars may remove comparative efficacy trials, saving USD 20–25 million and reducing development time from 5–7 years to 3–4 years, benefiting Indian pharma firms.

Biosimilar

- **Definition**: Biologic drugs **highly similar** (not identical) to approved biologics; **not generics**.
- **Source**: Made from **living cells** (e.g., bacteria, yeast, tissues); complex protein-based.
- **Cost Advantage**: **Cheaper** than original biologics; **enhances treatment access**.
- **India's Status**:
  - **<5% share** of USD 30 bn global market.
  - **Exports**: USD **0.8 bn** (current) → projected **USD 4.2 bn by 2030, USD 30–35 bn by 2047**.
  - Driven by **National Biopharma Mission, Genome Valley (Telangana)**.
- **Uses**: Treats **cancer**, **diabetes**, **autoimmune disorders** safely & effectively.

India Gains Access to Chinese Rare Earth Magnets

India's EV and automotive sectors got relief as Indian firms secured the first conditional licences to **import rare earth magnets from China**.

- **China** imposed **export restrictions** (Apr 2025) on **rare earth magnets** (e.g., NdFeB), disrupting **global EV supply chains**.
- **Restrictions** are **paused for 1 year** under the US-China trade deal with **selective exports** allowed to countries like **India**.
  - **Impact on India**: Threatened **EV production** due to reliance on **NdFeB magnets** (used in motors, steering, braking).
  - **Magnet Use**: NdFeB – strongest permanent magnets, operate at **150–200°C**; vital for **EVs and clean energy**.
- **Licensing Terms**: Indian firms can import with **strict controls**, limited to **non-defence use**.
- **Policy Concern**: China's **monopoly** highlights the need for **import diversification** and **energy security**.
- **India's Strategy**:
  - **Short-term**: Import from **Vietnam, Brazil**
  - **Medium-term (3–5 yrs)**: Build **domestic processing & magnet manufacturing** via **Atmanirbhar Bharat** and incentives.

India Crosses 500 GW Power Capacity Mark

India's total installed electricity capacity has surpassed **500 GW**, with over **51%** now originating from **non-fossil fuel sources** & **244.80 GW (≈49%)** from **fossil-fuel-based sources**.

Panchamrit of India's climate action

- Reduce total projected carbon emissions by 1 billion tonnes by 2030.
- Cut carbon intensity of the economy by **less than 45% by 2030**.
- Fulfil 50% of energy requirements from renewable sources by **2030**.
- Create **500 GW** of non-fossil **fuel energy capacity by 2030**.
- Achieve net-zero emissions by 2070.

- For the first time, **over 50% of electricity came from green sources in a day** — showing energy resilience & sustainability.
- India has emerged as a **global renewable energy leader**– **3rd** in **solar power capacity**; **4th** in **wind power**; **4th** in **overall renewable energy capacity** globally.

- With this, India has achieved its **COP26 Panchamrit goal** of **50% installed electric power capacity from non-fossil sources by 2030**, **5 years ahead** of target.

GSAT-7R: India's Heaviest Naval Communication Satellite

ISRO launched **GSAT-7R (CMS-03)**, India's **heaviest indigenously built advanced communication satellite**, from **Satish Dhawan Space Centre (SDSC) Sriharikota**, boosting **space** and **naval communication** capabilities.

- **About:** Launched using **LVM3-M5** (5th operational flight); **Multi-band** communication satellite over a wide oceanic region including the Indian landmass
  - Weighs **~4400kg** – **heaviest** communication satellite launched to **Geosynchronous Transfer Orbit (GTO)** from India
- **Technical Features**: Placed in **GTO**, shiftswill later move into its final **Geostationary Orbit** using onboard propulsion.
  - **15-year mission life**, advanced **multiband transponders** for **voice, data, video;** ensures secure communication for **Indian Navy**
- **Significance**: Replaces **GSAT-7 (Rukmini, 2013);** fully **indigenous**; aligns with **Aatmanirbhar Bharat**
  - Enhances **strategic autonomy**, reduces reliance on **European Ariane-5;** supports **Gaganyaan mission** with **cryogenic engine re-ignition test**

> **NOTE:** Previous mission of LVM3 launched the Chandrayaan-3 mission, making India the first to land near the lunar south pole

Integrated Sohra Tourism Circuit under PM-DeVINE

Ministry of Development of North Eastern Region (DoNER) launched **₹233 crore** projects in **Meghalaya** and laid the foundation for **Integrated Sohra Circuit** under **PM-DevINE** scheme.

