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Polity and Governance

Highlights

- State of School Education in India
- Challenges Faced by the Civil Services
- Punjab-Haryana Water Sharing Dispute
- Strengthening Parliamentary Oversight in India
- Caste Census in India: Need and Challenges
- Panchayat Advancement Index
- Reviving Private Members' Bills
- Debate Over Judicial Activism
- Personality Rights
- Digital Access as a Part of the Fundamental Right to Life and Liberty
- India's Waste Management Challenge

State of School Education in India

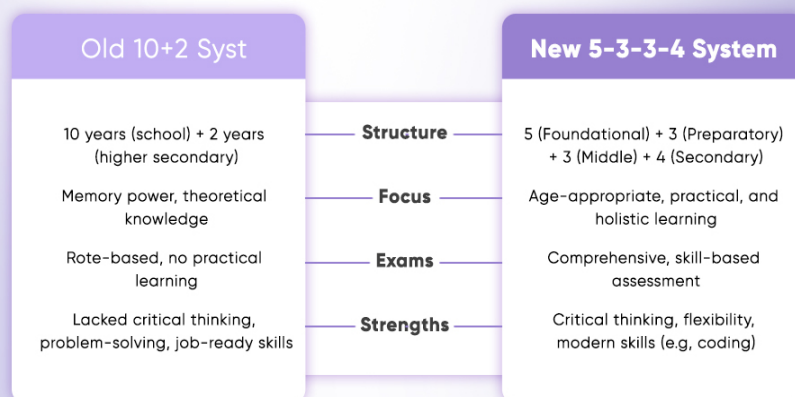
Why in News?

India's school education system is struggling, with the **ASER 2024** report revealing that only **23.4% of Class 3 students** in government schools can read a **Class 2-level text**. Public education spending remains at **4.6% of GDP**, falling short of the **6% target** set by **National Education Policy (NEP), 2020**.

Structure of School Education in India

- India's school education system is transitioning in phased manner from the **10+2 format** to the **5+3+3+4 structure** under the **NEP, 2020**.
- This revamped model spans **ages 3-18**, integrating early childhood care and education. It comprises:
 - **Foundational Stage** (5 years): 3 years pre-school + Classes 1–2
 - **Preparatory Stage** (3 years): Classes 3–5
 - **Middle Stage** (3 years): Classes 6–8
 - **Secondary Stage** (4 years): Classes 9–12

Comparison of the Systems



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HIGH ATTRITION

Gross Enrolment Ratio

(%age Of Total Kids In School)

Foundational (Nursery to II)	41.5
Preparatory (III-V)	96.5
Middle (VI-VIII)	89.5
Secondary (IX-XII)	66.5

%age Of Total Enrolments

Girls	48.1
Minorities	20
OBC	45.2
SC	18
ST	9.9

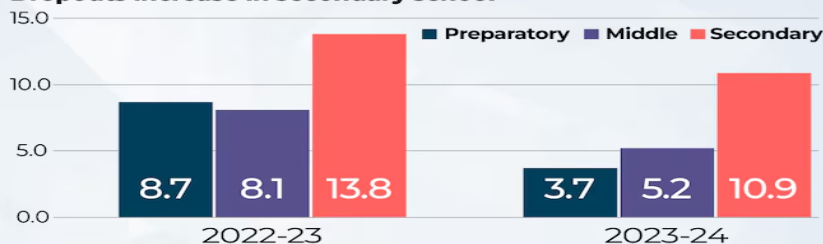
What are the Challenges Faced by India's School Education System?

- **Learning Poverty and Poor Outcomes:** Despite a high Gross Enrolment Ratio at the elementary level, foundational learning is severely deficient.
 - According to **ASER 2024**, 76.6% of Class 3 students remained unable to read the text, which was available in 19 languages.
 - According to the **World Bank's Learning Poverty Index** (percentage of 10-year-olds unable to read a basic text), India's learning poverty rate increased to **70% post Covid-19**, from 55% in 2019.
- **Teacher Shortage and Ineffective Training:** India faces a severe teacher shortage with over 1 million vacancies, especially in rural areas, leading to high pupil-teacher ratios (up to 47:1) and compromised teaching quality.
 - States like **Uttar Pradesh** and **Madhya Pradesh** have over 100,000 vacancies, and a notable percentage of teachers remain underqualified.
- **High Dropouts & Gender Disparity:** According to the Economic Survey 2024-25, dropout rates are 1.9% at primary, 5.2% at upper primary, and 14.1% at secondary levels.
 - According to **UDISE Plus** data for 2022-23 and 2023-24, boys have higher dropout rates than girls, especially at the secondary level.

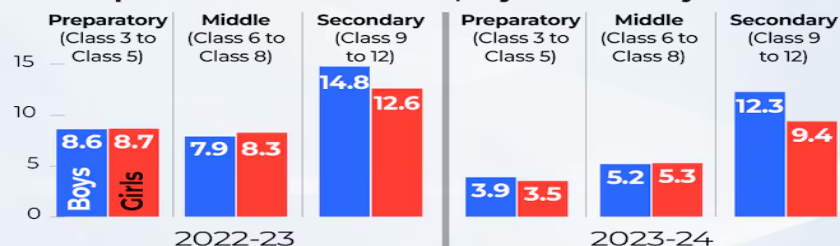
More Students are Staying in School

Dropout rates declined in 2023-24 compared to the previous years

Dropouts increase in secondary school



Girls drop out more in lower classes, boys at secondary level



Source: UDISE + Report Ministry of Education
Graphic: Sarfaraz, Ankita Tiwari

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- **Infrastructure Gaps:** According to UDISE+ 2023-24 data, only **43.5% of government schools have computers for teaching**, compared to **70.9% in private, unaided schools**.
 - Despite basic amenities in over 90% of schools, **infrastructure gaps persist**.
 - 1.52 lakh lack electricity, 67,000 lack functional toilets, and only **33.2% of government schools have disabled-friendly toilets**, most of which are **non-functional**.
- **Regional Disparity:** States like **Bihar, Uttar Pradesh, and Maharashtra** have the **highest dropout rates**.
 - In **West Bengal**, **79% of schools are at the foundational and preparatory levels**, but only **11.6% provide secondary education**, which increases the risk of dropouts.
- **Curriculum and Pedagogical Challenges:** India's school system remains **focused on exams and rote learning**, with little space for creativity, critical thinking, or life skills.
 - Many students, especially first-generation learners, **struggle due to lack of local language adaptation**.
- **Regulatory and Governance Deficits:** India's school regulation **focuses more on inputs than learning outcomes**, lacking an independent quality monitoring body.

- Though NEP 2020 proposes a **State School Standards Authority (SSSA)** for outcome-based regulation, its **slow implementation and absence of transparent benchmarks** hinder accountability and reform.

What is the State School Standards Authority (SSSA)?

- **About:** SSSA is an **independent regulatory body** proposed under the NEP 2020, aimed at **overseeing and ensuring the quality of education in schools** across India.
- **Functions:**
 - The SSSA is responsible for **setting academic and operational standards, assessing student performance/**
 - **Promoting accountability, providing transparent information to parents, and regulating both public and private schools** to ensure uniform quality across all educational institutions.
- **Recommendations for Effective Implementation:**
 - The SSSA should be established as an **autonomous statutory body** with **diverse stakeholder representation**, ensuring **transparency, accountability, and conflict-free governance**.
 - It must **set practical, ambitious standards** with **effective implementation**, learning from past regulatory shortcomings of the **RTE Act, 2009**.

What is the Institutional Framework of School Education in India?

Regulatory Body	Functions
Central Advisory Board of Education (CABE)	It is the highest advisory body for both the Central and State Governments. Acts as a platform for resolving educational issues .
National Council of Educational Research and Training (NCERT)	NCERT, established in 1961 , supports the Central and State Governments in improving school education , nodal agency for the Universalisation of Elementary Education .
State Council of Educational Research and Training (SCERT)	It is responsible for educational research and teacher training at the state level and implements the National Policy on Education within the states .
Central Board of Secondary Education (CBSE)	CBSE is a national-level board that conducts public exams and maintains a standardized curriculum for affiliated schools.

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What are the Government Initiatives Related to Education?

- [National Programme on Technology Enhanced Learning](#)
- [Sarva Shiksha Abhiyan](#)
- [PRAGYATA](#)
- [Mid Day Meal Scheme](#)
- [Beti Bachao Beti Padhao](#)
- [PM SHRI Schools](#)
- [National Education Policy \(NEP\) 2020](#)
- [STARS Programme](#)

Challenges Faced by the Civil Services

Why in News?

The vital role of [civil services](#) in democracy stresses the need for transparency, lateral entry, and maintaining neutrality amid growing concerns over political interference and administrative inefficiencies.

How did India's Civil Service System Evolve?

- **Colonial Beginnings:** Initially, civil servants for the [East India Company](#) were nominated by the **Company's Directors** and trained at Haileybury College in London. They were then sent to India to administer the British Empire.
 - This early system was deeply rooted in patronage, with few opportunities for Indians to join the administrative ranks.
- **Introduction of the Merit-Based System (1854):** The **Macaulay Report of 1854**, recommended replacing the patronage system (preference to political or familial connections) with a **merit-based system (through competitive examinations)**.
 - In response, the **Civil Service Commission** was established in 1854 in London, and the **Indian Civil Service (ICS) examination** began in 1855.
 - This system was initially restrictive, as examinations were held only in London, with a limited number of seats for Indians.

- **Indian Participation in ICS:** **Satyendranath Tagore** (brother of [Shri Rabindaranath Tagore](#)) became the first Indian to pass the ICS examination in 1864. Over the next few decades, the number of Indian candidates passing the ICS exam increased.
 - Following the **Montagu-Chelmsford Reforms (1919)**, the ICS exam began in India in 1922, held in Allahabad and later Delhi, alongside its continuation in London.
- **Reforms in Police and Forest Services:** Besides the ICS, services like the Imperial Police and Forest Service evolved, with Indian inclusion starting after 1920.
 - The Indian Police recruited more Indians post-1939, while the Indian Forest Service was created in 1966 under the All India Services Act, 1951.
 - Under British rule, **civil services were initially classified as covenanted and uncovenanted**.
 - The **1887 Aitchison Commission** reorganized them into **Imperial, Provincial, and Subordinate services**. Post-1919, Imperial Services were split into All India and Central Services.
- **Formation of Public Service Commissions:** The [Government of India Act, 1919](#) provided for the establishment of a **Public Service Commission** in India to manage recruitment and control of public services.
 - On the recommendations of **Lee Commission (1924)**, the **Public Service Commission** was created in 1926, with **Sir Ross Barker** as the first Chairman.
 - Further, the [Government of India Act, 1935](#) established a **Public Service Commission** for the Federation and a **Provincial Public Service Commission** for each province or group of provinces.
 - With the implementation of the Act, the Public Service Commission became the Federal Public Service Commission.
- **Post-Independence Reforms and Consolidation:** On **26th January 1950**, with the adoption of the Indian Constitution, the Federal Public Service Commission became the [Union Public Service Commission](#).
 - The Chairman and Members of the former Commission transitioned to the new body under **Article 378(1) of the Constitution**.

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- **Constitutional Provisions:** Article 312 of the Indian Constitution allows Parliament to create All India services, with recruitment handled by the UPSC. At the state level, recruitment is managed by **State Public Service Commissions (SPSC)**.
 - The UPSC and the SPSC are independent constitutional bodies. **Articles 315 to 323 (Part XIV)** of the Indian Constitution govern their composition, appointment, removal of members, and their powers and functions.
 - **Article 315:** Constitution of Public Service Commissions (PSC) for the Union and States.
 - Two or more states can agree to form a **Joint State Public Service Commission (JSPSC)**, subject to a resolution passed by the legislature of each state.
 - **Article 316:** Appointment and term of office of members of UPSC, JSPSC and SPSC.
 - **Article 317:** Removal and suspension of members of UPSC, JSPSC and SPSC.
 - **Article 318:** Power to make regulations for members and staff of the Commission.
 - **Article 319:** Prohibition on members holding office after ceasing to be members.

What are the Challenges Faced by the Civil Services?

- **Erosion of Neutrality:** Increasing political interference has undermined bureaucratic independence and the merit system, promoting a **spoils system in transfers and postings**.
 - The **spoils system, where ruling parties appoint loyalists to administrative roles**, was a common practice in the US until it was curtailed by the Pendleton Act of 1883. This system often resulted in the **politicization of administration, undermining governance and institutional stability**.
 - The Supreme Court in **Prakash Singh ruling (2006)** mandated states to **select Director General of Police (DGP)** in consultation with the UPSC, which is often bypassed by the states highlighting **political interference in civil services**.
- **Lack of Technical Expertise:** Many bureaucrats are **generalists, which limits their ability to address specialized**, technical challenges in areas like infrastructure, health, and education.
 - This can lead to inefficiency in addressing complex governance issues that require subject-specific knowledge.
 - The **Lateral Entry Scheme (LES)**, introduced to bring private sector expertise into senior bureaucracy, has made **63 appointments since 2019**.
 - However, it faces legal and political challenges due to the absence of a statutory framework and concerns over inadequate representation for marginalized communities.
- **Corruption and Accountability Issues:** **Corruption** remains endemic within the civil services, particularly at lower levels of administration.
 - The **Prevention of Corruption Act (PCA), 1988**, lacks a clear definition of **collusive corruption**, which involves secret collaboration for mutual benefit, often harming the public interest. This legal gap weakens efforts to effectively address such corruption.
 - **Article 311** offers broad protection to civil servants, often delaying action against corruption.
 - Despite efforts to address corruption, a lack of accountability and punitive action often allows corrupt practices to persist.
- **Resistance to Change and Bureaucratic Rigidity:** The civil services often operate in a **highly procedural, hierarchical manner**, which limits innovation and responsiveness.
 - The emphasis on following procedures instead of focusing on results has created a barrier to the effective delivery of public services.
- **Inefficient Use of Technology:** Civil services were not sufficiently empowered by **technology to meet the demands of modern governance**.
 - The absence of such capabilities limits the potential for enhancing citizen engagement and streamlining public services.

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What Measures can Strengthen the Civil Services in India?

- **Reforming Recruitment and Lateral Entry:** While the PSCs ensure merit-based recruitment, it needs reforms to include **domain specialists** through **lateral entry** at mid and senior levels.
 - The **NITI Aayog (Three-Year Action Agenda)** recommended increasing lateral induction to bring in fresh ideas and expertise from outside the bureaucracy.
 - The **2nd Administrative Reforms Commission (ARC), 2005** recommended lateral entry into the civil services to **infuse specialized knowledge and expertise** that traditional generalist officers might lack.
 - **Global Example:** The UK and Singapore civil services regularly induct professionals from academia and the private sector.
- **Performance Appraisal and Accountability:** Integrate the Annual Confidential Report (ACR) with 360-degree feedback mechanisms to ensure **objective performance reviews, as suggested by the 2nd ARC**.
 - Link promotions and postings with measurable outcomes aligned to **Sustainable Development Goals (SDGs)**.
 - Ensure **protection from political interference** while holding civil servants accountable through clear service rules and a strong **Civil Services Board (CSB)**.
- **Encouraging Specialization and Role Clarity:** The Indian bureaucracy continues to be largely generalist in nature.
 - Both the **Surendranath Committee (2003)** and the **Baswan Committee (2016)** recommended the promotion of domain specialization by identifying and grooming officers for sectoral leadership in areas such as health, infrastructure, and education.
- **Capacity Building and Training:** **Mission Karmayogi** offers a transformative path for strengthening India's civil services by shifting from rule-based to role-based governance.
 - Its effective implementation must ensure personalized and continuous learning through the **iGOT Karmayogi platform**, with a strong emphasis on behavioral, functional, and domain-specific competencies, including ethics and digital readiness, to build a citizen-centric and future-ready civil service.
- **Promoting Ethics and Integrity:** Establish **Ethics Commissions** at central and state levels to guide officers.
 - Introduce regular modules on public service values through the **National Learning Week under the Mission Karmayogi**, where civil servants take an annual oath to uphold integrity, ethics, and constitutional values.
 - Strengthen institutions like the **Lokpal, Central Vigilance Commission (CVC)** to curb corruption.
 - The **2nd ARC, 2005** recommended shifting to Article 309 for reasonable safeguards, enabling quicker disciplinary action.
 - The **UK's Nolan Committee (1994)** outlined seven core principles to guide public officials' ethical conduct, which includes selflessness, integrity, objectivity, accountability, openness, honesty, and leadership aimed at upholding ethics in public life.
 - India must institutionalize such values to strengthen ethical standards in governance.
- **Improving Work Culture and Grievance Redressal:** Foster a people-centric and service-oriented work culture.
 - Digitize grievance redressal through platforms like **Centralised Public Grievance Redress and Monitoring System (CPGRAMS)**, and strengthen feedback loops.
 - Encourage innovation and risk-taking by rewarding performance and protecting against vindictive action for bona fide decisions.
- **Inclusive and Diverse Civil Services:** Ensure representation of women and persons with disabilities not only in entry-level but also in leadership roles.

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FOUNDATIONAL VALUES FOR CIVIL SERVICES

The foundational values for civil services represent the fundamental principles and ethics that guide the conduct and responsibilities of civil servants.



Integrity

- Integrity refers to the soundness of moral principles, uncorrupted character, uprightness, honesty and sincerity.
- **Types:**
 - Moral Integrity
 - Intellectual Integrity
 - Professional Integrity
- **Example:** Satyendra Dubey (IES officer) – one of the first whistleblowers of India – exposed corruption in the Golden Quadrilateral Highway Construction Project.

Impartiality

- The quality of being fair, or not being biased or partial towards anything or anyone and acting solely according to the merits of the case.
- **Example:** An officer should distribute funds based on the needs of the communities rather than showing bias towards their own interests.

Non-Partisanship

- Non-disposition towards any political party, i.e., to exhibit political neutrality.
- **Example:** T.N. Seshan, as Chief Election Commissioner (CEC) from 1990–96, brought changes to ensure non-partisanship in the election process.

Objectivity

- Following facts rather than personal opinions to achieve equality.
- **Example:** When designing social welfare programs, the focus should be on the needs of the underprivileged populations, rather than favouring the wealthy/politically influential groups.

Tolerance

- Respect, acceptance and appreciation of the opinions, practices, race, religion etc. different from one's own.
- **Example:** Ashoka's Dhamma (religious tolerance and discouraged religious persecution)

Dedication to Public Service

- Being committed, responsive, and putting the public interest first.
- **Example:** Ashok Khemka (IAS officer) known for his stance against corruption.



Nolan Principles of Public Life

- First set out by **Lord Nolan** in a report on Committee on Standards in Public Life in the UK (1995)
- Outline the ethical standards those working in the public sector
- Principles:**
 - Selflessness ■ Integrity ■ Objectivity ■ Accountability ■ Openness ■ Honesty ■ Leadership

Punjab-Haryana Water Sharing Dispute

Why in News?

Punjab opposes the **Bhakra Beas Management Board (BBMB)**'s decision to release an additional 4,500 cusecs of water to Haryana.

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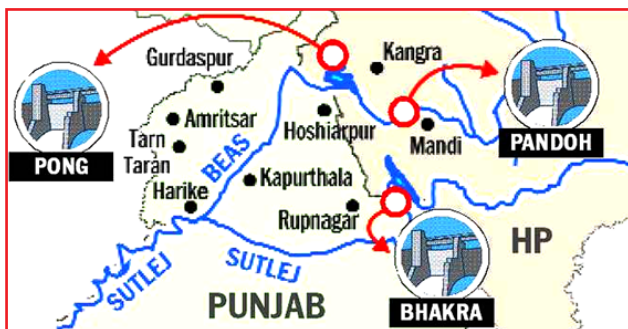
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- Meanwhile, **Haryana** has threatened to move the **Supreme Court** to secure its share, escalating a **decades-old dispute** over sharing the water of Bhakra Nangal Dam.

What are the Key Facts Regarding the Punjab-Haryana Water Sharing Dispute?

- **Current Crisis:** Haryana demanded 8,500 cusecs from the **Bhakra-Nangal project**—4,500 cusecs more than its current allocation. **Punjab refused**, forcing the **BBMB** to intervene.
 - In a **BBMB meeting**, **Haryana, Rajasthan, and Delhi** voted in favor of releasing extra water.
 - Punjab has **refused to open additional sluice gates**, leading Haryana to approach the **Supreme Court**.
- **Role of BBMB:** Before the division of Punjab in 1966, the **Bhakra-Nangal project** was managed by **Punjab**. In 1966, the **Bhakra Management Board (BMB)** was formed under the **Punjab Reorganisation Act, 1966** to oversee the project, ensuring it benefited **Punjab, Haryana, and Himachal Pradesh**.
 - BMB was renamed **BBMB** in 1976, it now manages **Bhakra Dam** (Himachal), **Nangal Dam** (Punjab), **Beas-Satluj Link Project** (Pandoh Dam), and **Pong Dam**.
- **Bhakra Nangal Dam:** It comprises **two separate but complementary dams** on the River Satluj i.e., the **Bhakra dam** in **Himachal Pradesh**, and the **Nangal dam** (10 km downstream in **Punjab**).
 - It is **India's 2nd tallest dam** after the **Tehri Dam** and its reservoir is known as the **Gobind Sagar**.
 - It is a **joint venture** of 3 state governments - **Rajasthan, Haryana, and Punjab**.
 - After, creation of Haryana, the **Satluj-Yamuna Link (SYL) canal** was proposed to deliver Haryana's share but **remains incomplete** due to Punjab's resistance.



Why are Punjab and Haryana Facing a Water Crisis?

- **Groundwater Depletion:** Groundwater depletion has become a **serious concern** in **Punjab, Rajasthan, and Haryana**, where the extraction rate has exceeded the recharge rate by **66, 51, and 34%**, respectively.
- **Falling Water Levels:** Dams like **Bhakra, Pong, and Ranjit Sagar** are experiencing **significantly lower water levels**, attributed to reduced **snowfall in the Himalayas**, which feeds these rivers.
- **Agricultural Practices:** **Water-intensive crops**, especially **rice**, have worsened **groundwater depletion**.
 - **Subsidies** for electricity and free water in states like **Punjab and Haryana** encourage **unregulated pumping**.
- **Indus Waters Treaty (1960):** The treaty limits India's access to the western rivers (Indus, Chenab, Jhelum), **vital** for irrigation in **Punjab and other states**, causing **regional water stress**.
- **Urban & Industrial Demand Surge:** **Rapid urbanization** in cities like **Chandigarh, Gurugram, and Ludhiana** has increased domestic **water demand**, while **thermal power plants** and industries further strain **limited water resources**.

What is the Interstate River Water Dispute?

- **About:** Interstate river water disputes arise when **two or more states disagree** over the **usage, distribution, or control** of rivers that flow across their boundaries.
- **Causes:**
 - **Riparian Rights:** Conflicts between **upstream and downstream states** over equitable water distribution.
 - **Water Sharing Agreements:** **Ambiguities** in agreements often fuel disputes when **one state feels aggrieved** by unequal shares or unfair allocations.
 - **Water Scarcity & Climate Change:** Increased competition due to **droughts** and changing weather patterns.
 - Political and electoral considerations **complicate** dispute resolution.
 - **Agriculture vs Industry:** Tensions between **agricultural and industrial water needs**.
 - **Economic Disparities:** Wealthier states with better infrastructure dominate water access.

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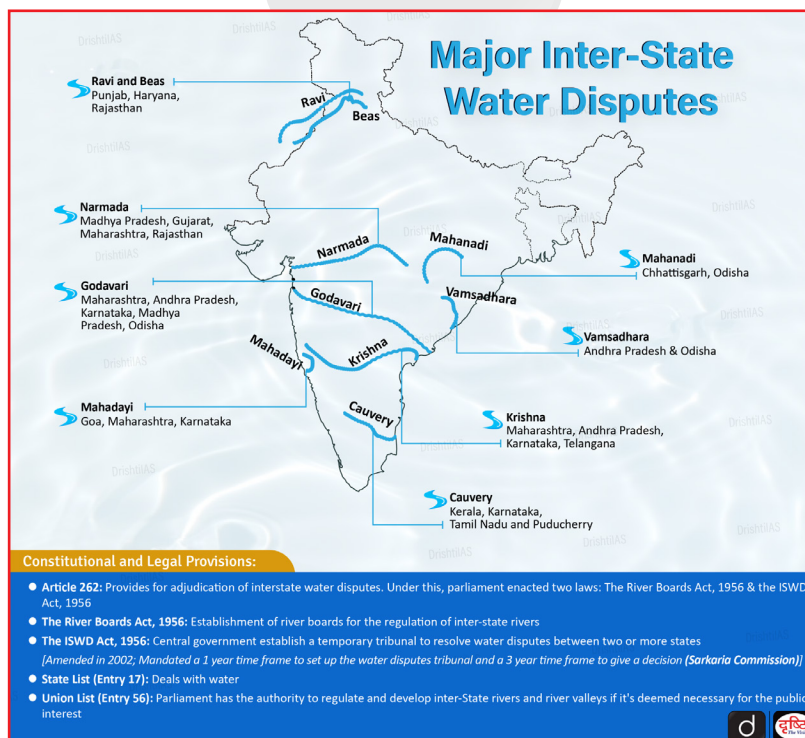
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- **Legal Delays:** Prolonged tribunals or **Supreme Court** judgments delay resolution.
- **Constitutional Provisions:**
 - **Entry 56 of the Union List:** It grants the Union Government authority to **regulate and develop inter-state rivers and river valleys**, as deemed necessary by Parliament for public interest.
 - **Entry 32 of the Concurrent List:** It is related to **shipping and navigation on inland waterways** as regards **mechanically propelled vessels**, and the rule of the road on such waterways.
 - **Entry 17 of the State List:** It pertains to **water**, covering aspects such as **water supply, irrigation, canals, drainage, embankments, water storage**, and hydro power.
- **Disputes Resolution Provisions:**
 - **Constitution:** According to **Article 262**, in case of **disputes relating to waters**:
 - Parliament has the authority to **enact laws** for the adjudication of any **dispute or complaint** regarding the **use, distribution, or control of waters** in any inter-State river or river valley.
- **Major Interstate River Water Disputes:**
 - Parliament may, through legislation, specify that **neither the Supreme Court nor any other court** shall have jurisdiction over such disputes or complaints as mentioned above.
 - **Statutory:** As per **Article 262**, the Parliament has enacted:
 - **River Board Act, 1956:** This empowered the Union government to establish **Boards for Interstate Rivers and river valleys** in consultation with State Governments. So far, **no river board** has been established under this Act.
 - **Inter-State Water Dispute Act, 1956:** If a state or states request a tribunal, the **Central Government** should **first try to resolve** the issue through **consultation**. If **unsuccessful**, it may then constitute the **tribunal**.
 - The **Supreme Court** shall **not question the Award or formula** given by tribunal, but it can question the working of the tribunal.
 - It was amended in **2002** that specified a **one-year deadline** for the establishment of a **water disputes tribunal** and a **three-year deadline** for **delivering a decision** as per the **Sarkaria Commission** recommendations.



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How to Solve Interstate River Water Dispute?

- **Strengthening Institutional Frameworks:** Amend the [Interstate River Water Disputes Act, 1956](#) to include **penalties for non-compliance** (such as reduction of central funding), and the establishment of a **single permanent tribunal** (as proposed in the 2019 amendment) with **specialized benches**.
- **Cooperative Federalism & Mediation:** Introduce **mediation and negotiation** before litigation, involving **neutral mediators** such as **retired judges and hydrologists**, alongside **political dialogue** through platforms like PM-led [inter-state council](#).
- **Scientific Water Management:** Provide **subsidies for drip and sprinkler irrigation** (similar to [PMKSY](#)) and promote [crop diversification](#) to reduce water-intensive crops like **sugarcane** in drought-prone areas.
- **Rainwater Harvesting:** Implement a **national policy for aquifer recharge** and **penalize over-extraction** of groundwater (e.g., Punjab's depleting resources) to ensure sustainable water usage.
 - The **INDIA-Groundwater Resource Estimation System (IN-GRES)**, which tracks and maps groundwater extraction, should be implemented nationwide for effective **groundwater management** based on its **criticality**.
- **Balanced Infrastructure Development:** Ensure **equitable water infrastructure** development that balances the **interests of all states**, while promoting **decentralized conservation** to reduce reliance on large-scale structures amid **climate change** and **variable river flows**.

Strengthening Parliamentary Oversight in India

Why in News?

India's push for 'Maximum Governance' must be matched by 'Maximum Accountability', prompting

renewed focus on strengthening Parliament's role in checking executive power.

- However, tools like [Question Hour](#) and [Standing Committees](#) often underperform, making reforms essential for effective democratic oversight and policy implementation.

What are the Key Mechanisms of Parliamentary Oversight?

- **Constitutional Foundations:** [Dr. B.R. Ambedkar](#) advocated for a parliamentary form of government due to its in-built mechanism for daily executive accountability through questions, motions, and debates.
 - The [Constituent Assembly](#) debated for 167 days to design a system ensuring [checks and balances](#) within a democratic framework.
- **Constitutional Provisions of Parliamentary Oversight:** [Article 75](#) states that the Council of Ministers is collectively accountable to the Lok Sabha, ensuring executive accountability in a Westminster-style democracy.
 - [Article 108](#) allows the President to call a joint sitting of both Houses to resolve legislative deadlocks.
 - [Article 111](#) grants the President the power to assent, withhold, or return a Bill (except Money Bills) to Parliament for reconsideration. This power serves as a check on legislative actions.
 - [Article 113](#) ensures that the government cannot incur any expenditure unless approved by **Parliament through an Appropriation Bill**.
 - [Article 114](#) governs the authorization of expenditure from the Consolidated Fund.
- **Parliamentary Oversight Mechanisms:**
 - **Question Hour:** MPs (**private members**) question ministers directly on government actions and policies.
 - **Zero Hour:** The Zero Hour is an Indian parliamentary innovation not found in the parliamentary rule book, it allows MPs to raise urgent matters without prior notice.

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- It begins immediately after Question Hour and continues until the day's official agenda starts.
- **Parliamentary Committees:** The Parliamentary committees, empowered by **Article 105** (**Parliamentary privileges**) and **Article 118** of the Constitution (deals with the rules of procedure for the Houses of Parliament), play a vital role in legislative oversight.
- Standing Committees scrutinize Bills, policies, and administrative actions, while the **Public Accounts Committee (PAC)** audits government spending.
- The **Estimates Committee** reviews budget estimates and recommends reforms for efficient resource use.
- **No-confidence motions** and **debates** allow Parliament to hold the government accountable.
- **Successes of Oversight Mechanisms:** The **Standing Committee on Railways** recommended waiving Indian Railways' dividend payments in 2015 to improve financial health, which was implemented in 2016.
- The **Standing Committee on Transport** influenced the **2017 Motor Vehicles Act** amendments by removing caps on third-party insurance and creating a **National Road Safety Board**.
- The **Committee on Public Undertakings** addressed delays in NHAI projects by recommending work begin only after acquiring **80% of land and clearances**.
- The **Estimates Committee** advocated for new **uranium mines** to cut import dependence.
- The **Public Accounts Committee (PAC)** exposed corruption in the 2010 **Commonwealth Games** and has made an average of **180 recommendations annually** over the past eight years, with around **80% accepted by the government**, reflecting its significant influence on ensuring financial accountability.
- **Judicial Pronouncements: *S.R. Bommai v. Union of India, 1994*,** the Supreme Court (SC) of India reinforced the **principle of collective responsibility (Article 75)** and emphasized that the executive must have the confidence of the legislature.
- In ***State of Kerala vs. K. Ajith and Others (2021)***, the SC held that parliamentary privileges and immunities do not exempt members from adhering to general laws, especially criminal laws that apply to all citizens.
- In ***Manohar Lal Sharma v. Principal Secretary (2014)***, the SC ruled that the allocation of coal blocks between 1993 and 2010 was arbitrary and illegal, violating **Article 14** of the Constitution.
- The decision was based on findings from the **Comptroller and Auditor-General of India** and PAC.

What are the Key Gaps in Parliamentary Oversight?

- **Erosion of Question Hour's Effectiveness:** Question Hour, intended to ensure daily executive accountability, is often disrupted by protests and adjournments.
- In the **17th Lok Sabha (2019–24)**, it operated only **60% of the time in Lok Sabha and 52% in Rajya Sabha**.
- Even when it functions, MPs tend to raise isolated or superficial queries instead of engaging in coordinated scrutiny of complex policies.
- **Underutilisation of Parliamentary Committees:** Department-related Standing Committees (DRSCs) generate detailed reports, but these are rarely discussed on the House floor.
- Despite robust evaluations, committee findings have limited influence on lawmaking and executive action.

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- The **temporary and rotating nature of committees** inhibits members from developing subject-matter expertise and continuity.
- **Lack of Post-Legislative Scrutiny:** There is no institutionalised mechanism to evaluate the implementation and impact of laws once they are enacted.
 - Without follow-up review, it is unclear whether legislation achieves its intended outcomes.
 - Unlike countries such as the UK, **India does not mandate periodic departmental reviews of major laws.**
- **Limited Accessibility and Public Engagement:** Committee reports and findings are often not accessible to the general public in user-friendly formats.
 - Lack of translations, visual aids, or simplified explanations restricts public awareness and civic engagement with legislative oversight.
- **Missed Opportunities in Technology Adoption:** Parliament has not adequately leveraged Artificial Intelligence, data analytics, or digital tools to enhance scrutiny.
 - Without modern tools, MPs face difficulties in identifying irregularities or patterns in government performance.

Caste Census in India: Need and Challenges

Why in News?

The Indian government has approved the inclusion of **caste enumeration** in the delayed **Census 2021**, reviving a practice discontinued after independence. Triggered by growing political and social demands, this move is expected to significantly **impact governance, affirmative action, and social justice efforts.**

What is a Caste Census?

- **Definition:** A caste census is a systematic collection of data on individuals' caste identities during a nationwide population census.
 - The word "**caste**" comes from the **Spanish word 'casta', meaning 'race' or 'hereditary group'.** The Portuguese used it to denote '**Jati**' in India.
 - M. N. Srinivas (Indian sociologist) defines caste as a **hereditary, endogamous, and usually localized group**, linked to a specific occupation, and occupying a certain position in the social hierarchy.
- **Objective:** It aims to understand the socio-economic distribution of various caste groups to inform policies on social justice, reservations, and welfare.
- **Historical Context of Caste Enumeration:** Caste enumeration was a regular feature of census exercises during British rule from **1881 to 1931**, while the 1941 Census also collected caste information but did not publish it due to the onset of **World War II**.
 - Since the 1951 Census, caste enumeration was discontinued for all **except Scheduled Castes (SCs) and Scheduled Tribes (STs)**, leaving no reliable national data on **Other Backward Classes (OBCs)** and other caste groups.
 - In 1961, the central government allowed states to conduct surveys and compile state-specific lists of OBCs.
 - The last national caste data collection was in **2011 through the Socio-Economic and Caste Census (SECC)**, aimed at assessing households' socio-economic conditions along with caste information.
- **State-level Surveys:** States like **Bihar, Karnataka, and Telangana** recently conducted their own caste surveys.

What is the Difference Between Caste Census and Caste Survey?

Click Here to Read More: [Caste Survey and Caste Census](#)

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DECENNIAL POPULATION CENSUS



A process of collecting, compiling, analysing and disseminating demographic, economic and social data (at a specific time) of all persons in a country.

BRIEF HISTORY

- Earliest mentions: **Rigveda** (800-600 BC), **Arthashastra** (300 BC) & **Ain-i-Akbari** (16th century)
- 1st Non-synchronous Census (held in a few places): **1872** under Gov. Gen. Lord Mayo
- 1st Synchronous Census (held all over British India): **1881** by W.C. Plowden (Census Commissioner of India) under Lord Ripon

RESPONSIBLE BODY

- Until 1951, Census Organisation was set up on an ad-hoc basis for each Census
- Since 1951, Office of the **Registrar General and Census Commissioner** (MHA)

LEGAL BACKING

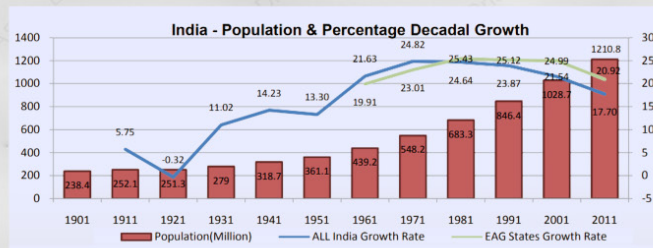
- A Union list subject under **Article 246**
- Conducted under **Census Act (CA), 1948**

CONFIDENTIALITY OF INFORMATION COLLECTED

- Guaranteed under CA 1948
- Information not even accessible to the courts of law

SIGNIFICANCE

- Largest single source of statistical information about people of India
- Used for good governance purposes
- Demarcation of constituencies & representation in Legislature



Census	Major Event
5 th (1921)	Only census to witness a decadal population decline (0.31%) Hence, called the year of "The Great Divide"
11 th (1971)	Added information on fertility for currently married women
13 th (1991)	Concept of literacy changed to children aged 7+ (previously 4+)
14 th (2001)	Leap in tech front; usage of Intelligent Character Reading (ICR)
15 th (2011)	Notable fall in case of Empowered Action Group (EAG) States noticed first time

Socio-Economic and Caste Census (SECC)

ABOUT

- Conducted in **2011** for the **first time since 1931**

COMPONENTS

- **Economic status** (to define a poor/deprived person)
- **Specific caste** (to evaluate caste groups that are economically worse/better off)

CONSTITUTIONAL BACKING

- **Article 340** mandates the **appointment of a commission** to investigate the conditions of socially/educationally backward classes

Census v/s SECC

- SECC identifies beneficiaries of state support (Census - national population data)
- SECC data open for use by govt depts (Census data - confidential)

SIGNIFICANCE

- Better inequality mapping
- Quantifiable data to support existing reservation levels

SOME KEY FINDINGS OF SECC 2011

- Total Households - 24.49 crore
 - Rural - 17.97 crore
 - SC/ST Households - 3.87 crore (21.56%)
- Households with no literate adult (age >25) - 23.5%

What is the Need for a Caste Census?

- **Current Gap:** While data exists for SCs and STs, there is no reliable, updated national data on OBCs and other caste groups, hindering effective policy formulation.
- **Addressing Challenges from Previous Surveys:** The 2011 SECC had significant flaws, particularly the lack of a comprehensive caste list.

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- The **National Commission for Backward Classes (NCBC)**, pointed out, the 2011 SECC proforma allowed citizens to **enter any caste**, leading to an overwhelming and inaccurate number of caste entries.
- This rendered the data **unreliable and impractical**. The upcoming caste census aims to address these issues by ensuring a more accurate and inclusive process.
- **Reshaping Affirmative Action:** The caste census can provide updated data to reassess reservation quotas and affirmative action programs.
 - The absence of caste data has left OBC population estimates unclear; the last available data from the 1931 Census showed OBCs at 52%, which influenced the Mandal Commission's 1980 reservation recommendations.
 - **Bihar's 2023 caste survey** found OBCs and EBCs make up over 63% of the state's population, fueling calls for **national-level caste data to guide policy decisions on reservations and social welfare**.
- **Sub-Categorization Within Broad Groups:** Detailed data enables the **sub-categorization of OBCs**, as recommended by the **Rohini Commission (2017)**, to ensure equitable distribution of reservation benefits.
- **Political and Electoral Implications:** Accurate caste data can lead to better political representation of **marginalized groups**, especially in state and national elections.
- **Push for Equality and Inclusivity:** Caste-based inequalities intersect with **poverty, region, and gender**.
 - A caste census can highlight these disparities, aiding targeted policies. It is seen as a step toward addressing entrenched inequalities and creating more inclusive, equitable policies for diverse communities.

What are the Concerns Regarding a Caste Census in India?

- **Risk of Reinforcing Caste Identities:** Critics argue that a caste Census could **entrench caste consciousness**,

legitimizing divisions rather than working toward a caste-less society.

- May deepen **social segmentation and hierarchies**, contradicting the constitutional goal of promoting fraternity and equality.
- **Equity vs. Equality:** While larger groups may benefit from representation, **micro-quota fragmentation** harms social cohesion.
 - Disproportionately **excludes minorities** within the backward classes **due to scale bias**.
 - **Hyper-fragmentation** risks undermining affirmative action meant for historically oppressed groups.
- **Political Exploitation and Competitive Backwardness:** Accurate caste data may fuel **vote-bank politics**, with parties tailoring policies for electoral gain.
 - It could trigger demands for **OBC/ST/SC status by politically dominant** or upper caste groups, increasing pressures on reservation quotas.
 - May lead to **"competitive backwardness"**, where groups seek lower status for benefits.
- **Constitutional and Legal Ambiguities:** Though **Article 340** permits the identification of backward classes, there is no constitutional mandate for caste enumeration in the general Census.
- **Issues with Proportional Representation:** Fresh caste data may challenge policies based on **1931 estimates**, triggering **demands for proportionate reservations** and calls to revise the 51% cap set by the **Indra Sawhney judgment, 1992**.
 - This shift might also **encourage larger communities to seek greater benefits**, undermining population control programs and affecting their effectiveness.

What are the Challenges in Conducting an Accurate Caste Census?

- **Lack of a Standardized Caste List:** A key challenge in conducting a caste Census is the lack of a **standardized caste code list**, no unified OBC list exists, the Central OBC list (used for central schemes) differs from more expansive state-specific lists.

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- The SECC 2011's open-ended self-reporting led to 46.7 lakh caste entries and over 8 crore errors, highlighting the difficulty of classifying India's thousands of castes and sub-castes in a consistent, reliable manner.
- **Caste Self-reporting and Mobility Claims:** Individuals may claim affiliation with a **higher caste due to its prestige**, as seen in the colonial censuses where communities alternated between identifying as Kshatriya, Rajput, Brahmin, or Vaishya.
 - In the post-independence period, some individuals may falsely identify with lower castes to **gain benefits from reservations** (e.g., some upper castes seeking OBC status).
 - Caste identities are **often fluid**, and self-reporting can vary across regions or generations.
- **Misclassification of Castes:** Confusion Due to similar surnames like 'Dhanak', 'Dhankia', 'Dhanuk', and 'Dhanka' belong to different caste categories (SC, ST, etc.), **leading to errors**.
 - Additionally, differing classifications across states further complicate the census, for example, the **Meena community is classified as ST in Rajasthan but as OBC in Madhya Pradesh**.
 - Given the sensitivity of caste in India, enumerators may avoid direct questions and rely on assumptions based on surnames, often leading to inaccurate entries.
- **Institutional and Administrative Capacity Constraints:** The Census lacks a **dedicated verification and coding unit**, which may lead to the new caste census data being as unreliable as the SECC 2011 data.

Panchayat Advancement Index

Why in News?

Prime Minister Narendra Modi, on **National Panchayati Raj Day (24th April)**, highlighted the **Panchayat Advancement Index (PAI)** as a key step toward empowering

local governance and achieving Viksit Bharat 2047 by ranking 2.16 lakh panchayats on **Sustainable Development Goals (SDGs)** linked themes.

What is the Panchayat Advancement Index?

- **About:** PAI is a composite index designed to assess the performance and progress of **Gram Panchayats (GPs)** across India using socio-economic indicators, identifies development gaps, and supports evidence-based planning.
 - It aligns with the **Localization of Sustainable Development Goals (LSDGs)** and the **National Indicator Framework (NIF)** developed by the **Ministry of Statistics and Programme Implementation (MoSPI)**.
 - It reflects India's commitment to the SDG 2030 Agenda by promoting participatory, bottom-up governance, assessing GPs development through socio-economic indicators, identifying gaps, and enabling evidence-based planning.

Purpose of Panchayat Advancement Index

- Measure incremental progress on LSDGs using scores of GP over years
- Grading of Panchayats based on performance in achieving LSDGs
- Evidence Based Assessment and Planning - Prioritizing Development
- Better method for Incentivization on developmental progress
 - PAI Data being used for incentivization by MOPR
 - States can also adopt the same system for incentivization of Panchayats
- No Inter-State comparison but States can compare GPs on
 - LSDG thematic scores on each theme
 - Composite PAI scores
- **Indicators of the PAI:** It is based on 435 unique local indicators across 9 LSDG-aligned themes.
 - It is designed to provide a multi-domain and multi-sectoral assessment of Panchayat-level development.

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Indicator Framework used for PAI Score Calculation 2022-23



Theme	Indicator Count	Total Data Points
Theme 1 - Poverty Free and Enhanced Livelihoods Panchayat	32	60
Theme 2 - Healthy Panchayat	21	42
Theme 3 - Child Friendly Panchayat	82	143
Theme 4 - Water Sufficient Panchayat	21	34
Theme 5 - Clean and Green Panchayat	33	58
Theme 6 - Self-sufficient Infrastructure in Panchayat	159	189
Theme 7 - Socially Just and Socially Secured Panchayat	62	100
Theme 8 - Panchayat with Good Governance	62	87
Theme 9 - Women Friendly Panchayat	44	81
Total	516	794

Unique Indicator	Mandatory Indicator	Optional Indicator	Unique Data Points	Numeric Indicators	Binary Indicators
435	331	104	566	207	228

- **Data Collection and Validation:** Over 2.16 lakh GPs from 29 States/Union territories (UTs) have entered data on the PAI Portal. Data entries are validated by respective States/UTs before inclusion.
- **Performance Categories of GPs:** Based on their PAI and thematic scores, GPs are classified into five performance categories: **Achiever (90+)**, **Front Runner (75–89.99)**, **Performer (60–74.99)**, **Aspirant (40–59.99)**, and **Beginners (below 40)**.
- **PAI data for 2022-23:** Out of 2.56 lakh GPs, 2.16 lakh submitted validated data. No Panchayat qualified as an Achiever, while 0.3% were classified as Front Runners, 35.8% as Performers, 61.2% as Aspirants, and 2.7% as Beginners.

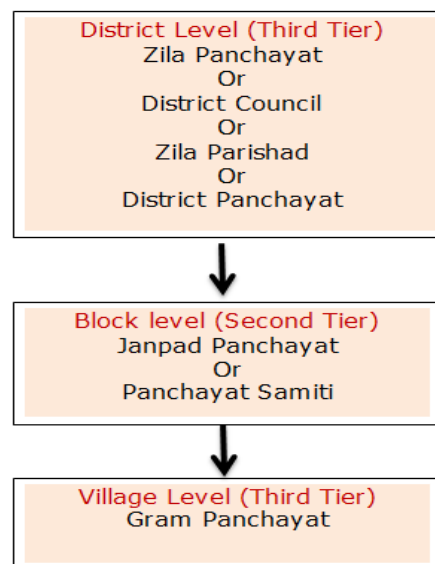
Constitutional Provisions Regarding PRIs

- **73rd Amendment Act, 1992:** It granted constitutional status to PRIs, creating a **three-tier system** with provisions for elections, reservations, and devolution of powers across gram sabhas, panchayat samitis, and zila parishads.
 - **Part IX of the Constitution**, added through the 73rd Amendment Act, 1992 and titled "**The Panchayats**," comprises **Articles 243 to 243-O** and lays down the structure, composition, elections, powers, and functions of PRIs.

- The **11th Schedule**, also added by the same amendment, lists 29 subjects devolved to Panchayats, detailing their powers, authority, and responsibilities for effective local governance.

- **Article 40 (Directive Principles of State Policy):** It directs the State to organize village panchayats and empower them appropriately.

Structure of Panchayati Raj System (Different Level of Panchayati Raj System)



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What are the Challenges Facing Panchayats?