- **Integrated Sohra Circuit**: Developed by **DoNER & Meghalaya Govt** to make **Sohra** a **sustainable tourism hub**; aims to boost **tourist spending 6x** and create **4,600+ jobs**.
  - Includes **Sohra Experience Centre**, **Nohkalikai Falls**, **Mawsmai Eco Park**, **Wahkaliar Canyon**
- **PM-DevINE Scheme:** Launched in **Union Budget 2022–23** as a **Central Sector scheme** with **100% Central funding**.
  - Supports **infrastructure, youth & women livelihoods**, aligned with **PM GatiShakti**; as of **Feb 2025**, **36 projects** worth **₹4,927 crore** sanctioned.

India's Maiden Private Rocket Launch

India's 1st private commercial satellite launch will be conducted by **Hyderabad-based Skyroot Aerospace** in **January 2026**, making it the only Indian entity besides **ISRO** to launch satellites into space.

- Skyroot earlier became India's **1st private company to launch a rocket** with the **Vikram-S suborbital mission (Nov 2022)**.
- **IN-SPACe** (est. June 2020) acts as an independent nodal body under ISRO to promote and authorise private participation.
- India's private space sector now has **200+ startups** and is projected to reach **$44 billion by 2033**.

IPPB–EPFO MoU for Jeevan Pramaan Services

India Post Payments Bank (IPPB) signed an **MoU with EPFO** to provide **doorstep Digital Life Certificate (Jeevan Pramaan)** services for pensioners under the **Employees' Pension Scheme, 1995**, ensuring tech-enabled, inclusive pension delivery.

- **Biometric-enabled, Aadhaar-based Digital Life Certificate (DLC)** for pensioners; must be submitted annually to ensure pension continuity.
- Applicable for **pensioners of central, state, and other govt. agencies**.
- Implemented by **Ministry of Personnel, Public Grievances and Pensions**.

IPPB

- Launched in 2018, operates under Ministry of Communications.
- **Innovation and Partnerships:**
  - **Fincluvation Initiative**: Innovation platform with fintechs for financial inclusion.
  - **WhatsApp Banking Services**: Access to banking services via WhatsApp.
  - **Ria Money Transfer Partnership:** Provides international inward money transfer services.
- India's postal system with India Post Office and IPPB Online is the **world's largest doorstep banking network.**

Tractor Emission Norms (TREM)

Farmers' organisations have **opposed the govt's plan to implement TREM Stage V norms for tractors from 1st Oct, 2026**, citing increased debt and financial hardship due to forced tractor upgrades.

- **TREM:** Pollution-control standards to reduce exhaust emissions from **agricultural tractors & machinery**; similar to **BS norms**, but specifically for **farm equipment**; targets pollutants like **NOx, PM, hydrocarbons, and CO**.
- **Stages: 1999**– Emission norms introduced; **2003**– **TREM Stage II** based on Expert Committee on Auto Fuel Policy **(Mashelkar Committee, 2002)**; **2005**– Bharat **TREM Stage III**; **2010–11**– **TREM-IIIA** – Introduced **HP-based limits**; **2023**– **TREM-IV** – For tractors **above 50 HP**

- **Impact: TREM-IV & V norms** for tractors above **50 HP** could **raise prices by 20-25%**; farmers argue **TREM-V** should apply only to **tractors above 70 HP**, mainly for **non-agricultural work**.

Research, Development and Innovation (RDI) Scheme

PM inaugurated **Emerging Science, Technology, and Innovation Conclave (ESTIC) 2025** in **New Delhi** and launched **RDI Scheme**.

- **About:** Initiated by **DST (Nodal Dept.)** with **Rs 1 lakh cr** to promote private sector participation in research, innovation, and tech commercialization.
- **Objective:** Provide **long-term financing/refinancing** at low or nil interest to boost private sector investment
- **Key Goals:** Support sunrise sectors & strategic industries; Finance transformative projects at higher **Technology Readiness Levels (TRLs)**; Establish a **Deep-Tech Fund of Funds (FoF)** for high-tech startups.
- **Governance: ANRF**– Guided by a board chaired by PM & an **Executive Council**; **Empowered Group of Secretaries (EGoS)** – Led by **Cabinet Secretary** for approvals & performance review.
- **Funding Mechanism: Two-tier Model**– Special Purpose Fund (SPF) under ANRF channels resources to 2nd-level fund managers like NBFCs.
  - **Funding**– Primarily through long-term concessional loans; Equity support for startups & potential contributions to **Deep-Tech or RDI-focused FoF**.

Operation 'WeedOut'

Operation **'WeedOut' by Directorate of Revenue Intelligence (DRI)** at Mumbai Airport seized high-grade hydroponic cannabis smuggled from Bangkok under the NDPS Act, 1985.

- **Hydroponic Cannabis**: Grown in a water-based, nutrient-rich solution instead of soil.
- **DRI:** India's apex anti-smuggling agency, formed in 1957 under **Central Board of Indirect Taxes & Customs, Ministry of Finance**.
  - **Functions**– Tackles drug trafficking, wildlife & environmental contraband, customs duty evasion, and other international trade frauds.
  - **Enforces provisions of**– Customs Act, 1962; 50+ other allied Acts, including **Arms Act (1959), NDPS Act (1985), COFEPOSA (1974), Antiquities and Art Treasures Act (1972), etc.**
  - **Other Operations**– **"Operation Fire Trail"** targets illegal Chinese fireworks imports.
- **NDPS Act, 1985:** India's principal law to **control/regulate narcotic drugs operation** and psychotropic substances.

- **Prohibits**– production, possession, sale, purchase, transport, storage, and consumption of narcotics and psychotropics, **except for licensed medical or scientific use**.

National Beekeeping & Honey Mission

India's honey sector is transforming under NBHM, promoting scientific beekeeping and boosting rural livelihoods and agriculture.

- **About:** A Central Sector Scheme to promote **overall promotion and development of** scientific beekeeping and quality honey production and other beehive products.
- **Sub Schemes:** Implemented through **3 Mini Missions (MM-I, MM-II, MM-III)** focused on production, post-harvest management, and research.
- **Implementing Agency: National Bee Board (NBB)** under Atmanirbhar Bharat, initially allocated ₹500 cr (2020–23), extended till 2025–26.
- **Objectives:** Boost rural livelihoods, employment, crop productivity, strengthen infrastructure, quality control, and empower women and cooperatives.
- **Ranking:** India is the **2nd largest honey exporter after China** (as of 2024), with major producers in UP, WB, Punjab, Bihar & Rajasthan; **Export Destinations**– US, UAE, Saudi Arabia, Qatar, and Libya.

India's 1st Digital Museum of Tribal Freedom Fighters

PM inaugurated **India's first digital museum, Shaheed Veer Narayan Singh Memorial and Tribal Freedom Fighters Museum**, in Nava Raipur Atal Nagar, Chhattisgarh.

- **Key Features:** Wood-carved entrance by Sarguja artisans; digital leaves depict 14 tribal revolts; highlights uprisings like **Halba Rebellion** & **Sarguja Revolt (Chhattisgarh)**; features **sculptures of tribal leaders like Birsa Munda & Gend Singh**.

Shaheed Veer Narayan Singh

- **About:** Born in **1795 in Sonakhan** (Chhattisgarh); **Binjwar tribe leader**.
- **Contribution to Freedom Struggle:** Seized grain during the 1856 famine, leading to arrest; escaped in 1857, raised an army of 500 tribals, fought against the British, **captured and executed in Dec 1857**, becoming Chhattisgarh's first freedom fighter.
- **Legacy:** Chhattisgarh instituted the **Shaheed Veer Narayan Singh Samman** for tribal and backward community upliftment.