- **Limited Financial Autonomy:** Panchayats rely heavily on state and central funds. According to an **Reserve Bank of India study (2022-23)**, average revenue per Panchayat was Rs 21.23 lakh, but only **1.1%** came from their **own revenue sources** (local taxes, fees).
 - The **15th Finance Commission (2021-26)** noted that only 8 states had constituted their **6th State Finance Commission (SFC)**, despite the due date being 2019-20. This continues to hinder the development and empowerment of Panchayats.
 - Additionally, Local tax collection remains politically sensitive and administratively weak in GPs.
- **Incomplete Devolution:** The **73rd Constitutional Amendment Act, 1992** mandates the devolution of **29 subjects to Panchayati Raj Institutions (PRIs)**, but a 2022 Ministry of Panchayati Raj report revealed that **less than 20% of states have fully implemented this transfer**.
- **Technological and Capacity Gaps:** Lack of **digital infrastructure and literacy** hampers monitoring, evaluation, and data reporting.
 - 12 states/UTs have **100% computer-equipped panchayats**, but Arunachal Pradesh has none, and Odisha has only 13%. **Internet access** is also poor, with Haryana and Arunachal Pradesh reporting 0% and 1% connectivity, respectively.
 - Many panchayats **lack trained staff and technical advisors** to design, monitor, and evaluate development plans.
- **Inadequate Infrastructure:** Only 7 states and UTs have 100% pucca (permanent) panchayat office buildings.
 - Arunachal Pradesh has the lowest rate, with only 5% of its panchayat offices housed in pucca structures.
- **Representation Gaps:** Despite a 50% quota for women in panchayats, states like Madhya Pradesh, Haryana, Punjab, and Tripura fall short.
 - Women make up 46.6% of elected representatives, but their participation is limited due to the **"Pradhan Pati" issue**, where male relatives often control decision-making.

- Patriarchal norms and bureaucratic neglect reduce women to figureheads in many states, particularly in northern regions like UP, Bihar, Haryana, and Rajasthan.

- **Poor Inter-Departmental Coordination:** Multiple government departments often function independently within the same village. Lack of **convergence** leads to **duplication of work and inefficient resource use**.

Reviving Private Members' Bills

Why in News?

The Vice President of India recently described **Private Member's Bills (PMBs)** as **"far-sighted, forward-looking, and a gold mine"** for India's democracy.

- His remarks have renewed focus on the declining relevance of PMBs, which are increasingly sidelined in Parliament despite their potential to strengthen individual legislative initiative.

What are Private Member's Bills?

- **About:** PMBs are legislative proposals introduced by **Members of Parliament (MPs)** who are not Ministers (i.e., not part of the government), enabling them to raise issues and suggest laws or amendments on matters significant to their constituencies.
- **Key Features:** Only non-government MPs can introduce these bills, offering a chance for independent legislative proposals.
 - MPs can also introduce resolutions to call attention to specific matters.
- **Procedure:**
 - **Drafting and Notice:** MPs draft and submit bills with at least one month's notice.
 - **Introduction:** Bills are introduced in Parliament, followed by initial discussions.
 - **Debate:** If selected, bills are debated, typically in limited Friday afternoon sessions.
 - **Decision:** Bills may be withdrawn or proceed to a vote.

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- **Decline of PMBs:** Since Independence, only **14 PMBs have been passed by both Houses** and received Presidential assent. No PMB has passed both Houses since 1970.
 - During the **17th Lok Sabha (2019–2024)**, 729 PMBs were introduced in the Lok Sabha and 705 in the Rajya Sabha, but only 2 and 14 were discussed in each House respectively.
 - In the **18th Lok Sabha (as of May 2025)**, 64 PMBs were introduced, but none discussed. In Rajya Sabha, 49 out of 82 PMBs were introduced, with only one discussed.

Public Bill vs Private Bill	
Public Bill	Private Bill
1. It is introduced in the Parliament by a minister.	1. It is introduced by any member of Parliament other than a minister.
2. It reflects of the policies of the government (ruling party).	2. It reflects the stand of opposition party on public matter.
3. It has greater chance to be approved by the Parliament.	3. It has lesser chance to be approved by the Parliament.
4. Its rejection by the House amounts to the expression of want of parliamentary confidence in the government and may lead to its resignation.	4. Its rejection by the House has no implication on the parliamentary confidence in the government or its resignation.
5. Its introduction in the House requires seven days' notice.	5. Its introduction in the House requires one month's notice.
6. It is drafted by the concerned department in consultation with the law department.	6. Its drafting is the responsibility of the member concerned.

How do Private Member's Bills Empower Legislative Democracy in India?

- **Promoting Independent Thought and Legislative Innovation:** PMBs allow MPs, **regardless of party, to raise issues outside the government's agenda**, fostering innovation in legislative discourse.

- The **'Right to Disconnect' Bill (2019)**, introduced to propose a legal right for employees to **disconnect from work after working hours**.
 - While not passed, it sparked national debate on work-life balance and mental health, highlighting how PMBs can address **societal issues often overlooked by government legislation**.
- **Driving Social Change:** The **'Rights of Transgender Persons' Bill (2014)** was the first PMB in 40 years passed in the Rajya Sabha.
 - Though it didn't pass the Lok Sabha, it paved the way for the **Transgender Persons (Protection of Rights) Act, 2019**, driving inclusivity and social justice.
- **Improving Governance:** The first Private Member's Bill passed by Parliament was the **Muslim Wakfs Bill, 1952**, which aimed to improve the governance and administration **of Wakf properties**.
 - It led to the enactment of the Waqf Act, 1954, which was later amended as the **Waqf (Amendment) Act, 2025**.
- **PMBs as Catalysts for National Debate:** In 1966, after Lal Bahadur Shastri's death, H.V. Kamath, introduced a PMB to amend the Constitution, making only **Lok Sabha members eligible** for the Prime Minister's post.
 - This Bill sparked an important political discussion on the **role of the Prime Minister** and the balance of power between the **Lok Sabha and Rajya Sabha**.

What are the Challenges Undermining the Relevance of Private Member's Bills?

- **Lack of Time and Attention:** Data from PRS Legislative Research shows the 17th Lok Sabha allocated only 9.08 hours to PMBs, while the Rajya Sabha spent 27.01 hours, a small fraction of total session hours.
 - **Friday scheduling** of Private Members' business limits discussion, as many MPs leave for constituencies, and sessions are often overridden by disruptions or urgent government business.
- The decline of these bills can also be attributed to **MPs' lack of seriousness, with many skipping discussions**.

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- **Structural Constraints:** The lack of a dedicated parliamentary mechanism, such as a **review committee**, hinders the scrutiny, prioritization, and timely discussion of PMBs, leading to legislative inefficiency.
 - The **Anti-Defection Law (the Constitutional 52nd Amendment Act, 1985)** limits MPs' independence if party discipline overrides individual initiative, making it difficult for MPs to introduce bills that deviate from their party's agenda.
- **Low Legislative Conversion:** Minimal PMBs reach the stage of debate or voting, reducing the incentive for MPs to engage with the process seriously.

What Reforms can Revitalize the Private Member's Bills Mechanism in India?

- **Protect Time Reserved for PMBs:** Amend the **Rules of Procedure and Conduct of Business** to safeguard the Friday slot for PMBs. This time should only be overridden in cases of **national emergency**.
 - Enforce this schedule consistently to enable proper debate and passage of PMBs.
 - Additionally, rather than encroaching on time reserved for PMBs, the **government should extend parliamentary working hours**; even a modest 1–2 hour extension can enhance the efficiency of **Zero Hour** and **Question Hour** while preserving PMB discussions.
 - This reform is especially crucial with the impending **delimitation**, which is expected to increase the number of MPs.
- **Institutional and Operational Reforms:** Establish a **PMB Review Committee** to vet proposals for constitutional validity, societal relevance, and bipartisan support.
 - Create a **fast-track process** for high-impact PMBs with substantial public and parliamentary backing.
- **Time and Format Innovations:** Slightly extend parliamentary working hours to accommodate government and private business distinctly.
 - Introduce the **UK-style Ten-Minute Rule**, allowing MPs to briefly present PMBs and opposing views within a fixed time, enhancing efficiency.

- **Encouraging Political Engagement:** Promote awareness and encourage both ruling and opposition MPs to view PMBs as tools for advocacy and grassroots responsiveness. Boost visibility through Parliament TV, bulletins, and public consultations.

Debate Over Judicial Activism

Why in News?

India is witnessing a growing debate on the judiciary's expanding influence, with concerns raised about '**judicial despotism**' clashing with the view that Supreme Court interventions are crucial for **upholding constitutional values**.

- Some of the recent judgments have ignited discussions on the **separation of powers** and whether the **judiciary has overstepped its constitutional limits**.

What is Judicial Despotism?

- **About: Judicial Despotism** refers to a situation where the judiciary, especially the higher courts, exercises **excessive or unchecked power**, often **going beyond its constitutional mandate**, thereby **undermining the roles of the legislature and the executive**.
- **Key Features:**
 - **Overreach into Other Organs:** When **courts start making laws** (legislative function) or directly intervening in administrative decisions (executive function) **beyond constitutional limits**.
 - **Frequent Use of Extraordinary Powers:** For example, frequent invocation of **Article 142** (which allows the Supreme Court to do "complete justice") **without clear legal or constitutional backing**.
 - **Supersession of Democratic Will:** When unelected judges **consistently override decisions made by democratically elected governments** without adequate justification.
 - **Lack of Accountability:** The higher judiciary enjoys **wide powers with minimal external accountability**, which, if misused, can lead to authoritarian tendencies.

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Concept	Meaning	Nature	Intent	Legitimacy	Examples	Impact
Judicial Activism	Proactive interpretation and enforcement of rights and constitutional values	Corrective and constructive	To uphold justice, protect rights	Within constitutional framework	Vishaka Guidelines, PILS for environmental rights	Enhances accountability and rights protection
Judicial Overreach	Judiciary crossing its limits and entering executive/legislative domain	Excessive and intrusive	To fill a governance vacuum, often with good intent	Borderline unconstitutional	Ordering liquor bans near highways, policy interference	Disrupts balance of powers
Judicial Despotism	Systemic, unchecked judicial dominance over other organs	Authoritarian and undemocratic	Assertion of supremacy, ignoring constitutional limits	Often outside constitutional boundaries	Frequent use of Article 142, overriding democratic will	Threatens democracy and constitutional order

What are the Instances Related to Judicial Activism and Restraints?

Instances Showing Judicial Activism

- **Broad Use of Article 142:** The SC has, in some cases, been accused of **issuing wide-ranging directives** (e.g., in mob lynching, Babri Masjid, divorces on irretrievable breakdown) where existing laws already provided a framework.
- **Other Instances of Judicial Activism:**
 - Directing states to **distance liquor shops from national highways (500 meters)** to prevent road accidents.
 - Assuming the power to issue **writ of mandamus against the President and Governors** for assenting to state bills.
 - Providing **compensation for victims of the Bhopal gas tragedy (1989)**.
 - Issuing **guidelines against sexual harassment at the workplace (1997)**.
 - Granting **permanent commissions to women officers** in the armed forces (2024).
- **Democratic Legitimacy:** Judicial activism upholds **Constitutional supremacy** by ensuring elected governments act within constitutional limits, as affirmed by SC in **I R Coelho v. State of Tamil Nadu (2007)**.

Instances Showing Judicial Restraint

- **Selective Intervention Only:** The SC has generally upheld existing public policies and rarely invalidates laws. It **upheld demonetisation, Rafale deal, NRC in Assam, and UAPA bail restrictions**. It **refused to recognise same-sex marriage, dismissed Pegasus probe calls, and did not hear key cases on EVMs and CAA**.
- **Recognised Judicial Restraint:** In **Shreya Singhal Case (2015)**, and **NJAC case (2015)**, the Court acted to **protect fundamental rights** and judicial independence, **not to assert supremacy**.
- **Delay in Hearing Key Cases:** Petitions related to **Citizenship (Amendment) Act, 2019, Electronic Voting Machine (EVM) and Pegasus surveillance** have seen little progress, raising concerns about **selective judicial passivity**.
- **Acceptance of Sealed Evidence:** SC has been criticised for **undermining transparency and due process** (e.g., in Rafale and bail cases).

What is Judicial Review?

- **About:** Judicial review refers to the **power of constitutional courts** (SC and HC) to examine the constitutionality of **legislative enactments** and **executive actions**.

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- **Constitutional Provisions:** Though the term “Judicial review” is not explicitly mentioned in the Constitution, it is implied in various articles of the constitution such as:
 - **Article 13**, which declares any law inconsistent with fundamental rights as void.
 - **Articles 32 and 226** which entrusts the roles of the protector and guarantor of **fundamental rights** to the SC and HC.
 - **Articles 131–136** empowers the Supreme Court to adjudicate disputes involving individuals, states, and the Union (interpretations by the SC become binding law across all courts).
 - **Article 137** grants the SC power to **review its own judgments**
- **SC’s Stands on Judicial Review:**
 - In **Kesavananda Bharati v. State of Kerala (1973)** and in **Indira Gandhi v Raj Narain case (1975)**, SC held **judicial review** as a **basic feature of the Constitution**, immune from even constitutional amendments.
 - In the **Minerva Mills Case (1980)**, the SC reiterated that **limited government and constitutional supremacy** are foundational principles, safeguarded through judicial review.
- **Examples of Judicial Review:**
 - In **Shreya Singhal v. Union of India (2015)**, SC struck down **Section 66A of the IT Act** as unconstitutional for violating **freedom of speech and expression** under Article 19(1)(a).
 - In **Supreme Court Advocates-on-Record Association v. Union of India (2015)**, (**or Fourth Judges Case**) SC struck down National Judicial Appointments

Commission (NJAC) Act and 99th Constitutional Amendment, protecting **judicial independence**.

Article 142

- **Article 142** of the Indian Constitution grants the Supreme Court the power to pass any decree or order necessary to do “**complete justice**” in a case.
- It grants the Supreme Court **residual, discretionary, and extraordinary powers** to fill legislative gaps or **address exceptional circumstances** where no law exists.
- **Landmark Uses:**
 - **Babri Masjid-Ram Janmabhoomi case (2019)**, allotted alternate land to Muslims.
 - **Divorce on grounds of irretrievable breakdown**, SC granted divorce even when not provided in the **Hindu Marriage Act 1955**.

Judicial Restraint

- **Judicial Restraint** is the **opposite of Judicial Activism**. It is a judicial philosophy that **encourages judges to limit the exercise of their power** and **avoid intervening in policy-making**.
- Judges should interpret the law based on the **original intent of the Constitution’s framers** and **precedents set by past decisions**.

Personality Rights

Why in News?

The **Madras High Court (HC)** ordered **Meta** and **Telegram** to remove fake accounts and channels misusing choreographer **Anita R. Ratnam’s** images and **deep fake audio** in investment frauds citing violation of **Personality Rights**.

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- She is a pioneer of **Neo Bharatam**, a unique **dance style** combining Bharatanatyam, Kathakali and Yoga.

What are Personality Rights?

- **About:** Personality Rights protect an individual's **public persona** like **name, voice, image, mannerisms** as part of their broader **right to privacy** or **property**.
 - It grants control over the **commercial use of one's name, image, or likeness**.
 - It can be further divided into two categories:
 - **Right of Publicity:** Protecting an individual's image and likeness from unauthorized commercial use, akin to trademark rights.
 - **Right to Privacy:** Safeguarding against public representation of one's personality without consent.
 - The **Right to Privacy** under **Article 21** of the **Indian Constitution** offers the closest legal protection (**though not explicitly mentioned**).
- **Key Related Provisions in India:**
 - **Copyright Act, 1957:** It indirectly protects **personality rights** via **passing off** and **deception** against misusing a person's identity.
 - **"Passing off"** is when goods or services are **misrepresented** as belonging to someone else, while **deception** involves **misleading** use of a person's name or likeness.
 - Under this, **creators or performers** hold **moral rights**, including the **right to be credited (attribution)** and to **oppose any alterations** that could **harm** their **reputation (integrity)**.
 - **Indian Trademarks Act, 1999:** Section 14 restricts the use of a **trademark** that **falsely** suggests a

connection with a **living person** or a **deceased person** within the **last 20 years** unless **consent** is obtained.

- **Information Technology Act, 2000: Section 66C** of the act addresses the **punishment** for **identity theft**, specifically using someone else's electronic **signature, password, or unique identification** feature **fraudulently or dishonestly**.
- **Related Key Judgments:**
 - **Krishna Kishore Singh vs Sarla A Saraogi Case, 2021:** The Supreme Court (SC) ruled that **rights to privacy, publicity, and personality** are **not inheritable** and cease upon the actor's death.
 - **Justice KS Puttaswamy vs Union of India Case, 2017:** The SC affirmed **privacy** as part of the **right to life** under **Article 21**, but noted it can be **restricted** for a **legitimate state aim** with **proportionate measures**.
 - **Shivaji Rao Gaikwad vs Varsha Production Case, 2015:** The Madras HC **recognized personality rights**, even though there is **no specific statutory definition** in India.
 - **Arun Jaitley vs. Network Solutions Private Limited Case, 2011:** The **Delhi HC** noted that an individual's **popularity or fame** is equally significant **online** as in **real life**.
 - **M. Entertainment Pvt. Ltd. vs. Baby Gift House Case, 2010:** The **Delhi HC** ruled in favor of **D.M. Entertainment Pvt. Ltd.**, holding that the **unauthorized sale of dolls imitating** singer Daler Mehndi's **likeness and songs** constituted a **violation** of his **personality rights**, thereby affirming his **commercial right to control the use of his public image**.

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INTELLECTUAL PROPERTY RIGHTS (IPRs)

IP refers to intangible assets owned/legally protected by an individual/company from outside use or implementation without consent.



NEED FOR IPR

- Encourages Innovation
- Economic growth
- Safeguard rights of creators
- Enhances ease of doing business



RELATED CONVENTIONS/TREATIES (INDIA SIGNATORY TO ALL)

- WIPO Administered (first recognised IPR under):
 - Paris Convention for the Protection of Industrial Property 1883 (Patents, Industrial Designs)
 - Berne Convention for the Protection of Literary and Artistic Works 1886 (Copyrights)
- WTO - TRIPS Agreement:
 - Ensures adequate standard of protection
 - Argues for incentives for technology transfer to developing countries
- Budapest Treaty 1977:
 - International recognition of the deposit of micro-organisms for the purposes of patent procedure
- Marrakesh VIP Treaty 2016:
 - Facilitate access to published works by visually impaired persons and persons with print disabilities
- IPR also outlined in Article 27 (Universal Declaration of Human Rights)



INDIA AND IPRS - INITIATIVES

- National IPR Policy 2016:
 - Motto: "Creative India; Innovative India"
 - Compliant with TRIPS Agreement
 - Brings all IPRs to single platform
 - Nodal Dept - Department of Industrial Policy & Promotion (Ministry of Commerce)
- National (IP) Awareness Mission (NIPAM)
- Kalam Program for Intellectual Property Literacy and Awareness Campaign (KAPILA)

World Intellectual Property Day: 26th April

Intellectual Property	Protection	Law in India	Duration
Copyright	Expression of Ideas	Copyright Act 1957	Variable
Patent	Inventions- New Processes, Machines, etc.	Indian Patent Act 1970	20 years Generally
Trademarks	Sign to distinguish business goods or services	Trade Marks Act 1999	Can last Indefinitely
Trade Secrets	Confidential Business Information	Protected without Registration	Unlimited time
Geographical Indication (GI)	Sign used on specific geographical origin and possess qualities due to site of origin	Geographical Indications of Goods (R & P) Act, 1999	10 years (Renewable)
Industrial Design	Ornamental or aesthetic aspect of an article	Design Act, 2000	10 years



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Digital Access as a Part of the Fundamental Right to Life and Liberty

Why in News?

The **Supreme Court (SC) of India** in the case **Amar Jain v. Union of India & Ors, 2025** ruled that inclusive digital access to e-governance and welfare systems is an integral part of the **fundamental right to life and liberty**, and issued directions to make the digital **Know Your Customer (KYC)** process more accessible for persons with disabilities (PwDs).

- This ruling comes in response to petitions filed by individuals facing challenges in completing the digital KYC process due to disabilities.

What is the SC Ruling on Digital Access for Disabled Persons?

- **Digital KYC Revisions:** The SC directed the revision of digital KYC norms to accommodate individuals with PwDs under the **Rights of Persons with Disabilities Act, 2016**, particularly those with vision impairments and facial disfigurements, such as acid attack survivors
 - It instructed the **Reserve Bank of India (RBI)** and other public entities to ensure accessibility in KYC processes and mandated that all regulated entities, public and private, adhere to accessibility standards.
 - It directed that departments must appoint **nodal officers for compliance, conduct regular audits** by certified professionals, and **involve visually impaired individuals** in the design phase of digital platforms.
- **Addressing the Digital Divide:** The Court also highlighted the persistent digital divide that excludes not **only the disabled but also rural communities, senior citizens, and economically weaker sections.**
 - The court held that under **Articles 21 (right to a dignified life), 14 (equality), 15 (protection against discrimination), and 38 (Directive Principles of State Policy)**, ensuring universal digital access for vulnerable groups is a constitutional obligation, not merely a policy choice, essential for **equal participation in public life.**

What are the Other Key Judgements Related to Digital Empowerment?

- In **Maneka Gandhi v. Union of India (1978)**, the Supreme Court held that any procedure restricting a fundamental right under **Article 21 must be fair, just, and reasonable**, not arbitrary or oppressive, laying the groundwork for inclusive digital rights jurisprudence.
- In **Faheema Shirin RK v. State of Kerala (2019)**, the Kerala High Court became the first in India to recognize the **right to access the Internet as part of the Right to Life under Article 21 and the Right to Education under Article 21A.**
 - The Court held that denying students internet access in hostels infringed upon their constitutional rights.
- In **Anuradha Bhasin v. Union of India (2020)**, the Supreme Court held that **Article 19(1)(a) protects the freedom of speech and expression via the internet**, and **Article 19(1)(g) safeguards the right to trade and conduct business online.**
 - It emphasized that **any restrictions on these rights must meet the tests of reasonableness and proportionality.**

What are the Key Hindrances in Digital Empowerment of PwDs in India?

- **Digital Literacy Divide and Exclusion:** A significant digital literacy gap excludes many PwDs from accessing essential services and economic opportunities.
 - Despite schemes like **PMGDISHA (Pradhan Mantri Gramin Digital Saksharta Abhiyan)**, PwDs remain disproportionately underrepresented in digital literacy programs.
- **Weak Enforcement of Accessibility Guidelines:** Although the **Rights of Persons with Disabilities (RPwD) Act, 2016** mandates digital accessibility, its implementation remains inconsistent across sectors.
 - **Amendments in 2023** aimed to strengthen compliance, but enforcement remains fragmented in both government and private enterprises.
 - Initiatives like **Sugamya Bharat Abhiyan** (Accessible India Campaign) aim to enhance accessibility of

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digital services, including education, yet face weak ground-level execution.

- **Scarcity of Accessible Assistive Technologies (AT):** There's a growing demand for assistive technologies tailored for PwDs, but India lacks affordable and need-based AT solutions.
 - Acid attack survivors struggle with facial recognition tasks like blinking or face alignment, while visually impaired users face challenges in tasks like selfies, and document verification, making digital KYC exclusionary and discriminatory.
 - **This scarcity limits PwDs' ability to effectively access and benefit from digital platforms, deepening their digital exclusion.**

Know Your Customer

- **KYC:** The KYC process is a **mandatory identity verification system** used by financial and non-financial institutions before customers can **invest or open accounts**.
 - It involves verifying a customer's identity using reliable documents or data, such as proof of identity, address, and a recent photograph. Similar details are required for joint or mandate holders.
- **Digital KYC:** It is a process of verifying a customer's identity using **digital means, like e-documents, biometric data, or Aadhaar authentication**, rather than traditional paper-based methods.
- **Central KYC Records Registry (CKYCRR):** The CKYCRR is a **centralized repository that stores uniform KYC records**, enabling reuse across financial institutions to reduce the need for repeated submissions.
 - It is accessible to authorized entities under the **Prevention of Money Laundering Act, 2002** or any Regulator (RBI, **Securities and Exchange Board of India**, and **Insurance Regulatory and Development Authority of India**) there under.
 - As of September 2024, the CKYCRR holds over **94 crore KYC records**, highlighting its growing utility and ease of access for reporting entities and their customers.

- **CERSAI:** The **Central Registry of Securitisation Asset Reconstruction and Security Interest of India (CERSAI)**, a Government of India company under the Companies Act, 2013, operates from New Delhi and is responsible for maintaining the KYC Registry under the **Prevention of Money Laundering Rules, 2005**.

India's Waste Management Challenge

Why in News?

A Nature study reveals India as the **world's top plastic polluter**, emitting **9.3 million tonnes annually**, about **20% of global plastic emissions** due to widespread **mismanaged waste**, highlighting the urgent need for systemic accountability.

What is Waste Management?

- **About:** Waste management refers to the **collection, treatment, and safe disposal of waste to reduce environmental pollution** and health hazards. It also includes **recycling, composting, and energy recovery**, aiming to conserve resources and promote sustainability.
- **Status of Waste Generation in India:** India generates over 159,000 tonnes of waste each day.
 - It is estimated that **rural India generates 15,000 to 18,000 million liters of liquid waste (greywater)** and **0.3 to 0.4 million metric tons of solid waste per day**.
 - According to a report by **The Energy and Resources Institute (TERI)**, India, on average, generates **62 million tonnes (MT) of waste annually**, including 7.9 MT of hazardous waste, 5.6 MT of plastic waste, 1.5 MT of **e-waste**, and 0.17 MT of **biomedical waste**.
 - **Only 43 MT of total waste generated gets collected**, with **12 MT being treated before disposal**, and the remaining **31 MT simply discarded in wasteyards**.
 - The **Central Pollution Control Board (CPCB)** projects that India's waste generation will increase to 165 MT by 2030.

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➤ **India's Key Initiatives Related to Waste Management:**

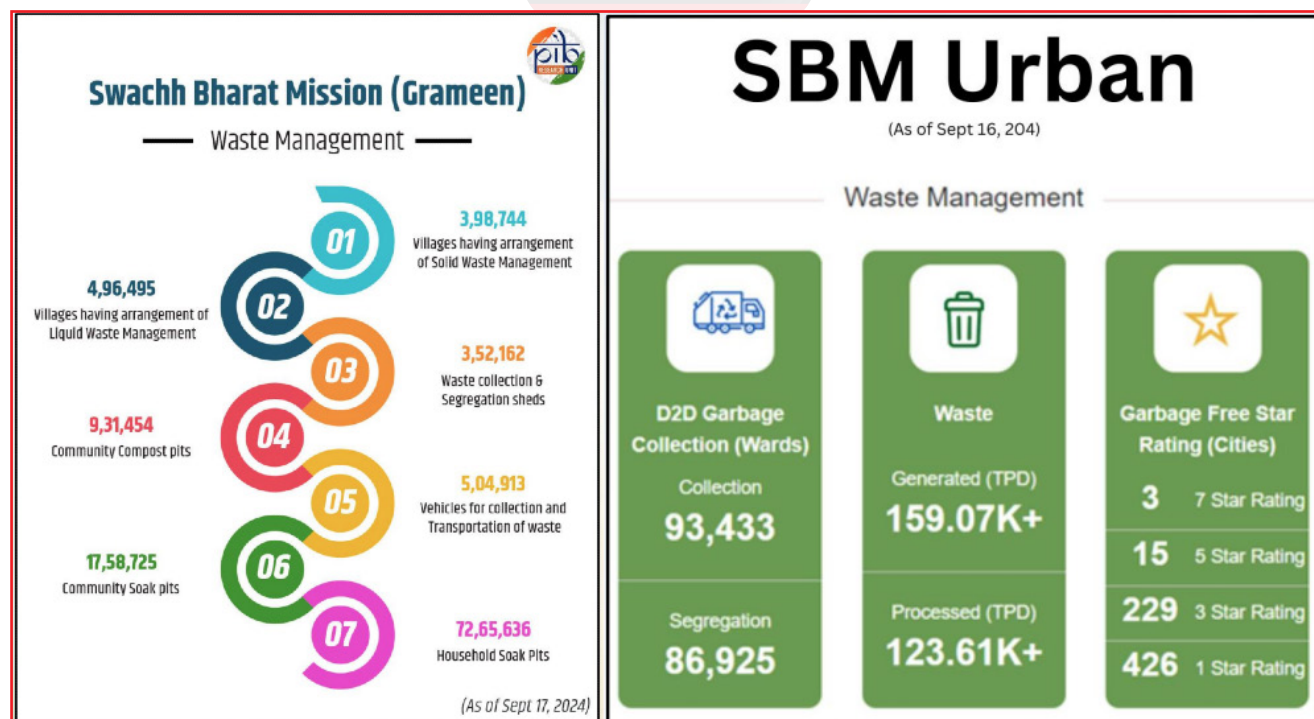
- **Swachh Bharat Mission (SBM):** Launched in 2014, **SBM** has significantly improved sanitation across urban and rural India.
 - As of 2024, 4.75 lakh villages have solid waste management systems, and 5.14 lakh villages have liquid waste management systems.
 - **SBM Urban 2.0** aims for “Garbage Free Cities” by establishing material recovery facilities, waste-to-energy plants, and recycling units, significantly boosting solid waste processing capacity by around 1.06 lakh tonnes per day (TPD) in urban areas.
- **Waste to Wealth:** This initiative under the **Prime Minister's Science, Technology, and Innovation Advisory Council (PM-STIAC)** repurposes discarded materials into art and utility items.
 - As of 2024, over 3 lakh citizens have been educated on waste management, and 80 out of 800+ evaluated technologies are already in use.

- **Waste Management Rules and Guidelines:** Under the **Environment (Protection) Act, 1986**, the Ministry has implemented several waste management rules and guidelines to promote environmentally sound practices. These include:

- [Solid Waste Management Rules, 2016.](#)
- [Plastic Waste Management Rules, 2016.](#)
- [Bio-medical Waste Management Rules, 2016.](#)
- [Construction and Demolition Waste Management Rules, 2016.](#)
- [Hazardous and other wastes \(Management and Transboundary Movement\) Rules, 2016.](#)
- [E-waste Management Rules, 2022.](#)
- [Battery Waste Management Rules, 2022.](#)

- **Extended Producer Responsibility (EPR) Mechanism:** **EPR** is a waste management policy that holds producers accountable for the entire lifecycle of their products, including collection, recycling, and disposal.

- In 2022, EPR for plastic packaging, e-waste, battery waste, and used oil was introduced, boosting growth in the waste management sector.



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What are the Challenges in India's Waste Management System?

- **Underreporting of Waste Generation:** Official data suggests a plastic waste generation of **0.12 kg per capita per day**, but studies estimate it at **0.54 kg per capita per day**, indicating significant **underreporting, especially in rural areas and informal sectors**.
- **Lack of Comprehensive Waste Audits:** No clear methodology is in place for collecting or auditing waste data, especially in rural areas that fall under **Panchayati Raj institutions** and does not fall under the scope of municipal bodies or local self-governance agencies.
- **Inadequate Infrastructure:** Dumpsites outnumber **sanitary landfills** by a significant margin (10:1). While **India claims a national waste collection coverage of 95%**, much of the waste is either burned or poorly handled. A lack of robust infrastructure to process and recycle waste further compounds the problem.
 - In remote and rural areas, waste processing facilities like material recovery facilities (MRFs) and recycling units are limited.
 - The establishment of kiosks for waste segregation and collection, as proposed for the EPR system, requires careful planning and significant investment in infrastructure, especially in areas with difficult access.



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Economic Scenario

Highlights

- Growth in CSR Spending
- Targeting Higher Growth Rate for India
- China's Export Restrictions on Critical Minerals
- Digital Banking Units: Progress & Challenges
- Enhancing Agricultural Diversification
- Stress in Microfinance
- One State-One RRB
- 2025 World Economic Outlook Report
- SC's Flags Gaps in Bankruptcy Resolution Process
- India-UK Free Trade Agreement
- Human Development Report 2025
- Pradhan Mantri Fasal Bima Yojana
- India's Livestock Sector
- Farmers Producer Organisation
- NITI Aayog Report on MSMEs in India
- Transforming India's Labour Force
- Global Wind Report 2025
- Annual Survey of Services Sector Enterprises
- India's Struggles with Supporting Deep-Tech Startups

Growth in CSR Spending

Why in News?

The report by PRIME Database (Indian market data firm) reveals a **16% rise in Corporate Social Responsibility (CSR)** expenditure by **listed companies** in FY 2023-24.

- This can be attributed to **improved profitability across sectors** and reflects **changing priorities in corporate philanthropy** and **compliance culture**.

Note: Listed companies are those whose shares are listed & traded on recognized stock exchanges like the **Bombay Stock Exchange (BSE)** or **National Stock Exchange (NSE)** in India and **comply with regulatory requirements**.

What are the Recent Trends in CSR Expenditure?

- **Trends in CSR Spending (FY 2023-24):** CSR spending by listed companies **rose to Rs 17,967 crore in 2023-24** from **Rs 15,524 crore in FY 2022-23**, reflecting an **overall increase in profits**.
 - HDFC Bank, Reliance Industries, TCS, and ONGC were the top contributors.
 - About **98% of companies met their CSR obligations**, and nearly **half went beyond the required spending**.

- Public sector undertakings (PSUs) also increased their CSR contribution by 19% compared to FY 2022-23.
- **Sectoral Allocation and Shifts:** Education received the largest allocation (Rs 1,104 crore), followed by healthcare (Rs 720 crore).
 - Spending on **environmental sustainability** rose the most at **54%** indicating a shift towards **ESG (Environmental, Social, and Governance)** goals, followed by a **5%** increase in **national heritage**.
 - However, support for areas like **slum development**, **rural development**, and **welfare of armed forces veterans** declined sharply (72%, 59%, and 52% respectively).
- **State-wise Trends:** Maharashtra, Rajasthan, and Tamil Nadu were the top three recipients of CSR funds, with the **top 10 states accounting for 60%** of the total CSR expenditure.
 - States that saw the **highest increase** in CSR funds compared to 2022-23 were **Tamil Nadu, Maharashtra, and Gujarat**, while **Rajasthan, Haryana, and Punjab** recorded the **largest declines** in CSR funding.
- **Direct Spends vs Implementing Agencies:** In FY 2023-24, **31% of companies spent directly on CSR**,

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29% used implementing agencies, 38% used both, and 2% didn't specify the method.

- However, **most funds (over 50%) were spent through implementing agencies.**

What is Corporate Social Responsibility?

- **About: Corporate Social Responsibility (CSR)** refers to a **company's responsibility towards society and the environment.**
- It is a **self-regulating model** that ensures **businesses remain accountable for their impact on economic, social, and environmental well-being.**
- By adopting CSR, **companies become more aware of their broader role in sustainable development.**



- **Legal Framework:** India is the **first country to make CSR spending mandatory** under **Section 135** of the **Companies Act, 2013**, providing a structured framework for eligible activities.
- **Applicability:** CSR rules apply to companies that, in the **preceding financial year**, have a **net worth exceeding Rs 500 crore**, or a **turnover over Rs 1,000 crore**, or a **net profit above Rs 5 crore**.
 - Such companies **must spend at least 2% of their average net profit of the last 3 financial years** (or available years if newly incorporated) on CSR activities.
- **Types of CSR Initiatives:**
 - **Corporate Philanthropy:** Charitable donations

- **Community Volunteering:** Organised employee service
- **Ethical Practices:** Producing socially responsible products
- **Cause Promotion:** Supporting social causes
- **Cause Marketing:** Linking sales to donations
- **Social Marketing:** Funding campaigns for public good
- **Eligible Sectors:** CSR spending covers areas like **eradicating poverty, promoting education and gender equality, fighting diseases** like **HIV/AIDS**, ensuring environmental **sustainability**, and contributing to government relief funds (Like **PM CARES** and **PM Relief Fund**) for socio-economic development and the welfare of disadvantaged groups.

What are the Challenges Related to CSR Spending in India?

- **Geographical Disparity in Spending:** Spending is **concentrated in industrial states** like Maharashtra, Rajasthan, Gujarat, Karnataka, and Tamil Nadu, **while North Eastern states** (Mizoram, Sikkim) and Lakshadweep, Leh and Ladakh receive **comparatively less funding**, reflecting a regional imbalance.
- **CSR Allocation Trends:** Over **75% of CSR funds** were concentrated in key areas like **education and vocational skills, hunger, poverty and healthcare, environmental sustainability, rural development and sports.**
 - Sectors related to **slum development, disaster management and armed force veterans** have very less spending.
- **Implementation Delays and Poor Planning:** Implementation delays from **late approvals and fund allocation** cause companies to **favor quick infrastructure** over long-term community development.
 - Lack of **strategic vision reduces CSR to charity**, while absent long-term policies and **duplicated efforts lead to unclear spending** and competition instead of collaboration.
- **Monitoring and Evaluation (M&E) Gaps:** Current M&E systems **focus on quantitative outcomes rather than real social impact.**
 - **Lack of standardized methods and inconsistent reporting by third-party evaluators** hinder transparency and make comparison between projects difficult.

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- **Challenges with NGO Partnerships:** Weak coordination between companies and NGOs limits project planning and execution.
 - **Short-term CSR cycles and restrictions on using funds** for NGO reserves affect capacity building. **Increasing dependence on intermediaries** further reduces efficiency and accountability.
- **Unspent CSR Amount:** Despite mandates, **27 companies did not spend on CSR.**
 - Most **avoid innovative or high-impact projects, favoring safe, repetitive initiatives**, which limits CSR's potential for sustainable development.

Injeti Srinivas Committee Recommendations on CSR

- Make CSR expenditure **tax-deductible.**
- Allow companies to **carry forward unspent CSR funds** for 3 to 5 years.
- Align **Schedule VII of the Companies Act, 2013** (which specifies the activities eligible for CSR initiatives) with **SDGs**, balancing local and national priorities.
- Mandate **impact assessments for CSR spend** exceeding Rs 5 crore.
- Register **CSR implementation agencies** on the **MCA portal.**
- Create a **CSR exchange portal** to connect contributors, beneficiaries, and agencies.
- Permit **CSR investments in social impact bonds.**
 - A **social impact bond** is a **financing tool** involving government, private, and charitable sectors to **address social problems.**
- Encourage the **promotion of social impact companies**, which **prioritize social and environmental goals alongside profit.**

Targeting Higher Growth Rate for India

Why in News?

India's **Gross Domestic Product (GDP)** growth has largely hovered around **6% from 2000 to 2025**, with the exception of a brief 8% period between 2006 and 2010, which is often referred to as the **"6% GDP growth trap."**

- Breaking this ceiling calls for **structural reforms, tech investment, human capital development, and sustainability.**

What is the Current State of the Indian Economy?

- **GDP Growth:** IMF projects India's GDP growth at **6.2% in 2025** and **6.3% in 2026**, making it the fastest-growing major economy.
- **Foreign Investment & Forex Reserves:** Forex reserves rose to **USD 688.13 billion** in May 2025, nearing the all-time high of September 2024.
- **Infrastructure:** Operational airports increased from 74 (2014) to **159 (2025)**, 50 new airport projects are planned till 2030. India is one of the **world's fastest growing civil aviation markets.**
- **Manufacturing:** Capacity utilization reached **75.3% in 2025**, indicating **strong industrial activity.** This suggests **factories are operating near potential**, reflecting **robust demand** and likely **encouraging private investment.**
- **Employment:** In 2024, India's **overall unemployment rate declined** slightly to **4.9%** (from 5.0% in 2023), with **rural unemployment** falling to **4.2%** and **urban unemployment** stable at **6.7%**. This indicates a gradual improvement in employment conditions, especially in rural areas.

What are the Key Challenges Hindering Higher GDP Growth Rate in India?

- **Low Investment and Job Creation:** Over the past 25 years (2000-2025) India's **investment-to-GDP ratio** has **fallen** from 39-42% (between 2006 & 2010) to **33% (2023)**, with **private investment dropping** from 18% to **9.8%**. This has **slowed down economic growth, capacity expansion, and job creation.**
 - Also there has been a **decline in employment elasticity** of investment (i.e. **fewer jobs are created for each unit of investment**) from 0.44 in 2000s to 0.21 in 2023.
 - This is due to **capital-intensive sectors** like **infrastructure and automation absorbing most investments**, limiting large-scale job creation.

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THE LONG-TERM TRAJECTORY

	2000	2023
1.a Investment to GDP ratio	26.0%	33.5%
	2000	2022
1.b Employment elasticity of investment	0.44	0.21
	2000	2024
2. Export to GDP ratio	13.2%	19.5%
3. Tax to GDP ratio	14.0%	18.5%
	2000	2025
4. Interest payment to total receipts	39.0%	25.0%

➤ Fiscal Constraints & Inefficient Public Spending:

A significant portion of the government's revenue (around 25%) goes to **interest payments** on public debt, limiting fiscal space for crucial investments in sectors like education and infrastructure.

- India's **tax-to-GDP ratio** remains low at 11.7%, compared to over 24% in countries like the UK, France, and South Africa which restricts resource generation.

- Further **inefficient public spending**, driven by **misallocation and bureaucratic delays**, reduces the effectiveness of policies in sectors critical for growth.

➤ Infrastructure Gaps & Trade Barriers: India's logistics cost is estimated at 14-18% of GDP (Economic Survey 2022-23), compared to the global benchmark of around 8%, due to factors like **poor road connectivity, port congestion, and fragmented supply chains**.

- The **export-to-GDP ratio** (19.5%) is also low due to **high tariffs and trade barriers**, coupled with **slow-paced trade agreements**, limiting access to global markets for Indian products, especially for small businesses.

➤ Social & Institutional Weaknesses: Economic growth is concentrated in urban sectors, leaving rural areas,

especially agriculture, behind. For example, the top 10% hold 77% of wealth, while the bottom 50% share only 13% of national income.

- **Corruption and institutional inefficiencies** contribute to these disparities, with India ranked 96th on the **Corruption Perceptions Index (2024)**.

➤ Global and External Factors: India's growth is impacted by global uncertainties, including **geopolitical tensions** (e.g., the **Russia-Ukraine war**), **economic slowdowns** in major economies (e.g., **US, China**), and **oil price fluctuations**.

- Its **dependence on foreign investment** makes it vulnerable to external shocks, as seen during the **global financial crisis** and **pandemic disruptions**.

What are the Key Drivers of Growth in the Indian Economy?

➤ Domestic Demand & Consumption: India's large consumer base and urbanization drive demand, particularly in **FMCG, e-commerce, and automobiles**. Rural consumption is bolstered by **agricultural output and government schemes**.

- **Private consumption** grew by 6.9% in Q3 FY25, while rural FMCG sales rose 4% in April-June 2024.

➤ Infrastructure & Capital Expenditure: Infrastructure projects under **National Infrastructure Pipeline (NIP)**, **Gati Shakti**, and **Bharatmala** are stimulating economic activity.

- The FY25-26 budget allocated Rs 11.21 lakh crore for capex, enhancing logistics and urban infrastructure. Capex grew at a **38.8% CAGR** from FY20-FY24 (**Economic Survey 2024-25**).

➤ Digital Economy & Fintech: India's digital economy accounted for **11.74% of GDP** in 2022-23. **UPI transactions** reached a record **Rs 23.48 lakh crore in January 2025**. These all are boosting business efficiency and tax compliance.

➤ Manufacturing Growth & Supply Chains: **PLI schemes** and a focus on **high-value manufacturing**

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(electronics, semiconductors, EVs) are boosting the sector. **Electronics exports** reached USD 23.6 billion in FY23, with mobile phones making up **43%**.

- **Geopolitical tensions** in the **Red Sea** and **Suez Canal** are **disrupting trade routes**, prompting firms to adopt the **China+1 strategy** and **shift supply chains to India**.
- **Services Sector**: India's services sector, led by **IT and fintech**, continues to be a **major growth driver**. Services exports **grew 12.8% in FY25**, up from **5.7% in FY24**, reinforcing India's position in global outsourcing.
- **Energy Transition**: India is focusing on **renewable energy** and **green hydrogen**. As of October 2024, **renewable energy capacity** reached **203.18 GW**, accounting for **46.3% of total installed capacity**.
 - India aims for an **USD 8 billion green hydrogen market by 2030**.
- **Fiscal and Monetary Stability**: Prudent fiscal policies and **stable monetary measures** ensure macroeconomic stability.
 - The **fiscal deficit** is expected to **decline to 4.9% of GDP in FY25**, while **retail inflation** eased to **4.9%**, despite food inflation at **8.4%**.

China's Export Restrictions on Critical Minerals

Why in News?

India is **engaging with China** over **export restrictions on germanium**, a **critical mineral** vital for semiconductors.

- **China**, which produces over **half of the world's germanium**, has restricted exports of this critical mineral, impacting industries in India that depend on imports.
- These export restrictions are part of China's strategy to protect **national security**, **retaliate against U.S. tariffs**, and strengthen its **control over global supply chains**.

About Germanium

- **About**: It is a **lustrous, hard, silvery-white semi-metal** with a **crystal structure** resembling that of **diamond**.
- **Application**: It is widely used in **electronics and optics**, especially in **fiber-optic cables**, **infrared imaging devices**, and **fiber-optic preforms**, which are crucial for **internet infrastructure**.
 - It is also **used in solar cells** due to its **heat resistance** and **higher energy conversion efficiency**.
- **Global Production**: China is the **world's largest producer and exporter** of germanium, accounting for **60% of global germanium production**.



What are Critical Minerals?

- **About**: **Critical minerals**, such as **copper, lithium, nickel, cobalt** and **rare earth elements** are essential components of many of today's rapidly growing **energy technologies**, from **wind turbines** and **electricity networks** to **electric vehicles**.
 - India has identified **30 critical minerals**, including **Antimony, Beryllium, Bismuth, Cobalt, and Germanium**.
 - **China** dominates the global processing of several critical minerals, including **rare earths**, controlling an estimated **80–90% of processing capacity**.

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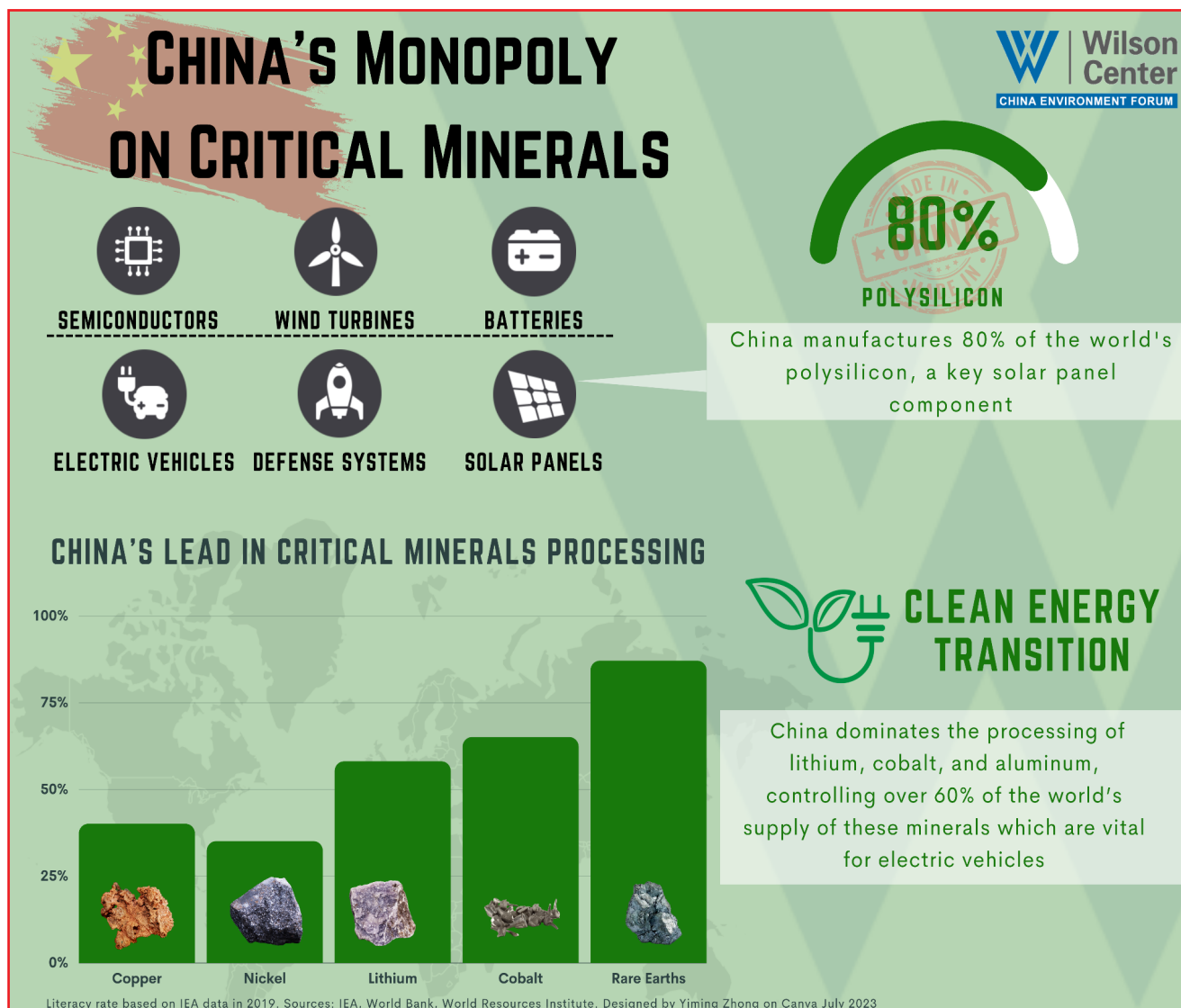


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- **Significance for India:** They are vital to renewable energy technologies that will be required to meet the “**Net Zero**” commitments of the countries around the world.
 - Critical minerals are essential for making **EVs**, **solar panels**, and **electronics**.
 - With India's **EV market set to grow at 49% CAGR till 2030**, reaching **1 crore annual sales**, demand for critical minerals and **advanced chemistry cell (ACC)** batteries will rise sharply.
 - Critical minerals drive innovation in **AI**, **robotics**, and **space technology**, supporting India's **Atmanirbhar Bharat** vision for **technological self-reliance**.
 - The **Economic Survey 2022–23** warns they may become **geopolitical flashpoints** like crude oil.
- **India's Dependence:** India is heavily dependent on imports for critical minerals, particularly from China.
 - These minerals, including **bismuth**, **lithium**, and **silicon**, are essential for industries such as pharmaceuticals, semiconductors, and aerospace.