India's First Quantum Computing Chip & NexCAR19

PM unveiled 3 innovations at ESTIC 2025: **QSIP (Quantum Security Integrated Processor), India's first 25-qubit Quantum Processing Unit, and NexCAR19**, marking a major leap in advanced computing & biotechnology.

- **QSIP Chip:** Hardware-based quantum security solution, developed with DST, uses quantum key distribution to **secure data & protect networks from future quantum-enabled cyber threats**.
- **25-qubit QPU:** Developed by **QpiAI**. The company also introduced **QpiAI-Indus**, India's first full-stack quantum computer with 25 superconducting qubits.
- **NexCAR19:** Developed by ImmunoACT (IIT Bombay spin-off), **India's first indigenous CAR-T cell therapy and the world's first humanised CAR-T therapy**, crucial for cancers like Acute Lymphocytic Leukemia. **Supported by DBT & BIRAC**.

Mussels as Bioindicators

Mussels are being used as bioindicators to monitor microplastic and chemical pollution in the **Saronic Gulf of Greece.**

- **About:** Mussels are bivalve mollusks (shell-bearing invertebrates with two hinged shells). They are found in both **marine (family Mytilidae)** and **freshwater (family Unionidae)** environments.
  - They occur **worldwide**, especially in **cooler seas,** and are an important component of coastal biodiversity.
- **Role as Bioindicators:** Mussels are used as bioindicators because they are **sessile, filter-feeding organisms** that accumulate **contaminants like heavy metals, microplastics,** and other pollutants in their tissues, providing a record of water quality over time.
  - Their wide **distribution and ability to reflect the presence of pollutants** make them valuable for monitoring both freshwater and marine environments for pollution, including chemical and biological hazards.

Kazakhstan Poised to Join Abraham Accords

The **US announced Kazakhstan's inclusion in the Abraham Accords**, expanding the framework that normalizes relations between Israel and Muslim-majority countries.

- **Abraham Accords**: US-brokered agreements (2020) normalizing ties between Israel and several Arab/Muslim-majority countries, named after Abraham, symbolizing unity.
- **Key Signatories**: Israel, UAE, Bahrain, Morocco (2020), Sudan (2021).
- **Significance**: Shows Arab countries moving away from the Palestine issue, enhancing regional diplomacy, trade, technology, and tourism.
- **India's Interests**: India strengthens ties with both Israel and Arab states, leading to the I2U2 platform (India, Israel, UAE, US) for collaboration in energy, water, health, transport, food security, and space.

SEBI Flags Digital Gold Risks

SEBI has issued an **advisory warning investors against unclassified/unregulated digital gold/e-gold products** due to high risks and lack of investor protection.

- **Digital Gold:** Refers to **buying gold electronically without physical possession**, with its price linked to physical gold; **created using blockchain technology**.
  - **Advantages**– Easy access, quick sale in emergencies, small investment amounts, no storage hassles, and can be converted into physical gold (coins, bars, jewellery).

- **Safer Alternatives:** SEBI advises investing in regulated options like **Sovereign Gold Bonds** (**SGBs**), **Gold ETFs, Electronic Gold Receipts** (**EGRs**), and commodity derivatives.
  - These options offer SEBI oversight, eliminate counterparty risk, ensure transparent price discovery, and provide investor protection.

Altermagnetism: A New Class of Magnetic Order

Researchers have **identified altermagnetism as a new magnetic phase beyond traditional ferromagnetism & antiferromagnetism** with potential for next-generation technologies.

- In altermagnetic materials, **magnetic moments alternate with complex symmetry operations like rotation/reflection**, resulting in a net-zero external magnetic field like antiferromagnets, but internal **electronic behavior similar to ferromagnets**, where spins split into different energy bands.