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Sl. No.	Critical Mineral	Percentage (2020)	Major Import Sources (2020)
1.	Lithium	100%	Chile, Russia, China, Ireland, Belgium
2.	Cobalt	100%	China, Belgium, Netherlands, US, Japan
3.	Nickel	100%	Sweden, China, Indonesia, Japan, Philippines
4.	Vanadium	100%	Kuwait, Germany, South Africa, Brazil, Thailand
5.	Niobium	100%	Brazil, Australia, Canada, South Africa, Indonesia
6.	Germanium	100%	China, South Africa, Australia, France, US
7.	Rhenium	100%	Russia, UK, Netherlands, South Africa, China
8.	Beryllium	100%	Russia, UK, Netherlands, South Africa, China
9.	Tantalum	100%	Australia, Indonesia, South Africa, Malaysia, US
10.	Strontium	100%	China, US, Russia, Estonia, Slovenia
11.	Zirconium(zircon)	80%	Australia, Indonesia, South Africa, Malaysia, US
12.	Graphite(natural)	60%	China, Madagascar, Mozambique, Vietnam, Tanzania
13.	Manganese	50%	South Africa, Gabon, Australia, Brazil, China
14.	Chromium	2.5%	South Africa, Mozambique, Oman, Switzerland, Turkey
15.	Silicon	<1%	China, Malaysia, Norway, Bhutan, Netherlands

The net import reliance for critical minerals of India (2020) (Source: A report on 'Unlocking Australia-India Critical Minerals Partnership Potential' by Australian Trade and Investment Commission, July 2021)

What are the Major Applications and Availability of Critical Minerals in India?

S. No.	Critical Minerals	Major Applications	Availability in India
1	Cadmium	Manufacture of electrical equipment, Chemical products, Solar cells , Electroplating, and Silver soldering	Cadmium is recovered as a by-product during zinc smelting and refining .
2	Cobalt	Electric Vehicles (EVs), Batteries, corrosion resistant alloys, Aerospace applications, Pigments and Dyes, Organic and inorganic chemical compounds.	Not available. Current requirements are made through imports.
3	Copper	Electrical and electronics products, Electrical Wiring, Solar Panel, Automotive industry .	Current copper concentrate production meets only 4% of the demand for copper smelters and refineries, requiring substantial imports.
4	Gallium	Semiconductors, Integrated Circuits , LEDs, Specialized thermometers, Barometric sensors.	Gallium is recovered as a by-product while producing alumina . Two plants, namely, HINDALCO at Renukoot, Uttar Pradesh and NALCO Damanjodi alumina refinery, Odisha, had recovered Gallium in the past.
5	Germanium	Optical fibers , Satellites, Solar cells, Infrared night vision systems .	Not available. Current requirements are made through imports.
6	Graphite	Batteries, Lubricants , Fuel cells for EVs, Electric Vehicle	9 million tonnes reserves exist.

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7	Lithium	Electric Vehicle, Rechargeable batteries , Glassware, Ceramics, Fuel manufacturing, Lubricant.	lithium-inferred resources of 5.9 million tonnes in the Salal-Haimana area of the Reasi district in J&K .
8	Nickel	Stainless steel, Solar panels, Batteries, Aerospace, Defence applications and Electric Vehicle.	Vedanta has a nickel and cobalt plant at Goa named NICOMET.
9	Rare Earth Elements (REE)	Permanent magnets, Catalyst, Polishing, Batteries, Electronics, Defence technologies, Wind energy sector, Aviation and Space	The resource estimate of Monazite from beach sand in India is 11.93 Mt having 55%-65% of rare earth oxides.
10	Silicon	Semiconductors, Electronics and transport equipment, Paints, Aluminum alloys	India reported production of 59000 metric tonnes of silicon and ranks 12th in production as per 2022 data.

What are India's Initiatives for Achieving Self-Reliance on Critical Minerals?

- **National Critical Mineral Mission**
- **Khanij Bidesh India Ltd (KABIL)**
- **Mineral Security Partnership (MSP)**
- **Investment Partnership with Australia**
- **2023 amendment in Mines and Minerals (Development and Regulation) Act, 1957**
- **Exploration Projects by Geological Survey of India (GSI)**

Digital Banking Units: Progress & Challenges

Why in News?

Digital Banking Units (DBUs), launched in 2022 to extend digital financial services to the remotest parts of the country, have seen **limited expansion** due to challenges like high operational costs, low digital adoption etc. raising questions about their effectiveness and long-term sustainability.

What is a Digital Banking Units (DBUs)?

- **About:** A DBUs is a specialised fixed point business unit or hub, housing a certain **minimum digital infrastructure for delivering digital banking products** entirely through self-service, anytime.
 - They were launched in **2022**, across **75 remote districts of India**, commemorating **India's 75th year of Independence**.

- **DBUs are set up by scheduled commercial banks (SCBs)** (excluding **Regional Rural Banks (RRBs)**, **payment banks**, and **local area banks**) with digital banking experience, **without prior Reserve Bank of India (RBI) approval** in **Tier 1 to Tier 6 centres**, **except where specifically restricted**.

- **Benefits:** It aims to **boost financial inclusion by enhancing access to digital banking** for underserved and unbanked populations.
- **Services Offered:** ATMs, cash deposit machines, passbook and internet kiosks, bill payments, and account opening via e- **KYC (Know Your Customer)**
- **RBI Mandate for DBUs:** The RBI mandates that DBUs must be physically separate from existing branches, with distinct entry and exit points.
 - They should be designed to serve digital users, featuring advanced technologies like Interactive Teller Machines, Service Terminals, and Cash Recyclers.
 - Additionally, each DBU must be overseen by a senior, experienced executive.

Difference Between Digital Banks and DBUs

- Digital banks are licensed under the **Banking Regulation Act, 1949**, with a balance sheet and legal personality, promoting innovation and competition.
 - DBUs are **extensions of traditional banks**, offering digital services within the bank's regulations, with limited scope for competition and innovation.

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- Digital Banks offer a broader range of banking services, including deposits, loans, and other financial products, all digitally.
 - DBUs focus on delivering digital banking products and services in a **specific location** but do not offer full-fledged banking services like digital banks.

What are the Challenges Faced by Digital Banking Units (DBUs)?

- **Ineffective Planning:** At the time of implementation of DBUs, banks were given just 45 days to set them up at **centrally chosen locations**, without considering **local needs, digital readiness, or regional differences** in demand and banking habits, which impacted the initiative's effectiveness.
- **High Operational Costs:** RBI requires DBUs to be separate from branches with costly infrastructure like interactive teller machines and video KYC. In **low-traffic areas, high costs deter banks from expanding DBUs.**
- **Low Digital & Financial Literacy:** Limited digital skills, especially among senior citizens, and the lack of **cash counters in tier-II, tier-III towns, and rural areas hinder DBU effectiveness**, limiting financial inclusion.
- **Connectivity & Strategic Integration Issues:** Remote areas lack stable internet and power, disrupting DBU operations.

What are Government Initiatives for Financial Inclusion?

- [Pradhan Mantri Jan Dhan Yojana \(PMJDY\)](#)
- [Pradhan Mantri Suraksha Bima Yojana \(PMSBY\)](#)
- [Pradhan Mantri Mudra Yojana \(PMMY\)](#)
- [Bharat Interface for Money \(BHIM\)](#)
- [Unified Payments Interface \(UPI\)](#)
- [Aadhaar Enabled Payment System \(AEPS\)](#)
- [Direct Bank Transfer](#)

What Steps Should be Taken to Enhance the Effectiveness of Digital Banking Units?

- **Decentralised, Demand-Based Expansion:** Instead of a top-down rollout, DBUs should be established

based on local demand, digital literacy levels, and banking penetration.

- A **decentralised, data-driven model** can ensure sustainability and **avoid underutilisation.**
- **Strengthening Digital Literacy Programs:** Leverage the [Pradhan Mantri Gramin Digital Saksharta Abhiyan \(PMGDISHA\)](#), aimed at digitally empowering rural citizens, to improve digital literacy in areas with low engagement.
 - Banks should collaborate with local governments and community organizations to **conduct training sessions for citizens, especially senior citizens and women**, on using digital services effectively.
- **Infrastructure Support:** Invest in improved connectivity infrastructure, especially in remote and underserved areas.
 - The [BharatNet Project](#) can play a crucial role in ensuring that stable internet access is available to remote areas.
 - Establish backup power solutions like **solar power to mitigate frequent power outages that affect DBU operations.**
- **Enhancing Customer Support:** DBUs should include human support for digital onboarding, problem resolution, and financial advice to enhance customer engagement.
 - Additionally, offering multilingual interfaces and **local language assistance can improve comfort and accessibility in diverse regions.**
- **Focus on Financial Products and Services:** DBUs should ensure easy access to [Pradhan Mantri Suraksha Bima Yojana \(PMSBY\)](#), [Pradhan Mantri Jeevan Jyoti Bima Yojana \(PMJJBY\)](#), and [Atal Pension Yojana \(APY\)](#), particularly in rural areas where insurance penetration is low.
 - **Facilitate quick access to digital loans, such as those under [PM Mudra Yojana](#), [e-Mudra](#), and other [MSME schemes](#).**

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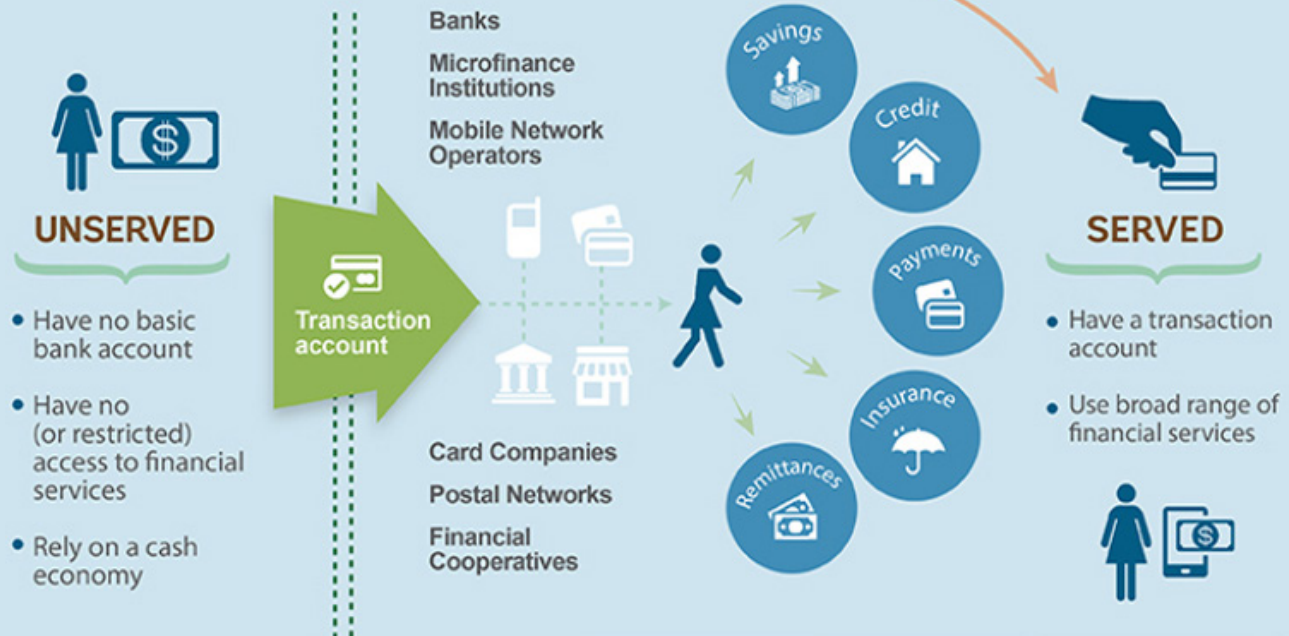
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Gateway to Financial Inclusion



How to get there?



What's needed to get there?

- Broader inclusion
- Customer-centered product innovation
- Financial capability
- Strong consumer protection
- Better financial infrastructure
- More & interoperable access points
- Enabling legal & regulatory frameworks
- Public & private sector commitment
- Open & balanced playing field

Enhancing Agricultural Diversification

Why in News?

Agricultural trends in India highlight a consistent increase in the area planted with **rice** and **wheat** cultivation, driven by **supportive policies**, **better breeding**, and **reliable yields**, while **other crops** see **fluctuating** acreages due to **lower returns** and **price instability**.

What are the Trends in Crop Cultivation in India?

- **Wheat and Rice:** Rice cultivation has **increased significantly**, especially in Punjab, where the area under cultivation rose by around 9%, and in Telangana, where it surged by approximately 348% between 2015–16 and 2024–25.

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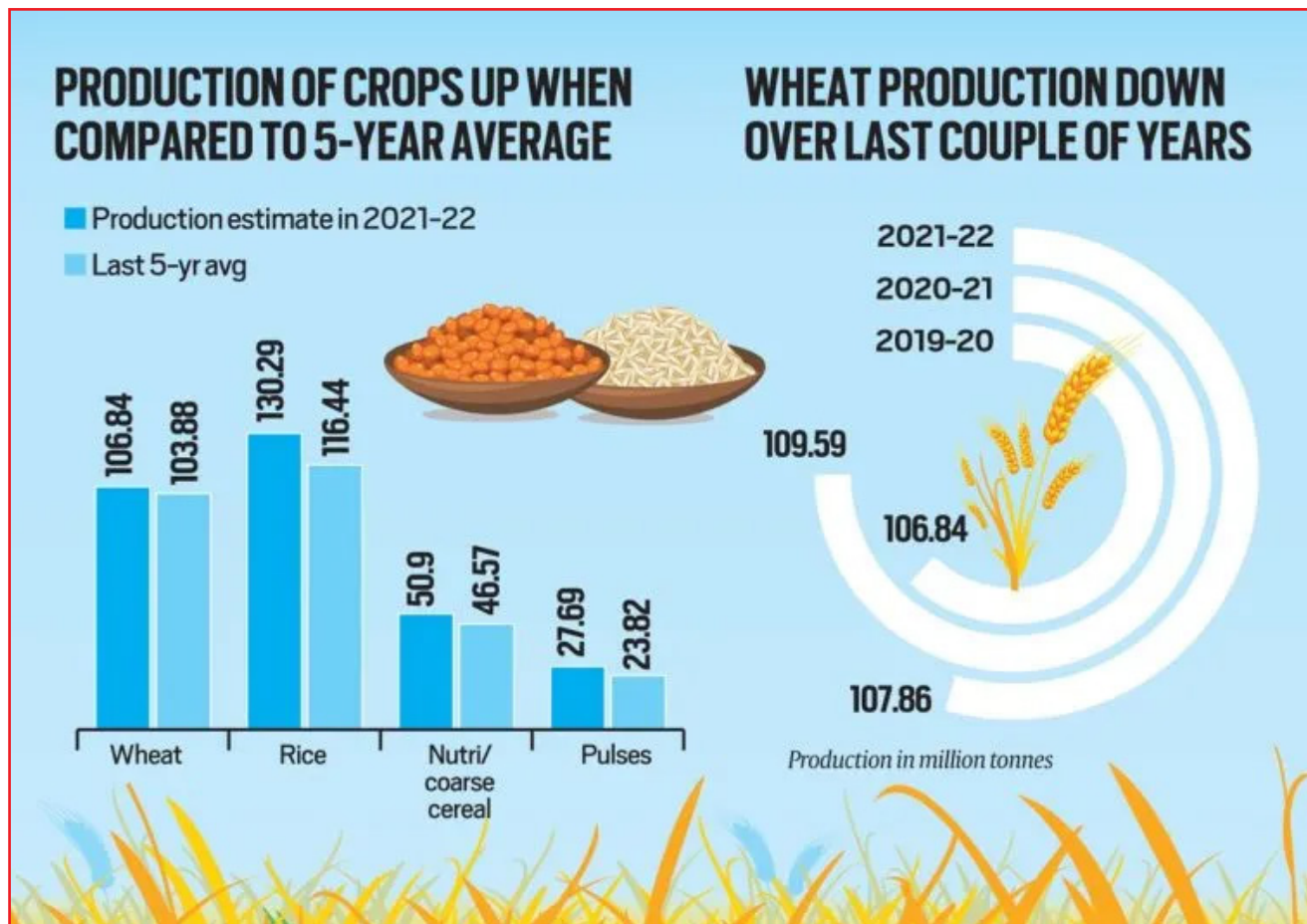
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- In Madhya Pradesh, the acreage under both wheat and rice has also grown notably, with **wheat** cultivation increasing by nearly **32%** and **rice** by around **92%** during the same period.
- **Cotton:** **Cotton** cultivation in **Punjab** **dropped by around 71%** from 2015 to 2025. In **Telangana**, the area under cotton **declined** by approximately **23%** from 2020 to 2025.
- **Chickpea (Chana):** The area under **chickpea** in Madhya Pradesh **declined** by approximately **34%**, from **30.2 lakh hectares** in 2015-16 to **20.1 lakh hectares** in 2024-25.
- **Soybean:** **Soybean** acreage in Madhya Pradesh **decreased by approximately 2.2%**, from **59.1 lakh hectares** in 2015-16 to **57.8 lakh hectares** in 2024-25, after peaking at 66.7 lakh hectares in 2020-21 due to high prices.



Why are Rice and Wheat the Most Preferred Crops Among Farmers?

- **MSP Procurement:** The government ensures **near-guaranteed procurement** of rice and **wheat** at **Minimum Support Prices (MSP)**, offering **price stability** and **income assurance**, which makes them less risky than crops without such support.
- **Irrigation Support:** Rice and **wheat** are mainly grown with **irrigation**, reducing dependence on **rainfall** and lowering **yield risk**, as access to **canal** and **groundwater** makes cultivation more reliable.
- **Continuous Genetic Improvement:** Both crops benefit from **strong public research support**, leading to development of **high-yielding**, **disease-resistant**, and **climate-smart** varieties.

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- Indian Council of Agricultural Research (ICAR) used CRISPR-Cas to create **Kamala**, a **genetically edited Samba Mahsuri rice** that produces 450–500 grains per panicle (versus **200–250 in the parent**), yields 5.37–9 tonnes/hectare, matures in 130 days (15–20 days faster), and conserves water and fertilisers through enhanced root biomass.
- ICAR scientists used **CRISPR (Clustered Regularly Interspaced Short Palindromic Repeats)-Cas** to edit the **Drought and Salt Tolerance (DST) gene in the rice variety Cottondora Sannalu (MTU-1010)**, creating **Pusa DST Rice 1**, which is more tolerant to **heat, salinity, and water stress** by suppressing the gene that limits abiotic stress resistance.
- In wheat, the Green Revolution varieties like **Kalyan Sona** and **Sonalika** not only increased yields significantly (from 1-1.5 tonnes per hectare to 3.8 tonnes) but also improved resistance to diseases and environmental stresses.
- In contrast, crops like cotton, oilseeds, and pulses have seen limited R&D and no major GM breakthroughs since **Bt cotton (2002–06)**, resulting in stagnant yields, unstable returns, and fluctuating cultivation.
- **High Demand & Stable Market:** Rice and wheat, staple foods with consistent **domestic** and **global demand**, are used in **Public Distribution System (PDS)**, **Mid-Day Meals**, and **welfare schemes**, ensuring steady sales.
- **Policy & Infrastructure Bias:** Procurement infrastructure (such as **mandis** and **storage**) is better developed for **cereals** than for other crops, and **loan waivers** and **subsidies** often favor **staple crops**.
 - Government schemes like **Pradhan Mantri Kisan Samman Nidhi (PM-KISAN)** and **fertilizer subsidies** support rice and wheat production.
- **micronutrients**, contributing to **malnutrition** (such as **protein** and **iron deficiencies**).
- **Soil Degradation:** Overuse of **water** for rice, combined with **chemical fertilizers**, contributes to **soil salinity** and **nutrient imbalance**, gradually reducing **soil health**.
 - Salinity-affected areas are projected to increase from **6.7 million hectares to 11 million hectares by 2030**.
- **Water Scarcity:** Rice cultivation's high **water consumption** and excessive **groundwater extraction** strain **water resources**, threatening **agriculture sustainability**.
 - Groundwater depletion has become a serious concern in **Punjab, Rajasthan, and Haryana**, where the extraction rate has exceeded the **recharge rate by 66, 51, and 34%, respectively**.
- **Market Distortions:** The **MSP system** can distort the market by promoting **monoculture farming** and neglect of more profitable or sustainable crops, resulting in **overproduction**, **price fluctuations**, and **unsustainable practices**.
 - E.g., Neglect of **pulses, oilseeds, and millets** leads to **import dependency** (e.g., 60% of edible oil is imported).
- **Regional Disparities:** Policy and procurement bias toward **rice and wheat** benefits irrigated **northwestern states**, leaving out rainfed and tribal regions with diverse cropping patterns.
- **Monoculture Risk:** Reduced crop diversity increases vulnerability to **pests, diseases, and climate shocks**, threatening food security.
 - E.g., **Wheat blast disease** is a **fungal infection** caused by the fungus *Magnaporthe oryzae* Triticum (MoT) that primarily affects wheat crops.

What are the Implications of Excessive Focus on Rice and Wheat?

- **Nutritional Deficiencies:** Excessive reliance on **rice** and **wheat** limits **nutritional diversity**, as they are mainly **carbohydrates** with fewer **proteins** and

What are India's Initiatives Regarding Crop Diversification?

- **Rashtriya Krishi Vikas Yojana (RKVY)**
- **Mission for Integrated Development of Horticulture (MIDH)**
- **Mission for Cotton Productivity**
- **Mission for Self-reliance in Pulses**
- **National Mission on High Yielding Seeds**

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Stress in Microfinance

Why in News?

India's microfinance institutions (MFIs) are facing a major crisis as **gross non-performing assets (NPAs)** surged to **16% by March 2025**, nearly doubling from **8.8% in 2024**. As defaults rise, lenders are pulling back, and regulatory interventions are raising concerns about the sector's sustainability.

What are the Factors that led to Rise in NPAs in MFIs?

- **Cyclical Nature of Microfinance:** MFIs have traditionally followed a cyclical pattern, with crises occurring every 3-5 years, and the current situation fits this historical trend.
 - However, deeper structural issues like rising loan defaults driven by economic slowdown (**GDP at a 4-year low of 6.4% in 2024–25**), **natural disasters** (heatwaves, floods), and election-related disruptions, impacted borrowers' repayment capacity.
- **Over-Leveraging of Borrowers:** In an effort to expand rapidly, MFIs have increasingly sanctioned loans to borrowers with **already high levels of debt**. This has led to an over-leveraged customer base, unable to keep up with repayments.
 - Many MFIs have been lenient in evaluating the **borrowers' repayment capacity**, focusing more on volume rather than assessing the financial health of individual borrowers.
 - Borrowers, particularly in rural areas, often take loans from multiple MFIs and other sources, compounding their debt burden and heightening the likelihood of defaults.
 - The rise in credit card outstanding, from Rs 2.30 lakh crore in 2023 to Rs 2.71 lakh crore in 2024, highlights a broader trend of **rising consumer debt**.
- **Weakening of the Joint Liability Group (JLG) Model:** The JLG model, central to microfinance operations, relies on **social pressure and collective responsibility for loan repayment**.

- However, it is becoming less effective due to **changing borrower profiles, weakened group cohesion, and rising individual defaults**.
- **Rising Regulatory Pressure:** The **Reserve Bank of India (RBI)** has imposed stricter lending norms and restrictions, such as **curbing aggressive lending practices**. While these actions aim to stabilize the sector, they have also led to short-term liquidity crunches for MFIs.
 - State governments have started passing laws to curb **coercive recovery methods by microfinance lenders**, including harsh penalties for non-compliance.
 - For instance, the Tamil Nadu Assembly passed the **Money Lending Entities (Prevention of Coercive Actions) Act**, while Karnataka proposed severe punishments for lenders causing undue hardship to borrowers.
 - Additionally, Campaigns like **Karja Mukti Abhiyan (loan waiver schemes)** have weakened the repayment culture, as borrowers anticipate government debt forgiveness, leading to higher defaults.

What is Microfinance?

- **About:** Microfinance, also known as microcredit, refers to the provision of financial services such as **small loans, savings accounts, insurance, and fund transfers** to underserved populations, particularly in rural and remote areas.
 - It is aimed at empowering marginalized and low-income communities, particularly women, to become financially self-sufficient and contribute to socio-economic development.
- **Importance of Microfinance:** It is a tool for **reducing poverty** by providing access to financial resources for income-generating activities.
 - Microfinance supports **small-scale businesses, boosting local economies and employment**, especially in rural areas.
 - Over the past three decades, it has improved living standards for **nearly 100 million rural households in India**.
 - Microfinance promotes **gender equality** by empowering women financially.
 - In 2022-23, India's microfinance sector added **80 lakh new women clients**, reaching a total of

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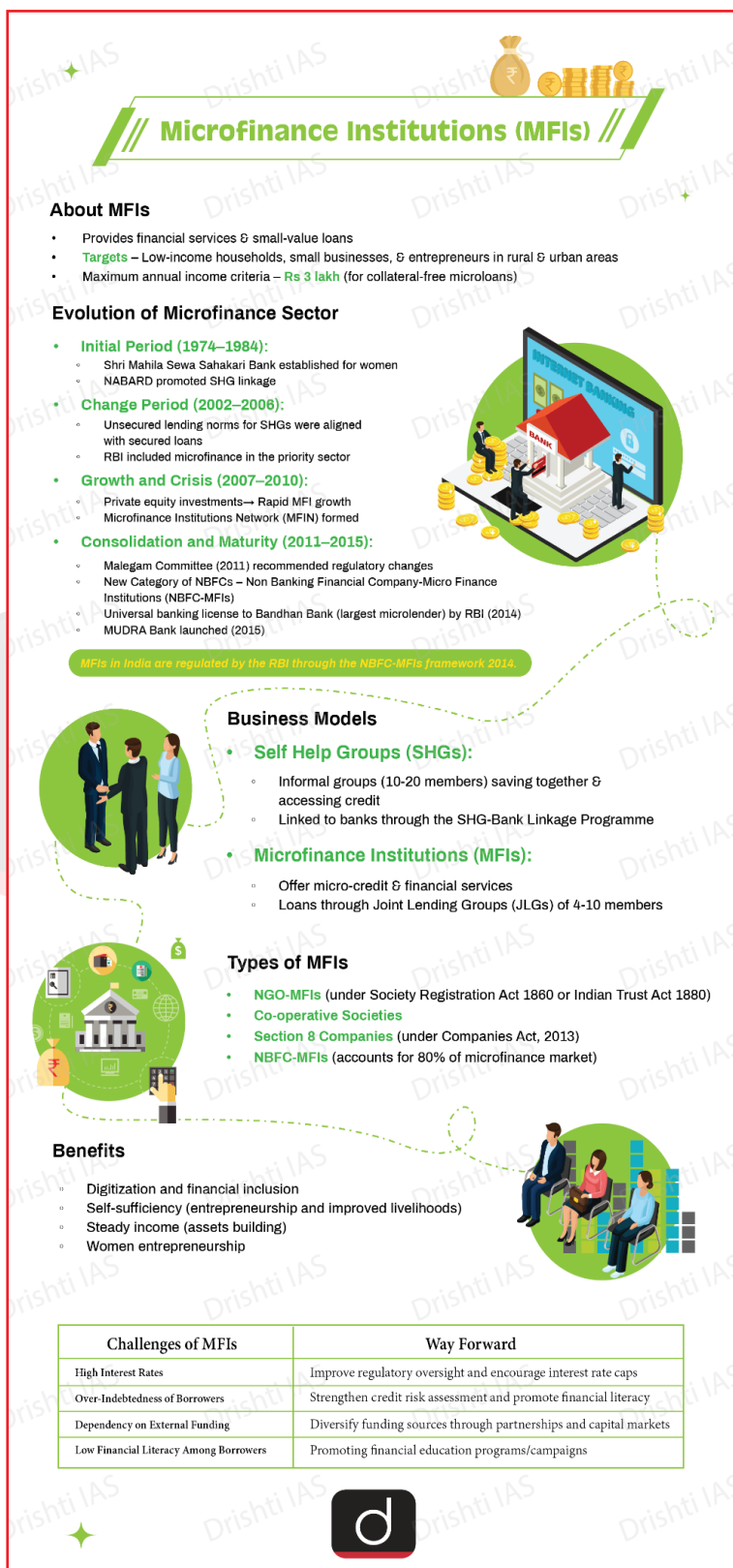


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6.64 crore women with 12.96 crore active loans by 2023, as per the **India Microfinance Review FY23 report**.

- **Microfinance in India:** Microfinance in India began with the establishment of the **Self Employed Women's Association (SEWA) Bank in 1974** in Gujarat, which aimed to provide financial services to low-income women excluded from formal banking.
 - In 1992, **National Bank for Agriculture and Rural Development (NABARD)** introduced the **Self-Help Group (SHG)-Bank Linkage Programme**, enhancing small-scale savings and access to credit for women.
 - In 2011, the **RBI recognized microfinance as a priority sector**, granting policy support to MFIs.
 - However, the **Andhra Pradesh microfinance crisis in 2010**, caused by aggressive lending practices, led to increased scrutiny and the formation of the **Malegam Committee (2010)** to regulate **Non-Banking Financial Company-Microfinance Institutions (NBFC-MFIs)**.
 - In 2015, the launch of **MUDRA Bank** under the **Pradhan Mantri Mudra Yojana (PMMY)** further strengthened the microfinance ecosystem by providing credit to small, non-corporate enterprises.
- **Current Status Microfinance in India:** MFIs currently operate in 28 states, 8 Union Territories and 730 districts in India.
 - The microfinance industry grew **16% in FY 2023-24, compared to 21% in 2022-23**. By March 2024, the sector's combined portfolio reached Rs 4.08 lakh crore.
 - As of 2024, the **top five states** with the highest loan outstanding in the microfinance sector are **Bihar, Tamil Nadu, Uttar Pradesh, Karnataka, and West Bengal**. These states collectively account for approximately 58% of the industry's total portfolio.



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One State-One RRB

Why in News?

The 4th phase of **Regional Rural Bank (RRB)** consolidation under the 'One State-One RRB' (OS-OR) plan has been rolled out in 10 states and one Union Territory, further shrinking the number of RRBs in India.

- This move aims to **boost operational viability and efficiency**, but concerns persist around staffing, technology integration, and regional risks.

What is the One State-One RRB Policy?

- **About:** OS-OR Policy is a reform initiative by the **Department of Financial Services** aimed at consolidating multiple RRBs within a state into a single unified entity.
 - The consolidation of RRBs began in 2005, following the recommendations of the **Dr. Vyas Committee (2001)**, which was constituted by the **Reserve Bank of India (RBI)**.
- **Phases of Consolidation:** Implemented under **Section 23A(1) of the Regional Rural Banks Act, 1976**, which allows mergers in the public interest.
 - **Phase 1 (FY 2006 – FY 2010):** RRBs sponsored by the same bank within a state were amalgamated. RRBs were reduced from 196 to 82.
 - **Phase 2 (FY 2013– FY 2015):** RRBs across different sponsor banks within a state were amalgamated. RRBs were reduced from 82 to 56.
 - **Phase 3 (FY 2019– FY 2021):** The 3rd phase focused on the OS-OR principle, reducing RRBs in larger states and consolidating them in smaller ones.
 - As a result, the number of RRBs dropped from 196 in 2005 to 43 by March 2021, improving profitability, capital, asset quality, and business.
 - **Phase 4 (FY 2025 Onwards):** Under OS-OR, the consolidation of RRBs has reduced the total number from 43 to 28.
 - Each restructured RRB will have an authorized capital of **Rs 2,000 crore**, providing a stronger base for credit expansion and economic support in their respective states.

- **Impact:** In FY 2023–24, RRBs recorded their highest-ever **net profit of Rs 7,571 crore**. The OS-OR model is expected to further support inclusive rural development and boost the rural economy.

Regional Rural Bank

- **About:** RRBs were established in 1975, following the recommendations of the **Narasimham Committee on Rural Credit (1975)**, and formalised under the RRB Act, 1976.
 - Their aim is to strengthen the rural economy by providing credit and other banking services to small and marginal farmers, agricultural labourers, artisans, and small entrepreneurs in rural and semi-urban areas.
 - The first RRB was **Prathama Bank**, headquartered in Moradabad, Uttar Pradesh.
- **Ownership:** The ownership of RRBs is shared among the **Government of India (50%)**, the **concerned State Government (15%)**, and the **sponsor bank (35%)**.
- **Regulation:** RRBs are regulated by the Reserve Bank of India under the Banking Regulation Act, 1949, and supervised by NABARD.
 - For taxation, they are treated as cooperative societies under the Income Tax Act, 1961.
- **Priority Sector Lending:** The RBI has set an enhanced target for Regional Rural Banks (RRBs) to lend 75% of their **Adjusted Net Bank Credit (ANBC) or 75% of ANBC or Credit Equivalent of Off-Balance Sheet Exposure (CEOBE)**, whichever is higher, to the **Priority Sector Lending (PSL)**.
 - This is in contrast to the 40% target applicable to commercial banks. RRBs can sell their priority loan portfolio through **Priority Sector Lending Certificates (PSLC)** to commercial banks.

What Challenges Persist

Despite the Consolidation of RRBs?

- **Cost Optimization vs. Operational Constraints:** Despite the consolidation, RRBs still face high operational costs. For instance, in 2023-24, the **cost/income ratio was 77.4%** and **wages/operating expenses ratio was 72%**, indicating inefficiency.

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- Cost optimization is important, but it depends on **whether each RRB can handle the combined branches and staff from the mergers**. Some branch reductions are unavoidable, but adjusting the staff may face frictions.
- Despite tech advances, personal engagement with villagers is essential due to low financial inclusion and literacy, raising costs. Adopting new technologies, including cybersecurity, also demands significant investment.
- **Concentration Risk:** In a scenario where a **State's agricultural sector fails**, a single RRB would absorb the full impact of losses, which was not the case under the previous model where risks were spread across multiple RRBs.
 - This concentration can exacerbate regional economic vulnerabilities, especially in the event of sectoral downturns.
- **Inter-Governmental and Regulatory Challenges:** The three-way ownership structure (**Central and State governments, sponsor banks**) and two regulatory authorities (RBI and **National Bank for Agriculture and Rural Development (NABARD)**) create administrative complexities and slow decision-making processes, stifling the effectiveness of RRB operations.
 - This multiplicity of owners and regulators complicates the governance structure, leading to inefficiencies in RRB management.
- **Economic Viability and Regional Considerations:** The reduction in RRBs under OS-OR makes economic sense, but consolidation must consider each state's unique economy, demography, and geography, as a one-size-fits-all approach may not be effective.

2025 World Economic Outlook Report

Why in News?

The **International Monetary Fund (IMF)**'s April 2025 **World Economic Outlook (WEO)** projects that India will

surpass Japan to become the **fourth-largest economy in 2025**.

What are the Key Highlights of the World Economic Outlook Report 2025?

Global:

- **Global Growth Forecast:** The IMF revised global growth down to 2.8% for 2025, and projected 3.0% growth for 2026.
 - The world's largest economy, the US, is projected to grow by just 1.8%, significantly lower than last year's expectations due to policy uncertainty and trade tensions.
- **Emerging Markets:** Growth in **emerging markets and developing economies** is projected to slow, with a 3.7% growth rate forecast for 2025, though still above the global average.
- **Global Inflation:** **Inflation** rates are expected to decline but at a slower pace than anticipated, and downside risks remain, particularly from trade tensions and volatile financial markets.
- **Aging Economies:** Global economies are experiencing **rapid aging**, driven by declining fertility rates and rising life expectancy.
 - This shift from a **demographic dividend** to a demographic drag presents challenges for economic growth. The average age of the world's population is projected to **increase by 11 years between 2020 and the end of the century**.
 - However, improvements in health and longevity have significantly enhanced the quality of life in older age.
 - A 70-year-old in 2022 had cognitive abilities similar to those of a 53-year-old in 2000. Healthy aging is projected to add 0.4% to global GDP growth between 2025 and 2050.

India:

- **Growth forecast:** While India's growth forecast has been slightly revised down from **6.5% to 6.2% for 2025**, it remains the **fastest-growing major economy** among its global counterparts.

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- The IMF projects India's nominal gross domestic product (GDP) to reach USD 4.187 trillion in 2025, surpassing Japan's estimated USD 4.186 trillion.
- **Comparisons to competitors:** Despite this slight downtrend, India continues to outperform most global and regional competitors, including **China**, which is projected to grow at a slower rate.
- China's **Gross Domestic Product (GDP)** growth forecast for 2025 has been downgraded to **4.0% from 4.6%**, making India's growth trajectory stand out.
- **Private consumption:** A key driver of India's growth is private consumption, particularly in rural areas, which is expected to remain strong, even amid global economic uncertainty.

IMF's World Economic Outlook

- The **WEO**, published biannually in **April and October**, provides analysis and projections for the global economy and individual countries.
- It aims to assess economic developments, identify trends, and offer policy recommendations.
- **Key components** WEO include forecasts for global and regional economic performance, insights into inflation trends, and an evaluation of financial stability risks.
- The WEO serves as an essential tool for policymakers, researchers, and investors to understand and navigate the economic landscape.

INTERNATIONAL MONETARY FUND

- **Estd. - 1944** (UN Bretton Woods Conference following Great Depression 1930s)
- **Headquarters - Washington, DC, USA**
- **Functions -**
 - » Global financial assistance
 - » Facilitate international trade
 - » Financing for developing countries
 - » Promotion of exchange rate stability
- **Member States - 190** (India a founding member)

India's FM is the ex-officio Governor on the Board of Governors of IMF

- **Special Drawing Rights (SDR) -**
 - » IMF's intl. reserve asset to supplement the official reserves of its member countries (**not a currency**)

Currencies in SDR Basket - \$, €, £, ¥ (Yen) and CN¥ (Renminbi)

- **IMF Quotas -**
 - » Reflects a member country's relative position in world economy (**India – 2.75%**)
 - » Denominated in SDRs
- **Flagship Publications -**
 - » World Economic Outlook
 - » Global Financial Stability Report
 - » Fiscal Monitor
 - » External Sector Report

What are the Key Drivers of India's Economic Resilience?

- **Private Consumption:** The Private Consumption is a significant driver, especially in rural areas, ensuring steady domestic demand despite global economic challenges.
 - India's private consumption has nearly doubled to Rs. 1.83 lakh crore in 2024, growing at a 7.2% **Compound Annual Growth Rate (CAGR)**, surpassing the US, China, and Germany.
 - The country is on track to become the **world's third-largest consumer market by 2026**, with the middle class expanding rapidly.
 - By 2030, the number of individuals earning over **Rs. 8.73 lakh annually is expected to nearly triple**.
 - India's per capita income is projected to exceed Rs. 3.49 lakh by 2030, driving consumption growth.
- **Macroeconomic Fundamentals:** India's robust fiscal management, with a lower **debt-to-GDP ratio of 56.8% in FY25** compared to its competitors like the US, which has a debt-to-GDP ratio of 124.0%, along with structural reforms, helps maintain stability.

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- **Infrastructure Development:** Investment in infrastructure and digitalization boosts productivity and job creation, enhancing long-term growth prospects.
 - India's digital economy has become a significant contributor to its economic growth, accounting for **11.74% of GDP** in 2022-23.
- **Government Reforms:** Initiatives like the **Pradhan Mantri Jan Dhan Yojana** for financial inclusion, and **Make in India** along with **Production-Linked Incentive schemes** to boost manufacturing have strengthened India's economic dynamism.
 - Additionally, schemes like **Bharatmala Pariyojana** for road infrastructure, **Sagarmala Project** for port development, and **Smart Cities Mission** have significantly improved physical infrastructure, supporting long-term growth.
- **Demographics and Labor Force:** India benefits from a young, growing workforce, with policies aimed at increasing female labor participation (**from 23.3% in 2017-18 to 41.7% in 2023-24**) and addressing global aging workforce challenges.
 - A **ServiceNow** report projects **India's workforce will grow from 423.73 million in 2023 to 457.62 million by 2028**, adding 33.89 million jobs, particularly in sectors like retail, tech, manufacturing, education, and healthcare.
- **Technological Innovation:** The growing adoption of digital technologies, including **Artificial Intelligence** and **renewable energy solutions**, supports higher productivity and resilience in economic activities.
 - Indian startups are likely to create **50 million new jobs and add USD 1 trillion to the economy by 2029-30 (FY30)**.
 - India's technology sector is witnessing rapid growth and is projected to reach **USD 300-350 billion over the next five years**.
- **External Demand and Trade Diversification:** India's increased integration into global value chains and trade agreements provides growth opportunities and buffers against global volatility. India's share in global services exports has doubled from **1.9% in 2005 to 4.3% in 2023**.

SC's Flags Gaps in Bankruptcy Resolution Process

Why in News?

The **Supreme Court (SC) of India**, invoking **Article 142**, struck down a resolution plan under the **Insolvency and Bankruptcy Code (IBC), 2016** and ordered liquidation of the debt-ridden company instead.

- This highlights growing concerns over the consistency and effectiveness of the IBC in achieving timely and constructive resolutions.

What are the Key Issues Flagged by the Supreme Court in Bankruptcy Resolution?

- **Non-Conformity with Statutory Provisions:** The resolution plan approved in the Bhushan Power & Steel Ltd. case did not conform to Section 30(2) of the IBC, which mandates that resolution plans must be in the best interests of creditors and meet statutory requirements.
- **Lapses by the Resolution Professional:** The resolution professionals (RPs) failed to perform due diligence and allowed a flawed resolution plan to proceed, highlighting concerns over competence, accountability, and regulatory oversight of RPs in the insolvency process.
- **Weaknesses in the Committee of Creditors (Coc):** The CoC, responsible for assessing the plan, did not exercise due diligence and commercial wisdom, approving a plan that ultimately harmed the interests of creditors.
 - COC spearheads the **Corporate Insolvency Resolution Process (CIRP)**, under the Insolvency and Bankruptcy Code (IBC) 2016.
- **Judicial Oversight Gaps:** The **National Company Law Tribunal's** failure to reject the flawed resolution plan under Section 31(2) of the IBC exposed gaps in judicial oversight, underscoring the need for stronger tribunal-level scrutiny to uphold the IBC's integrity.

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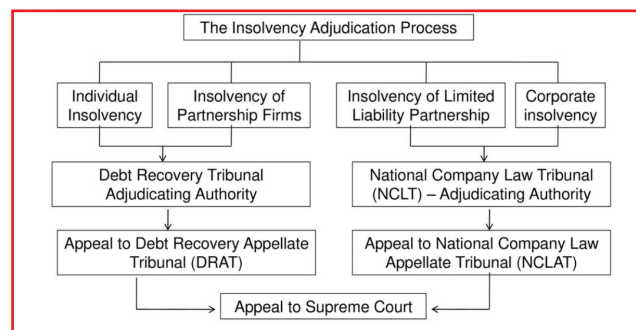


What is Insolvency and Bankruptcy Code (IBC), 2016?

- **About:** The **IBC, 2016** is India's comprehensive bankruptcy law that consolidates and streamlines existing insolvency frameworks for companies, partnership firms, and individuals.
 - Insolvency refers to a situation where **liabilities exceed assets, and debts cannot be paid** as they fall due. Bankruptcy is the **legal declaration of such inability to pay debts**.
 - The **T.K. Vishwanathan Committee (Bankruptcy Law Reforms Committee)** 2015 recommended a unified framework for resolving corporate and personal insolvencies, which led to the enactment of the **Insolvency and Bankruptcy Code (IBC), 2016**.
 - The IBC establishes a **time-bound, creditor-driven process for resolving insolvency**, aiming to improve credit discipline, resolve stressed assets efficiently, and strengthen the overall business environment.
 - It was primarily introduced to address the bad loan crisis in India's banking sector.
- **Regulating Authority:** The **Insolvency and Bankruptcy Board of India (IBBI)**, a statutory body established under the IBC, 2016, is responsible for formulating rules and regulations for insolvency resolution in India.
 - It comprises members from the **Ministry of Finance, Ministry of Corporate Affairs, and the Reserve Bank of India**.
- **Adjudicating Authority:** In the IBC, the Adjudicating Authority for corporate persons is the **National Company Law Tribunal (NCLT)**, while for individuals and firms, it's the **Debt Recovery Tribunal (DRT)**.
 - The **NCLT handles cases involving corporate debtors and their guarantors**, while the **DRT deals with insolvency matters of individuals and partnership firms** other than Limited Liability Partnerships.
- **Corporate Insolvency Resolution Process:** It is a time-bound legal mechanism under the IBC, 2016, designed to resolve the financial distress of companies that default on debt repayment.
 - It can be initiated by financial creditors, operational creditors, or the defaulting company itself by filing

an application with the NCLT which appoints an **Interim Resolution Professional (IRP)** who takes control of the company's management.

- The IRP verifies creditor claims and forms a CoC, which evaluates and votes on a resolution plan within **180 to 330 days**.
- The **Adjudicating Authority** may order liquidation if no resolution plan is filed within 180 days (or the extended period) from the insolvency commencement date.
- **Key Achievements:** Since its inception, the **IBC has facilitated the resolution of over Rs 3.16 lakh crore of debt in 808 cases**, contributing to better recovery rates compared to older mechanisms such as the DRT and Lok Adalat.
 - The IBC was described as a **"lighthouse of a new era"**, promoting **credit discipline and contributing significantly to the historic reduction of non-performing assets (NPAs)**.
 - As per the RBI's report, Net NPAs were at a 12-year low of 0.6% in June 2024, showcasing the IBC's effectiveness in improving credit discipline.
 - The IBC contributed significantly to India's improved rank in the **World Bank's Doing Business Report (DBR)**, with India rising from 142nd in 2014 to 63rd in 2019, before the report's discontinuation.



What are the Key Issues Related to IBC?

- **Delay in Resolution Process:** One of the key issues with IBC is the delay in completing insolvency resolutions.
 - While the IBC aims for a 180-day timeline, frequent extensions and delays in the process have led to asset devaluation, creditor losses, and overall inefficiency in resolving cases.

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- This undermines the core purpose of the Code—**quick and effective resolution.**
- **Imbalance in the CoC:** The CoC, which plays a crucial role in approving resolution plans, is heavily dominated by **financial creditors** (banks and financial institutions).
 - This often leaves **operational creditors (suppliers, employees)** underrepresented, leading to biased resolutions in some cases that may not account for the needs of smaller creditors or result in an unfair distribution of assets.
- **Lack of Legal Certainty in Cross-Border Insolvency:** The IBC framework lacks a comprehensive approach to **cross-border insolvency, causing challenges in the resolution of multinational companies** with operations or assets in multiple countries.
 - The absence of clear legal frameworks and coordination mechanisms with other countries can result in jurisdictional conflicts, **prolonged litigation, and asset mismanagement.**
- **Inadequate Protection of Debtors' Interests:** While IBC prioritizes the recovery of debts, it often places **excessive emphasis on creditor interests** at the expense of the debtor's right to rehabilitation.
 - The insolvency process tends to **push for liquidation rather than restructuring**, particularly in cases of distressed businesses that could still be viable with the right support.
- **Inefficiency in Liquidation Process:** The liquidation process under the IBC has been marred by inefficiencies such as poor asset valuation, lack of transparency, and delays in the sale of assets. This results in lower recoveries for creditors and market distortion.

India-UK Free Trade Agreement

Why in News?

India and the UK have signed a **India-UK Free Trade Agreement (FTA)**, marking a significant step between the world's **5th and 6th largest economies** amid ongoing **global trade volatility** and **tariff uncertainties**.

What are Key Highlights of the India-UK FTA?

- **About India-UK Trade:** UK is India's **4th largest export destination** and India is **UK's 11th largest trading partner**. The bilateral trade of **about USD 60 billion** is projected to double by **2030**.
 - It is **India's 16th FTA**, and the UK's most significant bilateral trade deal **post-Brexit**.
 - The FTA grants **zero-duty access** for **99% of Indian exports** to the UK, including **textiles, apparel, leather, footwear, marine products, sports goods, toys, gems and jewellery, auto parts, engineering goods, and organic chemicals**.
 - **Automobiles tariffs cut to 10%** under a quota, down from over 100%
 - **It also promotes labour mobility.** About **100 additional annual visas** for Indian professionals, particularly in **IT and healthcare**
- **Double Contribution Convention Agreement:** India and the UK also signed a **Double Contribution Convention Agreement** (also called a **Social Security Agreement**) as one of the key aspects of the deal.
 - It will ensure that **professionals** in either country are **not forced to pay national insurance or social security** contributions in both countries.

What are Free Trade Agreements (FTAs)?

- **About:** An FTA is a trade pact between **two or more nations** that aims to **reduce or eliminate customs duties and trade barriers** on goods traded between them.
 - FTAs, unlike **Preferential Trade Agreements (PTAs)**, offer comprehensive tariff elimination on most goods, whereas PTAs provide only limited tariff concessions on select products.
- **Objectives:**
 - **Reduction in Customs duties:** Typically, **90-95%** of goods are subject to **lower or zero tariffs**.
 - **Reduction in Non-trade barriers:** Aims to **ease regulations** that hinder trade.
 - **Promotion of Services and Investment:** Relax norms for services exports and encourage bilateral investments.

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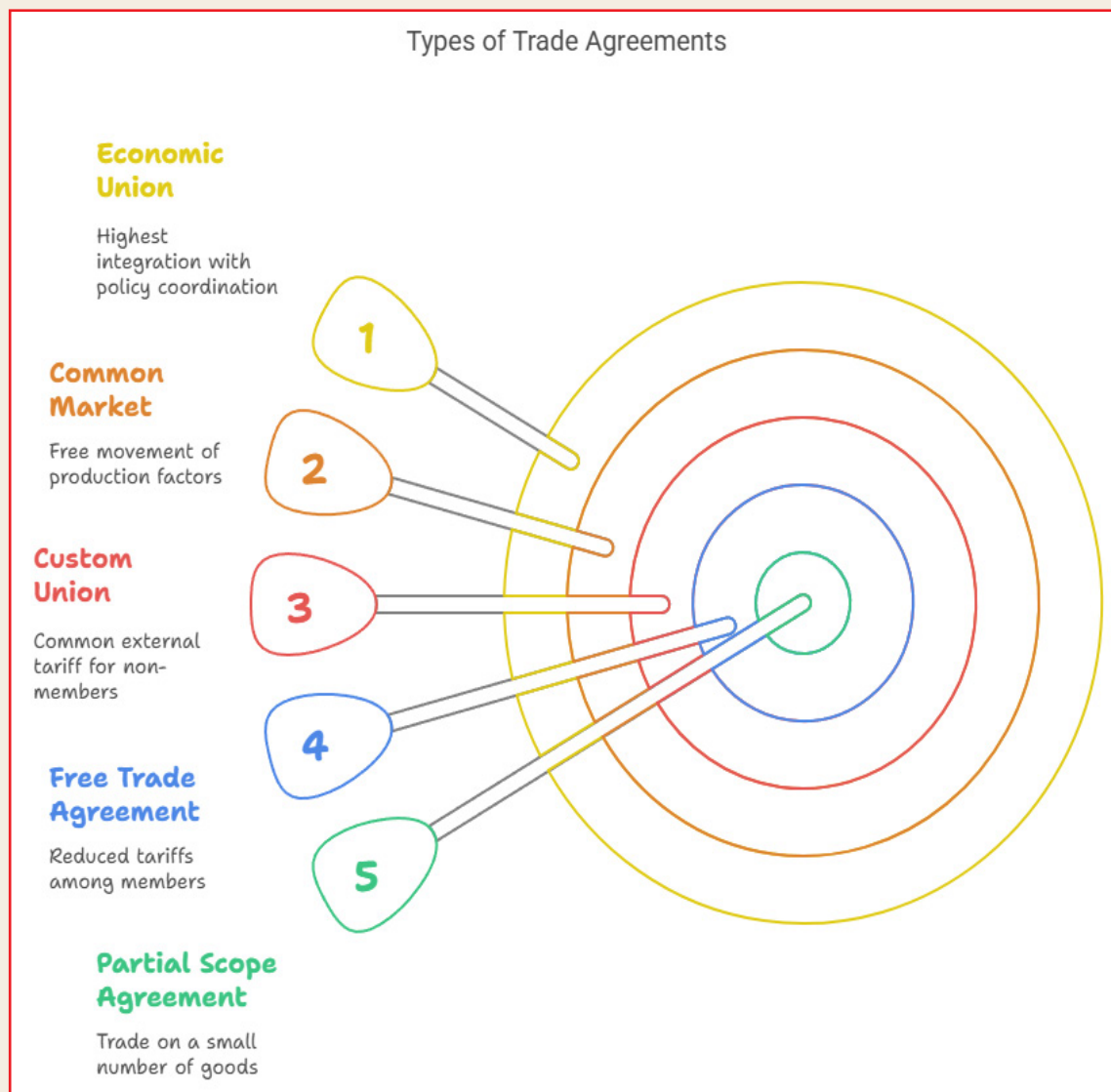
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➤ Types of Trade Agreements:



What is the Significance of FTAs for India?

- **Enhanced Market Access:** FTAs enable Indian exporters to tap into new markets with preferential terms, boosting trade volumes and competitiveness.
 - India's **FTA** with **UAE** boosted exports by **11.8%** to **USD 31.3 billion** in FY23, offering preferential access to **97%** of UAE's tariff lines, especially for **textiles, gems, jewelry, and engineering goods**.
- **Investment Inflows:** By fostering investor confidence and offering regulatory certainty, FTAs facilitate sustained foreign direct investment into India.

- For example, the **EFTA** agreement promises **USD 100 billion** in investments **over 15 years**, supporting **Make in India** and job creation.
- **Supply Chain Resilience:** FTAs help India diversify sourcing channels and secure vital inputs for strategic sectors.
 - For example, FTAs like **Australia-India ECTA** help diversify supply chains, with access to **critical minerals** for green tech and **EV manufacturing**, strengthening India's position in **global supply chains**.

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- **Technology Access and Innovation:** Through deeper economic integration, FTAs enable India to collaborate on advanced technologies and future-oriented sectors.
 - For instance, **India-Japan CEPA** aids in bringing advanced manufacturing technologies, while the **EFTA** includes provisions for green tech and digital innovation cooperation.
- **Services Sector Growth and Professional Mobility:** FTAs open up new opportunities for Indian professionals and service providers through liberalised entry norms and mutual recognition.
 - For instance, the **UAE CEPA** and **Australia ECTA** improve access for Indian services, with easier visa access for professionals and provisions for IT/ITeS sector growth.

MAJOR TRADE AGREEMENTS OF INDIA

Free Trade Agreement (FTA) With Neighbouring Countries

- India-Sri Lanka FTA
- India-Nepal Treaty of Trade
- India-Bhutan Agreement on Trade, Commerce, and Transit

A free trade agreement is a comprehensive deal between countries, offering preferential trade terms and tariff concessions, with a negative list excluding specific products and services.

Regional FTA's of India

- **India ASEAN Trade in Goods Agreement (11):** 10 ASEAN countries + India
- **South Asia Free Trade Agreement (7):** India, Pakistan, Nepal, Sri Lanka, Bangladesh, Bhutan, and the Maldives
- **Global System of Trade Preferences** (41 countries + India)

India's CECAs and CEPAs

CECA/CEPA is broader than FTAs, addressing regulatory, trade, and economic aspects comprehensively, with CEPA having the widest scope including services, investment, etc while CECA mainly focuses on tariff and TQR rates negotiation.

- CEPA with **UAE, South Korea, Japan**
- CECA with **Singapore, Malaysia**

Others:

- India-Australia Economic Cooperation and Trade Agreement (ECTA)
- India-Thailand Early Harvest Scheme (EHS)
- India-Mauritius Comprehensive Economic Cooperation and Partnership Agreement (CECPA)

An EHS precedes an FTA/CECA/CEPA, where negotiating countries select products for tariff liberalisation, paving way for broader trade agreements and fostering confidence.

Preferential Trade Agreements (PTAs)

Partners in a PTA grant preferential access to specific products by lowering duties on agreed tariff lines, maintaining a positive list of products eligible for reduced or zero tariffs.

- **Asia Pacific Trade Agreement (APTA):** Bangladesh, China, India, S. Korea, Lao PDR, Sri Lanka, and Mongolia
- **SAARC Preferential Trading Agreement (SAPTA):** Same as SAFTA
- **India-MERCOSUR PTA:** Brazil, Argentina, Uruguay, Paraguay and India
- India's PTA with **Chile, Afghanistan**



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What are the Key Concerns Associated with India's FTAs?

- **Rising Trade Deficits:** FTAs have often led to **higher import growth than exports**, raising concerns about **long-term economic viability**.
 - From **2017-2022**, **exports** to FTA partners grew by **31%**, while **imports** surged by **82%**, creating an unsustainable **trade imbalance**.
- **Low FTA Utilization:** India's **FTA utilization rate** stands at **25%**, far below the **70-80%** seen in developed countries, indicating a failure to fully capitalize on FTA benefits.
 - The **slow pace** of FTA talks with the **EU** and **Canada** leads to **missed trade opportunities**, hindering India's **growth and competitiveness**.
- **Competitiveness Challenges:** India faces **stiff competition** from partner countries in key industries due to **innovation and cost advantages**.
 - E.g., **ASEAN** and **South Korea** have outpaced India in industries like **electronics** and **textiles**, due to superior **innovation** and **cost efficiencies**.
 - India also faces an **inverted duty structure**, where raw material imports incur higher taxes than finished goods.
- **Non-Tariff Barriers:** While **tariffs** have decreased, **non-tariff barriers** (such as **standards** and **technical measures**) continue to hinder India's **export access**.
 - The **EU's Carbon Border Adjustment** could impact **USD 8 billion** worth of Indian exports, while **labor standards** may affect sectors like **textiles** and **leather** further **exacerbating** the issue.
- **Complex Certification:** The **certification** and **rules of origin** requirements under FTAs have raised **compliance costs** for exporters.
- **IPR Tensions:** FTAs with Western partners often pressure India to adopt stricter IPR regimes.
 - For instance, **FTAs with EU/UK/US** create conflicts with **India's domestic policies**, especially over **pharmaceutical patents** and **data exclusivity**, affecting the **generic drug industry**.

Human Development Report 2025

Why in News?

India has been ranked **130th** out of **193** countries and territories in the **2025 Human Development Report (HDR)**, titled "**A Matter of Choice: People and Possibilities in the Age of AI**", released by the **United Nations Development Programme (UNDP)**.

- The report noted that while India has made steady strides, inequality continues to undercut its human development achievements.

What are the Key Highlights of Human Development Report 2025?

Global

- **Stalled Human Development Progress:** The global HDI saw its smallest increase since **1990** (excluding the 2020-2021 crisis years).
 - If **pre-Covid** trends had continued, most countries could have reached **very high human development by 2030**, this is now likely to be delayed by decades.
- **Top and Bottom Ranks:** Iceland ranked first with an HDI of 0.972, while South Sudan ranked last with an HDI of 0.388.
- **Growing Inequality:** The disparity between the richest and poorest nations has been widening, with high-HDI countries continuing to make progress while low-HDI countries face stagnation.
- **AI and Future of Work:** The report notes that **Artificial Intelligence (AI)** is rapidly spreading, with **1 in 5** people globally already using AI tools.
 - While **60%** served people believe **AI will create new job opportunities**, half fear it could replace or transform their current roles.
 - The 2025 Human Development Report emphasizes the need for inclusive, **human-centered AI policies to ensure AI contributes positively to human development**, rather than exacerbating inequalities or displacing jobs.

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HDI ranking and value (2023)

Rank	Country	HDI value
1	Iceland	0.972
2	Norway	0.970
2	Switzerland	0.970
4	Denmark	0.962
5	Germany	0.959
5	Sweden	0.959
7	Australia	0.958
8	Hong Kong, China (SAR)	0.955
8	Netherlands	0.955
17	United States	0.938
130	India	0.685

HDI: Human Development Index

Source: UNDP Human Development Report 2025

India

- **India's HDI Ranking:** India ranked 133rd in 2022 and improved to 130th in 2023, with its HDI value rising from 0.676 to 0.685.
 - The country remains in the “medium human development” category, though it is approaching the threshold for “high human development” (HDI ≥ 0.700).
- **Regional Comparison:** Among India's neighbors, China (78th), Sri Lanka (89th), and Bhutan (125th) rank above India, while Bangladesh (130th) is on par. Nepal (145th), Myanmar (150th), and Pakistan (168th) are ranked below India.
- **Progress in Key Areas:**
 - **Life Expectancy:** India's life expectancy rose from 58.6 years in 1990 to 72 years in 2023, the highest ever, reflecting a strong post-pandemic recovery.
 - This progress is attributed to national health programs like **National Health Mission**,

Ayushman Bharat, Janani Suraksha Yojana, and Poshan Abhiyaan.

- **Education:** India's mean years of schooling have increased, with children now expected to stay in school for 13 years, up from 8.2 years in 1990.
 - Initiatives like the **Right to Education Act 2009, National Education Policy 2020, and Samagra Shiksha Abhiyan** have improved access, though quality and learning outcomes still require attention.
- **National Income:** India's **Gross National Income per capita** rose over fourfold, from USD 2,167 in 1990 to USD 9,046 in 2023 based on 2021 Purchasing Power Parity (PPP).
 - Additionally, 135 million Indians escaped **multidimensional poverty** between 2015-16 and 2019-21, contributing to HDI improvement.
- **AI Skills Growth:** India is emerging as a **global AI leader** with the highest self-reported AI skills penetration.
 - 20% of Indian AI researchers now remain in the country, a significant rise from nearly zero in 2019.

Challenges Impacting India's HDI:

- **Inequality Reduces HDI:** **Inequality** has reduced India's HDI by 30.7%, one of the highest losses in the region.
- **Gender Disparities:** **Female labour force participation** (at 41.7% and political representation continue to lag.
 - Steps like the **106th constitutional amendment reserving one-third of legislative seats for women** show promise for transformative change.

Changes in India's HDI Value and Indicators Between 2022 and 2023

Key Data (Human Development Index)	2022	2023
Rank	133	130
HDI value	0.676	0.685
Life Expectancy (years)	71.70	72.00
Expected Years of Schooling (years)	12.96	12.95
Mean Years of Schooling (years)	6.57	6.88
Gross National Income Per Capita (\$ 2021 PPP)	8475.68	9046.76

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How can Artificial Intelligence Contribute to Human Development?

- **Enhancing Productivity and Economic Growth:** AI is expected to significantly **boost productivity**, with 70% of global respondents optimistic about its impact. By automating routine tasks, AI allows focus on innovation in sectors like manufacturing, services, and agriculture.
 - A Google report estimates AI could add **Rs 33.8 lakh crore to India's economy by 2030**, playing a key role in reaching the **USD 1 trillion digital economy target by 2028 and contributing 20% to GDP**.
- **Improving Access to Healthcare:** In radiology, AI improves accuracy, detecting **abnormalities that may be missed by human eyes**, while in oncology, it helps create personalized treatment plans based on patient data.
 - AI also streamlines clinical workflows, optimizes resource allocation, and supports remote monitoring and telemedicine, particularly in underserved areas.
 - Furthermore, AI is revolutionizing medical education with **virtual reality (VR)** and adaptive learning, enhancing healthcare professionals' skills.
- **Transforming Education:** AI enables personalized learning through adaptive platforms, with real-time support from **AI tutors and chatbots**, especially in underserved areas.
 - It also helps educators track student progress and identify learning gaps more effectively.
- **Empowering Governance:** AI is streamlining public service delivery in India by improving efficiency, enhancing transparency, and detecting fraud in welfare schemes.
 - Tools like **MuleHunter.AI**, developed by the **Reserve Bank of India**, help combat digital fraud involving mule bank accounts.
 - The government's **Bhashini project** boosts multilingual communication, aiding policy outreach across linguistic groups.
- **Addressing Inequality and Promoting Inclusion:** AI tools can identify and bridge gaps in **service delivery, particularly for marginalized communities**. When

guided by human-centered design, AI can ensure equitable access to opportunities.

Pradhan Mantri Fasal Bima Yojana

Why in News?

According to the Ministry of Agriculture and Farmers Welfare, **97%** of all reported claims under the **Pradhan Mantri Fasal Bima Yojana (PMFBY)** and the **Restructured Weather-Based Crop Insurance Scheme (RWBCIS)** have been settled across India.

- **Goa, Chhattisgarh, Telangana, and Tamil Nadu** have achieved full claim settlement, while **Tripura, Andaman and Nicobar Islands, Andhra Pradesh, and Sikkim** have settlement rates from **91% to 51%**.

What is Pradhan Mantri Fasal Bima Yojana?

- **About:** Launched in **2016**, PMFBY is a **Central Sector Scheme** designed to offer **financial protection to farmers against crop losses caused by natural disasters, pests, or diseases**.
 - As of 2023–24, PMFBY became the **world's largest crop insurance scheme** in terms of the **number of farmers enrolled and land area covered**.
- **Key Features:**
 - **Eligibility:** **All farmers** including **sharecroppers and tenant farmers** growing the **notified crops** in the **notified areas** are eligible for coverage.
 - Participation in **PMFBY** is **voluntary**, with **non-loanee farmers** comprising **55%** of total beneficiaries.
 - **Risk Coverage:**
 - **Natural Disasters:** Includes **floods, droughts, cyclones, hailstorms, landslides**, and **unseasonal rainfall**.
 - **Pest & Disease Coverage:** Protects against **pest attacks and crop diseases**.
 - **Post-Harvest Losses (Individual Farm Basis) :** Compensation for damage within **14 days of harvest**, especially for crops kept in **"cut and spread"** condition.

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- **Localised Calamities:** The government provides compensation for **localised calamities** on an **individual farm basis**.
- **Prevented Sowing (on Notified Area Basis):** If **most insured farmers** in a **notified area** are **unable to sow** due to **adverse weather** despite **intent and incurred costs**, they can **claim up to 25% of the sum insured** as indemnity.
- **Premium Rates:** Farmers pay **affordable premiums**—2% for **Kharif crops**, 1.5% for **Rabi crops**, and 5% for **annual commercial or horticultural crops**.
 - The government **fully subsidizes premiums** for farmers in the **Northeast, Jammu & Kashmir, and Himachal Pradesh**.
- **Technological Integration:**
 - **Satellite Imagery & Drones:** Used for **estimating crop area**, resolving **yield disputes**, and assessing **crop losses**.
 - **Crop Cutting Experiments (CCEs):** The **CCE-Agri App** enables direct data upload to the **National Crop Insurance Portal (NCIP)**, ensuring **transparent yield assessment**.
 - It also utilizes **DigiClaim**, **Collection of Real Time Observations and Photographs of Crops (CROPIC)**, and **Weather Information Network Data Systems (WINDS)**.
- **Payouts:** PMFBY aims to process claims **within two months of harvest**, offering **timely financial support** to prevent farmers from falling into **debt traps**.

Restructured Weather-Based Crop Insurance Scheme

- It was launched in **2016** to **safeguard farmers** against financial losses due to **unfavorable weather conditions**.
- **RWBCIS** offers compensation based on **deviations from predefined weather indicators**—like **rainfall, temperature, humidity, and wind speed**—serving as proxies for crop loss without field-level evaluations
 - Whereas, **PMFBY** provides compensation based on **actual crop loss assessments** caused by **natural calamities, pests, or diseases**

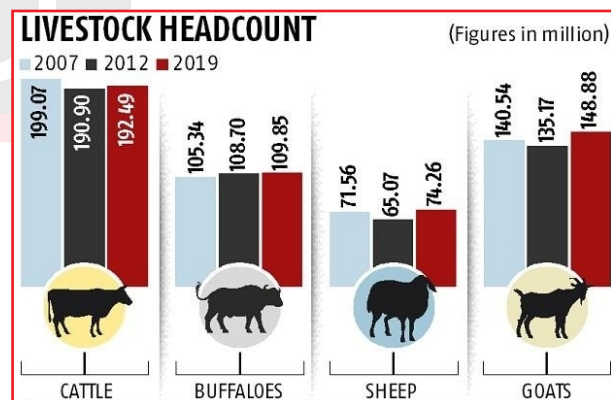
India's Livestock Sector

Why in News?

India's livestock sector is a backbone of rural livelihoods and nutrition, making animal health a national priority. As **World Veterinary Day 2025** celebrated the theme "**Animal Health Takes a Team**," it underscored the critical role of **veterinarians** and the growing need for a **One Health** approach in tackling **zoonotic risks**.

What is the State of the Livestock Sector in India?

- **Livestock:** India has the **world's largest livestock population** and it is a **key pillar of Indian agriculture**, supporting **rural livelihoods, nutrition, and economic growth**.
 - It involves rearing **cattle, buffaloes, sheep, goats, pigs, and poultry** for **meat, milk, eggs, and wool**.
- **Key Livestock Data:**
 - As per the **20th Livestock Census** (2019), India has a **total livestock population of 535.78 million**.



- **Milk, Meat, and Egg Production:** India ranks **1st** in **milk production**, contributing **24.76%** of global production.
 - India ranks **2nd** in **egg production** (1st China) and **5th** in **meat production** globally (Food and Agriculture Organization, 2022).

What is the Significance of the Livestock Sector in India?

- **Contribution to GDP:** The livestock sector grew at a **CAGR of 12.99% (2014-15 to 2022-23)**, contributing **5.50%** of India's **Gross Value Added (GVA)** in 2022-23.

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- It also provides employment to about **8.8 % of the population in India**.
- **Nutritional Security:** Livestock ensures **food security** by providing **protein-rich products like milk, eggs, and meat**. The **dairy sector** alone accounts for **two-thirds of the total value of livestock output**.
- **Sustainability and Climate Resilience:** Livestock supports **sustainable farming** by providing **organic manure, improving soil fertility, and reducing chemical use**. **Integrated livestock-crop systems** enhance resilience, especially in drought-prone areas.
- **Exports and Foreign Exchange:** Exports of livestock products, including **buffalo meat, dairy, and poultry**, rose by over **10%**, reaching **USD 3.64 billion** during April-December 2024, strengthening **India's foreign exchange**.
- **Poverty Alleviation:** Livestock is a key asset for **poverty reduction**, with over **50% of rural women engaged in livestock activities**, contributing to income and financial independence.
- **Cultural and Societal Importance:** Livestock has **cultural and religious significance**, especially in **festivals and rituals**. In states like Rajasthan and Gujarat, it also reinforces **community bonds and preserves traditional practices**.

What are the Key Issues Associated with the Livestock Sector in India?

- **Low Productivity:** India's livestock productivity, especially in dairy, meat, and poultry, remains **low compared to global standards**.
 - For example, India's average **annual cattle milk productivity** in 2019-20 was **1,777 kg/animal**, well below the **global average of 2,699 kg (FAO, 2019)**
- **Inadequate Infrastructure** The sector suffers from **poor breed quality, inadequate feeding, lack of proper veterinary services, cold chain facilities, and modern slaughterhouses**.
 - This leads to **high post-harvest losses, poor product quality, and limited market access** for small farmers.
- **Climate Risks & Environmental Impact:** Climate change affects livestock productivity due to **erratic weather, rising temperatures, and feed shortages**.

- On the other hand, livestock farming itself contributes to **methane emissions** and contributes to **soil degradation and biodiversity loss** due to overgrazing practices.
- **Health Risks** Zoonotic diseases like **avian influenza, foot-and-mouth disease (FMD), and brucellosis** pose significant health threats.
 - Around **60% of infectious diseases are zoonotic**, and **75% of emerging infections** are of animal origin.
 - **Poor hygiene, inadequate veterinary services, and lack of awareness** increases the spread of such diseases.
 - As per the data indicated by the **Secretary of the Department of Animal Husbandry and Dairying (DAHD)**, India needs to produce 2500 additional veterinary graduates annually for the next five years to meet the growing demand.
- **Lack of Adequate R&D:** **Lack of R&D** in livestock genetics, nutrition, and disease control hampers progress and greater focus is needed on **breed improvement, efficient feed systems, and veterinary advancements** to boost sector performance.

What are the Key Initiatives to Strengthen the Livestock Sector?

- **National Initiatives:**
 - **Livestock Health and Disease Control (LHDC) Programme**
 - **National Animal Disease Control Programme (NADCP)**
 - **National Livestock Mission (NLM)**
 - **Animal Health Security Strengthening in India for Pandemic Preparedness & Response:** It is backed by **FAO, ADB, and World Bank** to support India's animal health security by **upgrading labs, improving surveillance, and training field vets** for pandemic preparedness.
- **International Collaborations:**
 - **Food and Agriculture Organization (FAO):** FAO has strengthened India's veterinary services by **standardizing treatment guidelines (2024)**.

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- It has supported AMR management through the National Action Plan 2.0 and the Indian Network for Fisheries and Animal Antimicrobial Resistance (INFAAR).
- FAO has also trained veterinarians via the In-Service Applied Veterinary Epidemiology Training (ISAVET).
- Asian Development Bank (ADB) and the World Bank: They support India in enhancing animal health security by funding infrastructure, improving zoonotic disease surveillance, upgrading labs, and strengthening veterinary training for better pandemic response.

What is the "One Health" Approach?

- **About:** The One Health approach is a collaborative, multisectoral, and transdisciplinary strategy that recognizes the interconnectedness of human, animal, and environmental health.
- It promotes integrated policies and programs aimed at preventing global pandemics and improving public health outcomes.



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➤ Key Features:

- **Holistic Perspective:** Focuses on the **shared environment, human-animal interactions**, and ecosystem balance.
- **Disease Prevention:** Aims to **reduce the risk of zoonoses** like rabies, Ebola, avian influenza, Covid-19, and antimicrobial resistance (AMR).
- **Long-term Planning:** Encourages **preventive health strategies** rather than reactive responses.

➤ Historical Context & Institutional Initiatives:

- The **One Health** approach began in **1947** with **WHO's veterinary public health unit**, inspired by **James Steele's "one medicine" concept**, and is reflected in declarations like **Alma-Ata (1978)**, **Ottawa Charter (1986)**, and **Shanghai Declaration (2016)**.
- **WHO** leads through the **One Health Initiative Team** and the **quadrupartite collaboration (WHO, FAO, OIE, UNEP)**, supporting countries with policy integration and early disease detection.
- The **National One Health Mission** is a comprehensive initiative in India aimed at **strengthening the country's disease response** and promoting a **holistic approach to public health**.

Farmers Producer Organisation

Why in News?

The development of **Farmer Producer Organizations (FPOs)** has been a critical step towards **empowering small farmers** in India. Despite the government's significant investment in FPOs, their progress has been **slower than anticipated**.

What is a Farmers Producer Organisation?

- **About:** An FPO is a type of **producer organisation (PO)** with **farmers** as its members, and its promotion is supported by the **Small Farmers' Agribusiness Consortium (SFAC)**.
 - The **FPOs** came into existence in **2008**, inspired by economist **YK Alagh's** recommendation (2002) to amend the **Companies Act, 1956**.
 - FPOs can be registered under the **Companies Act, 2013**, the **Societies Registration Act, 1860**, or as **Public Trusts** under the **Indian Trusts Act, 1882**.
 - A **Producer Organisation** is a group of producers, **agricultural, non-farm, or artisan**, that can take **legal forms** like producer companies or **cooperatives**, sharing **profits** among members.
- **Objectives & Need:** Indian agriculture is dominated by **small and marginal farmers** (87% owning less

than 2 hectares), facing **weather and market risks**, and struggling to get fair prices.

- FPOs help small farmers by facilitating **bulk input purchases**, improving **bargaining power**, and ensuring **better price realization** with reduced costs.
- They also enhance **market access**, supporting the goal of **doubling incomes** and entering **global markets**.



- **Current Status:** **45,000 FPOs** are registered as companies, but only **16,000** are compliant with regulatory filings.
 - Just **4,000 FPOs** have received working capital loans for procurement and **average net profit per FPO** is Rs 3 lakh (too low to significantly boost farmer incomes).

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Success Story of FPOs

- **Indian Successful Story:**
 - **Kandhamal Apex Spices Association for Marketing (KASAM)** in **Odisha** promotes **Kandhamal turmeric** through 61 Spice Development Societies.
 - It collaborates with **Kisan Saathi**, helping **Gumapadar FPC Ltd.** export turmeric to **NedSpice Group** in the **Netherlands**, demonstrating FPOs' potential to reach **global markets**.
- **Global Success Stories:**
 - **Mexico (Ejido System):** Ejidos are **communal farming systems** where **land** is collectively owned and managed by **communities**, helping farmers access **international markets**, particularly for **crops** like **avocados** and **berries**.
 - **Thailand:** Programs like "One Tambon (Village) One Product" promote unique local agricultural products.
 - **China: Farmer Professional Cooperatives (FPCs)** in sectors like **tea**, **fruits**, and **aquaculture** have reached global markets, with platforms like **Alibaba** enabling direct sales to consumers.

- **Thin Margins:** Most FPOs operate on **thin margins in input/output marketing (3-6%)**, raising doubts about long-term viability.
 - With **limited profit margins**, FPOs may **struggle** to cover **operational costs**, **invest in growth**, and **sustain** their activities.
- **Challenge of Replacing Middlemen:** Farmers rely on middlemen for **trust, credit, and payments**. FPOs may not fully replace them, especially in regions with **feudal systems**, making complete elimination unrealistic.
- **Mere Outsourcing Channels:** Some FPOs act as **procurement agents or custom hiring centers**, diluting their original purpose of empowering farmers.
- **Lack of Social Capital:** FPOs need **social capital** and a **gestation period** to build **consensus and thrive**, as organizations based on social networks **can't take root overnight**.
 - Without social capital, FPOs may face **challenges** in **sustainability, governance, and growth**, delaying benefits to farmers and hindering expansion.

NITI Aayog Report on MSMEs in India

Why in News?

NITI Aayog, in collaboration with the **Institute for Competitiveness**, released a comprehensive report identifying **key challenges** hindering MSME growth and proposing **strategic reforms** to enhance their competitiveness and economic impact.

What are MSMEs?

- **About:**
 - **Micro, Small, and Medium Enterprises (MSMEs)** are businesses categorized based on their **investment in plant & machinery or equipment** and **annual turnover**.
 - They play a crucial role in India's economic structure by **promoting entrepreneurship, generating employment, and supporting industrialization** in rural and semi-urban areas.

What are the Key Challenges

Faced by FPOs in Indian Agriculture?

- **No One Size Fits All Approach:** FPOs cannot single-handedly resolve deep-rooted issues like the **vulnerability of farmers to climate risks**, the **lack of robust rural infrastructure**, the **limited reach of Minimum Support Prices (MSP)** for many crops, the volatility of global agricultural prices, and the persistent social inequalities that marginalize certain farming communities.
- **Limited Impact in Market Linkages:** Despite **3,500 FPOs** being integrated with **e-NAM**, the **traded value (Rs 3.19 lakh crore)** is only a **fraction** of the total agricultural GVA (Rs 50 lakh crore at current prices).
 - The disparity shows that **e-NAM** is **not fully reaching** the broader agricultural economy due to **low adoption, market fragmentation, infrastructure gaps, and regional disparities**.

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➤ Classification of MSMEs:

New classification of MSME

Type	INVESTMENT		TURNOVER	
	Current	Revised	Current	Revised
MicroEnterprise	Rs 1cr	Rs 2.5cr	Rs 5cr	Rs 10cr
Small Enterprise	Rs 10cr	Rs 25cr	Rs 50cr	Rs 100cr
Medium Enterprise	Rs 50cr	Rs 125cr	Rs 250cr	Rs 500cr

Source: Budget 2025-2026, Speech of Nirmala Sitharama, Union Minister of Finance February 1, 2025.

What Role do MSMEs Play in Driving India's Economic Growth?

- **Contribution to GDP and Employment:** MSMEs contribute approximately **29.2% to India's Gross Domestic Product (GDP)**, **36.2% to manufacturing output**, and employing over **120 million people**.
 - For example, the **textile industry**, largely driven by MSMEs, employs millions in activities like **spinning, weaving, and apparel manufacturing**.
- **Export Promotion:** MSMEs contribute **nearly 45% (FY 2021–22)** of India's total **exports**, strengthening India's position in the global trade arena.
 - The **Indian handicraft sector**, largely of **small-scale enterprises**, contributes significantly to **export revenue**, accounting for around **40% of global handmade carpet exports**.
- **Rural Industrialization:** MSMEs promote **rural industrialization** and foster **inclusive growth**, aligning with **Dr. APJ Abdul Kalam's PURA (Providing Urban Amenities in Rural Areas)** vision.
 - For instance, the **Khadi and Village Industries Commission (KVIC)**, consisting mainly of small-scale units, plays a critical role in providing **employment and empowering local communities** in rural areas, contributing to **balanced regional development**.

- **Innovation and Entrepreneurship:** MSME fosters **innovation and entrepreneurship**, with small businesses often quicker to adapt to changing market dynamics.
 - India's thriving **startup ecosystem (the third-largest in the world)** is predominantly driven by MSMEs, which have led to innovative solutions in sectors like **e-commerce, fintech**, and other emerging industries.
- **Supporting Women Empowerment:** MSMEs act as a **catalyst for empowering women and marginalized communities** by fostering **inclusive entrepreneurship**.
 - According to the Udyam Registration Portal, over **20% of MSMEs are women-owned**, highlighting the **growing participation of women** in the entrepreneurial ecosystem.

Click Here to Read More: [Significance of the MSME Sector in the Indian Economy](#)

What are the Key Challenges Faced by MSMEs in India?

As per the NITI Ayog's Report on MSMEs:

- **High Informatization:** Over **90% of MSMEs in India** remain **informal**, with only **9% of registered firms** having transitioned from unregistered status.

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- Despite efforts like the **Udyam portal** (95 lakh registrations vs 6.34 crore total MSMEs), **high compliance costs** and **regulatory burdens** deter many from formalising, limiting access to credit, schemes, and global value chains.
- **Lack of Formal Credit Access:** Despite improvements in credit access for MSMEs rising from **14% to 20% for micro/small** and **4% to 9% for medium enterprises (2020–2024)**, a significant **credit gap** persists.
 - Only **19% of credit demand** was met by formal channels in FY21 with other challenges like **lack of collateral**, **high NPAs**, **weak credit checks**, and **poor financial literacy**, forcing many MSMEs to rely on informal credit at high interest rates (30–60%).
- **Skill Gaps:** From 2014–2022, **skilled labor** increased by **19.94% in small**, **20% in medium**, and **12.72% in large enterprises** (World Bank).
 - However, a significant skill mismatch exists, with a **3.9% decline in knowledge-intensive hiring**.
- **Product Diversification Challenges:** MSMEs in India face barriers to product diversification due to **limited market awareness**, **technical knowledge**, and **high costs for machinery and marketing**.
 - Despite **18% growth** in customer base for diversified firms, challenges like **high development costs**, **poor marketing**, and **limited access to finance** hinder **brand establishment** and entry into international markets.
- **Compliance Burden :** Tax and other compliances remains a **significant challenge for MSMEs in India**.
 - While GST has improved efficiency, it has also **raised compliance costs and operational challenges for MSMEs**.
- **Inadequate Infrastructure & Outdated Technology:** Despite India's 40th rank in the 2023 Global Innovation Index, **MSMEs face limited access to advanced technology**, high costs, and unreliable infrastructure, restricting their scalability and integration into global value chains.
 - Only **6% of MSMEs use e-commerce** and just **45% have adopted AI**, reflecting the sector's **slow pace of digital adoption**.
- **The “Missing Middle” Problem:** Despite initiatives like **ECLGS (Emergency Credit Line Guarantee Scheme)** and **Startup India**, MSMEs in India struggle to **access and fully utilize government schemes** due to **limited awareness and understanding**.
 - It reflects the **underrepresentation of medium-sized enterprises**, with **97.92% of MSMEs classified as micro**, **1.89% classified as small** and only **0.01% as medium**.
 - This gap is caused by **strict regulations**, **high compliance costs**, **limited finance access**, and **low productivity**.

What are the Key Recommendations by NITI Aayog on MSMEs?

- **Reforming MSME Credit Access:** To bridge the credit gap in MSMEs, it is essential to reform the **Credit Guarantee Fund Trust for Micro and Small Enterprises (CGTMSE)** by **enhancing oversight and reducing risk premiums**.
 - NBFCs, especially in remote areas, should be **scaled up with SIDBI funding** to improve their capacity and governance.

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- At the state level, **lowering eligibility barriers for capital and interest subsidies** will further support MSMEs at various stages of their growth.
- **Skilling and Workforce Alignment:** Invest in **STEM education** to meet MSME manpower needs, particularly in rural areas.
 - **Align training programs with industry demands** and **reform vocational education** to address the skills gap, focusing on **financial literacy and operational skills**.
 - States should offer **partial subsidies for training**, with **curricula updated regularly** to ensure relevance.
- **Driving Tech & AI Adoption:** Enhance MSME supply chains with **digital risk management** and **tailored insurance products**.
 - Promote **Artificial Intelligence (AI)** adoption through **subsidies, grants, and awareness campaigns**.
 - Support **technological upgrades in textiles and chemicals**, and develop **affordable MSME-specific infrastructure**. Invest in **Industry 4.0 technologies** to address obsolescence.
- **Upgrading Innovation Ecosystem:** Strengthen Institute for Collaborations (IFCs) to foster **research, innovation, and technology upgrades** for MSMEs by **expanding knowledge networks between universities, research institutes, private entities, and government bodies**.
 - Upgrading **Common Facilitation Centres (CFCs)** to IFC standards will boost **productivity, innovation, and competitiveness in the MSME sector**.
- **Boosting Market Access and Supply Chain Management:** MSMEs should receive **export incentives and digital platform support**, similar to initiatives in Haryana,

Bihar, Andhra Pradesh, and Tamil Nadu, including **quality certifications and market research**.

- **Collaboration with design schools** and investment in new technologies will enhance competitiveness in sectors like textiles.
- States should **invest in supply chain infrastructure and local training**. Additionally, **promoting food processing MSMEs** through **trade fairs and export programs** will improve market access.
- **Improving Policy Monitoring & Engagement:** Enhance **MSME policy awareness and outreach** at the state level. **Regular surveys** should **assess policy performance and drive improvements**.
 - **Engage effectively with MSME stakeholders**, including **Owner-Operated Enterprises (OAEs)** (where the owner is directly involved in the day-to-day operations) and **women-owned enterprises**.
 - **Capture informal sector MSMEs in datasets** to reduce informality and identify areas for improvement.

More About MSME Sector in India

Click Here to Read: [Key Issues Associated with MSME Sector in India, Measures to Enhance the Effectiveness of MSME in India](#)

What are the Key Government Initiatives for MSMEs?

- [Pradhan Mantri MUDRA Yojana](#)
- [Mutual Credit Guarantee Scheme for MSMEs](#)
- [Udyam Registration](#)
- [CHAMPIONS Portal](#)
- [MSME SAMADHAAN](#)
- [Government e-Marketplace \(GeM\)](#), an online platform for MSMEs to participate in public procurement, expanding their market access.

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INDIA'S MSME SECTOR

(MSME - Micro, Small and Medium Enterprises)

Manufacturing Enterprises and Enterprises rendering Services

Classification	MICRO	SMALL	MEDIUM
Investment in Plant and Machinery or Equipment	≤ ₹1 crore	≤ ₹10 crores	≤ ₹50 crores
Annual Turnover	≤ ₹5 crore	≤ ₹50 crores	≤ ₹250 crores

MSME regulation

- **Nodal Ministry:** Ministry of Micro, Small, and Medium Enterprises
- **Act:** Micro, Small, and Medium Enterprises Development Act, 2006

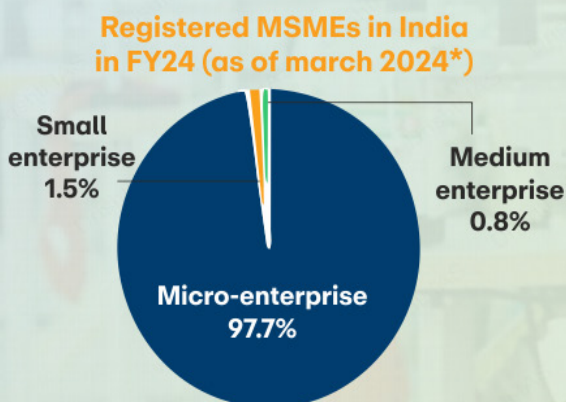
Key MSME States - Maharashtra (17.74%), TN (10.20%), UP (9.34%), Gujarat (7.43%) and Rajasthan (7.38%)

Share of MSMEs in Indian Economy

- India's Total Exports: 45%
- India's GDP: 30%
- Total Manufacturing Output: 38.4%
- Provides employment to ~11 crore people

Challenges

- Only 16% of SMEs get access to timely finance
- ~86% of manufacturing MSMEs in India are unregistered
- Outdated technology, lower productivity levels, lack of necessary skills and branding expertise
- Delayed payments from larger enterprises or govt agencies



Government Initiatives and Support

Administrative Support:

- CHAMPIONS 2.0 Portal
- Mobile App for Geo-tagging of Cluster Projects and Technology Centers
- Udyam Assist Platform
- ASPIRE Scheme
- Zero Defect & Zero Effect (ZED)

Financial Support

- Raising and Accelerating MSME Performance (RAMP) Scheme
- Trade Receivable Discounting System (TReDS)
- Prime Minister's Employment Generation Programme (PMEGP)
- Pradhan Mantri Mudra Yojna (PMMY)
- Credit Guarantee Trust Fund for Micro & Small Enterprises (CGTMSE)
- Interest Subsidy Eligibility Certificate (ISEC)

International
MSME
Day 27th
June



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Transforming India's Labour Force

Why in News?

On May 1st, the world commemorates **International Labour Day** to honour the dignity of work and workers' rights. In India, while the day honours workers' contributions, it also underscores the need for stronger implementation of labour laws to eliminate **bonded and exploitative labour**.

What is the Current Status of India's Labour Force?

- In 2024, India's overall Labour Force Participation Rate (LFPR) remained relatively stable at **59.6%**, with a slight decrease from **59.8% in 2023**, according to the **Periodic Labour Force Survey (PLFS)**.
- The **Worker Population Ratio (WPR)** also saw a marginal decline, moving from **58.0% to 57.7%**.
 - Unemployment rates experienced a minor increase from **3.1% to 3.2% at the all-India level**.

What are the Current Issues Related to India's Labour Ecosystem?

- **Widespread Informality:** According to the **National Sample Survey Organization**, around about 39 crore of India's 47 crore workforce is in the **unorganised sector**, lacking job security, contracts, and social protection.
 - Additionally, 9.8% of workers in the organised sector are informal, highlighting widespread outsourcing and worker vulnerability.
 - While **Gross Domestic Product (GDP) formalisation** has reached 56% and labour market **formalisation lags at 15% (Citi Research 2024)**.
 - Post-Covid, **54 million new jobs were created**, mostly self-employment, not formal wage employment.
- **Dominance of Low-Quality Jobs and Skill Gap:** The **International Labour Organisation's India Employment Report 2024**, highlights that **low-quality jobs in the informal sector dominate**, with migrants and

informal workers often facing conditions similar to bonded labour.

- Even where high quality jobs are available, The **Economic Survey 2023-24**, reveals that only **51.25% of India's graduates are deemed employable**, highlighting a significant skills gap.
- **Delayed Implementation of Labour Laws:** The implementation of the Labour Codes in India is delayed due to objections from trade unions over reduced rights and weakened worker protections. Additionally, the readiness of states to draft and implement the necessary rules has also been a significant factor.
 - Additionally, **Gig workers** (7.7 million gig workers as of 2020-21) **are excluded from minimum wage laws**, occupational safety regulations, and the Industrial Relations Code 2020, leaving them vulnerable to health risks and lacking dispute resolution mechanisms.
- **Gender Disparities in Labour Force:** The **female labour force participation rate (LFPR)** dropped from **41.3% in 2023 to 40.3% in 2024**, while men's rose from 78.3% to 79.2%.
 - Urban female unemployment stands at **8.2%** and only 3% of employed women over **25 hold advanced degrees, highlighting underutilization of educated women and a skills-job mismatch**.
- **Low Labour Productivity:** India ranks **13th globally for the longest working hours, with an average of 46.7 hours per week**, and over 51% of employees working 49 hours or more.
 - Despite this, India's labour productivity is relatively low, with a **GDP per working hour of USD 8**, placing it **133rd globally**.
 - High-pressure work environments, especially in corporate sectors, are contributing to **mental health issues among employees**.
 - Labour productivity, a key indicator of economic growth and competitiveness, is crucial for improving living standards.
 - By 2030, climate change is expected to cause the loss of **over 2% of total working hours globally each year**, further exacerbating the productivity issue.

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How can India Enhance the Productivity and Inclusivity of its Labour Force?

- **Enhancing Formalisation:** India should prioritize transitioning workers from informal to formal employment by effectively implementing the **Labour Codes, 2020** and expanding coverage under **EPFO (Employees' Provident Fund Organisation)** and ESIC (Employees' State Insurance Corporation).
 - Additionally, strengthening schemes like **Pradhan Mantri MUDRA Yojana**, **MSME Udyam** and **Employment Linked Incentive (ELI)**, and linking them to infrastructure development in Tier 2 and Tier 3 cities, will promote job creation and economic growth.
 - **Formalisation** will provide access to worker benefits like healthcare, pensions, and job security, improving overall productivity and reducing inequality.
- **Boosting Skill Development:** Improve the quality and relevance of vocational training under schemes like **Skill India** and **Pradhan Mantri Kaushal Vikas Yojana (PMKVY)** and strengthen industry-academia linkages focusing on digital, green, and soft skills for future jobs.
 - Indian can learn from **Ireland model** in this regard by focusing on fostering a strong connection between education and industry
- **Revisiting the Labour Codes through Dialogue:** India should institutionalize social dialogue mechanisms by reconvening the **Indian Labour Conference (ILC)**.
 - Ratifying **ILO Convention No. 87 on freedom of association** and **ILO Convention No. 98 on the right to organize and collective bargaining** would promote unionization, particularly for workers in informal sectors.
 - This would address the challenges faced by these workers, **including lack of job security, limited bargaining power, and poor working conditions**, while ensuring fair wages and better working conditions.
- **Promoting Gender Equality:** Increase female labour force participation through policies like **Beti Bachao Beti Padhao** and the **Maternity Benefit Act (2017)**.