- **Features:** Exhibit **anomalous Hall effect** (sideways voltage without an external magnetic field).
  - **No net external magnetic field externally**, making them less susceptible to magnetic disturbances; **Magnetic neutrality reduces interference,** ideal for dense, fast, energy-efficient electronic & spintronic devices.

- **Applications:** Promising in spintronics for data processing **using electron spin rather than electric charge**.
  - Could enable **faster memory and logic devices** with less energy use
  - **Low magnetic noise** makes them suitable for stable quantum technologies & future computing platforms.

India Demonstrates 500 km Quantum Key Distribution (QKD) Network

Under the National Quantum Mission (NQM), QNu Labs demonstrated India's first 500 km QKD network over existing optical fiber, enhancing quantum capabilities and cyber defense.

QKD Network

- **QKD**: A secure communication technology using quantum mechanics to generate and share encryption keys, ensuring data security against eavesdropping, even by quantum computers.

- **Core Principles**:
  - **No-Cloning Theorem**: An unknown quantum state cannot be copied, preventing unauthorized duplication.
  - **Observer Effect**: Any attempt to measure quantum particles disrupts them, revealing eavesdropping.

- **Functioning**: QKD uses qubits (quantum bits) transmitted through optical fibers to securely exchange encryption keys. Eavesdropping disrupts qubits, making tampering detectable.

- **Significance**:
  - **Future-Proof Security**: Secure against quantum computers.
  - **Eavesdropper Detection**: Detects intrusions and discards compromised keys.

- **Critical Infrastructure Protection**: Safeguards vital national assets, preventing the "harvest now, decrypt later" threat.
- **Digital Sovereignty & Innovation**: Enhances security, trust, and drives technological and economic growth.

Ricin Poisoning

Gujarat ATS uncovered a suspected attempt to extract & deploy **ricin, a highly lethal biological toxin,** arresting individuals linked to cross-border radical networks.

- Ricin is a toxic **carbohydrate-binding protein** from *ricinus communis* seeds (castor oil plant) that disrupts protein production in cells, **causing damage and death when inhaled, ingested, or injected**.
  - **Highly dangerous** due to its potency, lack of antidote, and difficulty in detection. Made from widely available castor beans; **classified as a Schedule-1 agent under the Chemical Weapons Convention (CWC)**.

Vanadium Redox Flow Battery (VRFB) System

The Minister of Power inaugurated **India's first and largest 3 MWh VRFB system**, marking a significant milestone in advancing long-duration energy storage (LDES) to enhance renewable energy integration and grid resilience.

- **VRFB:** An **electrochemical energy storage system** using vanadium ions to store and release energy through redox reactions. It stores energy in liquid electrolytes, making it modular and scalable.

- **Energy capacity depends on the electrolyte volume**, while power output is determined by the cell stack size, allowing independent scaling of both.
- **Advantages**: Scalable, long-lasting, efficient, fast response, deep discharge, and high safety with non-flammable, recyclable vanadium electrolytes.
- **Importance**: VRFB **stores excess energy from intermittent solar and wind sources**, providing long-duration storage and enhancing grid stability.
- **Energy Security**: Reduces dependence on imported lithium-ion batteries, supporting energy security under Atmanirbhar Bharat.

Petroleum and Natural Gas Regulatory Board (PNGRB)

Chairman of GAIL has expressed **disagreement with several key recommendations made by the PNGRB expert committee**, headed by DK Sarraf, regarding efforts to boost domestic gas usage.

- **About**: Regulatory & statutory body under the **Petroleum and Natural Gas Regulatory Board Act, 2006**, functions like a **tribunal** with powers similar to a **Civil Court** and performs **quasi-judicial duties**.
- **Objective**: Protect consumer interests, regulate gas activities (**excluding crude oil production**), promote markets, ensure supply.
- **Dispute Resolution**: Resolves disputes related to **refining, storage, transportation, distribution, and marketing of petroleum and gas**, as well as complaints on retail obligations, city gas networks, etc; can **issue orders, directions, or refer matters for investigation**.
- **Appeal Mechanism**: Appellate Tribunal estd. under **Section 110 of the Electricity Act, 2003**.