- Provide **safe workspaces**, **flexible hours**, **work-from-home options**, childcare support, and gender-sensitive policies to boost female labour force participation.
- **Enhancing Worker Health and Safety Standards:** Improve **occupational health and safety standards**, particularly in high-risk sectors such as mining, construction, and textiles.
 - Ensure strict enforcement of the **Occupational Safety, Health, and Working Conditions Code, 2020**.

What are the Key Conventions of the International Labour Organization?

Ten Core Conventions of the International Labour Organization

(also called fundamental/human rights conventions)



Ratified by India

1. Forced Labour Convention (No. 29)
2. Abolition of Forced Labour Convention (No.105)
3. Equal Remuneration Convention (No.100)
4. Discrimination (Employment Occupation) Convention (No.111)
5. Minimum Age Convention (No.138)
6. Worst forms of Child Labour Convention (No.182)



Not Ratified by India

7. Freedom of Association and Protection of Right to Organised Convention (No.87)
8. Right to Organise and Collective Bargaining Convention (No.98)
9. C155 - Occupational Safety and Health Convention, 1981 (No. 155)
10. C187 - Promotional Framework for Occupational Safety and Health Convention, 2006 (No. 187)

International Labour Day

- International Labour Day, or May Day, **originated from the 1886 Haymarket Affair in Chicago**, where a peaceful workers' rally for an eight-hour workday turned violent.

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- To honor the “Haymarket Martyrs,” the Second International declared May 1st as International Workers’ Day in 1889.
- The movement symbolized the global fight for fair hours—8 for work, 8 for rest, and 8 for personal life.
- In India, Labour Day also known as **Kamgar Divas** or **Antrarashtriya Shramik Divas** was first celebrated on 1st May 1923, in Chennai by the **Labour Kisan Party of Hindustan**.

What is Bonded Labour?

- **About: Bonded labour, or debt bondage**, is one of the most common yet least recognised forms of **modern slavery**.
 - It occurs when a person is forced to work to repay a loan, often under deceptive terms, receiving little or no wages.
- **Causes:** Bonded labour stems from caste discrimination, feudal land systems, deep poverty, and lack of education and healthcare. Limited livelihood options trap families in inter-generational bondage.
 - **Urban migration** also fuels bonded labour in informal sectors like **domestic work, hotels, and child begging**.
- **Related Constitutional and Legal Provisions:** Articles 21 and 23 of the Indian Constitution **prohibit bond labour**.
 - The **Bonded Labour System (Abolition) Act, 1976** legally abolished bonded labour and nullified all related agreements. It freed labourers from debt obligations and barred recovery of bonded debts.
- **Prevalence in India:** In 2016, the government announced a plan to rescue and rehabilitate 1.84 crore bonded labourers by 2030.
 - However, as of 2021, only **12,760 bonded labourers had been rescued over a span of five years**.
 - It is common in agriculture, brick kilns, mining, silk, matchstick, textiles, and firecracker industries, with high prevalence in Bihar, UP, Tamil Nadu, Karnataka, and Punjab.

Global Wind Report 2025

Why in News?

The **Global Wind Energy Council’s (GWEC) Global Wind Report 2025** warns that projected wind capacity will only meet **77%** of 2030 targets, jeopardizing **net-zero** and **Paris Agreement** goals to limit warming to **below 2°C** (preferably 1.5°C).

What are Key Findings of the Global Wind Report 2025?

- **Wind Power Installation:** In 2024, **117 GW** of new wind capacity was added globally, up slightly from **116.6 GW in 2023**, bringing total global capacity to **1,136 GW**.
- **Regional Performance:** **China** led the global wind market in 2024, contributing **70% of new capacity**, followed by the **United States, Brazil, India, and Germany** as the other top markets.
 - **Uzbekistan, Egypt, and Saudi Arabia** have emerged as success stories, as onshore wind capacity in **Africa and the Middle East** doubled in 2024 compared to previous years.
 - Only **8 GW** of **offshore wind** capacity was installed globally in **2024**, marking a **26% drop from 2023**.
- **Challenges:**
 - **Policy and Regulatory Issues:** Instability in key markets, delays in **project permitting**.
 - **Infrastructure Gaps:** Underinvestment in **grid upgrades**.
 - **Financial and Market Pressures:** Inflation and **high interest rates**, trade protectionism and ineffective renewable energy auction systems
- **Need to Scale-up:** At **COP28 Dubai**, nations committed to **tripling renewable capacity by 2030**, with **wind installations** needing to reach **320 GW annually**.
 - **Without this scale-up**, efforts to limit warming to **1.5°C** may fail, missing a crucial climate window.

What is the Status of Wind Energy in India?

- **Total Wind Power Capacity:** As of 31st March 2025, India has achieved a **cumulative** installed wind power capacity of **50.04 GW**.

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- In FY 2024–25, India added **4.15 GW** of wind power capacity, up from **3.25 GW** in FY 2023–24.
- **Global Standing:** India ranks **4th globally** in terms of total installed wind power capacity, trailing only **behind China, the United States, and Germany.**
- **State-wise Distribution:** As of 2025, the top wind energy-producing states in India are **Gujarat, Karnataka, and Tamil Nadu.**
- **Domestic Manufacturing Capacity:** India boasts a robust **wind turbine manufacturing** industry with an annual production capacity of about **18,000 MW.**
- **Offshore Wind Energy Potential:** The **National Institute of Wind Energy** estimates that **Gujarat** has **36 GW** and **Tamil Nadu** about **35 GW** of offshore wind energy potential.

Renewable Energy



India is the world's third largest producer of renewable energy.

Targets



- Achieve net zero carbon emissions by **2070**
- Produce **5 Million Tonnes** of green hydrogen by **2030**
- **57** Solar Parks aggregate capacity of **39.28 GW**
- Wind Energy offshore target of **30 GW** by **2030**

Installed capacity of renewable sources of energy in India



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What are Challenges in Wind Energy Production in India?

- **Land Acquisition Complexities:** Each wind turbine requires **7–8 acres** for rotors larger than **150 metres in diameter**, and slow land-use conversion from **agricultural land to non-agricultural status** causes major delays in large projects.
- **Non-modernized grid:** High-potential wind sites in Rajasthan, Gujarat, and coastal Tamil Nadu **lack transmission infrastructure**, raising energy costs due to **distance from demand centers**.
- **Policy Inconsistencies:** **Withdrawal** of incentives like **Accelerated Depreciation** and **Generation-Based Incentives** has created uncertainty.
 - **Differences** in policies across states regarding **tariffs, power purchase agreements**, and approvals hinder uniform development.
 - The upfront costs for wind projects (**turbines, installation, and grid connection**) are substantial and smaller developers often struggle to secure funding.
- **Supply Chain Challenges:** While India has a domestic manufacturing capacity of **5,200 MW for towers and 8,000 MW for gearboxes**, **blade availability** remains a concern, leading to significant **imports**.
 - Reliance on imported components, especially from **China**, raises concerns about **supply chain stability** and **cybersecurity**.
- **E-waste Problem:** Disposal of outdated components like **control systems, inverters, and batteries** is challenging due to **hazardous materials** like **lead, cadmium, and mercury**.
 - **Wind turbine blades**, made of **composite materials**, further complicate **recycling** and contribute to **e-waste** issues.

Annual Survey of Services Sector Enterprises

Why in News?

The **Ministry of Statistics and Programme Implementation** released findings from a pilot study on

the **Annual Survey of Services Sector Enterprises**, aimed at filling **critical data gaps** in India's **incorporated service sector**, which is **not covered** by existing surveys like the **Annual Survey of Unincorporated Sector Enterprises**.

- It covered those service sector enterprises which are registered under **Companies Act and Limited Liability Partnership Act**.
- It found that **82.4% enterprises** were **Private Limited Companies**, followed by **Public Limited Companies (8%)** and **LLPs (8%)**.

What is the Importance of Services Sector Enterprises for India?

- **Contribution to GDP:** In **FY 2024-25**, the services sector contributed approximately **55%** to India's Gross Value Added (GVA), up from **50.6%** in **FY14**.
 - It sustained strong growth at **7.6% in FY24**, showcasing its **resilience amid global challenges**.
- **Employment Generation:** The sector employs approximately **30% of India's workforce**, encompassing industries such as **information technology, finance, healthcare, education, tourism, and retail**.
- **Global Trade:** During April-December 2024, India's services exports stood at **USD 280.94 billion**.
 - In **telecommunications, computer, and information services**, India accounts for **10.2%** of global exports, ranking as the **2nd-largest exporter** in this category.
- **Foreign Direct Investment (FDI):** From April 2000 to December 2024, the services sector attracted **USD 116.72 billion in FDI**, constituting about **16% of India's total FDI inflows** during this period.
- **Integration with Other Sectors:** The '**servicification**' of industry, or the growing integration of services like **design, logistics, and after-sales support** into manufacturing processes, has boosted **productivity and added value** to the industrial sector.
- **Critical for Urbanization & Digital India:** The expansion of **FinTech and digital payments**, is critical for the success of **Digital India**.
 - The **Smart Cities Mission** also depends on this sector for services like **urban mobility, waste management**, and **e-governance**.

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What are the Challenges Faced by the Services Sector in India?

- **Skill Gaps & Workforce Readiness:** The [Economic Survey 2023-24](#) indicates that **only 51.25%** of India's youth are considered **employable**, possessing the skills needed to meet the rapidly **evolving demands of the industry**.
 - According to [WEF](#), **only 5%** of India's workforce, the youngest and largest in the world, is recognized as **formally skilled**.
- **Informal Employment Dominance:** In 2017-18, around **78%** of services sector jobs were **informal**.
 - **Gig workers** (Swiggy, Ola, Uber) **lack** social security such as **health insurance, retirement funds, or paid leave**.
- **Global Competition & Protectionism:** IT sector faces **visa restrictions** (e.g., H-1B rejections by US), rise of **competing hubs** (e.g., Philippines (BPO), Vietnam (IT)), and **declining cost advantage** (e.g., Indian IT wages rose 8-10% annually on an average).
- **Infrastructure Gaps:** Larger units are **yet to fully adopt AI and ML**, which are essential for enhancing connectivity and customer engagement.
 - A majority of [MSME](#) units in rural areas, run by women, SC-ST and other marginalized groups, **do not have access to basic digital tools**.
- **Post-Pandemic Vulnerabilities:** Inbound tourism in India is **still recovering** from the pandemic, with **foreign tourist arrivals at 90% of 2019 levels** in the first half of 2024.

India's Struggles with Supporting Deep-Tech Startups

Why in News?

A study commissioned by the **Office of the Principal Scientific Advisor (PSA)** has revealed that India's **public-funded Research and development (R&D) ecosystem** offers limited support to **deep-tech** start-ups.

What is Deep Tech?

- **About:** It refers to technology based on significant scientific or engineering advancements, often requiring extensive research and development.
 - Examples of Deep Tech include **AI, quantum computing, biotechnology, and robotics**. These innovations address complex problems and have the potential to drive major economic and societal changes.
- **India's Initiatives Related to Deep Tech:**
 - [Deep Ocean Mission](#)
 - [National Quantum Mission](#)
 - [IndiaAI Mission](#)
 - [National Research Foundation](#)
 - [Startup India](#)
 - [India Semiconductor Mission](#)

What are the Key Findings of the Study on R&D Organizations' Support for Startups?

- **Limited Support for Deep Tech Start-Ups:** Only 1 in 4 public-funded R&D organizations provide incubation support for start-ups, and **just 1 in 6 focus on deep-tech startups**.
 - Only 15% of the institutions collaborated with foreign industry partners, limiting global exposure and technology co-development.
- **Low External Collaboration:** 50% of labs do not open their facilities to external researchers or students, limiting cross-pollination of ideas and knowledge-sharing.
- **Skewed Budget Utilization:** Central government expenditure on R&D was Rs 55,685 crore in 2020-21, but when excluding strategic sectors (**defence, space, atomic energy**), the spending on non-strategic sectors amounted to Rs 24,587 crore.
 - Only **one-fourth of participating institutions spent 75–100% of their budget** on actual R&D activities.
 - Many labs under the [Council of Scientific and Industrial Research \(CSIR\)](#), [Indian Council of Medical Research \(ICMR\)](#), Ministry of AYUSH, and [Department of Science and Technology \(DST\)](#) reported R&D spending below the median level.

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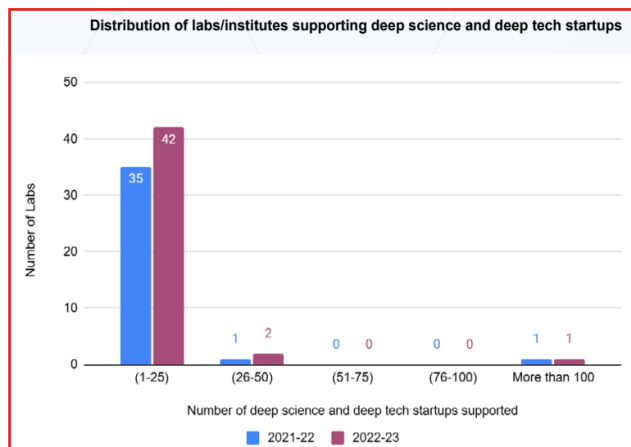


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Why Does India Struggle to Support Deep Tech Start-Ups?

- **Skewed Focus on Low-Tech Consumer Services:** The majority of Indian start-ups cater to **consumer-facing sectors** such as food delivery, logistics, and fintech.
 - This trend is driven by short-term profitability and low entry barriers, in contrast to the **capital-intensive and high-risk nature** of deep tech areas like semiconductors, robotics, and space tech.
 - Venture capital in India heavily favours **fast-scaling sectors** like e-commerce, edu-tech, and digital payments.
- **Underwhelming R&D Investment:** India's gross expenditure on R&D is only **0.64% of GDP**, far below global leaders like China (2.43%).
 - Most of this spending is concentrated in **strategic sectors** (defence, space, atomic energy) that are **not accessible** to private start-ups, restricting innovation spillovers.
- **Lack of Risk-Tolerant Capital:** Deep-tech ventures often operate in **pre-revenue stages for extended periods** due to the complexity of their technologies. They need substantial upfront investment in lab facilities, **Intellectual Property** protection, and a skilled workforce.
 - Lack of predictable, long-term funding **deters entrepreneurs from entering high-risk, high-reward sectors** like AI, **semiconductors**, and **space tech**.
- The **Startup India Seed Fund** and other schemes provide early-stage funding, but **fail to meet the sustained capital needs** of deep-tech ventures.
- **Insufficient Institutional Collaboration:** A lack of robust industry-academic partnerships leads to gaps in **applying research outcomes to real-world solutions**, particularly in emerging technologies like AI, **quantum computing**, and **biotechnology**.
 - The absence of industry collaboration limits the ability of research labs to develop scalable and market-ready innovations.
- **Infrastructure Bottlenecks:** Many of India's public-funded R&D labs lack the facilities necessary for incubating and nurturing deep-tech start-ups.
 - High-tech startups often require reliable **digital infrastructure**, energy, and lab access, which remain limited in **Tier II and III cities**, where most new startups are emerging.
- **Brain Drain of Research Talent:** Due to the underfunded and less conducive ecosystem in India, many talented researchers in **fields like AI, robotics, and semiconductors** opt to move to countries like the US and Europe, where opportunities and funding are more readily available.
 - Additionally, the **lack of advanced skills** in emerging technologies like quantum computing and AI, further weakens the deep-tech ecosystem.
- **Policy and Regulatory Complexity:** In 2024, the **IndiaAI Mission** was approved to promote indigenous AI capabilities. However, it wasn't until 2025 that the government selected Bengaluru-based startup **Sarvam to develop India's first homegrown Large Language Model (LLM)**.
 - This decision was largely reactive to **China's rapid AI advancements**, highlighting India's delayed recognition of deep-tech sectors like AI as crucial for national innovation and digital sovereignty.
 - Additionally, India lacks a **dedicated compliance framework** tailored for deep-tech ventures. Navigating bureaucratic red tape, securing intellectual property, and accessing lab facilities remain challenging, discouraging serious investment in innovation.

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International Relations

Highlights

- Strengthening G20's Effectiveness
- Foreign Aid and India
- Strengthening India-West Asia Ties

Strengthening G20's Effectiveness

Why in News?

The **G20**, often hailed as the “premier forum for international economic cooperation,” faces criticism for its **lack of global representation**. Its exclusive membership **undermines its credibility** and effectiveness in addressing global issues.

- With **South Africa** chairing the **G20** in **2025**, there is growing **support for reforms** to make the forum more **inclusive and globally representative**.

What is the Significance of G20?

- **About:** The G20 was founded in **1999** after the **Asian financial crisis** as a forum for the **Finance Ministers** and **Central Bank Governors** to discuss **global economic and financial issues**.
- **Evolution:** The G20 was **elevated** to the **leaders' level** after the **2007–08 financial crisis** and declared the **top forum** for global economic cooperation in **2009**.
 - While it began with a focus on macroeconomics, its agenda now covers **trade, health, climate change, and more**.
- **Membership:** Its membership includes **19 national economies** and the **European Union (EU)** and **African Union (AU)**. **India** became a member of the **G20** in the year **1999**, when the group was **established**.
 - **Other countries** can be invited as “**special guests**” on an **ad hoc** basis.
- **Structure and Governance:** The **G20** operates under a **rotating presidency** with annual summits and functions **without a permanent secretariat**.

- The **troika system** (current, past, and incoming presidents) manages the **G20** work, with the **2025 troika** consisting of **South Africa** (current), **Brazil** (past), and the **US** (incoming 2026 president).
- **Global Influence:** Represents **67%** of the global population, **85%** of world GDP, and **75%** of global trade.
 - International organizations like the **International Monetary Fund (IMF)**, **World Bank**, **Organisation for Economic Co-operation and Development (OECD)**, and **World Trade Organization (WTO)**, along with representatives from some **UN entities**, participate in **G20 meetings**.
- **Key Outcomes of G20 over the Years:**
 - **Global Alliance Against Hunger and Poverty:** Launched at the 2024 G20 Summit in Rio de Janeiro, Brazil, the initiative aims to reach **500 million people through cash transfer programs** and to provide **150 million school meals** to children by 2030.
 - **India-Middle East-Europe Economic Corridor (IMEC):** The **IMEC**, launched during the **G20 Summit in New Delhi**, seeks to strengthen **trade, economic relations, and regional integration** between India, the Middle East, and Europe.
 - **Global Biofuels Alliance (GBA):** It was launched at the **G20 Summit** in New Delhi, India, with the goal of promoting adoption of **sustainable biofuels**.
 - **Global Minimum Corporate Tax:** In 2021, at the **G20 Summit in Rome**, G20 leaders formally endorsed a **15% global minimum corporate tax**, aiming to **curb tax avoidance** by multinationals and foster a **fairer global economy**.
 - **Digital Economy Action Plan (2017):** Enhanced cooperation on **digital trade**, cybersecurity, and data governance.

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- **Basel III Norms:** At the 2010 Seoul Summit, G20 leaders adopted **Basel III norms** to tighten banking regulations.
- **Framework for Strong Growth (2009):** Coordinated **fiscal stimulus** and banking reforms post-crisis, **stabilizing the financial system**.
 - **Debt Service Suspension Initiative (2020)** offered **debt relief** to poor countries during Covid-19, aiding recovery.
- **Climate Change Action Plan (2010):** Promoted **low-carbon growth**, influencing the **2015 Paris Agreement**.

G20

Founded in 1999 after Asian financial crisis to discuss global economic and financial issues

No permanent secretariat

Members: 19 countries, The European Union (EU) and The African Union

Permanent Guest: Spain

G20 Summit: Takes place annually

2023 Presidency: India (**Theme:** One Earth, One Family, One Future)

Sherpas: The agenda and work are coordinated by them as the representatives of the G20 countries

Troika: The Presidency is supported by the Troika (previous, current and incoming Presidency)



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What are the Limitations of the G20?

- **Lack of Representation:** The G20 is a self-selected group comprising **19 countries, the EU, and the African Union**, excluding over **90% of the world's nations**, which may participate only as occasional "special guests."
 - It has **no mandate** to represent the entire **international community** (193 UN member states plus non-members).
 - **Non-member** countries can only **participate** if invited as "**special guests**", making the forum **exclusive and unrepresentative**.
- **Exclusivity in Decision-Making:** The G20's **informal structure and lack of permanent secretariat** make it difficult to engage with non-member countries. Its decisions **affect the entire world, yet most nations are not directly involved** in the deliberations.
 - Despite ensuring continuity, the **troika system lacks enforcement power**, making the G20 more of a **discussion forum** than an action-driven body.
- **Global Challenges Require Global Solutions:** Issues such as **climate change, pandemics, and economic inequality** demand broad global cooperation.
 - The G20's **narrow membership limits** its capacity to form **inclusive solutions** that reflect the interests of all nations.
 - Global cooperation is declining as rich nations cut **official development assistance (ODA)** and major economies favor exclusive G20 forums over inclusive UN platforms.
 - **Wealthy nations dominate** the G20, **sidelining poorer countries' concerns** on aid and climate finance, deepening global inequality.
- **Divergent Priorities:** Developed countries prioritize **advanced technology, climate transitions, and geopolitical stability**, while developing nations focus on **poverty alleviation, access to resources, and economic growth**.
 - This disparity in priorities leads to disagreements on issues like **climate financing, trade liberalization, and equitable resource allocation**.
- **Geopolitical Rivalries:** Political tensions between countries like the **US and China**, or conflicts involving

Russia and Israel, create barriers to consensus-building, often shifting focus away from collaborative problem-solving.

Foreign Aid and India

Why in News?

US President Donald Trump's decision to impose a 90-day freeze on foreign assistance, halting **United States Agency for International Development (USAID)** personnel from disbursing aid globally, has sparked discussions on the role of **foreign aid and its impact on India**.

What is USAID?

- **About:** The **USAID** was established in **1961** as an **independent agency** to **unify** all US efforts in providing **civilian foreign aid and development assistance**.
- **Objectives:** It aims to **promote democratic values** and contribute to a **free, peaceful, and prosperous world**.
 - It also aims to **advance US national security and economic prosperity** through **international development initiatives**.
- **Coverage:** It operates in **over 100 countries** around the world. The top countries the USAID engages with are **Ukraine, Ethiopia, Jordan, Somalia, Congo (Kinshasa), Afghanistan, Nigeria, Syria, Yemen and South Sudan**.
 - In **2024**, USAID accounted for 42% of all humanitarian aid tracked by the **United Nations**.
- **Key Sectors of Engagement:** USAID works across multiple development sectors, including **economic development, global health, education, food security, humanitarian assistance, climate change, and democracy and governance**.
- **Major Flagship Programs:** President's Emergency Plan for AIDS Relief (PEPFAR) aims at preventing **Human Immunodeficiency Virus (HIV)** infections, and saves lives.
 - **Power Africa** aims to **expand access to electricity** across Africa
- **USAID's Engagement in India:** India's association with USAID began in **1951** with the **India Emergency Food Aid Act**, evolving over decades from **food aid to infrastructure, capacity building, and economic reforms**.

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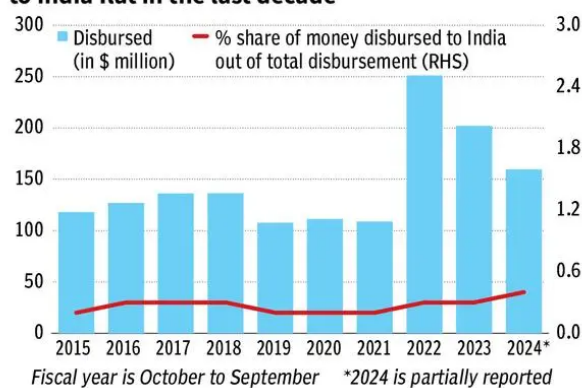
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- As per the **Ministry of Finance**, **USAID** funded **seven projects** worth **USD 750 million** in **2023-24**, focusing on **agriculture and food security, water, sanitation, and hygiene (WASH), renewable energy, disaster management, and health**.
 - USAID supported **Swachh Bharat Abhiyan** by enabling **toilet access for 3 lakh people** and helping **25,000 communities** become **open defecation free**, while also promoting **WASH practices** in rural areas.
- USAID has saved over **2 million children in India since 1990** by **reducing deaths** from pneumonia and diarrhoea. It supported education through the **Padhe Bharat Badhe Bharat initiative** and trained over 61,000 teachers.
 - It has also strengthened rural healthcare via support for HIV/AIDS (under PEPFAR), maternal health, and disease surveillance.
 - Programs like Feed the Future enhanced crop yields, post-harvest practices, and **climate-resilient farming** for smallholders.
- USAID supports India's **Conference of Parties (COP) 26** goals through initiatives in solar energy, forest conservation, and disaster resilience.
 - For example, it partnered with the Ministry of Environment, Forest and Climate Change (MoEFCC) on **Forest-PLUS 3.0** to restore forests, aid farmers, and assist conservationists.

India's health unhurt

Share of USAID disbursements to India flat in the last decade



How will the Freeze on USAID Affect India?

- **Health Sector:** USAID allocated **USD 79.3 million** to India's **health initiatives** in 2024, and its **suspension** may slow **pandemic recovery** and **health infrastructure** progress.
- **Economic Development:** USAID contributed **USD 34.4 million** in 2024 to support poverty alleviation and sustainable livelihoods in India. A halt in funding could slow progress in poverty reduction and disrupt livelihood programs.
- **Loss of Flexible Funding:** Unlike rigid **government grants**, **USAID aid** offers **flexibility** for grassroots needs; its **withdrawal** may limit **NGOs' innovation** and response to **local challenges**.
- **Hamper Capacity Building:** Foreign funding has historically supported **capacity building, skill development, and global best practices**; its **suspension** may stall **knowledge transfer** and weaken **NGOs' global linkages**.
- **Unemployment and Project Disruptions:** Many NGOs rely on **foreign aid** to hire **trained professionals** and run **social development projects**; its **halt** could cause **job losses**, stalled **new initiatives**, and **incomplete programmes**.
- **Weakening of Accountability Role:** Foreign-aided NGOs often act as **watchdogs**, challenging **government overreach** and **market excesses** to protect the **marginalised**; reduced **financial independence** may weaken their voice and **policy advocacy**.

How has India's Relationship with Foreign Aid Evolved?

- **Early Dependence:** Post-Independence, India sought aid to **bridge development gaps and reduce poverty**, with most assistance coming from Western nations, especially between **1955 and 1965**.
- **Decline in Official Aid (Post-1970s):** From the 1970s, India focused on self-reliance through policies like the **Green Revolution and industrialization**. This led to a steady decline in **Official Development Assistance (ODA)**.
 - The **Foreign Contributions Regulation Act, 1976 (FCRA)** imposed **restrictions** on foreign aid to NGOs, reflecting the government's **suspicion of foreign**

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aid as a potential source of foreign influence in domestic affairs.

- **Shift Towards FDI and Global Cooperation (Post-1990):** Liberalization shifted India's focus to **Foreign Direct Investment (FDI)** and economic growth.
 - FDI grew at a **Compounded Annual Growth Rate (CAGR)** of **19.05%** pre-liberalization and **24.28%** post-liberalization, indicating liberalization's positive impact on FDI. **Since 1991**, FDI inflows in India have **increased** by over **165 times**.
 - India continues to receive foreign aid for targeted sectors like **health, education, and rural development**, especially through NGOs.
 - India prioritized global partnerships in **trade, climate, and technology** over foreign aid, focusing on **sustainable development**.
- **Transition from Aid Recipient to Donor (Post 2020s):** India allocated **USD 6,750 crore** in the 2025 Budget as aid to developing countries, mainly in **Asia and Africa**.
 - It uses aid strategically to **counter** regional powers like **China**, as seen in the **USD100 million credit to Maldives (2022)**, and accepts bilateral aid only from key partners to safeguard sovereignty.
 - India focuses on **capacity building** through programmes like **Indian Technical and Economic Cooperation Programme**, and plays a key humanitarian role, exemplified by **Vaccine Maitri**, which sent **Covid-19** vaccines to 95 nations.

What are India's Concerns with Foreign Aid?

- **Sovereignty and Policy Interference:** Foreign funds often come with **policy prescriptions** (e.g., **patent reforms**, environmental regulations) that may conflict with India's domestic priorities.
 - Donors like **USAID** or **World Bank** may push **structural adjustment programs**, impacting **subsidy regimes** (e.g., farm laws, food security).
- **Threat to Internal Security:** The **FCRA** was tightened in **2020** to curb misuse by NGOs, amid concerns over foreign-funded groups like **Greenpeace** and **Amnesty** fueling protests (e.g., **anti-Kudankulam, farm laws**)

and the risk of funding **separatist** or **anti-national** activities (e.g., **Khalistan** groups).

- **Diplomatic Leverage:** Foreign aid can influence India's **geopolitical stance** (e.g., **Russia-Ukraine war, Quad vs. BRI**), and over-reliance on **Western aid** may affect India's **strategic autonomy** in **Global South** forums.
- **Cultural Imperialism:** Foreign-funded NGOs may promote ideologies (e.g., **LGBTQ+**, **evangelicalism**) conflicting with Indian traditions, while aid programs may prioritize **donor interests** (e.g., **climate adaptation** over **poverty alleviation**).
- **Lack of Transparency and Accountability:** Absence of standardized reporting mechanisms has led to public mistrust and inefficiencies in aid utilization.

Strengthening India-West Asia Ties

Why in News?

West Asia holds major **strategic and economic importance** for India under the '**Link West**' policy. India's deepening ties with the countries like **UAE, Saudi Arabia, Iran, and Israel** reflect its strategic shift to secure **energy, enhance trade**, and assert its **role in West Asian geopolitics**.

How is West Asia Geographically Classified?

- **West Asia** is a subregion of **Asia**, located **West of Central and South Asia, South of Eastern Europe, and North of Africa**.
 - It is bordered by major water bodies including the **Mediterranean Sea, Persian Gulf, Red Sea, Caspian Sea, and the Gulf of Oman**.
- The region comprises **18 countries**, with key subregions like the **Arabian Peninsula** (e.g., **Saudi Arabia, UAE**), the **Fertile Crescent** (e.g., **Iraq, Syria**), the **Caucasus** (e.g., **Armenia, Azerbaijan**), and **Anatolia** (Turkey).
- Home to around **283 million people**, the region is geopolitically significant due to its vast **oil reserves**, particularly in the Arabian Peninsula.
 - **Saudi Arabia**, with 35 million people, has the region's largest economy, while **Bahrain** is the smallest by population.

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India's Look West Policy:

- Launched in 2005, it aims to enhance India's political, economic, and security cooperation with West Asia, focusing on energy security, trade, and regional stability, while maintaining neutrality in regional political conflicts.
- India views the Gulf as part of its extended neighbourhood, with Iran being a key part of its proximate neighbourhood, emphasizing geographic, economic, and cultural ties.

What is the Significance of West Asia for India?

- **Energy and Economic Ties:** West Asia is vital for India's energy security, supplying nearly 50% of its crude oil. With over 40% of global natural gas reserves and more than 50% of global oil reserves, the region is crucial for India's oil-dependent economy.
 - Iraq, a key oil supplier, was India's fifth-largest trading partner in 2021–22, while Qatar, providing 41% of India's natural gas imports, plays a vital role in India's security strategy.

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- The **UAE is India's 3rd largest trading partner**, with trade bolstered by the CEPA, while Saudi Arabia ranks 4th, formalized through the 2019 Strategic Partnership Council.
- **Connectivity & Trade Corridors:** West Asia is key to enhancing India's strategic connectivity. Initiatives like the **India-Middle East-Europe Economic Corridor (IMEEC)** connect India to Europe, countering **China's Belt and Road Initiative**.
 - The **International North-South Transport Corridor (INSTC)** links India to Central Asia and Russia via Iran's **Chabahar Port**, supporting India's Central Asia policy.
 - Vital maritime chokepoints like the **Strait of Hormuz** and **Bab el-Mandeb** ensure secure trade and energy flow for India.



- **Security & Counterterrorism Cooperation:** West Asia is vital for India's defense, security, and counterterrorism cooperation. India has strengthened ties with nations like **Saudi Arabia and the UAE in defense, IT, and counterterrorism efforts**.
 - The **rising missile and drone threats from Yemen's Houthi rebels** underscore the **region's security vulnerabilities**, as demonstrated by the recent **Red Sea Crisis**.

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- India's joint military exercises, **Desert Cyclone** with the UAE and **Naseem Al Bahr** with Oman, underscore its **deepening strategic ties and enhanced interoperability** with key Gulf partners.
- **Balanced Multilateral Diplomacy:** India-Israel cooperation spans **defence, cybersecurity, agriculture, and water management**.
- India's participation in **mini-lateral initiatives** like **I2U2** (India, Israel, UAE, US) reflects its focus on **interest-based coalitions**.
- India's continued engagement in **Afghanistan** through **infrastructure, education, and humanitarian aid** supports its regional stability objectives, countering **China and Pakistan's influence** in the region.
- **Diaspora and Remittance:** West Asia is home to over **9 million Indian expatriates**, whose remittances play a vital role in supporting India's economy.
- In 2021, India received around **USD 87 billion** in remittances, with a major share coming from **Gulf Cooperation Council (GCC)** countries.
- Additionally, the large Indian diaspora enhances India's **soft power** and **socio-cultural engagement** in the region. Eg: **BAPS Hindu Temple in Abu Dhabi** is the first traditional Hindu stone temple in the Middle East.

What are the Challenges to India-West Asia Relations?

- **Limited Economic Ties:** Although efforts have been made to expand economic relations, trade between India and West Asia remains relatively limited compared to other regions.

- For instance, in **2019**, India's **total trade with West Asia** accounted for only **7.5%** of its global trade.
- **Geopolitical Tensions:** West Asia is a **politically volatile region**, and India faces the challenge of navigating these **complex geopolitical dynamics**, such as maintaining ties with both **Israel and Palestine**, as well as managing strategic relationships with regional rivals like **Iran and Saudi Arabia**.
- Also, political instability in several West Asian countries, including **Syria, Iraq, and Yemen**, has had a **negative impact on India's strategic and economic interests** in the region.
- **Competition with Other Major Powers:** India's interests in West Asia are influenced by the competing interests of global powers, particularly **China**, which has been increasing its regional influence.
- India's interests in West Asia are shaped by the growing presence of global powers, particularly **China**, which has expanded its regional influence through **strategic investments in infrastructure and ports**, such as the development of the **Jebel Ali Port in the UAE** and **partnerships in Oman's Duqm Port**, posing a challenge to **India's own maritime and economic outreach in the region**.
- **Energy Diplomacy Issues:** West Asia supplies a **significant share of India's crude oil and natural gas**, making it vital to India's energy security.
- **Geopolitical instability or conflict** in the region could disrupt supplies, impacting India's economy.
- While India is steadily **transitioning to renewable energy, maintaining stable traditional energy ties with West Asia** remains crucial during this transition phase.



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Social Issues

Highlights

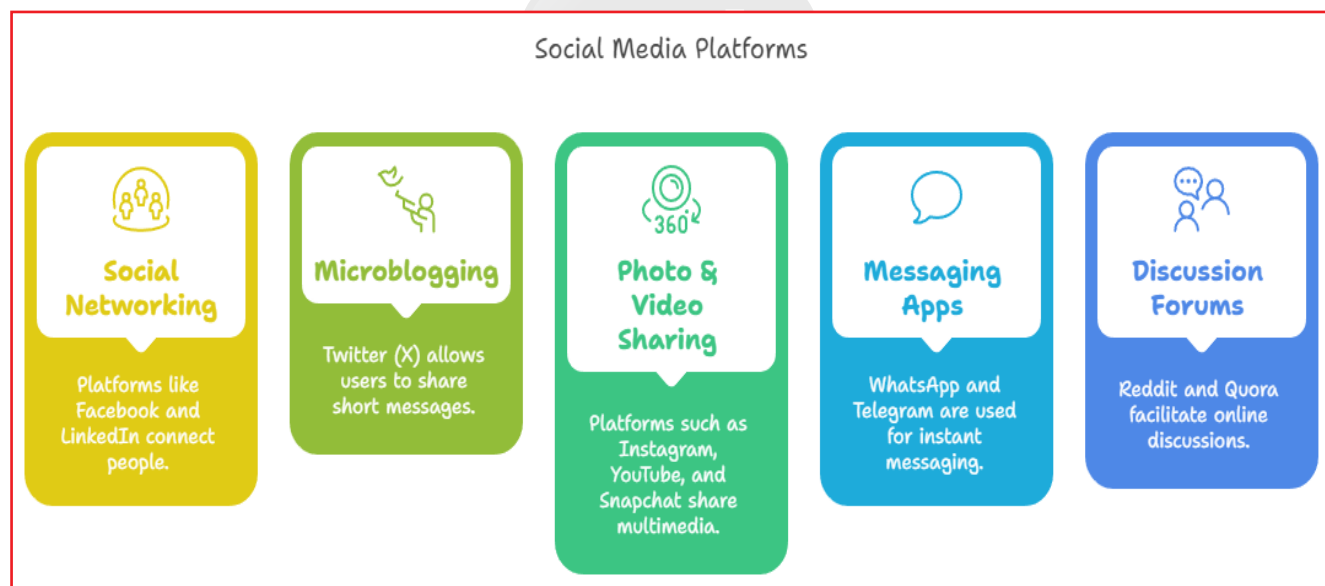
- Impact of Social Media on Young People
- Participation of Women in Cooperatives
- What is the Significance of Cooperatives in Women Empowerment?

Impact of Social Media on Young People

Why in News?

The rise of **social media** has brought to light the **growing concerns** over its **impact on youth identity** and **mental health**. As young people's sense of self becomes **increasingly linked to online validation**, issues like **anxiety** and **distorted self-image** are on the rise, prompting a need for reflection on its role in shaping lives.

What is the Significance of Social Media?



- **Impact on Indian Society:** Social media challenges **traditional media monopolies** by allowing citizens to share **real-time news and opinions**, holding authorities accountable as seen during **Covid-19** when doctors used Twitter to highlight oxygen shortages.
 - Governments and politicians use social media for direct public engagement, policy announcements, grievance redressal, and political promotion, as observed during the **Lok Sabha elections 2024** in India.
 - Social media amplifies marginalized voices, fueling movements like the **MeTooIndia (2018) campaign** where women exposed harassment across sectors.
- **Social Media Impact on Indian Economy:** Social media drives India's **digital economy**, supporting small businesses, startups, **gig workers**, and influencers. For example, home chefs, artisans, and influencers use platforms like WhatsApp catalogs to sell products.

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- The creator economy, led by YouTube and Instagram influencers, grew from **962,000 in 2020 to 4.06 million in 2024, now supporting 8% of the workforce.**
- India's creative economy, valued at **USD 30 billion in 2024, and contributes 2.5% to GDP.**
 - Following **WAVES 2025**, the government launched a USD 1 billion fund to support creators with capital, skill development, and global access.
- Social media supports startups, crowdfunding, and economic diversification, fueling the e-commerce boom.
 - For example, Patanjali and boAt gained global visibility through strategic marketing.
- It also promotes digital payments and the **formalization of the economy**, as seen with WhatsApp Pay simplifying transactions.

How is Social Media Regulated in India?

- **Laws Governing Social Media in India:**
 - **Information Technology Act, 2000:** It is the principal law for **electronic governance** and communication, including **social media**.
 - **Section 79(1)** grants **intermediaries** (like social media platforms) **liability exemption** for third-party content, provided they only offer access and don't control or alter the content.
 - **Information Technology (Intermediary Guidelines and Digital Media Ethics Code) Rules, 2021:** It requires **social media platforms** to ensure **online safety** by **removing inappropriate content** and **educating users** on **privacy, copyright, defamation, and national security**.
 - The **2023 Amendment** requires **online intermediaries** like **Facebook** to remove false content about the Indian government, but the **Supreme Court** recently paused its implementation.
- **Judicial Stand:**
 - **Shreya Singhal v. Union of India (2015):** **Section 66A** of the **Information Technology Act, 2000** was struck down by the **Supreme Court** for being vague, upholding **freedom of expression** on social

media and ruling that **criticism, satire, or dissent** can't be criminalized for hurting feelings unless it falls under the reasonable restrictions listed in Article 19(2)

- **K.S. Puttaswamy v. Union of India (2017):** It declared **privacy** a fundamental right under **Article 21** of the Constitution, influencing the push for **data protection laws** like the **Digital Personal Data Protection Act, 2023 (DPDP Act)**, and **WhatsApp privacy and Aadhaar norms**.

What Concerns are Associated with Social Media?

- **Mental Health Deterioration:** Mental health risks from social media include **anxiety, depression, and loneliness**, fueled by the pressure for constant validation, **Fear of Missing Out (FOMO)**, and comparisons to idealized lives.
 - The **performance culture** suppresses **real emotions**, making it harder for young people to express vulnerability and seek help.
- **Ethical Concerns:** Social media **distorts identity**, especially among youth, by encouraging **curated self-presentation for public approval**.
 - Instead of developing an **authentic sense of self in private**, young users often shape their identities around what gains likes and followers. This constant need for validation blurs the line between **who they truly are and who they present themselves to be**, leading to confusion, anxiety, and emotional distress.
 - This, coupled with **filter bubbles**, leads to users being exposed to more extreme views, **reinforcing negative behaviors and limiting diverse perspectives**.
 - **Filter bubbles** occur when algorithms show content based on a **user's preferences**, limiting exposure to diverse viewpoints and **reinforcing existing beliefs**.
- **Parental Disconnect:** Most adults lack the tools or awareness to understand the **digital ecosystem** their children navigate.
 - Teens create **fake Instagram accounts** to hide their activity from parents, and which can make them **more secretive and disconnected**.

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- **Child Exploitation:** Children (**child influencers**) are being used by adults to generate **content and income**, exposing them to **external validation**, **adult scrutiny**, **performance pressure**, and identity confusion before they reach **emotional maturity**.
- **Cyberbullying or Trolling:** **Cyberbullying** and exploitation involve **anonymous harassment**, **hate comments**, **deepfake** abuse, and child grooming, where predators target young influencers.

Participation of Women in Cooperatives

Why in News?

Despite India being one of the **largest cooperative movements in the world**, with approximately 8.5 lakh cooperatives, **women-only cooperatives still account for only 2.52%** of the total, according to a **NITI Aayog report** (2023).

- The **UN** has declared **2025** as the **International Year of Cooperatives** with the theme **“Cooperatives Build a Better World,”** launching it globally in 2024 India.

What are Cooperative Societies?

- **About:**
 - A cooperative society is a **voluntary, member-owned organization** designed to meet common economic, social, and cultural needs through self-help, mutual assistance, and community welfare, distinct from profit-driven enterprises.
- **Evolution of the Cooperative Movement:**
 - **Pre-Independence Era:**
 - Informal cooperatives like **Chit Funds** and **Nidhis** existed; formalized through the **Cooperative Credit Societies Act, 1904** and expanded by the **Cooperative Societies Act, 1912** to include marketing and artisan societies.
 - **MacLagan Committee (1914)** recommended a **three-tier cooperative banking system**, shaping the structural framework for cooperative finance.
 - **Post-Independence Era:**
 - Strengthened through **Five-Year Plans**, the establishment of the **National Cooperative**

Development Corporation (NCDC) (1963) and **NABARD (1982)** enhanced rural credit and cooperative development.

Legal and Constitutional Backing:

- Key legislations include **Multi-State Cooperative Societies Act (MSCS) (1984 & 2023)**, National Policy on Cooperatives (2002), and the **97th Constitutional Amendment (2011)** granting cooperatives constitutional recognition and protection.

Recent Developments:

- The **Ministry of Cooperation**, established in **2021**, emphasizes the government's commitment to enhancing cooperative societies as key contributors to economic progress.

Types of Cooperatives:

- **Consumers' Cooperatives:** Provide goods at fair prices by eliminating middlemen (e.g., Kendriya Bhandar).
- **Producers' Cooperatives:** Support small producers with inputs like raw materials and tools.
- **Marketing Cooperatives:** Facilitate collective sale of produce to ensure better prices (e.g., **Amul**).
- **Credit Cooperatives:** Offer credit and banking services, including rural and urban cooperative banks. (e.g., **Urban Cooperative Banks (UCBs)**).
- **Farming Cooperatives:** Promote collective farming benefits for small landholders. (e.g., **Primary Agricultural Credit Societies (PACS)**).
- **Housing Cooperatives:** Enable affordable housing through land pooling and shared development (e.g., Employees' Housing Societies).

Current Status of Cooperatives in India:

- **India's Position:** India accounts for **27% of global cooperatives**, with 20% of its population as members, above the global average of 12%.
- **Top 3 sectors:** **Housing** (24%), **dairy** (17.7%), and **PACS** (13%), accounting for **over 54%** of all the cooperatives in the country.
- **Leading States:** Maharashtra (alone accounts for **over 25%** of the country's cooperatives), Gujarat, Telangana, Madhya Pradesh and Karnataka.

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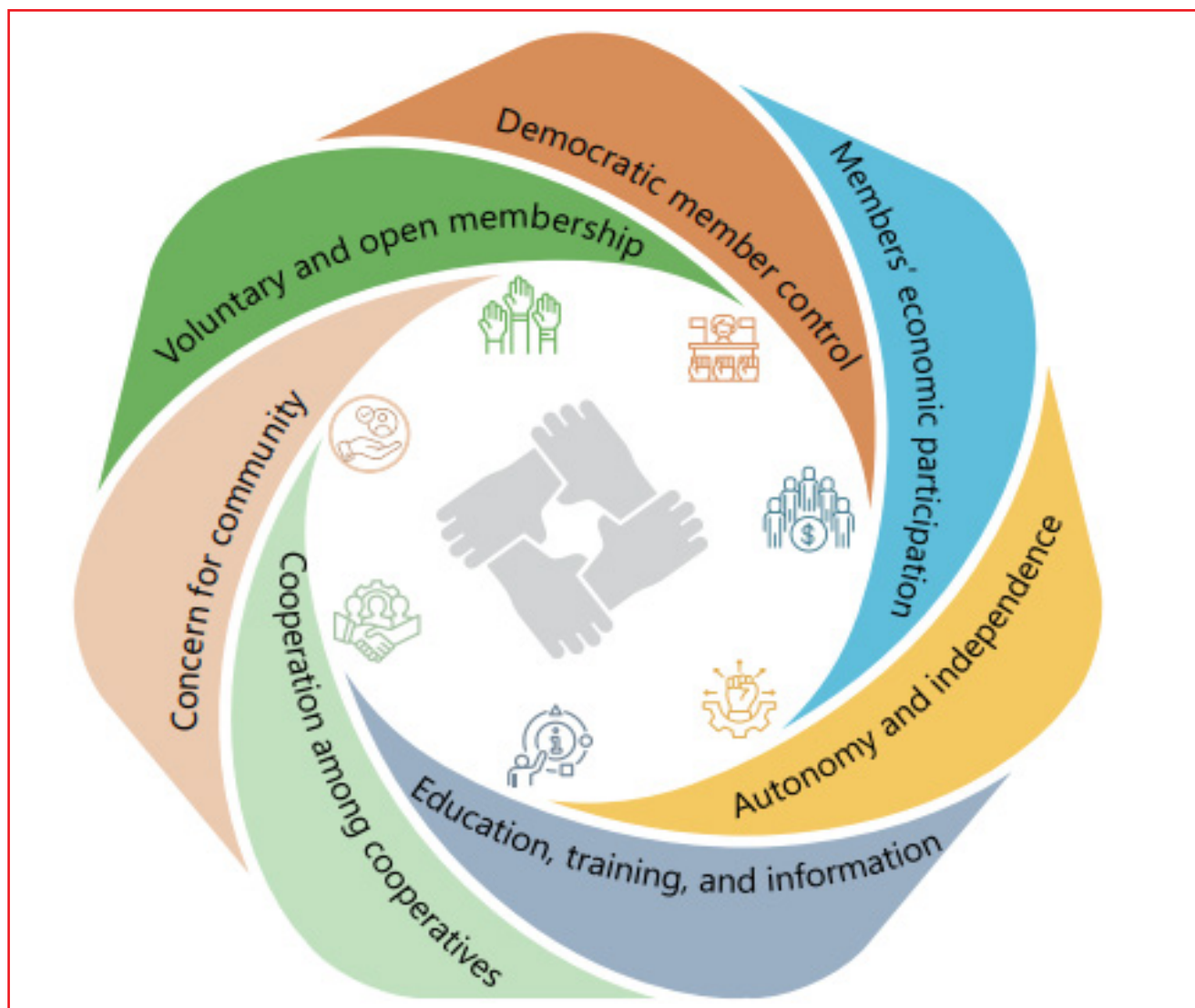
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➤ Principles of Cooperatives:



Read More: [Cooperatives and Their Evolution in India](#)

What is the Significance of Cooperatives in Women Empowerment?