'Country-of-Origin' Disclosure for E-Commerce Products

The **Legal Metrology (Packaged Commodities) (Second) Amendment Rules, 2025** propose that e-commerce platforms must provide **searchable and sortable filters** based on the **'Country of Origin'** for packaged commodities sold online.

- This is to enhance **consumer empowerment**, transparency, and promote **Made in India** products under **Atmanirbhar Bharat** and **Vocal for Local**.

Rules of Origin (RoO)

- **About**: RoO determines a product's national origin to guide tariffs, duties, and trade preferences.
- **Types**: **Preferential Origin (**For reduced tariffs under trade agreements) and **Non-Preferential Origin** (For non-tariff measures like quotas and trade remedies).

- **Criteria**:
  - **Wholly Obtained**: Products fully produced in one country (e.g., minerals, agriculture).
  - **Substantial Transformation**: For manufactured goods, origin is where the last major transformation occurred.
  - **Uses:** Supports trade policies, determines tariff treatment, and aids in trade statistics, labelling, and procurement.

Ammonium Nitrate

A blast near **Delhi's Red Fort has raised concerns about Ammonium Nitrate**, as investigators suspect it was used in the **explosion by a "white-collar" terror module** linked to JeM.

- **Ammonium nitrate (NH_4NO_3): White, crystalline, water-soluble, nitrogen-rich** compound made by reacting ammonia with nitric acid, **melting at ~170°C**.
  - An oxidising agent and a **key ingredient in commercial explosives**. Classified as a dual-use substance.
- **Legitimate Uses:** Nitrogen fertilizer in agriculture; Controlled blasting in quarries and excavation; Key component in mining-grade explosives.
- **Use in Weaponisation:** Pure Ammonium nitrate is not explosive by itself and is classified as **an oxiliser** under **UN classification of dangerous goods;** becomes volatile when combined with fuel oil, potassium chlorate, sulphur, or other accelerants, forming **ANFO (Ammonium Nitrate Fuel Oil)**, a commonly used explosive.
  - Exploited in major terror attacks in India, **including 2019 Pulwama attack and Indian Mujahideen strikes b/w 2000 & 2011** in Mumbai and Delhi.
- **Regulation:** Ammonium nitrate activities are **governed by the Ammonium Nitrate Rules, 2012;** storage of large quantities in populated areas is prohibited.
  - A separate **PESO-issued licence** is required under the rules for any ammonium nitrate activity.
  - An **industrial licence under the Industrial Development and Regulation Act, 1951** is mandatory for manufacturing.
  - Mixtures with **over 45% ammonium nitrate are classified as explosives under the Explosives Act, 1884**. This does not apply to fertilisers from which ammonium nitrate cannot be extracted.

Discovery of Largest and Most Distant Black Hole Flare

Astronomers have detected the **largest & most distant flare from a black hole**, originating from the **supermassive black hole in the Active Galactic Nucleus (AGN) J2245+3743**, located 10 bn light-years away from Earth.

- **Brightest Flare:** The black hole, **first observed in 2018**, is responsible for the brightest flare ever recorded, linked to a **tidal disruption event (TDE)** from consuming a star.
- **Flare Characteristics:** The flare **intensified by 40 times, peaking at 30 times the brightness of any previous black hole flare**, releasing energy equivalent to 10 trillion suns.
- **Star Consumption:** In 2023, Keck Observatory data confirmed the flare's intense energy and ruled out a supernova, revealing the consumed star is **30 times the mass of the Sun**.
- **Time Dilation Effect:** Black hole's gravity causes cosmological time dilation, **allowing researchers to observe the event at a slower pace**, providing insights into black hole dynamics.

Anti-dumping Duty

India imposed a 5-year anti-dumping duty on hot-rolled steel imports from Vietnam after finding that low-priced imports were harming the domestic steel industry.