➤ Pathway to Socio-Economic Empowerment:

- Cooperatives provide rural women with **low-threshold entry into income-generating activities**, accessible livelihood options, fair pricing, skill development, and inclusive governance, addressing economic exclusion and enhancing socio-economic resilience.
- Successful models like **Self-Employed Women's Association (SEWA)** (3.2 million informal women workers), **Amul** (3.6 million women dairy farmers), and **Lijjat Papad** (45,000+ home-based producers) illustrate how

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cooperatives foster both **economic self-reliance** and **social upliftment** for women.

- **Inclusive Leadership and Historical Recognition:**
 - Despite significant roles in informal cooperatives like *kuries* and *bhishis* in Kerala and Maharashtra, women's contributions remain under-recognized in formal cooperative narratives.
 - Cooperatives can help integrate women into **value chains** as **workers, producers, and decision-makers**, thus ensuring equitable benefit-sharing and access to markets.
- **Access to Services & Financial Inclusion:**
 - Women's cooperatives enhance access to **credit, banking, insurance, housing, healthcare, and education**, bridging service delivery gaps in underserved areas.
 - They also build **financial literacy and entrepreneurial capacity**, enabling women to manage savings, investments, and small enterprises effectively.
- **Social Capital and Community Resilience:**
 - Cooperatives foster **trust, reciprocity, and shared responsibility**, helping women build **resilience against socio-economic challenges**, particularly in rural or **disaster-prone areas** with limited institutional support.

What are the Key Government Initiatives For Empowering Women Cooperatives?

- **Amendment of the MSCS Act, 2023** mandates **2 seats for women** on the boards of multi-state cooperatives, ensuring gender equality and decision-making participation.
- **Model Bye-Laws for PACS** mandates **women directors** on the boards of over **1 lakh PACS**, ensuring women's representation in grassroots cooperative management.
- **NCDC** initiatives such as **Swayam Shakti Shahakar Yojna** provides **working capital loans** to women SHGs for access to bank credit and **Nandini Sahakar** offers **term loans** with **interest subvention** of up to **2%** to women cooperatives for business activities.

- **Collaboration Between NABARD, NDDB, and State Governments** to focus on enhancing cooperatives in rural areas, including:
 - Establishment of **Multipurpose PACS, Dairy, and Fishery Cooperatives** in Panchayats.
 - **Cooperation Among Cooperatives** pilot project in Gujarat, empowering women in **Dairy Cooperatives** by designating them as **Business Correspondents/Bank Mitras** and providing **Rupay KCC cards**.

What are the Challenges Faced by Women's Cooperatives in India?

- **Structural Constraints:**
 - Around **50% of women's cooperatives in India are dormant** due to inadequate institutional support, poor financial linkages, lack of training, and limited market access. Most remain small, underfunded, and struggle with sustainability, visibility, and producing market-ready, quality products.
- **Time Poverty and Unpaid Labour:**
 - According to the Time Use Survey (2024), **women spend 16.4% of their day on unpaid domestic work**, while **men spend only 1.7%**. This disproportionate burden limits women's ability to participate in paid or cooperative work.
- **Lack of Skills & Underrepresentation:**
 - Women in rural cooperatives face major challenges due to **low literacy, limited education**, and lack of skills in business, technology, and marketing. This hampers their **participation, leadership, and productivity**.
 - **Poor market access** and location in marginalised areas further weaken cooperatives' viability.
 - In mixed cooperatives, **women hold only 26% of membership positions**, and even **fewer leadership roles** limiting their influence on decision-making and strategic planning.
- **Cultural and Social Norms:**
 - Deep-rooted patriarchy and gendered expectations often curtail women's autonomy, especially in rural areas. **Limited mobility, societal scrutiny, and lack of confidence** hinder their sustained participation.

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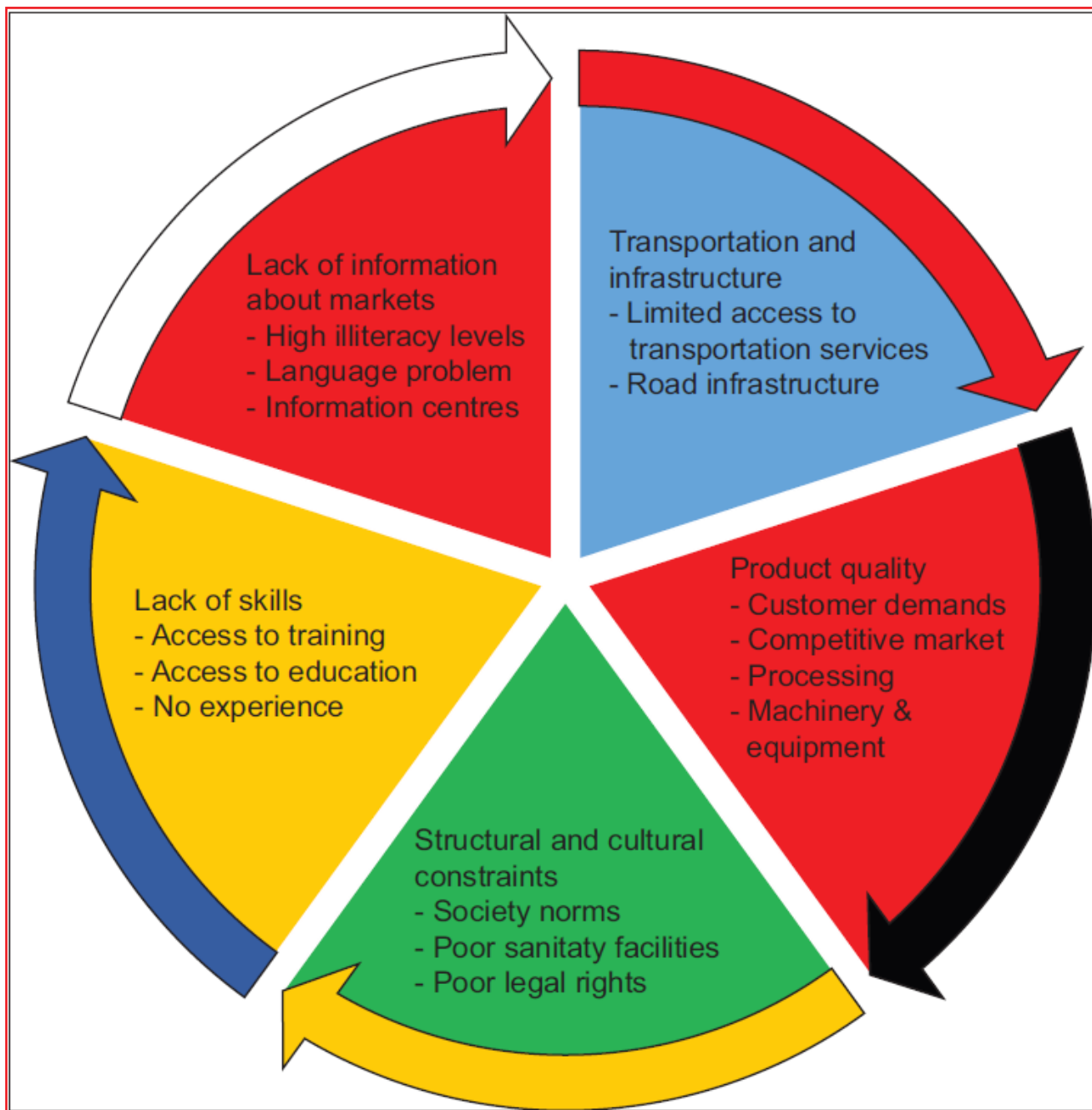


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Science & Technology

Highlights

- Evolution of India's Space Program
- Semaglutide for Fatty Liver Treatment
- Natural Hydrogen
- Lack of Access to Antibiotics Against CRGN

Evolution of India's Space Program

Why in News?

The **Global Space Exploration Summit (GLEX) 2025**, held in **New Delhi** under the theme **"Reaching New Worlds: A Space Exploration Renaissance."** The Prime Minister emphasized that **India's space programme** goes beyond **scientific discovery**—serving as a tool to **empower citizens** and drive **economic and social development**.

- In another development, the **European Space Agency (ESA)** emphasised on collaboration with **India** and is open to working together on **larger and uncharted areas** of space exploration.

Global Space Exploration Summit (GLEX)

- **About:** GLEX aims to promote **international cooperation** in **space exploration** by encouraging the exchange of **programmatic, technical, and policy information**.
 - It was jointly organized by the **International Astronautical Federation (IAF)**, the **Indian Space Research Organisation (ISRO)** as the host, and the **Astronautical Society of India (ASI)** as the co-host.
 - **IAF (1951)** is a leading global **non-governmental organization (NGO)** that brings together all stakeholders in the field of space activities featuring **astronauts** including **Rakesh Sharma** (India's first astronaut), including **space agencies** such as **ISRO, ESA, and Roscosmos**.

- **Purpose:** The conference facilitates discussions on **collaborative solutions, shared challenges, lessons learnt, and the way forward** for all **spacefaring nations**.

How does India's Space Program Evolve Overtime?

- **Humble Beginnings (1960s–1970s):** In **1963**, the first **sounding rocket** (US made **Nike-Apache**) was launched from the **Thumba** in **Kerala**, focusing on **basic atmospheric studies** and establishing foundational infrastructure.
- **Building Indigenous Capabilities (1980s–1990s):** India developed the **SLV (Satellite Launch Vehicle)** and **INSAT series** for **communication** and **weather monitoring**, along with the **IRS (Indian Remote Sensing satellites)** to support **agriculture, water management, and disaster response**.
 - The early focus was on **self-reliance** and **development-driven space technology**.
- **Entering the Global Arena (2000s–2010s):** In **2008**, India launched **Chandrayaan-1**, its **1st lunar mission** and became successful in first attempt ahead of several global powers (e.g., **US Pioneer** and **USSR Luna**: Both were **launch failure in 1958**), and helped discover **water molecules** on the Moon.
 - In **2014**, **Mangalyaan** (Mars Orbiter Mission) made India the **1st country** to reach **Mars** on its first attempt.
 - In **2023**, **Chandrayaan-3** landed near the **Moon's South Pole**, and in **2024**, India successfully docked two satellites in orbit under the **SpaDeX mission**.

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ISRO LAUNCH VEHICLES

BACKGROUND

First rocket developed by ISRO - SLV (Satellite Launch Vehicle)

Successor of SLV - Augmented Satellite Launch Vehicle (ASLV)

Polar Satellite Launch Vehicle (PSLV)

About

- The **Workhorse of ISRO**
- 3rd gen, 4-Stage launch vehicle (1st, 3rd stages - solid fuel; 2nd, 4th stages - liquid fuel)

Capacity

- Delivers earth-observation/remote-sensing satellites
- Used to launch satellites of lower mass (~1400 Kg)

4 Variants:

- PSLV-CA PSLV-QL PSLV-DL PSLV-XL

Launches Satellites in

- Low inclination LEO Sub-GTO GTO

Important Launches

- First successful launch - October 1994
- Chandrayaan-1 (2008)
- Mars Orbiter Spacecraft (2013)

PSLV is 1st Indian launch vehicle to be equipped with liquid stages



Geosynchronous Satellite Launch Vehicle (GSLV)

About

- 4th Gen, 3-staged launched vehicle
- Much more powerful rocket, carries satellites much deeper into space
- Has an indigenous Cryogenic Upper Stage

Capacity

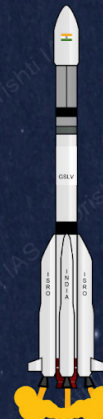
- Delivers communication-satellites
- Carries heavier satellites (~2200 kg to GTO)
- Carries 10,000-kg satellites to LEO

Launches Satellites in

- Primarily Geosynchronous Transfer Orbit (GTO) (~36000 Km altitude)

Important Launches:

- Chandrayaan-2 Upcoming Gaganyaan



Launch Vehicle Mark-III

About

- Aka **GSLV Mk-III**
- 3-stage launch vehicle (2 solid propellant and 1 core stage comprising liquid and cryogenic stages)

Capacity

- 4,000-kg of satellites into GTO
- 8,000 kg of payloads into LEO

Launches Satellites in

- GTO Medium Earth orbit (MEO)
- LEO Missions to moon, sun

Mk-III versions have made ISRO entirely self-sufficient in launching its satellites



Small Satellite Launch Vehicle (SSLV)

About

- Developed specifically for small and micro-satellites

Capacity

- Satellites up to 500 kg

Launch Limit

- 500 km planar orbit (LEO) from Satish Dhawan Space Centre



- **Global Outreach (2010s–2020s):** In 2017, India launched **104 satellites** using **PSLV-C37** in a single mission.
 - India offered launch services to **34 countries**, boosting its global space role, with initiatives like the **South Asia Satellite** and upcoming **G20 Satellite Mission**.
- **Future Ambitions (2020s–2040s):** The **Gaganyaan mission** is under development to send Indian astronauts into space, with planned missions to the **Moon (2040)**, **Mars**, and **Venus**.
 - The **Bharatiya Antariksh Station** (possibly by **2035**) will enable permanent research in low Earth orbit.
- **Rise of the Private Sector:** Over **250 space startups** now exist, driving innovation in **propulsion systems** and **imaging and satellite technology**. E.g.,
 - **Skyroot Aerospace** launched **Vikram-S** (India's first private rocket) in **2022**.

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- **Agnikul Cosmos** inaugurated India's first private space launch pad at Sriharikota in 2022.

How India's Space Programme Promote Economic and Social Development?

- **Public Service Delivery:** ISRO's satellite data supports schemes like **SVAMITVA**, which provides rural landowners with **property cards**, **reducing disputes** and **boosting credit access**.
 - It also aids **e-KYC via Aadhaar (linked to ISRO's geospatial data)** to ensure targeted delivery of subsidies like **LPG** and **MNREGA** wages.
- **Agriculture & Food Security:** ISRO's **FASAL** (Forecasting Agricultural Output using Space, Agro-meteorology & Land-based observations) program uses satellite data to **predict crop yields**, **reducing price volatility** and aiding food distribution.
 - **Bhuvan-Krishi** provides soil maps for precision farming.
 - Resourcesat-2 helps in monitoring disasters like **locust attack** by observing changes in **vegetation health**.
- **Disaster Management:** Satellites like **INSAT-3D/3DR** track cyclones, enabling timely evacuations.
 - For **flood and drought monitoring**, the **National Agricultural Drought Assessment and Monitoring System (NADAMS)** system uses satellite data to assess drought conditions and guide relief fund allocation.
- **Bridging the Digital Divide:** **GSAT** satellites provide broadband connectivity to remote and tribal areas, enhancing access to **education**, **telemedicine**, and **e-governance** services in underserved regions.
- **National Security:** The **GSAT-7** series supports communication for the Indian Armed Forces, while **Cartosat satellites** assist in **border surveillance**, enhancing **defense preparedness** and national sovereignty.
 - **NavIC** (Navigation with Indian Constellation) provides **encrypted signals and data for precision-guided weapons** for military platforms (aircraft, ships, missiles, and ground forces).

What are Key Issues Related to India's Space Sector?

- **Budgetary Constraints:** India allocates just **0.04% of its GDP** to space, significantly lower than the **0.28%** spent by the US.
 - With **ISRO's budget at USD 1.95 billion** compared to NASA's **USD 25 billion**, India faces limitations in funding large-scale projects, infrastructure, and R&D investments.
 - E.g., **Reusable Launch Vehicle (RLV-TD)** tests were **delayed** due to limited funds.
- **Import Dependencies:** India's space program faces **persistent reliance on imports** for advanced sensors, and semiconductors.
 - **Indigenous innovation** is slow and underfunded, as evidenced by the delayed development of the **cryogenic CE-20 engine**.
- **Growing Space Debris:** India lacks **effective debris mitigation strategies**, with over **114 Indian-origin objects** classified as **space debris** in orbit.
- **Security Vulnerabilities:** India lacks **space-based early warning systems** against **hostile countries** posing threat to India's space assets, integrated surveillance, and robust **ASAT** capabilities.
 - Its **military use of space** remains limited, especially when compared to the dual-use dominance of **China** and the **US**.
- **Drain of Skilled Workforce:** India faces a significant **outflow of talent** due to better infrastructure and opportunities abroad.
 - While top **Indian-origin scientists** contribute to global missions, India struggles with **STEM retention**.
- **Limited Commercial Presence:** India's share in the global space economy is only **2–3%**, despite having cost-effective and reliable launch systems like **PSLV**.
 - **Commercialization** and **contract acquisition** lag behind competitors like **SpaceX**.
- **Geopolitical Competition:** China's rapid advancements, such as the **Tiangong Space Station** and **BeiDou**, overshadow India's regional influence.
 - Additionally, India's lack of **space diplomacy** and **dual-use tech strategies** puts it at a disadvantage in the global space race.

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What is ISRO'S Collaboration with Foreign Space Agencies?

- **Roscosmos (Russia):**
 - **Gaganyaan Mission:** Russia helped in training Indian astronauts for the **Gaganyaan** human spaceflight mission.
 - **Launch Vehicle Technology:** India and Russia have collaborated on **spacecraft technologies**, including **cryogenic engines** and **crewed mission support**. E.g., **Rakesh Sharma**, first Indian citizen, to travel to space aboard the Soviet spacecraft **Soyuz T-11**.
- **NASA (USA):** **NISAR (NASA-ISRO Synthetic Aperture Radar)** is a joint project between NASA and ISRO that will **map the entire globe every 12 days**, offering consistent data on **ecosystems, ice mass, vegetation, sea level rise, groundwater**, and natural hazards like **earthquakes, tsunamis, volcanoes, and landslides**.
 - Both are also working for **training and sending astronauts** to the **International Space Station (ISS)** under the **Axiom 4 mission**.
- **JAXA (Japan):** **LUPEX (Lunar Polar Exploration)** is a joint mission by ISRO and JAXA aimed at exploring the **Moon's polar regions**, specifically targeting **permanently shaded areas** to investigate the presence of **water** and assess the potential for a **sustainable long-term lunar station**.
- **CNES (France):** **Megha-Tropiques (2011)** is a joint **Indo-French joint satellite mission** launched for the study of the **tropical atmosphere and climate** related to aspects such as **monsoons, cyclones**, etc.

Semaglutide for Fatty Liver Treatment

Why in News?

A new study found that **semaglutide** (used in **weight-loss and diabetes drugs** like **Ozempic and Wegovy**) is also effective in treating **fatty liver disease**, also known as **Metabolic Dysfunction Associated Steatohepatitis (MASH)**.

What is Semaglutide?

- **About:** Semaglutide is a **glucagon-like peptide-1 (GLP-1) receptor agonist**. It is primarily used to manage type 2 diabetes and obesity.
 - Semaglutide mimics the action of **GLP-1**, a hormone that helps **lower blood sugar levels** by increasing **insulin secretion** in response to meals, **inhibiting glucagon release**, and **delaying gastric emptying**.
- **Side Effects:** Semaglutide is associated with **common side effects** such as **nausea, vomiting, diarrhea, constipation, and abdominal discomfort**.
 - It is **contraindicated (not medically advised)** for individuals with a **personal or family history of medullary thyroid cancer** or **Multiple Endocrine Neoplasia type 2**.

What is Non-Alcoholic Fatty Liver Disease?

- **About Fatty Liver Disease:** Fatty liver disease (**hepatic steatosis**) is the buildup of **excess fat in liver cells**.
 - It becomes **unhealthy when fat exceeds 5% of liver cells (hepatocytes)**, affecting liver function and metabolism.
 - It is of 2 types- **NAFLD (Non-Alcoholic Fatty Liver Disease) & Alcoholic Fatty Liver Disease (AFLD)**.
- **Non-Alcoholic Fatty Liver Disease (NAFLD) or Metabolic Dysfunction-Associated Steatotic Liver Disease (MASLD):** **Metabolic Dysfunction-Associated Steatotic Liver Disease (MASLD)** (earlier known as **NAFLD (Non-Alcoholic Fatty Liver Disease)**) is a condition where fat accumulates in the liver **without excessive alcohol intake** and may cause serious liver damage over time.
 - Its prevalence in India is estimated at **9–32%**.
 - **4 Stages of MASLD:**
 - **Non-Alcoholic Fatty Liver (NAFL):** Fat builds up in the liver **without causing damage or inflammation**, usually leading to **mild discomfort** from an enlarged liver.
 - **Non-Alcoholic Steatohepatitis (NASH) or Metabolic Dysfunction-Associated Steatohepatitis (MASH):** A more serious form with **liver inflammation, scarring, and links to heart and kidney issues**. Around **25%** may progress to **cirrhosis or liver cancer**.

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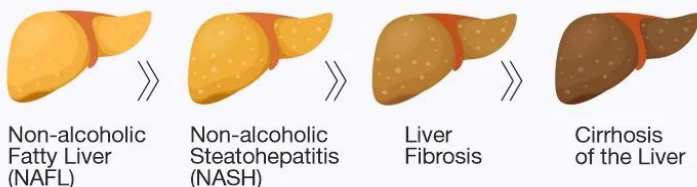
- **Fibrosis:** Long-term inflammation creates scar tissue in the liver, which affects its ability to function.
- **Cirrhosis:** The most severe stage with permanent liver scarring, shrinking, and possible liver failure or cancer.

Types of Fatty Liver



The types of fatty liver disease can be categorised as follows:

1 Non-alcoholic Fatty Liver Disease (NAFLD)



2 Alcoholic Fatty Liver Disease (AFLD)



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- **Alcoholic Fatty Liver Disease (AFLD):** AFLD, or alcoholic steatohepatitis, is caused by **excessive alcohol intake** ($\geq 40\text{g/day}$ in males, $\geq 20\text{g/day}$ in females), leading to **fat accumulation in the liver**.
 - Alcohol metabolism in the liver generates **toxic compounds** that damage liver cells, trigger **inflammation**, and impair natural defences.
- **Treatment for Fatty Liver Disease:** The primary treatment is **weight loss** through diet, exercise, or medication.
 - **GLP-1 Receptor Agonists:** These medications **aid in weight loss** by regulating gut hormones that control appetite and fat storage.
 - **Resmetirom:** A **thyroid hormone-based drug** that specifically **targets liver fat**, though it is costly.
 - **FGF21 Drugs:** These drugs focus on **adipose tissue** to **reduce fat accumulation** and enhance metabolic health.
 - **Tirzepatide:** A **dual-action medication** that promotes **weight loss**, assists in **diabetes management**, and shows **potential benefits** in treating sleep apnea.

What are India's Key Initiatives to Promote Healthy Lifestyle?

- [Eat Right Mela](#)
- [Fit India Movement](#)
- [Eat Right Station Certification](#)
- [Mission Poshan 2.0](#)
- [Poshan Vatikas](#)
- [Unified India Organic](#)

Natural Hydrogen

Why in News?

Natural hydrogen, a potentially clean, abundant, and low-cost energy source, is gaining global attention as a game-changer in the transition to green energy.

What are Key Facts About Natural Hydrogen?

- **About:** Natural hydrogen, also called **geologic hydrogen** or **white hydrogen**, refers to **hydrogen gas (H_2)** that is **naturally produced** and stored in the Earth's crust.
 - Unlike manufactured hydrogen (from fossil fuels or renewables), **natural hydrogen is produced geologically**—raising hopes for a **sustainable energy revolution**.
- **Formation:** Natural hydrogen **exists freely underground**, and formed through **natural geological processes** like-
 - **Serpentinisation:** Reaction of **water with iron-rich rocks**.
 - **Radiolysis:** Splitting of water by **radioactive rocks**.
 - **Organic Decomposition:** From **deep burial of organic matter**.

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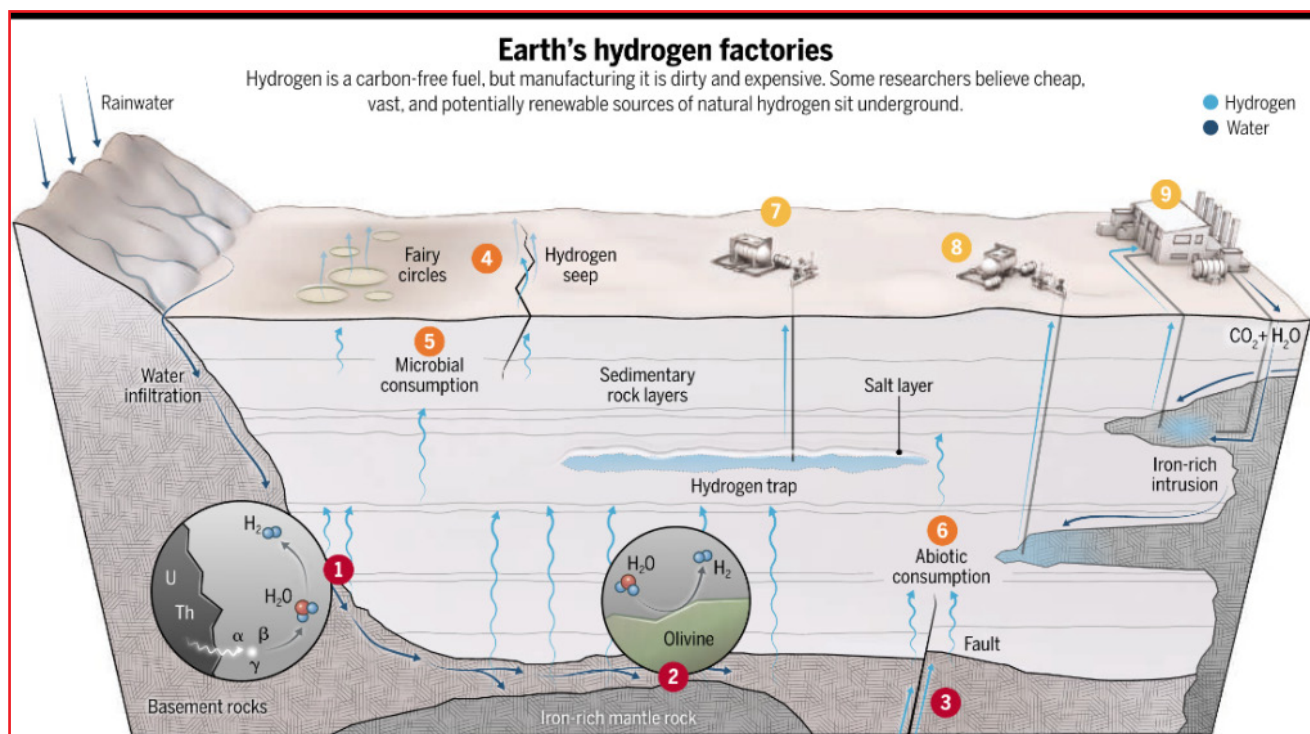


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Generation

1 Radiolysis

Trace radioactive elements in rocks emit radiation that can split water. The process is slow, so ancient rocks are most likely to generate hydrogen.

2 Serpentinization

At high temperatures, water reacts with iron-rich rocks to make hydrogen. The fast and renewable reactions, called serpentinization, may drive most production.

3 Deep-seated

Streams of hydrogen from Earth's core or mantle may rise along tectonic plate boundaries and faults. But the theory of these vast, deep stores is controversial.

Loss mechanisms

4 Seeps

Hydrogen travels quickly through faults and fractures. It can also diffuse through rocks. Weak seeps might explain shallow depressions sometimes called fairy circles.

5 Microbes

In shallower layers of soil and rock, microbes consume hydrogen for energy, often producing methane.

6 Abiotic reactions

At deeper levels, hydrogen reacts with rocks and gases to form water, methane, and mineral compounds.

Extraction

7 Traps

Hydrogen might be tapped like oil and gas—by drilling into reservoirs trapped in porous rocks below salt deposits or other impermeable rock layers.

8 Direct

It might also be possible to tap the iron-rich source rocks directly, if they're shallow and fractured enough to allow hydrogen to be collected.

9 Enhanced

Hydrogen production might be stimulated by pumping water into iron-rich rocks. Adding carbon dioxide would sequester it from the atmosphere, slowing climate change.

- **Discovery:** In 1987, a borehole in **Bourakébougou, Mali**, revealed a mysterious flame—later found to be **98% pure hydrogen** in 2012.
 - Major discoveries in **France (Lorraine & Moselle)** revealed **92 million tonnes** of hydrogen (**half of global production**).
- **Major Reserves:** **Hydrogen seeps** have been documented in more than 10 countries, including **Australia, the USA, France, South Korea, Canada, and Spain**.
- **India's Natural Hydrogen Potential:** India's geological structures make it a **high-potential zone** for natural hydrogen:
 - **Ultramafic and mafic rocks, ophiolite belts, and greenstone formations.**
 - **Sedimentary basins** in Vindhyan, Cuddapah, Gondwana, and Chhattisgarh.
 - **Hydrothermal systems** and hot springs signal possible underground generation
- **Potential Impact:** If only **2%** of global geological hydrogen is **recoverable**, it could match **twice the energy of all known natural gas reserves** and meet global hydrogen demand for **200 years**.

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- **Cost Efficiency:** Production cost is estimated at **USD 1/kg or less, cheaper** than both **green and grey hydrogen**.
 - A global “**hydrogen rush**” is underway, with companies exploring natural hydrogen rising from **10 in 2020 to 40 in 2023**.

Note: Hydrogen makes up about **75% of the universe's mass**, but only **0.5–1.0 ppm (parts per million)** of Earth's atmosphere. In Earth's crust, it accounts for **0.75% by weight**.

What is Green Hydrogen?

Click Here to Read: [Green Hydrogen](#)

Lack of Access to Antibiotics Against CRGN

Why in News?

A study published in *The Lancet Infectious Diseases* reveals that only **7.8% of patients in India with carbapenem-resistant Gram-negative (CRGN) infections** received the appropriate **antibiotic** treatment, highlighting a severe lack of access to effective **treatments for multidrug-resistant infections**.

What are the Key Findings of the Study Regarding Antibiotic Access?

- **Limited Access to Appropriate Antibiotics:** A study of nearly 1.5 million CRGN infection cases across eight **low- and middle-income countries (LMICs)**, including India, reveals that in 2019, out of nearly **10 lakh CRGN infections in India, fewer than 1 lakh patients** received appropriate antibiotics.
 - Only **7.8% of patients in India received the correct treatment**, slightly above the 6.9% average across the eight studied LMICs (Bangladesh, Brazil, Egypt, India, Kenya, Mexico, Pakistan, and South Africa). The lack of proper treatment resulted in an estimated 3.5 lakh deaths.
- **Barriers to Effective Treatment:** The study identified several barriers, including insufficient diagnostic testing,

lack of standardised treatment protocols, and issues with antibiotic supply and affordability.

- **Recommendations:** The study calls for a two-pronged approach: preserving antibiotics through responsible use and **ensuring access for those in need**.
 - It calls for strengthening antibiotic stewardship programs and regulatory frameworks.
 - It advocated for bridging the access gap to ensure that all patients receive the correct treatment.

What is the Carbapenem-Resistant Gram-Negative (CRGN)?

- **Definition:** CRGN refers to a group of bacteria that are **resistant to carbapenem antibiotics**, which are typically used as a last line of defense against multi-drug resistant infections.
 - These bacteria are classified as **Gram-negative**, meaning they do not retain the **crystal violet dye during the Gram staining procedure**, which is used to classify bacteria based on their cell wall structure.
 - Examples of CRGN infections include those caused by *Escherichia coli*, *Klebsiella pneumoniae*, and *Pseudomonas aeruginosa*.
- **Mechanisms of Resistance:** The resistance occurs because these bacteria have developed mechanisms to break down or **evade carbapenem antibiotics**, often through the production of enzymes called **carbapenemases**.
- **CRGN Infections:** CRGN infections can cause serious conditions such as pneumonia, bloodstream infections, and urinary tract infections.
 - These infections are challenging to treat due to the resistance to antibiotics.
- **Public Health Threat:** CRGN infections are difficult to treat and are associated with **high morbidity and mortality rates**.
 - The lack of effective antibiotics to treat these infections can lead to prolonged hospital stays, increased healthcare costs, and higher death rates.

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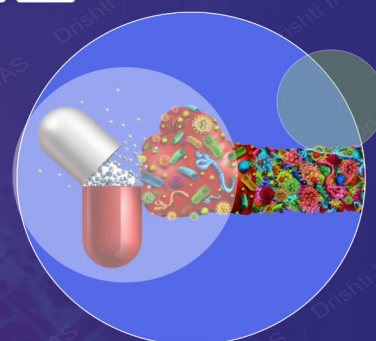
Gram Staining

- **Bacteria:** These are **unicellular microorganisms classified as prokaryotes, lacking a true nucleus**. They have a simple structure, including a cell wall, capsule, deoxyribonucleic acid, pili, flagellum, cytoplasm, and ribosomes.
 - Bacteria can be classified as **gram-positive or gram-negative based** on their cell wall composition.
- **Gram Staining:** The Gram stain procedure distinguishes between **Gram positive and Gram negative** groups by coloring these cells red or violet.
 - **Gram-positive bacteria stain violet** due to their thick cell wall, which retains the crystal violet stain.
 - In contrast, **Gram-negative bacteria stain red** because their thinner wall allows the crystal violet to wash out during decoloring.

ANTIMICROBIAL RESISTANCE



The ability of microorganisms to resist the effects of antimicrobial drugs



CAUSES OF ↑ AMR

- Poor infection control/sanitation
- Antibiotic overuse
- Genetic mutations of microbe
- Lack of investment in R&D of new antimicrobial drugs

Microbes that develop AMR are called 'Superbugs'

IMPACTS OF AMR

- ↑ Risk of spreading infections
- Makes infections harder to treat; prolonged illness
- ↑ Healthcare costs

EXAMPLE

- Carbapenem antibiotics stop responding due to AMR in *K. pneumoniae*
- AMR *Mycobacterium tuberculosis* causing Rifampicin-Resistant TB (RR-TB)
- Drug-resistant HIV (HIVDR) making antiretroviral (ARV) drugs ineffective

RECOGNITION BY WHO

- Identified AMR as **one of the top 10 threats** to global health
- Launched **GLASS** (Global Antimicrobial Resistance and Use Surveillance System) in 2015

INDIA'S INITIATIVES AGAINST AMR

- Surveillance of AMR in microbes causing **TB, Vector Borne diseases, AIDS etc.**
- **National Action Plan on AMR (2017)** with One Health approach
- **Antibiotic Stewardship Program** by ICMR

New Delhi metallo-β-lactamase-1 (NDM-1) is a bacterial enzyme, emerged from India, that renders all current β-lactam antibiotics inactive



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Environment and Ecology

Highlights

- Role of Indigenous Communities in Biodiversity Conservation
- Microplastic Infiltration in Oceans
- India and the Dynamism of Arctic Region
- Biological Diversity (Access and Benefit Sharing) Regulation, 2025
- Global Call to Ban Chlorpyrifos
- Modern Technology for Sustainable Forest Management

Role of Indigenous Communities in Biodiversity Conservation

Why in News?

Conservation laws globally often exclude **indigenous and local communities (IPLCs)**, sidelining their role in biodiversity protection. In India, the **Forest Rights Act, 2006** was a step towards recognizing IPLC rights, but state-led conservation models still prevail.

- The **challenge remains** to ensure that India's conservation efforts **fully empower IPLCs** in managing and protecting their lands.

What Role does Indigenous Communities Play in Biodiversity Conservation?

- **Preserve Traditional Knowledge:** Indigenous tribes possess generations-old knowledge about **medicinal plants, wildlife behavior, and sustainable resource use**.
 - E.g., The **Kani tribe** (Kerala) uses traditional knowledge to conserve **medicinal plants** in the **Agasthyamalai Biosphere Reserve**.
- **Community-Led Forest Protection:** Many tribal communities protect forests through **sacred groves and community reserves**.
 - E.g., The **Bishnoi community** (Rajasthan) is known for protecting the **Khejri tree** and wildlife like **blackbucks**.
- **Seed Conservation:** Indigenous farming practices preserve **native crop varieties and soil health**.

- E.g., Tribes in **Odisha and Nagaland** practice **jhum (shifting) cultivation** with long fallow periods to maintain **soil fertility**.
- **Coexistence with Wildlife:** Many tribal groups follow cultural traditions that prohibit overhunting and promote **harmony with wildlife**.
 - E.g., The **Soliga tribe** (Karnataka) coexists with tigers and elephants in the **Biligiri Rangana Hills (BRT) Tiger Reserve**.

What are the Key Frameworks in India Recognizing the Role of Indigenous Communities in Biodiversity Conservation?

- **Biological Diversity Act (BDA), 2002:** Through **Biodiversity Management Committees (BMCs)** at the local level, the initiative promotes the **conservation of local plants, animals, and habitats**, while also **documenting traditional knowledge** and fostering an **inclusive approach** to conservation.
- **FRA, 2006: Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act (FRA), 2006** recognizes the **rights of forest dwellers**, including **Adivasis and other traditional forest communities**, over **forest land and natural resources** to manage forests sustainably.
 - The **Gram Sabha** plays a central role in conserving biodiversity by **managing, protecting, and regulating access to community forest resources**, ensuring **sustainable use** and safeguarding the rights of **forest-dwelling communities**.
- **Panchayats (Extension to Scheduled Areas) Act (PESA), 1996:** **PESA, 1996** mandates that **local self-governments** in tribal areas have **control over land**

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and natural resources, including forests and water bodies, thus ensuring local control over conservation practices.

- **Joint Forest Management (JFM):** The [Joint Forest Management \(JFM\)](#) and Eco-development programs involve local communities for forest conservation and sustainable resource use, with IPLCs managing [non-timber forest products \(NTFPs\)](#) and fuelwood to ensure ecosystem sustainability.
- **National Biodiversity Action Plan (NBAP):** The [NBAP](#) promotes **participatory conservation**, involving **tribal communities** in decision-making, respecting **traditional knowledge**, and strengthening **community-based initiatives**.

How Key Global Initiatives have Recognized the Role of IPLCs?

- **Convention on Biological Diversity (CBD):** The [Kunming-Montreal Global Biodiversity Framework \(GBF\)](#), adopted in 2022, emphasizes IPLCs participation.
 - **Target 3** aims to conserve **30% of global land and oceans by 2030** with full respect for **Indigenous rights**.
 - **Target 22** ensures their **access to justice, land tenure, and decision-making participation**.
 - The **COP-16 to the Convention on Biological Diversity (CBD)** established a permanent **Subsidiary Body** to recognize the vital role of IPLCs in **biodiversity conservation**.
- **Nagoya Protocol (2010):** The [Nagoya Protocol](#), adopted in 2010 under the [CBD](#), ensures the **fair sharing of benefits** from genetic resources and promotes respect for **traditional knowledge** of IPLCs.
- **UN Declaration on the Rights of Indigenous Peoples (2007):** It is the most comprehensive international instrument detailing the **rights of indigenous peoples**, setting minimum standards for their **recognition, protection, and promotion**.
 - It covers **individual and collective rights**, including **cultural identity, education, health, and employment**, and promotes **non-discrimination and effective participation** in matters affecting them.

Microplastic Infiltration in Oceans

Why in News?

A recent study published in *Nature* reveals that [microplastics](#) are not just surface pollutants but are now **embedded deep within the ocean**, impacting the **planet's biogeochemical and carbon cycles**.

What are Key Findings of the Study?

- **Microplastic Infiltration:** Microplastics are **widespread across the ocean**, dominating marine ecosystems and **reaching depths of up to 100 metres** in ocean gyres.
 - While **larger plastic fragments** (100 to 5,000 micrometres) were typically concentrated near the **ocean surface**, **smaller particles** were discovered embedded as deep as **100 metres** within ocean gyres.
 - **Gyres**, slow-moving, circular ocean currents, **trap and concentrate plastics**.
- **Quantity:** The **total plastic input from 1950–2015** was estimated at **17–47 million metric tonnes**.
 - Fishing gear made of **nylon and polyester** is a key source of dense plastics like Polyethylene Terephthalate (PET) in the ocean, with over **56 polymer types** detected.
- **Impacts:** The water column, vital for **biogeochemical cycling**, is increasingly affected by **microplastics**, potentially **disrupting** the ocean's **carbon cycle**.
 - **Carbon Cycle Interference:** Plastic pollution adds **external carbon (called allochthonous carbon)** to marine ecosystems, with **microplastic carbon** rising from **0.1% of total particulate organic carbon (POC)** at 30 m to **5% at 2,000 m** in subtropical gyres.
 - It could make marine samples appear **420 years older**.
 - **Biogeochemical Impacts:** Microplastics alter microbial [nitrification](#) and [denitrification](#) and release **metabolites** that **disrupt nutrient cycles**.

What are Microplastics?

- **About:** Microplastics, defined as plastics less than **five millimetres** in diameter, can be **harmful to oceans and aquatic life**.

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- Solar UV radiation, wind, and **ocean currents** break down plastics into **microplastics** (<5 mm) and **nanoplastics** (<100 nm).
- **Classification:**
 - **Primary microplastics:** They are tiny particles made for **commercial use**, like **microbeads**, **plastic pellets**, and **microfibers** from clothing.
 - **Secondary microplastics:** They form when larger plastics like bottles **break down** due to **sunlight** and **ocean currents**.
- **Concerns:** Microplastics can attach to red blood cells, **reducing oxygen transport**, and have been found in **placentas** and **fetal organs**.
 - They can **damage human cells**, and **young children** are especially vulnerable to such exposure.
- **Applications:** It is used in **drug delivery**, **industrial cleaning**, and as **exfoliants** in **personal care products** like scrubs and toothpaste.
- **Regulations Related to Microplastics:**
 - **Global:** **United Nations Environment Programme (UNEP) Plastics Treaty**
 - **India:** **Ban on Single-Use Plastics, Plastic Waste Management Rules, 2016, Plastic Waste Management (Amendment) Rules, 2024.**

India and the Dynamism of Arctic Region

Why in News?

The **Arctic**, a peaceful zone of scientific cooperation, is rapidly emerging as a geopolitical and military frontier, driven by climate change that is opening new sea routes, especially the **Northern Sea Route (NSR)** and triggering commercial interest and military buildup.

How Has the Arctic's Geopolitical Landscape Evolved?

- **Climate Change and Resource Access:** The opening of the NSR, previously passable only during brief summer months, is now a **nearly year-round navigable global trade route**.
 - This increase in maritime traffic is linked to the Arctic's untapped natural resources, including oil, gas, and minerals.
- **Commercialization and Militarization:** Arctic states are reopening old bases, deploying submarines, and showcasing power.
 - The Arctic has attracted commercial and military interests, especially from **Russia** (assertive military deployments), China (expanding Arctic footprint), and the US (renewed focus on Greenland).
 - The region is transitioning from a scientific commons to a geopolitical hotspot, central to global power play.
- **Potential Impact on India:** A militarised Arctic could undermine India's maritime interests by redirecting trade through the NSR, reducing the relevance of Indian Ocean routes.
 - This shift could jeopardize **India's MAHASAGAR (Mutual and Holistic Advancement for Security and Growth Across Regions) Vision** for regional connectivity and weaken its role in the **Indo-Pacific maritime order**.
 - India's strong ties with Russia, especially amid the ongoing **Ukraine conflict**, have raised concerns among Nordic states.
 - These relationships may hinder India's ability to forge closer partnerships with Arctic nations, which are cautious of India's perceived strategic alignment with Russia.

Arctic

- **About:** The Arctic is a region located above the **Arctic Circle, north of latitude 66° 34' N, encompassing the Arctic Ocean** and surrounding lands, with the **North Pole at its center**.
 - This region includes territories of eight Arctic states: Canada, Denmark (Greenland), Finland, Iceland, Norway, Russia, Sweden, and the USA, who together form the **Arctic Council**.
 - The Arctic is home to nearly **4 million inhabitants**, with approximately one-tenth being indigenous peoples.
- **Significance:** It is rich in natural resources, including coal, diamonds, zinc, and rare earth metals, with **Greenland possessing about a quarter of the world's rare earth reserves**.

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- As India is the **3rd-largest energy consumer**, the Arctic's melting ice makes these resources more accessible, potentially addressing **India's energy security needs**.
- Geographically, the Arctic regulates **ocean currents and reflects solar radiation, helping maintain Earth's temperature**.
- **Environmentally**, the Arctic's melting ice is linked to glacial changes in the Himalayas, critical for India's water security.



What is India's Approach Towards the Arctic?

- **Historical Engagement:** India's Arctic engagement began in 1920 with the signing of the **Svalbard Treaty**.
 - The **National Centre for Polar and Ocean Research (NCPOR)**, under the Ministry of Earth Sciences, is the lead agency for India's Arctic studies.
- **Scientific Expeditions:** India's Arctic engagement began in **2007** with its first scientific expedition, focusing on biological sciences, ocean and atmospheric sciences, and glaciology.

- In 2008, India established the **Himadri Research Station** at the **Svalbard Arctic research base**.
 - Himadri is manned for 180 days annually. India has conducted 13 Arctic expeditions since 2007.
- This was followed by the deployment of the **IndArc Observatory in 2014** at Kongsfjorden, marking India's first multi-sensor moored observatory.
- In 2016, India set up its **northernmost atmospheric laboratory** at Gruevabudet, equipped to study clouds, precipitation, pollutants, and atmospheric parameters.
- **Arctic Council:** India became an Observer nation of the Arctic Council in 2013 and has actively contributed to its six Working Groups.
 - India has also engaged with the **Arctic Energy Summit, Arctic Science Ministerial, and meetings of Task Forces**.
- **India's 2022 Arctic Policy:** India's Arctic policy focuses on strengthening scientific, climate, and environmental research, enhancing maritime and economic cooperation.
 - It aims to deepen understanding of **climate change impacts on India's security and economy**, enhance analysis of Arctic ice melt, and explore connections between **polar regions and the Himalayas**.
 - The policy also seeks to foster deeper cooperation with Arctic nations, increase India's participation in the Arctic Council, and improve understanding of Arctic governance and geopolitics.

What are the Gaps in India's Approach Towards the Arctic?

- **Lack of Clear Strategy:** India lacks a long-term strategy addressing the region's **geopolitical and economic importance**. While focused on sustainability, it does not fully address the growing **militarization and geopolitical competition** in the Arctic.
- **Limited Economic Engagement:** India has limited private sector involvement in Arctic business opportunities.

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like resource extraction, shipping, and tourism, leaving its commercial engagement underdeveloped.

- Additionally, India has not capitalized on the NSR, failing to integrate it into its broader economic strategy despite its growing importance due to melting ice and climate change.
- China's growing presence and its **Polar Silk Road initiative** challenge India's Arctic strategy. India's policy needs to address the economic and security implications of China's increasing influence in the region.
- **Underdeveloped Infrastructure Focus:** India has overlooked key opportunities in Arctic infrastructure and shipping connectivity.
 - As Arctic sea routes become more significant, India's limited involvement in infrastructure projects and absence from shipping ventures puts it at a disadvantage in the region's expanding economy.
- **Lack of Indigenous Engagement:** India has not developed clear policies for engaging with indigenous communities, which is crucial for responsible development.
- **Limited Research Focus:** India's research in the Arctic, through Himadri and IndArc, is significant but could expand to include emerging areas like Arctic biodiversity, marine pollution, and climate-induced migration.

Biological Diversity (Access and Benefit Sharing) Regulation, 2025

Why in News?

The **National Biodiversity Authority (NBA)** notified the **Biological Diversity (Access to biological Resources and Knowledge Associated thereto and Fair and Equitable Sharing of Benefits) Regulation 2025** to ensure fair benefit sharing from the use of biological resources.

What are the Key Highlights of the Biological Diversity (Access and Benefit Sharing) Regulation, 2025?

- **Benefit Sharing Linked to Turnover:** All users who have an annual turnover of over Rs 1 crore need to share a statement with information on the resources used per year.

Annual Turnover	Benefit Sharing Rate (% of the annual gross ex-factory sale price of the product (excluding government taxes))
Up to Rs 5 crore	Exempt
Rs 5 – Rs 50 crore	0.2%
Rs 50 – Rs 250 crore	0.4%
Above Rs 250 crore	0.6%

- **High-Value Biological Resources:** For high-value biological resources like **red sanders, sandalwood, agarwood**, and threatened species under the Biodiversity Act, 2002 benefit sharing must be at least 5% of the sale or auction amount, and can exceed 20% for commercial use.
- **Digital Sequence Information (DSI):** The 2025 Regulation replaces the 2014 Guidelines, expanding the scope to include DSI, which can now be considered part of genetic resources, unlike the earlier framework.
 - DSI refers to the **digital representation of genetic sequences derived from Deoxyribonucleic acid (DNA), Ribonucleic acid (RNA),** or proteins of organisms. It's essentially the digital code of an organism's genetic makeup.
- **Researchers & IP Applicants:** The Regulation mandates benefit-sharing for researchers and intellectual property applicants, with **10-15% of the collected benefits** retained by the NBA.
- **Cultivated Medicinal Plants Exempt:** Cultivated medicinal plants are exempt from benefit sharing.
 - This exemption stems from the **Biological Diversity (Amendment) Act 2023**, which promoted medicinal

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plant cultivation and eased compliance for **AYUSH** practitioners.

What is Access and Benefit Sharing?

- **About:** ABS refers to the process of **granting access to biological resources** (such as plants, animals, or genetic material) and **ensuring that the benefits arising from their use whether monetary or non-monetary** are equitably shared with the source communities or nations.
 - ABS relies on **prior informed consent (PIC)** from the provider and negotiations to establish **mutually agreed terms (MAT)** for the fair and equitable sharing of genetic resources and associated benefits.
- **Framework:** Rooted in the **Convention on Biological Diversity (CBD)**. The **Nagoya Protocol**, adopted in 2010 under the CBD, provides a legally binding framework for access to genetic resources and fair benefit-sharing.
 - **COP-16 of the CBD (2024)**, held in **Cali, Colombia**, finalized key modalities for a multilateral mechanism to share benefits from the use of DSI.
 - In India **ABS** is implemented through the **Biological Diversity Act, 2002** and ABS Regulation, 2025.

National Biodiversity Authority

- The **NBA**, established in 2003 under the **Biological Diversity Act, 2002**, is a statutory body that advises the Centre on **biodiversity conservation, sustainable use, and fair benefit-sharing**.
 - Headquartered in Chennai, It operates through a decentralized structure involving **State Biodiversity Boards (SBBs)** and local **Biodiversity Management Committees (BMCs)**.
 - While SBBs guide state governments and regulate commercial use, BMCs focus on local biodiversity documentation and conservation.
 - BMCs are responsible for preparing **People's Biodiversity Registers (PBRs)**.
- Since its establishment, NBA has supported creation of SBBs in 28 States, 8 UT's and facilitated establishment of around 2,77,688 BMCs.

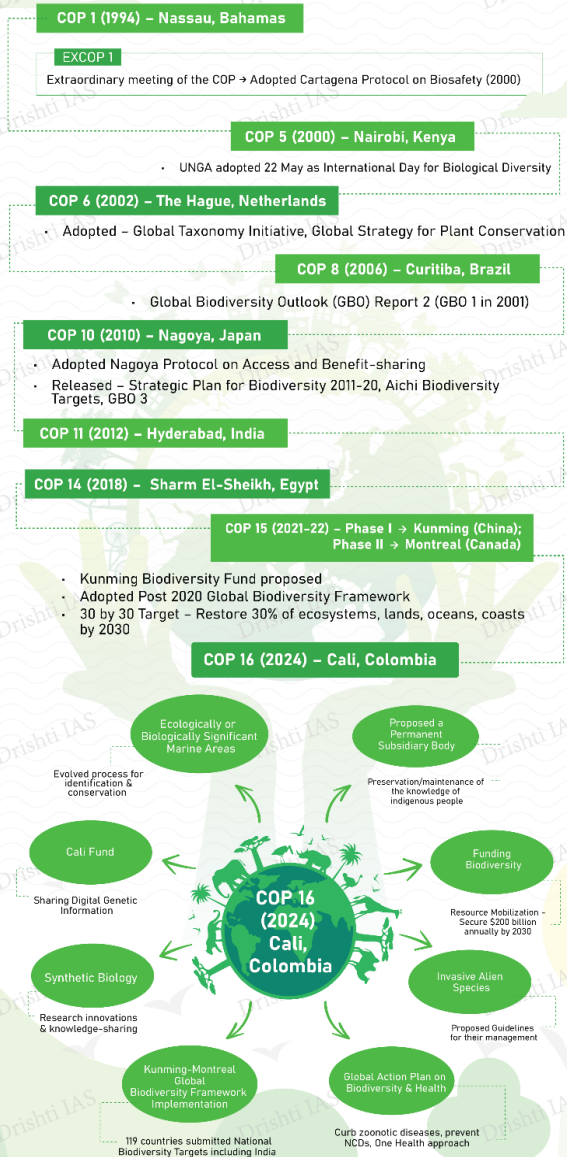
Important CoPs of CBD

The UN Convention on Biological Diversity (CBD) 1993 is a legally binding treaty.

Objectives



Significant Meetings



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Global Call to Ban Chlorpyrifos

Why in News?

The Conference of the Parties (COP) to the [Basel, Rotterdam, and Stockholm](#) (BRS) Conventions in Geneva proposed the banning of toxic pesticide **Chlorpyrifos** by listing it under **Annex A of Stockholm Convention** (complete global ban without exemptions).

- However, **India opposed the move**, citing the **absence of viable alternatives** and the potential threat to **food security**.

What is Chlorpyrifos?

- **About:** Chlorpyrifos is an **organophosphate** (formed by esterifying phosphoric acid with alcohol) insecticide used in **agriculture, public health** to control pests like **termites, mosquitoes, and roundworms**.
 - It works by **inhibiting an acetylcholinesterase enzyme essential for nerve function**, affecting both **target pests** and **non-target species, including humans**.
- **Health Impact:** Exposure (via skin, inhalation, or ingestion) can cause **headache, nausea, dizziness, muscle cramps**, and in severe cases, **paralysis and breathing difficulty**.
 - It forms a **toxic byproduct (chlorpyrifos oxon)** in the body, which causes these effects.
- **Environmental impact:** It **persists in soil for weeks to years, breaks down slowly in acidic conditions**, and may **contaminate water bodies through erosion**.
 - It is **highly toxic to birds** (e.g., robins, mallards), **fish, bees, and earthworms**, and can **bioaccumulate in the food chain**.
- **Usage in India:**
 - Chlorpyrifos, a **widely used pesticide in India (9.4% of total insecticide consumption in 2016-17)** has been registered under the **Insecticides Act since 1977**. (IPEN Report)
 - Classified as **moderately hazardous** by **WHO** and a **possible carcinogen** by **EPA**, its residues are found in **produce, water, blood, and breast milk**.

What is the Stockholm Convention?

- **About:** The [Stockholm Convention](#) on **Persistent Organic Pollutants (POPs)** is a global treaty **adopted in 2001** and **came into force in 2004**. Its main goal is to **protect human health and the environment from (POPs)**.
- **Key Features:**
 - **Annex A:** Elimination of listed chemicals
 - **Eg: Aldrin, Chlordane, Dieldrin, Endrin, Heptachlor, Hexachlorobenzene, Mirex, Polychlorinated biphenyls**
 - **Annex B:** Restriction of listed chemicals
 - **Annex C:** Reduction of unintentional release of listed chemicals
- **Financial Mechanism:** The [Global Environmental Facility \(GEF\)](#) serves as the **designated interim financial mechanism** for the **Stockholm Convention**, supporting developing countries in implementing its obligations.
- **India and Stockholm Convention:** India ratified the **Stockholm Convention in 2006**. To regulate Persistent Organic Pollutants (POPs), the **MoEFCC** notified the '**Regulation of Persistent Organic Pollutants Rules, 2018**' under the **Environment (Protection) Act, 1986**.

What are POPs?

- **About:** [Persistent Organic Pollutants \(POPs\)](#) are **toxic, carbon-based chemical substances** that **persist in the environment for long periods**, resist degradation, and **accumulate in living organisms**.
- **Health & Environmental Impacts:** Can cause **cancer, immune suppression, neurotoxicity, reproductive disorders**, and **endocrine disruption** and its exposure leads to **both acute and chronic effects**, even across generations.
 - **Bioaccumulation:** POPs **accumulate in the fatty tissues** of living organisms over time.
 - **Biomagnification:** Their **concentration increases as they move up the food chain**, affecting top predators and humans.
- **Examples:**
 - **Endosulfan:** Banned in many countries; known for **endocrine disruption**.

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- DDT: Banned for agriculture in India but still used for **vector control** (e.g., mosquito fumigation in malaria-prone areas).
- Others include Aldrin, Dieldrin, PCBs, and Toxaphene.

Click Here to Read: [Basel Convention and Rotterdam Convention](#)

Modern Technology for Sustainable Forest Management

Why in News?

Madhya Pradesh has become the **first state** in India to implement an **AI-based Real-Time Forest Alert System (RTFAS)** on a pilot basis for **active forest management**.

- It underscores the **use of technology** in helping meet India's challenges in **sustainable forest management**.
- **Key Features:**

Note: As per the **18th India State of Forest Report 2023**, Madhya Pradesh has the **largest forest cover** in India (85,724 sq km) but also reported the **highest deforestation** (612.41 sq km lost in 2023).

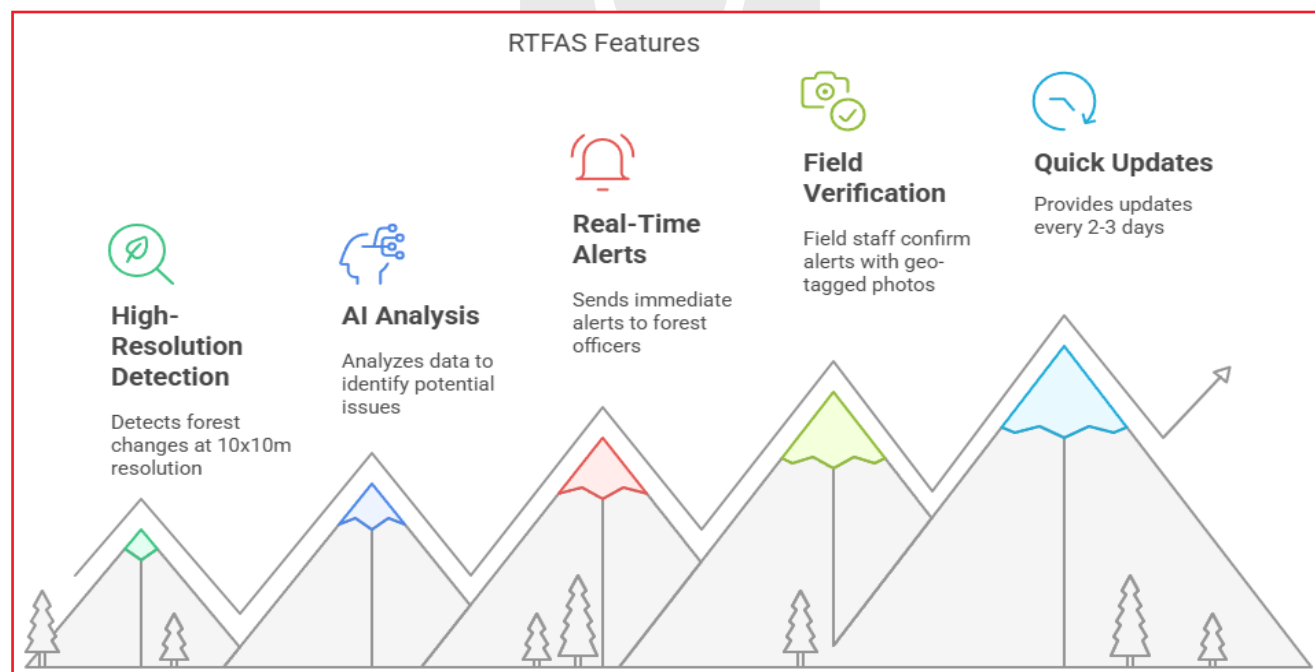
- India's forest and tree cover is **25.17%**, significantly below the **33% target** set by the **National Forest Policy 1988**.

What is the Status of Forests in India?

Click Here to Read: [18th India State of Forest Report 2023](#)

What is an AI-based Real-Time Forest Alert System?

- **About:** RTFAS is a **cloud-based AI system** that integrates **satellite technology, machine learning, and real-time monitoring** to combat **deforestation**.
- It uses **Google Earth Engine** to analyze **multi-temporal satellite data** and **detect land use changes** through a **custom AI model**.



What is the Role of Technology for Sustainable Forest Management?

- **Forest Carbon Management:** High-resolution satellites like ISRO's **Resourcesat** monitor **forest health and deforestation**, while **hyperspectral imaging** helps assess **carbon stock and biodiversity**.

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- AI algorithms analyze historical and real-time data to predict deforestation trends.
- **Preventing Forest Fires: AI Cameras & Thermal Sensors** detect smoke and heat to trigger early fire alerts. E.g., FireSat is a constellation of satellites dedicated entirely to detecting and tracking wildfires.
- Drones provide live feeds to aid firefighting and monitor fire hazards like pine needle buildup.
- **Combating Encroachment:** Satellite-based systems like RTFAS send notifications to forest officers within 2-3 days when unauthorized activities (logging, farming, construction) are detected.
- **Mitigating Human-Wildlife Conflict:** AI-Enabled Camera Traps & GPS Tracking monitor animal movements near village borders, reducing conflicts.
 - E.g., PoacherCam is an advanced camera equipped with a specialized human-detection algorithm that can remotely notify anti-poaching teams of nearby intruders.
 - RFID tags and geofencing alert officials when elephants or tigers stray into human settlements.
- **Forest Restoration and Afforestation:** Green bots can be deployed during the afforestation process to track tree growth, soil health, and environmental changes, creating a comprehensive database of forest health.
- **Biodiversity Monitoring:** Acoustic sensors like Rainforest Connection use AI to recognize bird and frog sounds and track endangered species in the Amazon.
- Environmental DNA (eDNA) from water or soil samples detects genetic traces of species like fish and amphibians, helping monitor invasive or rare aquatic life.

What is the Need of Sustainable Forest Management?

- **Climate Change Mitigation:** Afforestation acts as a carbon sink, absorbing CO₂ and reducing greenhouse gas emissions while promoting environmental sustainability alongside industrial growth.

- **Industrial & Trade Necessity:** The EU's Carbon Border Adjustment Mechanism (CBAM), effective from 2026, will impose tariffs on carbon-intensive imports (steel, cement, aluminium) from India and other countries.
 - Afforestation becomes vital for reducing the carbon intensity of exports, helping lower CBAM tariffs and sustain trade competitiveness.
- **Ecosystem Health:** Expanding tree cover enhances soil health, prevents soil erosion, recharges groundwater, retains water, and strengthens resilience to extreme weather events.
- **Economic and Social Benefits:** It supports industries like timber, fuelwood, and agroforestry, providing additional income sources for rural communities.

What are Initiatives Taken by India for Sustainable Forest Management?

- **Government-Led Programs:**
 - Green India Mission (GIM): Increased forest cover by 0.56% between 2017 and 2021.
 - National Agroforestry Policy (2014): Encourages tree planting on private farmland to reduce pressure on natural forests.
 - Trees Outside Forests in India Program: Encourages tree planting on non-forest lands by involving private stakeholders to boost green cover.
 - Compensatory Afforestation Fund (CAMPA): Funds reforestation where forests are diverted for industrial use.
- **Corporate & Community Efforts:**
 - CSR-Driven Plantations: Companies in automobile, cement, and energy sectors undertake afforestation to offset emissions.
 - Agroforestry for Livelihoods: Farmers integrate timber, fruit, and medicinal plants with crops for additional income.
- **Carbon Credit Strategies:** Industries invest in afforestation to earn carbon credits.



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History

Highlights

- Satavahana Dynasty and Culture

Satavahana Dynasty and Culture

Why in News?

The [Archaeological Survey of India \(ASI\)](#) has documented **11 ancient inscriptions** in Peddapalli, Telangana belonging to the **Satavahana dynasty**.

- Written in Brahmi script and Prakrit language, these **1st BCE–6th CE inscriptions** offer key insights into the **Satavahana era** and early **Deccan** politics and culture.
- The inscriptions confirm **Telangana** as part of **Asmaka**, one of the sixteen **Mahājanapadas**, highlighting its historic role and early ties to major **dynasties**.

What are the Key Facts Regarding the Satavahana Dynasty?

- About:** The Satavahanas (1st century BC to the early 3rd century AD) succeeded the **Mauryas** in the **Deccan** and **central India**, with early rule centered in **north Maharashtra** (upper **Godavari valley**) and later expanding to **Karnataka** and **Andhra**.
- Important Rulers:**

- They are identified with the **Andhras** mentioned in the Puranas, though inscriptions do not use this name.



Ruler	Reign Period	Key Achievements
Simuka	60 BC- 37 BC	Founder of the Satavahana dynasty and is mentioned as the first king in a list of royals in a Satavahana at Naneghat inscription .
Gautamiputra Satakarni	AD 106–130	<ul style="list-style-type: none"> Regarded as the greatest Satavahana ruler. Defeated the Shakas and destroyed the Kshaharata lineage (ruled by Nahapana). The empire extended from Malwa in the north to Karnataka in the south. Coins of Nahapana (Kshaharata ruler) were re-struck by Gautamiputra, symbolizing conquest.
Vashishthiputra Pulumayi	AD 130–154	<ul style="list-style-type: none"> Shifted capital to Paithan (Pratishthan) on the Godavari. Brought Andhra into the Satavahana fold. Rudradaman (Western Kshatrapas dynasty) fought many wars with the Satavahanas, but to stop the conflict, Vashishthiputra Satakarni, son of King Pulumavi, married Rudradaman's daughter.

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Yajna Sri Satakarni	AD 165–194	<ul style="list-style-type: none"> ➤ Regained lost territories in north Konkan and Malwa. ➤ Patron of trade and navigation; his coins depict ships. ➤ His reign marked the peak of maritime trade.
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- **Material Culture:** Iron tools like **hoes, ploughshares**, and **arrowheads** were widespread, with smelting sites in **Karimnagar** and **Warangal**.
- **Agriculture:** Iron tools and **paddy transplantation** boosted farming, making the **Krishna-Godavari delta** a major rice region.
 - **Cotton** production, noted by **Pliny (author of Natural History)**, was a hallmark of **Andhra**.
- **Urbanisation and Trade:** **Peddabankur** (200 BCE–200 CE) featured **brick structures, wells**, and **covered underground drainage**. **Pliny** noted 30 **walled towns** in the eastern **Deccan** (Andhra region).
 - The surge in trade is reflected in the spread of **Roman** and **Satavahana** coins in the **Krishna-Godavari** region.
- **Coins:** Coins featured **Prakrit inscriptions** and symbols like **ships with two masts, elephants** (strength), **lions** (power), **star pattern, Chaitya**, and **Dharmachakra**.
 - Coins were issued in **lead, potin (a mixture of copper, lead, and tin), copper**, and **bronze**, while **gold** was used as bullion.
- **Social Organization:** The **Satavahanas**, originally a **Deccan tribe**, became **brahmanized**, with **Gautamiputra Satakarni** re-establishing the **varna system** disrupted by **Shakas**.
 - The **Satavahana** dynasty showed **matrilineal influence**, with kings named after their mothers, but it remained **patriarchal**, with succession passing to the male heir.
 - Craft and commerce flourished, with **merchants, and artisans**, especially **gandhikas (perfumers)** donating to Buddhist causes.
- **Administration:** The **3-tier feudal system** consisted of the **Raja** (King), who could issue coins, the **Mahabhoja** (second-rank rulers), and the **Senapati** (military chiefs with local authority).
 - **Districts (Ahara or Rashtra)** governed by **Mahamatras (officials)**.
- **Military-based governance:**
 - **Senapati (commander)** acted as **provincial governor**.
 - **Gaulmika** (military officer) maintained **rural law and order**.
- **Military camps (Kataka, Skandhavara)** served as administrative centers.
- The Roman historian **Pliny** noted that the **Andhra kingdom (Satavahanas)** had a **large army** with infantry, cavalry, and elephants, reflecting their military strength.
- **Religion:** The **Satavahana rulers**, as **Brahmanas**, promoted **Brahmanism**, performing **Vedic sacrifices** like **ashvamedha** and **vajapeya**, and worshipping **Vaishnava gods** such as **Krishna** and **Vasudeva**.
 - The **Satavahanas** supported **Buddhism**, granting land to monks in **Nagarjunakonda** and **Amaravati**, where **Mahayana Buddhism** thrived.
 - The **Satavahanas** were the **first to grant land to Brahmanas**, but they granted land more often to **Buddhist monks**.
- **Architecture:** The **Satavahanas** are known for their **rock-cut architecture**, with notable examples like the **Karle Chaitya** and **Nasik Viharas**.
 - The **Amaravati Stupa** was reconstructed during the Satavahana period, featuring intricate sculptures of the **Buddha's life**.
 - The **Satavahanas patronised Buddhist art and architecture**, as seen in the **Ajanta Caves 9 and 10**, and actively **promoted the Amravati School of Art**, known for its intricate and narrative sculptures.
 - Inscriptions from **Naneghat in Maharashtra** highlight the dynasty's **religious patronage**, particularly towards Buddhism, mentioning **tax exemptions** on lands granted to Buddhist monks.
 - **Nagarjunakonda** prospered most in the **second–third centuries** under the patronage of the **Ikshvakus**, the **successors of the Satavahanas**.

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- **Language:** The **official language** of the Satavahanas was **Prakrit**, and their inscriptions were written in the **Brahmi script**.
 - **Gathasattasai (Gathasaptasati)**, a **Prakrit text** attributed to **King Hala**, is an important literary work from this period, containing **700 verses**.
- **Decline:** The dynasty declined around the **3rd century AD**, and was **succeeded by the Ikshvakus** in eastern Deccan, who continued several Satavahana traditions, especially in Buddhist patronage.
 - Later, the **Pallavas** rose to prominence in the southern region.



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Art and Culture

Highlights

- India's Sacred Relic of Sakyamuni Buddha to Vietnam

India's Sacred Relic of Sakyamuni Buddha to Vietnam

Why in News?

India is sending the sacred relic of **Sakyamuni Buddha** from **Sarnath to Vietnam** for an international exposition marking the **United Nations Day of Vesak** 12th May 2025, it is organized by the Ministry of Culture and the **International Buddhist Confederation (IBC)**.

- This event highlights the influence of **Buddhism** in Southeast Asia and the significant role of ancient Indian rulers in spreading Buddhism across the region.

Note: Shakyamuni Buddha is the name given to Gautama Buddha. The term 'Buddha' means "the awakened one," a title applicable to anyone who attains enlightenment in Buddhist doctrine.

- However, '**Shakyamuni**', meaning "**sage of the Shakya clan**," specifically refers to the historical figure **Siddhartha Gautama**, son of **King Siddhodhana** and **Queen Maya**, born in **Kapilavastu**, part of **Shakya Republic**.

What is the Significance of Sarnath Relic of Sakyamuni Buddha?

- The relic of Sakyamuni Buddha was excavated from **Nagarjuna Konda in Andhra Pradesh** between 1927 and 1931 by the **Archaeological Survey of India (ASI)**.
- It holds immense religious value, as it is believed to be a corporeal relic of the Buddha himself, preserved since his **Mahaparinirvana**.
- It was gifted to the **Mahabodhi Society of India** in 1932, the relic has since been enshrined at the **Mulagandha Kuti Vihara in Sarnath**.

How did Indian Rulers Contribute to the Spread of Buddhism in Southeast Asia?

- **Emperor Ashoka (268–232 BCE):** Ashoka sent Buddhist missionaries to Southeast Asia. His son **Mahinda** and daughter **Sanghamitta** were instrumental in establishing Buddhism in **Sri Lanka**.
 - Ashoka's missions played a crucial role in planting the roots of **Theravāda Buddhism** in **Sri Lanka** and later in Southeast Asia.
- **Gupta Period:** The **Gupta Empire** (4th–6th century CE) promoted **Mahayana Buddhism**, which reached Southeast Asia via trade and scholars.
 - Gupta rulers supported the construction of **Buddhist universities like Nalanda**, attracting monks and students from across Asia.
 - **Borobudur**, a massive Buddhist monument in central Java, Indonesia, blends the forms of a stupa, temple mountain (inspired by Mount Meru in Hindu mythology), and mandala (a mystical symbol of the universe).
 - Influenced by Indian Gupta and post-Gupta art, it was designated a **UNESCO World Heritage site** in 1991.
- **Trade-Facilitated Religious Exchange:** Indian rulers, particularly during the Maurya and Gupta periods, promoted maritime trade, connecting eastern Indian ports like **Tamralipti** (an ancient port city on the Bay of Bengal) with regions such as **Sumatra, Java, and the Malay Peninsula**.
 - This trade route also saw Buddhist monks and artisans spread Buddhist ideas, rituals, and iconography across Southeast Asia.
 - The **Srivijaya Kingdom in Sumatra** (Indonesia) flourished due to Indian influence, promoting Buddhism through trade and cultural exchange.

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- **Cultural Diplomacy and Influence:** Indian epigraphy, Sanskrit inscriptions (Prambanan Temple-Java), and Buddhist art styles (e.g., Amaravati and Gupta Schools) were adopted in **Java (Indonesia), Cambodia, Thailand, and Myanmar**.
- **Angkor Wat** in Cambodia is the **largest religious monument in the world**, and was built in the 12th century by Khmer King Suryavarman II. Originally dedicated to **Hindu god Vishnu**, it later became a Buddhist temple and was designated a **UNESCO World Heritage Site in 1992**.
- Additionally, **Bagan, a UNESCO World Heritage Site in Myanmar**, is home to thousands of Buddhist temples and stupas, showcasing **Theravada Buddhist art** and architecture and reflecting India's missionary efforts in spreading Buddhism.

GAUTAM BUDDHA

Believed to be 8th of the 10 incarnations of Lord Vishnu (Dashavatar)

BIRTH

- Born as Siddhartha (563 BC)
- Birthplace - Lumbini (Nepal) near Kapilavastu

PARENTS

- Father - elected ruler of Kapilavastu; headed Shakya republican clan
- Mother - princess from Koshalan dynasty

IMPORTANT EVENTS

Buddha's Birth

The Great Departure (Mahabhinishkramana)

Enlightenment (Nirvana)

First Sermon (Dhammachakrapavartan)

Death (Mahaparinirvana)

Buddha referred to himself as **Tathagata** (one who has thus come/gone) and has been addressed as **Bhagavat** (in Buddhist texts)

CONTEMPORARIES

- Vardhaman Mahavira
- Bimbisara
- Ajatshatru

OTHER IMPORTANT PLACES ASSOCIATED WITH BUDDHA

- Bodhi Gaya (Enlightenment) (named Buddha after attaining enlightenment)
- Sarnath (first sermon)
- Vaishali (last sermon)
- Kushinagara (death place (487 BC))

BUDDHISM

ORIGIN

- 6th century BC, based on the teachings of Gautam Buddha

MAIN FEATURES

- Essence - Attainment of enlightenment (Nibbana)
- Supreme Deity - None

PRINCIPLES

- Avoid the extremes; follow Madhyam Marg (middle path)
- Individualistic component (everyone is responsible for their own happiness)
- 4 Noble Truths:
 - Dukkha (suffering)
 - Samudya (cause of suffering)
 - Nirodha (suffering could be ended)
 - Atthanga Magga (8-fold path to achieve this)
- 8-Fold Path:
 - Right - view, intention, speech, action, livelihood, mindfulness, effort and concentration

BUDDHISM REJECTS

- Authenticity of Vedas
- Concept of soul (atman) (unlike Jainism)

MAJOR BUDDHIST TEXTS

- Sutta Pitaka (main teachings of Buddha - Dhamma)
- Vinaya Pitaka (rules of conduct for monks/nuns)
- Abhidhamma Pitaka (philosophical analysis)
- Other imp texts - Divyavadana, Dipavamsa, Mahavamsa, Milind Panha

Buddha's teachings were rehearsed, authenticated & divided in 3 Pitakas at the 1st Buddhist Council

These teachings were written down c. 25 BC in Pali

4 BUDDHIST COUNCILS

Buddhist Council	Patron	Venue	Chairman	Year
First	Ajatshatru	Rajgriha	Mahakashyapa	483 BC
Second	Kalashoka	Vaishali	Sabbakami	383 BC
Third	Ashoka	Pataliputra	Mogaliputra	250 BC
Fourth	Kanishka	Kundalban (Kashmir)	Vasumitra	72 AD



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Geography

Highlights

- *Tapti Basin Mega Recharge Project*

Tapti Basin Mega Recharge Project

Why in News?

Madhya Pradesh (MP) and Maharashtra have signed a **memorandum of understanding (MoU)** to jointly implement the **Tapti (Tapi) Basin Mega Recharge Project in MP**, the **world's largest groundwater recharge scheme** aimed at ensuring **optimal utilization of river water resources** for irrigation across both states.

What is the Tapti Basin Mega Recharge Project?

- **About:** It is a joint inter-state groundwater recharge initiative under which Madhya Pradesh and Maharashtra will jointly develop **three Tapti River streams** originating from **Multai, MP**.
 - It is the **third major inter-state river project** involving MP, following the **Ken-Betwa Link Project** (MP & UP) and the **Parbati-Kalisindh-Chambal Link Project** (MP & Rajasthan).
- **Key Features:**
 - **Water Allocation:** The project plans to **divert water from the Tapti River to northeastern Maharashtra for drinking water** and to support **irrigation in southern and southeastern Madhya Pradesh**.
 - Total usage is **31.13 thousand million cubic feet (TMC)**, with **11.76 TMC** allocated to MP and **19.36 TMC** for Maharashtra.
 - The project includes **construction of a diversion weir** at the MP-Maharashtra border and development of **right and left bank canals in both states**.
 - The project entails the use of **3,362 hectares of land in Madhya Pradesh**, with no displacement or rehabilitation needed.

- **Beneficiary Districts:** The project covers the **Burhanpur and Khandwa districts of MP** and **Akola, Amravati, and Buldhana in MH**, which have historically faced groundwater stress and erratic rainfall.

Key Facts Related to Tapti River

- **Geography:** The Tapti River, India's **second-longest west-flowing river** after the **Narmada**, flows through **Madhya Pradesh, Maharashtra, and Gujarat**.
 - It is one of the 3 major rivers in India that **flow westward**, along with the **Narmada** and **Mahi**.
 - It drains into the **Arabian Sea** at the **Gulf of Khambhat** in Gujarat.
- **Basin Area & Terrain:** The Tapi basin, bounded by the **Satpura range (north)**, **Mahadeo hills (east)**, **Ajanta and Satmala hills (south)**, and the **Arabian Sea (west)**.
 - It flows between the **Satpura Range and Mahadeo Hills**, running **parallel to the Narmada River** to the north, separated by the main part of the Satpura Range.
- **Tributaries:** The Tapti has **14 major tributaries: 4 right-bank** (Vaki, Aner, Arunawati, Gomai) and **10 left-bank** (Nesu, Amravati, Buray, Panjhara, Bori, Girna, Waghur, Purna, Mona, Sipna).
 - **Purna River** is the **main left-bank tributary**, providing perennial flow.
- **Dams and Projects:** **Ukai Dam** (Gujarat), **Hathnur Dam** (Maharashtra)

What is the National Perspective Plan (NPP) for Interlinking Rivers?

Click Here to Read: [National Perspective Plan \(NPP\) for Interlinking of Rivers](#)

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Security

Highlights

- Strategic Defence Technologies in India
- Self-Defence Clause Under UN Charter
- Operation Sindoor

Strategic Defence Technologies in India

Why in News?

India's Defence Minister Rajnath Singh inaugurated the **BrahMos Integration and Testing Centre in Lucknow**, underscoring the significance of the **BrahMos supersonic cruise missile**.

- In a separate development, India's growing defence ties and the effectiveness of the **S-400 Triumf** system were highlighted as it successfully intercepted missile and **Asisguard Songar drone attacks launched by Pakistan**, showcasing a swift and decisive kinetic response.

What are Key Facts About BrahMos and S400 Triumf?

BrahMos

- **Name Origin:** "BrahMos" is derived from **Brahmaputra (India)** and **Moskva (Russia)** rivers.
- **Developed By:** **BrahMos Aerospace** a joint venture between **India's Defence Research and Development Organisation (DRDO) (50.5%)** and **Russia's NPO Mashinostroyeniya (NPOM) (49.5%)**.
- **First Test:** BrahMos was successfully tested in **2001**, from Chandipur, Odisha.
- **Type:** BrahMos is a **two-stage supersonic cruise missile** designed for **high precision and speed**. It features a solid-propellant booster in the first stage, followed by a **liquid-fuelled ramjet** in the second stage that sustains a cruise speed of **Mach 3** (three times the speed of sound), making it one of the fastest cruise missiles in the world.

- It is a **supersonic cruise missile** with 'fire and forget' capability (requiring no further input after being launched).
- BrahMos is a **stand-off range weapon** designed to be launched from a safe distance beyond enemy defense range. It can cruise at **altitudes up to 15 km** and **strike targets as low as 10 meters for precision**.
- **Range:** BrahMos' range has evolved from 290 km to 350 km, with future versions aiming for up to 800 km and hypersonic speeds (Mach 5+).
- BrahMos is **three times faster, 2.5 times longer in range, and has a higher seeker range than subsonic missiles**, resulting in greater accuracy and nine times more **kinetic energy**.
- **Variants of BrahMos:**
 - **Ship-Based Variant:** Deployed on the Indian Navy's frontline warships since 2005, it can launch a single missile or salvo (up to 8) missiles, effectively executing both **sea-to-sea and sea-to-land strikes**.
 - It was first deployed on the **INS Rajput**, enhancing the Indian Navy's strike capability.
 - **Land-Based Variant:** It has 4-6 mobile launchers, each carrying 3 missiles that can be fired simultaneously at different targets in various configurations.
 - It was operationalized by the **Indian Army** in **2007**, cruises at **2.8 Mach** and, after upgrades, can strike targets with precision up to **400 kilometres**.
 - **Air-launched Variant:** The **BrahMos Air-Launched Cruise Missile (ALCM)** is the **heaviest weapon** integrated with India's **Sukhoi-30 MKI** fighter jets.

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- With a 1,500 km range, BrahMos-armed Sukhois serve as a key deterrent along borders and in the **Indian Ocean Region**.
- **Submarine-launched Variant:** It can operate from 50 meters underwater using separate settings for underwater and aerial flight.
- **Futuristic BrahMos-NG:** BrahMos-NG (Next Generation), a **lighter, stealthier next-gen missile** under development, is designed for **air, naval, and underwater platforms** and **torpedo tube** launch capability.



S400 Triumph

- **About:** The S-400 Triumph, developed by Russia, it is one of the world's most advanced **long-range surface-to-air missile (SAM) systems**.
 - It is dubbed **SA-21 Growler** by **North Atlantic Treaty Organization (NATO)**, it was inducted into service in 2007.
 - It is designed for multi-layered air defence, it can intercept a wide range of aerial threats including aircraft, ballistic missiles, cruise missiles, drones, and stealth targets.
- **Range:** Engages targets up to **400 km** away and at altitudes up to **30 km**.
- **Speed:** Can intercept targets flying at speeds of up to **Mach 14** (~17,000 km/h).
- **Radar Reach:** Detects targets up to **600 km** using advanced radar systems.
- **Target Handling:** Tracks up to **300 targets** and engages up to **36 simultaneously**.
- **Missile Types:**
 - **40N6:** Long-range (up to 400 km)
 - **48N6:** Medium-range (up to 250 km)
 - **9M96E / 9M96E2:** Short to medium-range (40–120 km)
- **India's Role with the S-400:** In 2018, India signed a USD 5.4 billion deal with Russia for **five S-400 air defence squadrons**.

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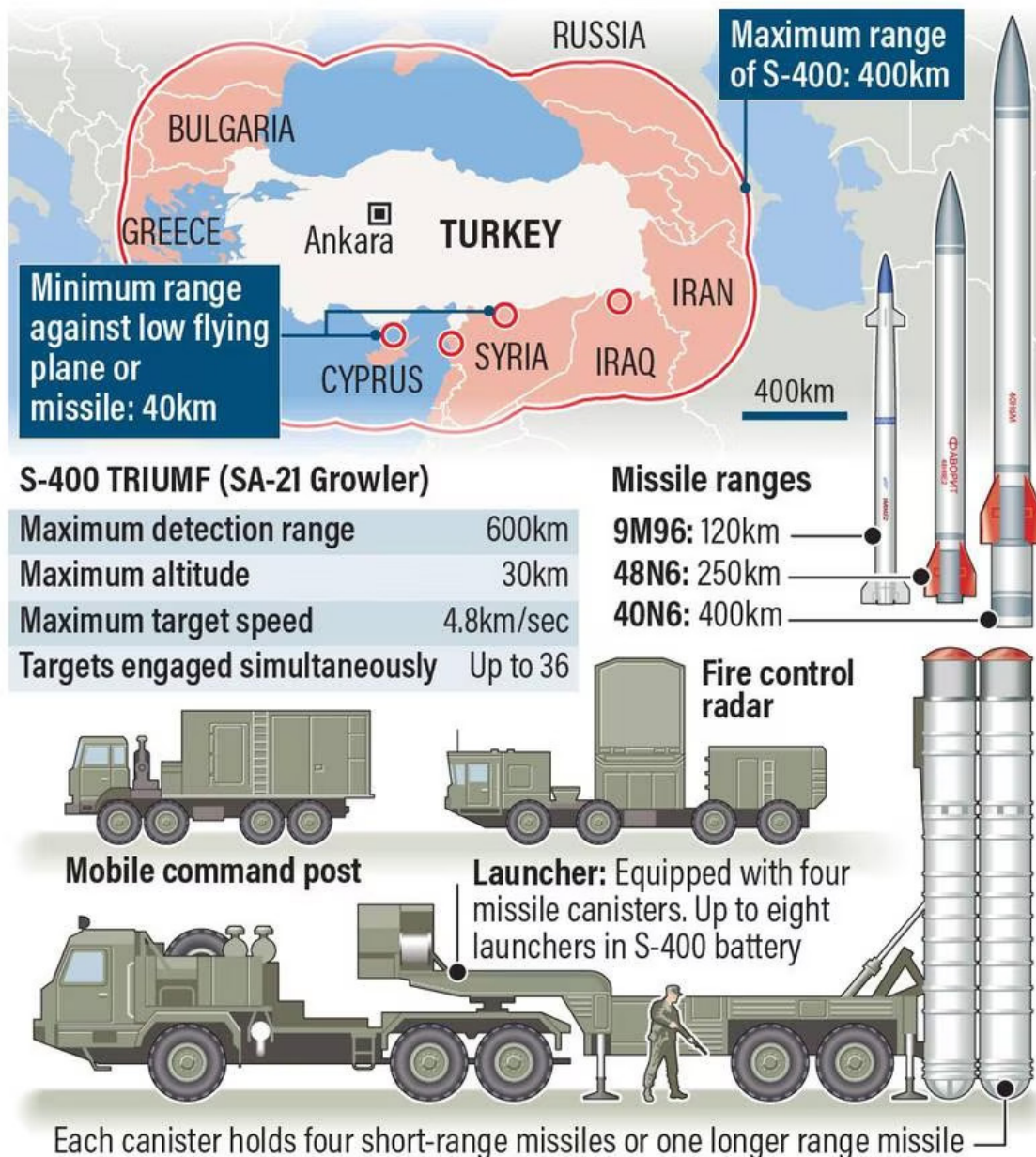


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- Three are currently operational, with two more due by 2026. Known as **Sudarshan Chakra** in India, the S-400 was used by the IAF to counter a Pakistani aerial attack, highlighting its strategic significance.

S-400 SURFACE-TO-AIR MISSILE SYSTEM



- Can shoot down up to 80 target simultaneously
- Cannot yet accurately target low-flying aircraft and missiles (altitude below 30,000 ft) at great distances

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Note: Asisguard Songar drones are Turkey's first indigenous armed unmanned aerial system (UAS), equipped with assault rifles, grenade launchers, mortars, or tear gas, all featuring safety mechanisms. Designed for stealth and coordination, they enable reconnaissance and precision strikes.

What is Kinetic and Non-kinetic Warfare?

- **Kinetic Warfare:** Kinetic warfare involves the use of **direct physical force**, such as **airstrikes**, **artillery**, and **ground assaults**, to defeat an adversary.
 - Examples include Operation Sindoor (2025), and the Balakot Airstrike (2019), where the IAF targeted Jaish-e-Mohammed camps after the Pulwama terror attack.
- **Non-kinetic Warfare:** It involves strategies that **do not rely on direct physical attacks** but instead target an **enemy's political, economic, informational, or psychological stability**.
 - It includes **cyber warfare** (e.g., Israel's cyber attack on Iran's nuclear facilities), **information warfare** (e.g., fake Rafale downing claims during Operation Sindoor), **electronic warfare** (e.g., India's Samyukta and Divya Drishti systems), **psychological warfare** (e.g., threats, troop videos), and **economic warfare** (e.g., India revoking Pakistan's Most-Favored-Nation (MFN) status post-Pulwama).

What are Defence Agreements of India in the Recent Past?

- **India-Russia:** India has acquired S-400 systems, **MiG-29 fighters**, and **Kamov helicopters** from **Russia**, alongside agreements for **licensed production** of **T-90 tanks**, **Su-30MKI fighters**, **AK-203 rifles**, and **BrahMos missiles**.
- **India-US:** India and the US launched the US-India COMPACT initiative, aimed at fostering military and technological cooperation.
 - A **Security of Supply Arrangement (SOSA)** and **Memorandum of Agreement** on **Liaison Officers** were signed, ensuring **reciprocal support for defence needs**.
 - India has integrated several **US-origin defence items**, including **C-130J Super Hercules**, **C-17 Globemaster III**, and **AH-64E Apache helicopters**, and is also in talks to acquire **F-35 Lightning-II** combat aircraft.
- **India-UK:** Finalised Free Trade Agreement to deepen defence trade and cooperation. **Thales UK** and **Bharat Dynamics Limited (BDL)** for the supply of **laser beam riding MANPADs** (Man-Portable Air Defense Systems) and **STARStreak missiles** (short range surface-to-air missile).
 - Both are collaborating on a first-of-its-kind **air-to-air missile assembly and testing facility** in Hyderabad.
- **India-France:** India and France signed an Inter-Governmental Agreement (IGA) for **26 Rafale-M aircraft** for the **Indian Navy** and a **Defence Industrial Roadmap**, covering Scorpene submarines, Rafale jets, and indigenous production.

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Treaties Against Nuclear Weapons

Part - I

Nuclear Weapons

- The most dangerous weapons on earth; a **bomb or missile that uses nuclear energy to cause an explosion.**
- Nuclear weapons release energy either by **nuclear fission (atomic bombs) or nuclear fusion (hydrogen bombs).**
- Even a single weapon is potent of **destroying a whole city**, potentially **killing millions**, **jeopardising the natural environment** and lives of future generations.
- They were used for the **first and last time in WW-II** by the US in 1945 on **Hiroshima and Nagasaki.**

Treaty on the Non-Proliferation of Nuclear Weapons (NPT 1970)



- **Objective:**
 - Prevent the spread of nuclear weapons and its technology
 - Foster peaceful uses of nuclear energy
 - Further the goal of nuclear disarmament
- **Member States:**
 - 191 with **5 nuclear-weapon states (NWS)** (US, Russia, UK, France & China)
- **Nuclear-Weapon States:**
 - Those who **manufactured & exploded** a nuclear weapon or nuclear explosive device **before 1st January 1967**
- **Significance:**
 - **Only binding treaty** to the goal of disarmament by the NWS
- **India and NPT:**
 - India (along with Pakistan, Israel, North Korea, and South Sudan) is **not a member**
 - Opposes it as a **discriminative disarmament policy**
 - India's policy - **No First Use against NWS and no use against non-NWS**
- **NPT Review Conference:**
 - **Undertakes review** of the treaty's implementation **quinquennially**



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Treaties Against Nuclear Weapons

Part II



Missile Technology Control Regime (MTCR) (1987)

- An informal and voluntary partnership
- Not legally binding
- Established in 1987 by G7 countries

Objective: To prevent the proliferation of missile and UAV (Unmanned Aerial Vehicle) technology capable of carrying >500 kg payload for range >300 km

MTCR Categories

Category I Items	Category II Items
<ul style="list-style-type: none"> • Complete rocket and UAV systems (>500 kg payload for >300 km) • Such items are subjected to unconditional strong presumption of denial for export 	<ul style="list-style-type: none"> • Less-sensitive and dual-use missile related components and other complete missile systems (range >300 km) • Their export is subject to licensing requirements

35 Member Countries

India inducted into the MTCR in 2016 as the 35th member

China not a member

Mandate on Members

- Prohibition on supplying missiles and UAV systems controlled by the MTCR to non-members.
- In 1992, the ambit was extended to all Weapons of Mass Destruction - nuclear, chemical & biological.

Secretariat: No formal Secretariat; France serves as MTCR's Point of Contact

MTCR and UN: No formal linkage but remains committed to the UN's non-proliferation and export control efforts

Significance for India

- Can procure high-end missile technology
- Can run joint programmes for development of UAVs with other countries

Comprehensive Nuclear-Test-Ban Treaty (CTBT) (1996)

Objective: Ban all nuclear explosions - everywhere, by everyone

Negotiated At: Conference on Disarmament in Geneva 1996 (adopted by UNGA)

185 Signatories

Out of 44, 36 countries have ratified

Treaty will enter into force after all 44 States listed in Annex 2 will ratify it (States having nuclear facilities at the time the Treaty was negotiated and adopted)

8 Annex-2 Countries Not Ratified

- China, North Korea, Egypt, India, Iran, Israel, Pakistan and the US
- India, North Korea and Pakistan haven't also signed the Treaty

CTBT Organisation

- Promotes the Treaty so that it can enter into force
- Headquartered in Vienna



Self-Defence Clause Under UN Charter

Why in News?

India has carried out **Operation Sindoor** in self-defence after the **Pahalgam terrorist attack**, raising questions about the **justification of India's response** and its alignment with **Article 51 of Right to Self-Defence under UN Charter**.

What is Article 51 of the UN Charter?

- The **UN Charter** generally **prohibits the use of force under Article 2(4)**, which **bars member states from using force against the territorial integrity or political independence of any state**, except in cases of **self-defence** as permitted by **Article 51**.
- Under this, **self-defence is permitted** only after an "armed attack" and **must comply with 2 principles: necessity** (force must be essential to respond to the attack) and **proportionality** (response must not exceed what is required to repel it).

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- The **Charter governs state conduct and state-sponsored uses of force**. However, in the *Nicaragua v. U.S. case (1986)*, the **ICJ** held that an **armed attack under Article 51** includes acts by **non-state actors** like Al-Qaeda only if carried out “by or on behalf of a state.”
- **India attributed** the attack to **Pakistan-trained and supported terrorists and partially fulfilled** its duty under Article 51 by briefing the majority of UNSC members as required.

Article 51 of the United Nations Charter

Article 51 of the United Nations Charter gives member states of the United Nations the right to claim the right of self-defense if they are committed to the principles of the UN executive system. This article allows countries to claim the right of self-defense if they come under armed attack, under the following conditions.

1

Armed attack

The right to self-defense is activated only in case of an armed attack on countries.

2

Direct action

The right to self-defense must be directly related to the country that has been targeted by the attack.