- Anti-dumping duty is a **protective tariff on imports priced below their normal value in the exporting country** to protect domestic industries.
  - India is **among the largest users**, mainly targeting Chinese imports; **Directorate General of Trade Remedies (DGTR)** under the Ministry of Commerce investigates anti-dumping cases; **Finance Ministry imposes the duty**.
- **WTO rules allow such duties under Article 6 of GATT (1994)** with specific & strictly regulated conditions.

Drone City and Space City Project

Union Ministry of Commerce & Industry laid the foundation for **India's first Drone City & new Space City in Andhra Pradesh** during **30th Confederation of Indian Industry (CII) Partnership Summit**.

- **Drone City:** To be built at **Orvakal Industrial Node**, Kurnool across **300 acres** for drone manufacturing, testing & innovation. Supports **Kisan Drones**, **Swamitva Yojana**, and national security operations like **Operation Sindoor**.
- **Space City:** Planned near **Sriharikota** to boost space industry, aims to complement **IN-SPACe and Indian National Space Promotion** and Authorization Centre efforts to promote private sector participation in space.
- **Incentives:** 100% **State GST refund** via escrow mechanism, 20% **capital investment reimbursement**.

India Joins Global Research on Dolphin–Fisher Mutualism

University of Kerala partners with international researchers to study **cooperative fishing** between **Indo-Pacific humpback dolphins** and **artisanal fishers** in **Ashtamudi Lake**, Kerala.

- **Mechanism:** Dolphins use **tail-slaps/rolls** to signal **dense fish shoals**, enabling fishers to **cast nets** effectively; dolphins then feed on scattered fish.
- **Mutualism:** Both species benefit — **enhanced fish catch** for fishers and **easier prey access** for dolphins.
- **Indo-Pacific Humpback Dolphins (Sousa plumbea):** Found in **shallow coastal waters** of **Asia, Africa, Australia**. Listed as **Endangered (IUCN)**. **S. teuszii** and **S. chinensis** species of the same group—listed under **Appendix I and II** of the **CMS**.

10th Anniversary of Amrit Pharmacies

Union Health Minister inaugurated the **10th Anniversary Celebrations** of **AMRIT (Affordable Medicines and Reliable Implants for Treatment)** Pharmacy at **New Delhi**.

AMRIT Pharmacy

- **About:** Launched in **2015** by **MoHFW**, implemented by **HLL Lifecare Ltd (Mini Ratna PSU)**.
  - Aims to reduce **out-of-pocket medical expenses** via a **nationwide pharmacy network** supplying **low-cost essential medicines, implants, and surgical items**.
- **Mission:** Deliver **affordable, reliable public sector pharmacy services** and **improve access** to essential treatments.
- **Impact (as of Oct 2025):** Medicines supplied: **₹17,047 crore;** Patient savings: **₹8,395 crore;** Beneficiaries: **6.85 crore patients**

Jan Aushadhi Kendras (PMBJP)

- **About:** Operates under **Department of Pharmaceuticals**, launched under **PMBJP** (2008, restructured in 2015–16). Provide **quality generic medicines** at **much lower prices** than branded drugs.
- **Coverage:** Over **16,000 Kendras;** Supply **2,100+ drugs** and **300+ surgical items;**
  - Products made in **WHO-GMP certified** units, tested in **NABL-accredited labs**
- **Digital Tool: Jan Aushadhi SUGAM App** – locates Kendras, checks medicine availability, compares prices, and shows savings.

Quantum Clock

A **2025 study** in *Physical Review Letters* finds that **reading time** in a quantum clock uses **more energy** than making it tick.

- Measures time via probabilistic state changes in quantum particles. Unlike classical clocks that tick forward consistently; quantum clocks show randomness, can tick backward, and generate minimal entropy, challenging the idea of reliable, irreversible time.
- Operates via **Double Quantum Dot (DQD)** system: electron moves $0 \to L \to R \to 0$, counting as a tick.

- At **equilibrium** (equal forward/backward jumps), **no entropy** is produced → clock stops ticking.

■ **Time is read** using a nearby quantum dot sensor; generates minimal entropy (heat/disorder).

■ **Significance:** Could lead to more energy-efficient atomic clocks by focusing on reducing entropy in observation systems (e.g., optical clocks, ytterbium lattice clocks).

- Can help improve ultra-precise clocks, guide efficient quantum computing designs.

SC Calls for Stronger Tiger Conservation Measures

SC has **directed Uttarakhand to fully restore the Corbett Tiger Reserve** following illegal tree-felling & construction and issued reforms for **tiger conservation and management** across all State.

■ SC has directed all States to **notify core & buffer areas of tiger reserves** within 6 months and declare ESZs within 1 year.

■ States **must prepare a Tiger Conservation Plan in 3 months**, ban tiger safaris in core & critical tiger habitats, and **treat human-wildlife conflict as a natural disaster** with stronger compensation, including Rs 10 lakh ex-gratia under **Integrated Development of Wildlife Habitats scheme.**

Corbett Tiger Reserve

■ **About:** Asia's first national park (1936), **originally Hailey National Park**, renamed in 1956 to honor Jim Corbett; **first national park under Project Tiger** (1973).

■ **Location:** In the Himalayan foothills of Uttarakhand, with valleys through which Ramganga, Pallaen, and Sonanadi rivers flow. Located in Bhabar & lower Shivalik region.

■ **Flora & Fauna:** Moist & dry deciduous forests, sal trees, mixed woodlands, etc. Known for open grasslands (chaurs), such as Dhikala & Bijrani. **Flagship species include tigers & elephants**, along with leopards, carnivores, sambar, deer, birds, and reptiles like gharials & crocodiles.

International Convention Against Doping in Sport

At **10th Session of COP** to the **International Convention against Doping in Sport**, held at **UNESCO Headquarters, Paris,** India was **re-elected Vice-Chairperson** of the **Asia-Pacific Bureau** for **2025–27**.

■ **About:** UNESCO multilateral treaty adopted on **19th Oct 2005**, in force since **1st Feb 2007**; ratified by **192 States Parties** (incl. India); **2nd most ratified UNESCO treaty** (after **World Heritage Convention** (196 State Parties)).

■ **Objective:** Only **legally binding international instrument** to prevent & eliminate **doping in sport** globally.

■ **Governance: COP** (meets biennially) oversees **implementation** & **compliance**.

UNSC Approves Trump's Plan for Gaza

UNSC adopted Resolution 2803, endorsing the Trump Gaza Peace Plan and authorizing creation of **International Stabilization Force (ISF) in Gaza**. The resolution passed with 13 votes in favor and none against, while **China & Russia abstained**.

■ **Phase 1:** Ceasefire, hostages' release, and partial Israeli troop withdrawal.

■ **Subsequent Phases:** Demilitarization, transitional governance, and reconstruction, aiming for a **"deradicalized, terror-free zone."**

India Re-Elected to Codex Executive Committee

India was unanimously re-elected to the **Executive Committee of the Codex Alimentarius Commission (CCEXEC) at CAC48**, securing its seat for Asia until CAC50 in 2027.

Codex Alimentarius Commission (CAC)	Codex Alimentarius (Food Code)
■ Created in **1963 by FAO & WHO**, sets global food safety and quality standards to protect consumers and ensure fair trade. **Members– 189; India joined in 1964**. ■ CAC implements the **Joint FAO/ WHO Food Standards Programme**. ■ **CCEXEC** oversees CAC management, strategic planning, and standards development. India is a member as **Regional Coordinator for Asia (CCASIA)**.	■ Collection of international standards on food hygiene, additives, pesticide residues, contaminants, labeling, and inspection. ■ **WTO's Agreement on Application of Sanitary and Phytosanitary Measures (SPS)** recognizes Codex standards as reference for international trade and dispute resolution.

India & CAC

■ India has been chairing **Codex Committee on Spices and Culinary Herbs (CCSCH) since 2014**, with the Spices Board of India as the secretariat.

■ Actively engaged in **discussions on the Codex Strategic Plan 2026–31, advocating for SMART** (Specific, Measurable, Achievable, Relevant, Time-bound) Key Performance Indicators.