3


Notification to the Security Council


A country that uses the right of self-defense must immediately notify the Security Council.

4

Compliance with the principles of the Charter

A country that uses the right of legitimate defense must comply with the principles of the United Nations Charter in these actions.





Images of the military attack of the Zionist regime of Israel on the building of the Iranian consulate in Syria

On April 1, 2024, the Zionist regime of Israel launched an air attack on the Iranian consulate in Damascus, as a result of which seven of Iran's official military advisers were killed.

The Islamic Republic of Iran, in response to this crime and to prevent further Israeli encroachments on their official interests, on April 13, 2024, attacked several military bases in Israel in accordance with Article 51 of the United Nations, and with official notification to the Security Council.

What is Unwilling or Unable Doctrine Related to Article 51 of the UN Charter?

- It permits a **state to use self-defense against non-state actors (NSAs)** in **another state's territory** when that **state is unwilling or unable to act**, invoking an exception under the UN Charter.
 - The **US invoked the doctrine** in the **2011 operation against Osama bin Laden in Pakistan** but Russia and China criticize it for undermining state sovereignty and the UN system.
- **India's Position:** At the **UNSC Arria Formula meeting in February 2021**, India outlined **3 conditions** for using the doctrine:
 - The **non-state actor** has repeatedly attacked the state.
 - The **host state** is unwilling to neutralize the threat.

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- The **host state** actively supports or sponsors the non-state actor.
- Following the **Pahalgam attack**, India **accused Pakistan of inaction** and implied the use of the “**unwilling or unable**” doctrine.

Read More: [Pahalgam Terror Attack and Suspension of the Indus Waters Treaty](#)

Operation Sindoor

Why in News?

India launched **Operation Sindoor** in retaliation for the **April 2025 Pahalgam terrorist attack**, targeting 9 terrorist infrastructure sites in Pakistan and **Pakistan-occupied Jammu and Kashmir (PoJK)**.

- **Wing Commander Vyomika Singh and Colonel Sofiya Qureshi** led the Indian government’s briefing about the operation.

What is Operation Sindoor?

- **About:** Operation Sindoor was a coordinated precision strike operation launched by the Indian Armed Forces on 7th May 2025, in retaliation for the Pahalgam terror attack.
 - It was executed through the coordinated efforts of the **Army, Navy, and Air Force**, conducted from Indian territory.
 - Unlike past operations with aggressive names meant to project strength, this operation’s name was chosen as a **personal tribute to the victims**, particularly the **widows of the Pahalgam attack**.
- **Targets:** Under ‘Operation Sindoor,’ the Indian Armed Forces targeted terror facilities linked to **Jaish-e-Mohammed, Lashkar-e-Taiba, and Hizbul Mujahideen** in Pakistan and PoJK.
 - These strikes aimed to dismantle terrorist infrastructure used for planning attacks against India.

SITES TARGETED IN OPERATION SINDOOR



- **High-Precision Weapons Involved in Operation Sindoor:** Indian Air Force (IAF) used advanced systems like **SCALP Cruise Missiles, HAMMER Precision-Guided Bombs, and Loitering Munitions** to carry out these operations with high accuracy and minimal collateral damage.
 - **SCALP Cruise Missile:** SCALP stands for “**Storm Shadow**”, a **long-range, air-launched cruise missile**. It was used for deep, precision strikes against high-value, fixed targets, including fortified positions and critical infrastructure in enemy territory.
 - **Manufacturer:** Developed by MBDA, a European defense firm.
 - **Launch Platform:** Typically deployed from advanced fighter jets like the **Rafale**.

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- **Combat Use:** The missile has been used in combat scenarios, including operations in Iraq, Libya, and Syria, and also supplied to Ukraine for precision strikes against enemy positions.



SCALP
MISSILE WARRIORS OF
OPERATION SINDOOR

INDIA TODAY GROUP

SCALP
Also known as Storm Shadow

Guidance system: **GPS, INS, IIR & TERPROM**

Transport: **Mirage 2000, Rafale, Su-24, Tornado, Typhoon, Gripen**

- **HEIGHT: 480 mm**
- **WIDTH: 630 mm**
- **WINGSPAN: 3 m**
- **OPERATIONAL RANGE 550 km**
- **MAXIMUM SPEED Mach 0.95 (323 m/s)**
- **MASS: 1,300 kg**
- **WARHEAD WEIGHT: 450 kg**
- **LENGTH: 5.1 m**

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- **HAMMER Precision-Guided Bomb:** The **HAMMER (Highly Agile Modular Munition Extended Range)** missile was used to engage targets requiring medium-range precision, such as dynamic or mobile terrorist sites.
 - **Manufacturer:** Developed by Safran Electronics & Defense, a French defense company.
 - **Key Features:** HAMMER can be fitted with various guidance systems, including **GPS, infrared imaging, and laser targeting**, making it versatile against different targets.



- **Loitering Munitions:** Also known as “kamikaze drones”, Loitering Munitions are used for surveillance and target engagement, loitering over enemy territory before executing precision strikes.
 - **Key Advantages:** They provide real-time intelligence and can operate over extended periods and can make **autonomous decisions on when to engage**, offering flexibility and reducing the risk to operators.



What are the Past Military Operations by India against Pakistan?

- **Operation Riddle (1965 Indo-Pak War):** It was India's response to Pakistan's **Operation Gibraltar** and **Grand Slam** in 1965, following Pakistan's violation of the **Line of Control (LoC)** and entry into Jammu and Kashmir.

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- **Operation Ablaze (1965 Indo-Pak War):** It was a pre-emptive mobilisation by the Indian Army in April 1965, triggered by rising tensions along the India-Pakistan border, particularly in the [Rann of Kutch](#).
 - While it did not lead to immediate combat, it demonstrated India's military readiness, setting the stage for the **full-scale war that began in August 1965**.
 - The operation, along with Operation Riddle, helped push back Pakistan and led to the [Tashkent Agreement \(1966\)](#).
- **Operation Cactus Lily (1971 Indo-Pak War):** It was an air assault operation by the Indian Army and Air Force during the [Bangladesh Liberation War](#).
 - Conducted in December 1971, it involved crossing the **Meghna River**, bypassing a Pakistani stronghold at Ashuganj/Bhairab Bazar, and advancing towards Dhaka.
- **Operations Trident and Python (1971):** These are Indian Navy offensive operations on Pakistan's Karachi port during the [Indo-Pak War, 1971](#).
 - Operation Trident, was the first use of **anti-ship missiles in the region**. These operations contributed to Pakistan's defeat and the creation of Bangladesh.
- **Operation Meghdoot (1984):** On 13th April 1984, under Prime Minister Indira Gandhi, India launched **Operation Meghdoot**, securing control of the [Siachen Glacier and Saltoro Ridge](#), including key passes like Bilafond La and Sia La.
- **Operation Vijay (1999):** It was India's military operation to reclaim territory occupied by Pakistani forces during the [Kargil War](#).
 - It successfully forced Pakistani troops to withdraw, leading to India's victory.
- **Operation Safed Sagar (1999 Kargil conflict):** It involved IAF launching airstrikes to dislodge Pakistani troops from Indian positions along the **LoC**. It was the first large-scale use of **air power since 1971**.
 - The operation successfully helped India regain all strategic heights in Kargil.
- **2016 Surgical Strikes:** The surgical strikes were conducted by Indian special forces in response to the [Uri attack](#). The operation targeted terrorist launch pads across the LoC in Pakistan-administered Kashmir.
- **Operation Bandar (2019 Balakot air strikes):** In response to the 2019 attack on a **Central Reserve Police Force convoy in Jammu and Kashmir**.
 - The **Indian Air Force** conducted air strikes on a Jaish-e-Mohammed training camp in **Balakot, Pakistan**.
 - This operation was the first air strike across the LoC since 1971, leading to brief aerial skirmishes between India and Pakistan.

Read more: [Pahalgam Terror Attack and Suspension of the Indus Waters Treaty](#)



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Disaster Management

Highlights

- Fire Safety in India

Fire Safety in India

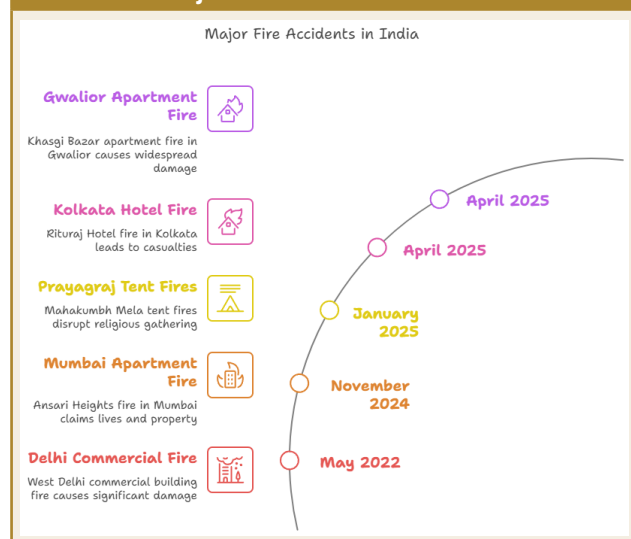
Why in News?

Recent **fires** in **overcrowded buildings** across India have become **disturbingly common**, such as a **hotel fire** in **Kolkata** killing 14, including children, and a **blaze** in **Ajmer** claiming 4 lives.

Note: According to the **Accidental Deaths and Suicides in India (ADSI)** report by the **National Crimes Records Bureau (NCRB)**, as many as **7,435 people** were killed in over **7,500 fire accidents** in **2022**.

- Fire Service is a **State subject** and has been included as a **Municipal function** in the **XII Schedule** of the Constitution of India under **Article 243(W)**.

Major Fire Accidents in India



Why are Urban Areas Prone to Deadly Fires?

- **Urbanisation and Infrastructure Issues:**
 - **Illegal Constructions:** Unauthorized buildings violate the **3-meter setback** rule, blocking **ventilation** and

fire access. Even approved buildings often use **non-fire-resistant materials**, with **old wiring** and **overloaded systems** raising fire risks.

- **Poor Urban Planning:** Congested layouts and narrow lanes **delay the arrival of fire engines** and **hinder rescue operations**. While **National Building Code (NBC) 2016** mandates **two enclosed staircases** of at least **1 meter width** for buildings over 15m, many older buildings with **just one staircase** become **deadly** during fires.
- **Governance Challenges:**
 - **Political Interference:** Illegal colonies are often **regularized during elections** without fire safety upgrades, while **stricter rules** like Delhi's 2019 fire safety amendments have been **rolled back** under pressure from builders.
 - **Lack of Public Awareness:** Residents and businesses often **ignore fire drills** and get trapped due to **unfamiliarity with exits**, while commercial spaces are **misused** for **storage in stairwells** or **illegal factories** in basements.
- **Industrial and Commercial Oversights:**
 - **Faulty Machinery and Poor Maintenance:** Overheated equipment or unserviced Heating, ventilation, and air conditioning (HVAC) systems in workplaces.
 - **Unsafe Handling of Hazardous Materials:** Chemical spills or gas leaks in factories triggering explosions.
- **Climate-Driven Threats:**
 - **Severe heat:** Extreme heat caused by **climate change** leads to **excessive use of air conditioners**, which can **overload electrical systems**, and in some cases result in **AC compressor bursts**, increasing the risk of **fire incidents** in **urban areas**.

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What are the Key Fire Safety Regulations in India?

- **National Building Code (NBC):** NBC, developed by the **Bureau of Indian Standards (BIS)**, was first introduced in **1970**, with its **third edition** released in **2016**.
 - It serves as the **primary standard** for fire safety in India, offering guidelines on general **construction, maintenance, exit routes, and fire safety measures** for buildings.
 - State governments are required to **integrate** its recommendations on **minimum fire safety and rescue protocols** into their local bylaws.
- **Model Building Bye Laws 2016:** It ensures fire safety through its key provisions like use of **fire-resistant materials** for construction, installation of **fire alarms and detection systems**, adequate natural light and **ventilation** to avoid smoke buildup etc.
- **Fire Prevention and Fire Safety Act, 2005:** It is designed to ensure **fire safety** in buildings and must be upheld by all states to **consolidate and update laws** related to fire prevention and safety.
- **Model Bill to Provide for the Maintenance of Fire and Emergency Service for the State, 2019:** It offers a model framework for states to **manage fire and emergency services** effectively.
- **Scheme for Expansion and Modernization of Fire Services in the States 2023:** It was launched by the Central Government in **2023** after the **15th Finance Commission** recommended **Rs 5,000 crore** to strengthen **fire services** at the state level.
- **Fire Safety Week:** Union Health Ministry observes **Pan-India 'Fire Safety Week'** from **21st to 25th April** to **raise awareness about fire prevention and safety practices** across the country.

- **NDMA Guidelines:** The National Disaster Management Authority (NDMA) has also laid out guidelines on **fire safety at homes, schools, and hospitals**.

How can Urban Areas be Made Fire-resilient?

- **Infrastructure Modernization:**
 - **Smart Infrastructure:** Lowered **sidewalks** aid fire engine access, while **AI detection, self-regulating grids, and fire-resistant materials** boost fire safety. **Retractable staircases** offer extra emergency exits in high-rises.
 - **Retrofitting Fire-Retardant Materials:** **Retrofitting buildings with fire-retardant materials** (such as flame-resistant paints, coatings, and insulation) can reduce the speed and intensity of a fire.
- **Overhauling Firefighting:**
 - **More Breathing Apparatuses:** Increasing the number of **breathing apparatuses** for **firefighting personnel** ensures more **firefighters** can enter smoke-filled buildings to conduct rescues without suffocating.
- **Safe Industrial Practices:**
 - **Industrial risk management:** Industries should **phase out** the use of **hazardous materials** and adopt **safe storage protocols**, ensuring that any chemicals or substances that could contribute to a fire are handled with **strict safety measures**.
- **Climate Resilience:**
 - **Innovative Strategies:** **Green spaces** as firebreaks, **water recycling systems** for firefighting reserves, and **predictive analytics** to forecast fire risks can enhance fire prevention and response strategies.



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Rapid Fire Current Affairs

Highlights

- Dongria Kondh Tribe
- National Scheme for Upgradation of ITIs
- Gaps in MSME Sector
- Revised SHAKTI Policy 2025
- Bond Forwards
- Asteroid 2024 YR4
- Semi Cryogenic Engine
- Indore Declared India's First Beggar-Free City
- Wadge Bank
- Kendu Leaf
- 80th Anniversary of World War II
- Maharana Pratap Jayanti
- National Technology Day 2025
- UN Vesak Day 2025
- IMDEX Asia 2025
- SVAMITVA Scheme & WB Land Conference 2025
- Saola
- Predatory Pricing
- Geostrategic Passes Connecting Kailash Mansarovar Yatra
- Bhimgad Wildlife Sanctuary
- US Places India on 'Priority Watch List'
- AI-Enabled Water Atlas
- SC Rules Licensed Stamp Vendors as 'Public Servants'
- INS Tamal
- Impact of Marine Pollution on Seabirds
- Vembanad Lake
- Democratic Republic of Congo (DRC)
- Cloud Seeding
- 300th Birth Anniversary of Ahilyabai Holkar
- Insider Trading
- Genetic Adaptations in the Haenyeo
- International Thalassemia Day
- World Red Cross and Red Crescent Day
- Green Hydrogen Certification Scheme of India (GHCI)
- INS Sharda to Maldives for HADR
- Bagram Airfield
- Genome-edited Rice Varieties
- Kaleshwaram Lift Irrigation Project
- Increase in Fair and Remunerative Price
- Mt. Makalu
- Red-Crowned Roofed Turtle

Dongria Kondh Tribe

The **Dongria Kondh** are a **Particularly Vulnerable Tribal Group (PVTG)** residing in Odisha's **Niyamgiri Hills** and are known for their **spiritual bond with nature, and distinct culture**.

- **Dongria Kondh Tribe:** They worship **Niyam Raja**, the deity of the hills, and follow practices like **Podu (shifting) cultivation**
 - They speak **Kui**, an ancient **Dravidian language**, and pass down ancestral wisdom through **oral traditions (no script)** of songs and dance.
 - They have a number of **sub-tribes**, such as the **Kovi, Kuttia, Languli, Penga, and Jharnia (protector of streams)**.

- **Land Rights and Legal Victory:** In the 2000s, the tribe strongly opposed **Vedanta's mining operations** on their land.
 - This resistance culminated in a landmark **2013 Supreme Court judgment** that upheld the **Gram Sabha's** constitutional right to reject mining projects in their area.
- **PVTG:** is a **sub-classification** of a Scheduled Tribe that is considered **more vulnerable** than a regular Scheduled Tribe.
 - India has **75 PVTGs**, with the **highest number (13) in Odisha**, followed by 12 in Andhra Pradesh.
- **Niyamgiri Hill Range:** It is located in **Kalahandi and Rayagada** districts of Odisha, is bordered by **Karlapat Wildlife Sanctuary** to the northwest and **Kotgarh Wildlife Sanctuary** to the northeast.

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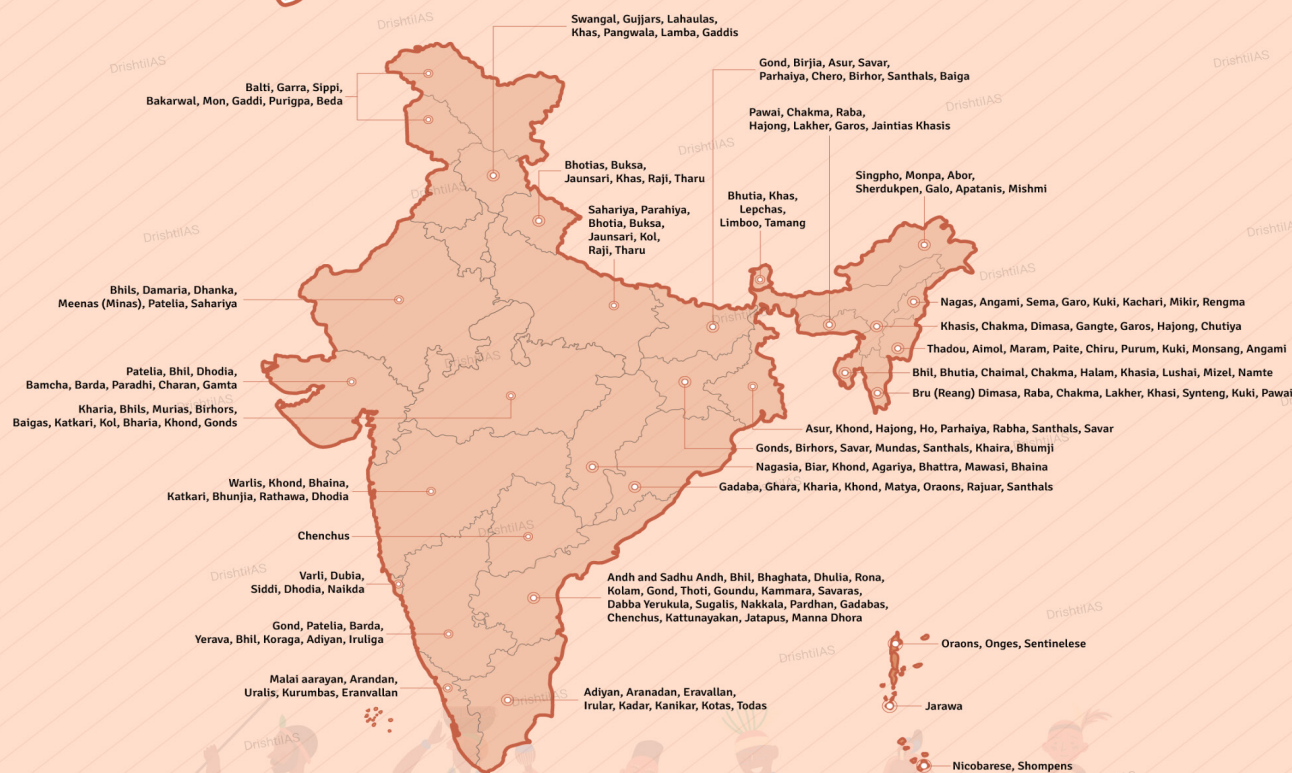
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Major Tribes in India



- STs constitute **8.6% of the population of India** (Census 2011). Draft National Tribal Policy, 2006 records **698 STs** in India.
- **Particularly Vulnerable Tribal Groups (PVTGs)** are more vulnerable among the tribal groups. Among the 75 listed PVTGs, the highest number is found in Odisha.
- **Bhil is the largest tribal group** (38% of the total scheduled tribal population of India) followed by the Gonds.
- **Madhya Pradesh has the highest tribal population** in India (Census 2011).
- The **Santhal** are the **oldest tribes** in India. The Santhal system of governance, known as **Manjhi-Paragana**, can be compared to local self-governance.
- According to the Scheduled Castes and Scheduled Tribes list (modification orders), 1956, the inhabitants of **Lakshadweep** who and both of whose parents were born in these islands are treated as STs.
- **Article 342** of the Constitution prescribes procedure to be followed for specification of STs.
- **Article 275** provides for the **grant of special funds** by the Union Government to the State Government for promoting the welfare of Scheduled Tribes and providing them with a better administration.



Read More: [Dongria Kondh Tribe](#)

National Scheme for Upgradation of ITIs

The Union Cabinet has approved a **Rs 60,000 crore** scheme to upgrade **1,000 government Industrial Training Institutes (ITIs)** over five years, along with the creation of five **National Centres of Excellence (NCOEs)** for Skilling.

- It will be funded by **the Centre, states, industries**, with **ADB** and **World Bank** co-financing **50%** of the central share.
- It focuses on upgrading ITIs under a **hub-and-spoke model** with industry-relevant trades, and promoting **new-age skills** among 2 million youth in capital-intensive sectors like **automation, AI**, and **advanced manufacturing**.

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- **Five National Centres of Excellence for Skilling** to be set up in existing **National Skill Training Institutes (NSTIs)** at Bhubaneswar, Chennai, Hyderabad, Kanpur, and Ludhiana to train **50,000 trainers**.
 - NSTIs primarily focus on **training trainers**; currently, there are **33 NSTIs** across India.
- An **industry-led SPV model** will drive **curriculum planning, infrastructure, and management**, marking a shift from **government-only control** to **public-private collaboration**.
- ITIs are **vocational training centers** that provide training in trades like **electrical, mechanical, carpentry, plumbing, and computer technology**.
 - The **Directorate General of Training (DGT)**, under the **Ministry of Skill Development and Entrepreneurship (MSDE)**, is the apex organization for the **affiliation and accreditation** of ITIs.

Read More: [Restructuring Skill India Programme](#)

Gaps in MSME Sector

The report titled “*Understanding the Indian MSME Sector: Progress and Challenges*” by the **Small Industries Development Bank of India (SIDBI)** identifies **lack of timely and adequate credit** as a primary challenge for **Micro, Small and Medium Enterprises (MSMEs)** in India.

- **Key Findings:** Informal borrowing remains prevalent, with **12% of micro enterprises, 3% of small industries, and 2% of MSMEs overall** still relying on informal lending sources.
 - The MSME sector faces an addressable **credit gap of 24%**, amounting to nearly **Rs 30 lakh crore**, with the gap rising to **27% in the services sector** and reaching **35% for women-owned MSMEs**.
 - 25% of MSMEs face a skilled manpower shortage, especially in defence, garments, hotels, and sanitaryware sectors.
- **SIDBI:** It is a statutory body established under the **SIDBI Act, 1989**, and serves as the **principal financial institution for the promotion, financing, and development** of the MSME sector in India.
 - SIDBI, headquartered in **Lucknow**, Uttar Pradesh, is a **wholly-owned subsidiary** of the Government of India.

- **Current Landscape of MSMEs in India:** MSMEs now contribute **30.1% to India's Gross Value Added (GVA) (2022–23)**, up from 27.3% in 2020–21.
 - Exports from MSMEs jumped from **Rs 3.95 lakh crore (2020–21)** to **Rs 12.39 lakh crore (2024–25)**, with their share in total exports rising to 45.79% by 2024.

New classification of MSME

Type	INVESTMENT		TURNOVER	
	Current	Revised	Current	Revised
MicroEnterprise	Rs 1cr	Rs 2.5cr	Rs 5cr	Rs 10cr
Small Enterprise	Rs 10cr	Rs 25cr	Rs 50cr	Rs 100cr
Medium Enterprise	Rs 50cr	Rs 125cr	Rs 250cr	Rs 500cr

Source: Budget 2025-2026, Speech of Nirmala Sitharama, Union Minister of Finance February 1, 2025.

Read More: [Union Budget 2025-26 Measures to Boost MSMEs](#)

Revised SHAKTI Policy 2025

The **Cabinet Committee on Economic Affairs (CCEA)** approved the revised **SHAKTI policy** for coal allocation to enhance **coal availability**, and promote **ease of doing business** in the power sector.

- **SHAKTI Policy (2017)** aims to make **coal allocation transparent** by moving from a nomination-based system to **auction or tariff-based bidding**.
- **Key Highlights of the Revised Policy:** It introduces two streamlined windows-**Window-I** and **Window-II**, replacing eight older categories to enhance the **ease of doing business**.
 - **Window-I (Coal at Notified Price):** Coal will be supplied at **fixed prices for government-owned thermal plants**, including **joint ventures (JVs)** and subsidiaries.
 - **Window-II (Premium above Notified Price):** **Power producers** can secure coal through an **auction at a premium over the notified price**.
 - Offering them **flexibility** in selling electricity via **long-term (up to 25 years)** or **short-term (up to 12 months)** contracts.
- **Coal:** India has the world's **5th largest coal reserves** and is the **2nd biggest coal consumer**.

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- Coal remains vital, contributing **55% to India's energy mix** and powering **over 74% of electricity generation**.
- **Odisha, Jharkhand, and Chhattisgarh** are the **top three coal-rich states** in India, together holding about **69%** of the country's total coal reserves.

Read More: [Coking Coal as Critical Mineral](#)

Bond Forwards

The **Reserve Bank of India's (RBI)** norms on **bond forwards** aim to establish a **regulated framework** for trading **forward contracts** in **government securities** in India.

- **Forward contracts** are customized agreements between two parties to **buy or sell an asset** at a **predetermined price** on a **specified future date**.



Forward Contracts



A forward contract is an agreement to buy or sell a currency at a set rate on a future date.



The agreed-upon exchange rate is locked in, protecting both parties from future changes.



1.2800

Both parties wait until the specified future date, with the exchange rate remaining unchanged.



On the agreed date, the currency is exchanged at the pre-set rate.

Bond Forwards

- **About:** **Bond forwards** are financial contracts in which **two parties agree to buy or sell a government bond (central or state)** at a **future date and pre-fixed price**, offering a new tool to manage interest rate risks.
- **Purpose:** To help **long-term investors** (like insurance companies) **hedge interest rate risk**, **improve cash flow planning**, and deepen the **bond derivatives market**.
 - Unlike **unregulated FRAs (Forward Rate Agreements)**, which offer only **cash settlement**, bond forwards involve **physical delivery** of the bond, aligning better with the needs of such investors.
- **Market Impact:** Bond forwards are likely to boost demand for 10–15-year **State Development Loans (SDLs)**, which offer higher yields (e.g., 6.71% on SDLs vs. 6.41% on central government bonds), making them attractive for forward contracts.

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- **Participants:** Residents and non-residents eligible to invest in government securities under the Foreign Exchange Management (Debt Instruments) Regulations, 2019, can participate in bond forward transactions. Additionally, any entity classified as a non-retail user is permitted to undertake such transactions as a user.
- **Scheduled Commercial Banks (SCB), Primary Dealers** (as market makers), and institutional investors like insurance companies can participate, while **Small finance banks (SFBs)**, payment banks, **local area banks (LAB)**, and **regional rural banks (RRBs)** are excluded.

Read More: [Bond Yield](#)

Asteroid 2024 YR4

The **National Aeronautics and Space Administration (NASA)** has updated its assessment of **Asteroid 2024 YR4**, initially considered a potential Earth threat, now indicating a **3.8% chance** of it colliding with the **Moon** on **December 22, 2032**.

- This collision with the Moon could result in the formation of a **large crater** and pose a significant risk to **lunar missions**.
- **Asteroid 2024 YR4:** It was first discovered in December 2024, by the **Asteroid Terrestrial-impact Last Alert System (ATLAS) telescope** in Chile.
 - It is a **Near-Earth asteroid (NEA)** with an orbit that brings it within **1.3 Astronomical Units (1 AU is the average distance from Earth to the Sun)** of Earth.
 - It is estimated to be **53-67 meters wide**, about the size of a **15-story building**.

Asteroid:

- **About:** Asteroids are **rocky, airless remnants** from the early solar system, formed about **4.6 billion years ago**.
- **Location & Size:** Mostly found in the **Asteroid Belt between Mars and Jupiter**, some also follow **Earth-crossing orbits**. They range in size from a few meters to hundreds of kilometers.
- **Classification:** They are classified as **Main Belt (between Mars and Jupiter)**, **Trojans** (sharing a planet's orbit at

Lagrangian points), and **Near-Earth Asteroids** (whose orbits bring them close to or intersect Earth's path).

- **Initiatives Related to Monitoring of Near-Earth Objects:**
 - **ESA's Hera Mission**
 - **NETRA Project & Space Junk**



Read More: [Asteroid 2024 YR4](#), [Double Asteroid Redirection Test \(DART\) Mission](#)

Semi Cryogenic Engine

Indian Space Research Organisation (ISRO) successfully conducted a **short-duration hot test** of its **semi cryogenic engine** at the **ISRO Propulsion Complex (IPRC), Mahendragiri**.

- A short-duration hot test involves briefly firing the engine using actual fuel to **verify its ignition and performance under real operating conditions**. This test marks the 2nd milestone, following the first successful hot test conducted in March 2025.
- **Semi Cryogenic Engine:** It is a **liquid rocket engine** that uses **liquid oxygen (LOX)** as an oxidizer and **refined kerosene (RP-1)** as fuel.
 - Designed to power the booster stages of future heavy-lift launch vehicles, semi-cryogenic engine's LOX-kerosene combination offers higher density

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impulse than cryogenic systems, enhancing propulsion performance.

- Additionally, **kerosene is cheaper and easier to handle** than liquid hydrogen, reducing costs and simplifying operations.
- The successful development of this semi-cryogenic engine will boost ISRO's payload capacity and support future launch vehicles like the **Next Generation Launch Vehicle (NGLV)**.
- **NGLV:** It is a cost-efficient, reusable heavy-lift rocket being developed by ISRO, designed to carry up to **30 tonnes to Low Earth Orbit**, with a reusable first stage.
 - It features a **3-stage design** with **LOX engines for the first two stages** and a **cryogenic upper stage**.
 - NGLV aims to support **communication satellite launches, deep space missions, and future human spaceflight** and cargo missions.

Cryogenic vs Semi-Cryogenic Engines: Key Differences

Feature	Cryogenic Engine	Semi-Cryogenic Engine
Fuel	Liquid Hydrogen (LH ₂) + Liquid Oxygen (LOX)	Refined Kerosene (RP-1) + Liquid Oxygen (LOX)
Fuel Temperature	LH ₂ at -253°C, LOX -183°C	-183°C, Kerosene stored at ambient temperature
Complexity	High (due to handling ultra-cold LH ₂ , insulation challenges)	Lower (kerosene is stable at room temperature)
Cost	Expensive (LH ₂ production/storage costs, complex infra-structure)	Cheaper (kerosene is cost-effective, simpler logistics)
Thrust	Lower thrust but higher specific impulse (efficiency in vacuum)	Higher thrust (ideal for heavy-lift boosters)
Advantages	- High efficiency (specific impulse ~450 sec) - Clean exhaust (water vapor)	- Higher thrust-to-weight ratio - Higher density impulse (more fuel storage) - Cost-effective

Read More: [3D Printed Cryogenic Engine and Space Sector Privatisation](#), [NISAR Satellite](#).

Indore Declared India's First Beggar-Free City

Indore, Madhya Pradesh, has been declared **India's first beggar-free city** under the **Ministry of Social Justice**

and **Empowerment's Bhiksha Vriti Mukta Bharat** (begging-free India) initiative.

- The achievement, also recognised by the **World Bank**, follows sustained rehabilitation efforts under the **"Comprehensive Rehabilitation of Persons Engaged in the Act of Begging"**, a sub-scheme of **SMILE scheme**.

Begging

- **About:** Begging involves soliciting alms through various acts like singing, selling items, or displaying deformities.
- **Status:** **Census 2011** reports **4.13 lakh beggars in India**, with the highest numbers in **Uttar Pradesh, Bihar, Maharashtra, and Madhya Pradesh**. **SECC 2011** estimates 6.62 lakh rural households depend on begging.
- **Constitutional Basis:** Vagrancy (includes beggary) is in the **Concurrent List** (Entry 15, List III), where both Centre and states can legislate.
- **No Central Law:** India lacks a uniform central law on begging, and **Bombay Prevention of Begging Act, 1959**, acts as a main law which criminalizes begging and defines beggars broadly.

SMILE Scheme: Rehabilitation of Persons Engaged in Begging

- **About:** Launched in 2022, the **SMILE scheme** includes 2 sub-schemes: **Rehabilitation of Persons Engaged in Begging** and **Empowerment of Transgender Persons**.
 - The **beggary sub-scheme** focuses on **identifying, profiling, and rehabilitating individuals** engaged in begging, **with their consent**, in urban areas like religious, historical, and tourist cities.
 - The goal is to rehabilitate **at least 8,000 individuals** from FY 2023–24 to FY 2025–26.
- **Rehabilitation Strategy:** It involves **coordination with local bodies for identification**, outreach, and resettlement, with **empathetic engagement** and **profiling through photo/video documentation**.
 - District administrations, **NGOs**, **SHGs**, and Temple Trusts provide services like counselling, education, and reintegration support.

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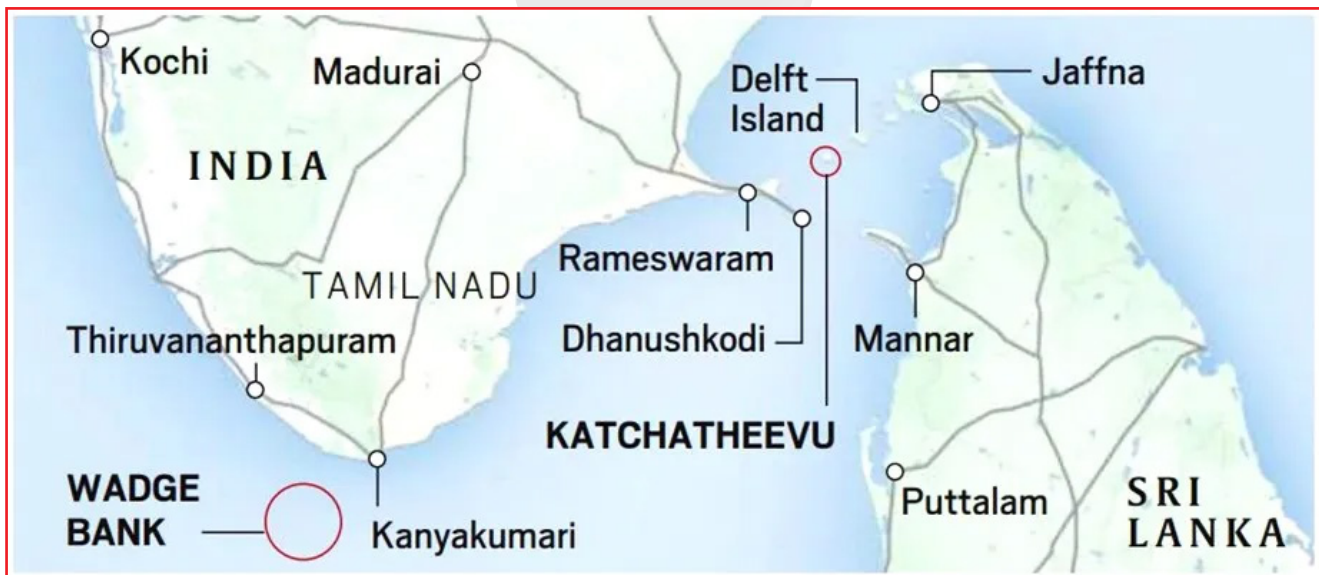
Read More: [Ban on Begging](#), [Building An Inclusive Society Through SMILE](#).

Wadge Bank

Fishermen in **Kanyakumari** oppose the Union government's proposed **hydrocarbon exploration** project at **Wadge Bank** under **Hydrocarbon Exploration and Licensing Policy (HELP)**, fearing it will harm their livelihoods and the ecologically sensitive marine area.

Wadge Bank

- **Wadge Bank** is a submarine plateau in the Indian Ocean, located 80 km off Kanyakumari (Cape Comorin), lying in India's **Exclusive Economic Zone (EEZ)**.
 - A **bank** is a shallow elevation on the **continental shelf**, usually **less than 200 meters deep**, formed of **continental origin**.
- It is known for its **rich marine biodiversity** and **abundant fishery resources**.
- The **1976 India-Sri Lanka Maritime Boundary Agreement** grants India **sovereign rights** over **Wadge Bank**, including the right to explore **petroleum and minerals**, while **Sri Lankan fishermen are prohibited** from fishing in the area.
- It is one of the **world's richest fishing grounds**, with **high organic productivity**, serving as a **key feeding and breeding ground** for fish.
- Wadge Bank **peak fishing season** is from **July to October**, boosted by **seasonal upwelling** that enhances nutrient availability.



Hydrocarbons

- **Hydrocarbons** are organic compounds (made of carbon & hydrogen) that form the basis of fossil fuels like **coal**, **petroleum**, and **natural gas**.

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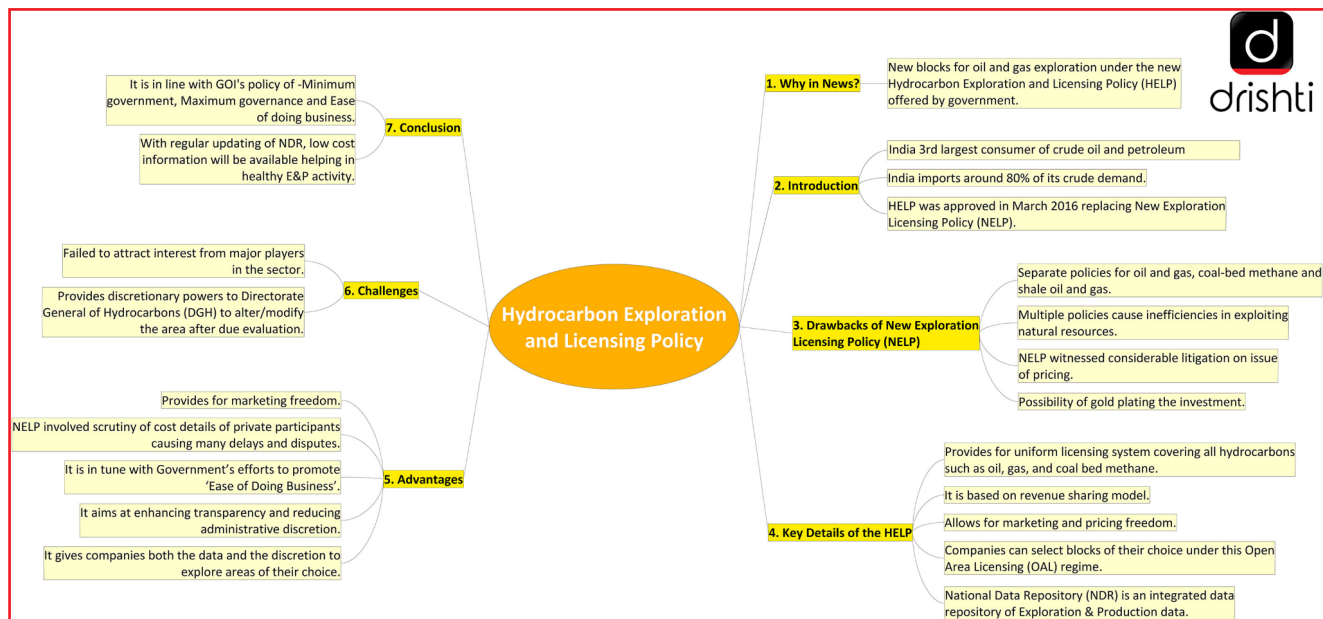


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Read More: [Katchatheevu Island](#), [Hydrocarbons Exploration and Extraction](#)

Kendu Leaf

Villages of Odisha, are awaiting government **deregulation on kendu (Tendu) leaves** to manage their trade independently under the **Forest Rights Act (FRA), 2006**.

- Odisha is India's **3rd-largest kendu leaf producer** after Madhya Pradesh and Chhattisgarh, contributing around 4.5–5 lakh quintals annually, nearly 20% of national output.

Kendu Leaf

- **Botanical Name:** *Diospyros melanoxylon* (leaves)
- **Common Use:** Wrapper for beedis (local hand-rolled cigarettes)
- **Economic Significance:** Kendu leaf, a nationalised product like bamboo and sal seed, is a major **Non-Timber Forest Produce (NTFP)**, often called “green gold” and a key income source for tribals, women, and widows.
- **Legal Status:** Covered under **Minor Forest Produce (MFP)** as per FRA, 2006

Forest Rights Act (FRA), 2006

- The FRA, 2006 recognizes and grants **forest rights to forest-dwelling Scheduled Tribes and Other Traditional Forest Dwellers** lacking formal land titles despite generations of residence.
 - It grants **individual rights** over cultivated land, **MFP rights** to collect and sell non-timber produce, **community rights** over traditional forest use, **habitat rights** for **PVTGs**, and **Community Forest Resource (CFR) rights** to manage and conserve forests. **Gram Sabha approval** is mandatory for diversion of forest land.
- The FRA overrides conflicting state laws like the **Odisha Kendu Leaf (Control of Trade) Act**.

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TREE ECOLOGY SERIES

Tendu / Coromandel Ebony



Botanical Name: *Diospyros melanoxylon*

Image source: efloraindia

About this tree

Habit

- Deciduous tree
- Medium size
- Slow growing

Specific properties

- Drought tolerant
- High degree of mortality mainly due to grazing, cutting, leaf plucking and fires

Propagation: Seeds

Ecology

- Fruit preferred by fruit bats and birds, notably hornbills
- Leaves and fruits are food for sloth bear, langurs
- Host plant for Baronet and Common Silverline butterflies

Uses

- Contributes to socio-economic livelihood of tribal people in India
- Fruit is consumed by tribes in different forms as pulp, paste, powder and fruit wine
- Leaves are used to make beedi, a traditional cigarette
- Leaves are used in treatment of scabies, old wounds, as laxative and against digestive problems
- Fruit is used in treating digestive disorders, urinary, skin and blood diseases
- Timber

www.forrest-india.org

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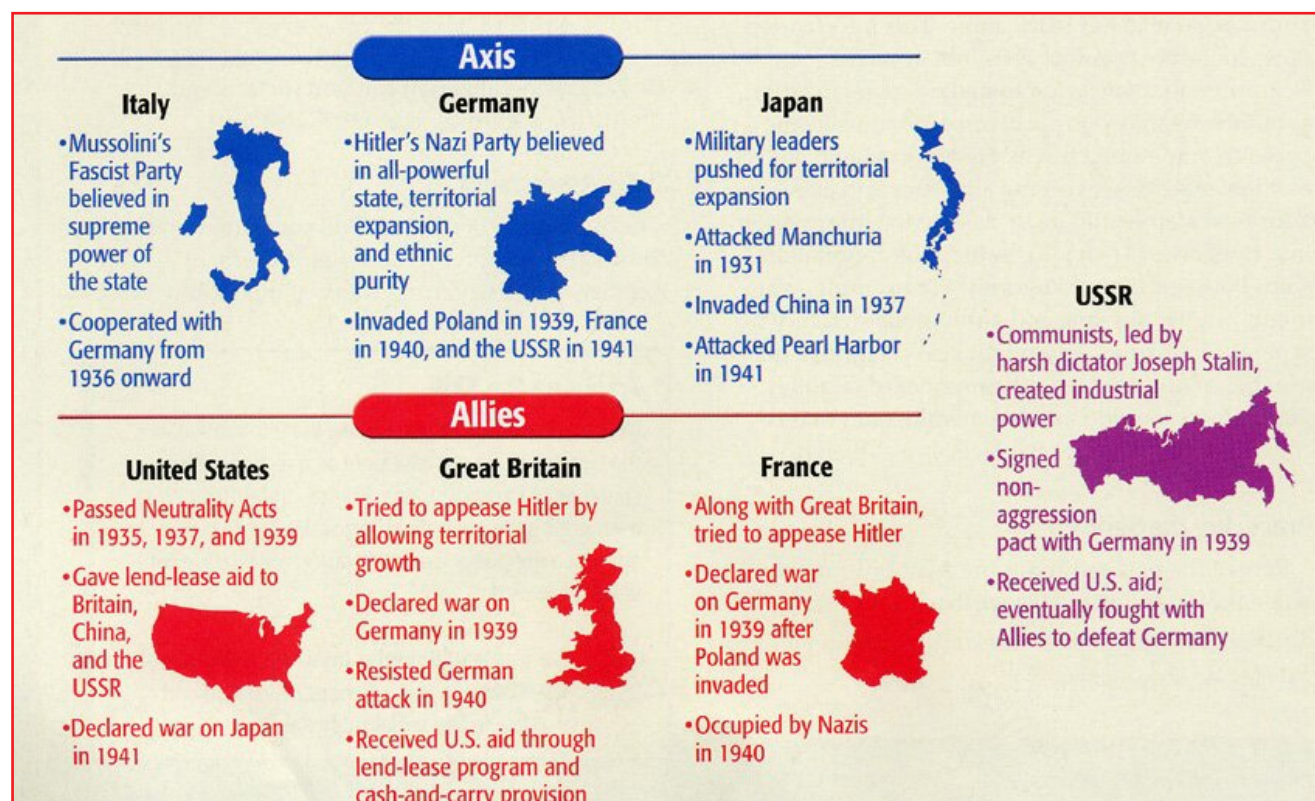


Read More: [Tribal Ministry's Directive on Forest Right Act, 2006](#).

80th Anniversary of World War II

On 9th May 2025, Russia marked the 80th anniversary of Nazi Germany's defeat in [World War II](#), with President Vladimir Putin leading a grand **military parade** featuring **tanks**, **missiles**, and **troops** through **Red Square**.

- **Nazi Germany** surrendered on 7th May 1945, with the act of **military surrender** taking effect on 8th May 1945, following the **Battle of Berlin** (20th April – 2nd May 1945).
- Russia celebrates **Victory Day** on 9th May instead of 8th May (like Western nations) due to differences in **time zones**.
- **World War II** (1939–1945) was the most **widespread and devastating conflict** in history, fought between the **Axis powers** (Germany, Italy, Japan) and the **Allied powers** (including the US, France, Great Britain, the Soviet Union, and China).



- The war began on 1st September 1939 with **Germany's invasion of Poland**, prompting **Britain and France** to declare war on Germany.
- Under **Operation Barbarossa**, **Germany** invaded the **Soviet Union**, but was halted during the **Battle of Stalingrad** (1942–1943).
- **World War II** ended with the **unconditional surrender of Germany** in **May 1945**, following the **fall of Berlin**, and the **surrender of Japan** in **September 1945** after the **atomic bombings of Hiroshima and Nagasaki**.

Read More: [World War II and India](#)

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Maharana Pratap Jayanti

The Prime Minister paid rich tributes to the valiant warrior, **Maharana Pratap** on the occasion of his Jayanti on 9th May 2025.

- **Maharana Pratap**, born on 9th May 1540 in Kumbhalgarh, Rajasthan, was the 13th King of Mewar and the eldest son of Udai Singh II.
- **Maharana Udai Singh II** ruled the kingdom of Mewar with his capital at Chittor and was also the founder of the city of Udaipur.



- The **Battle of Haldighati** (18th June 1576) was fought between Maharana Pratap and Raja Man Singh of Amber, a general of Mughal emperor Akbar; though Maharana Pratap fought bravely, he was defeated by the Mughal forces.
- After 1579, Maharana Pratap regained Western Mewar and set up his new capital at Chavand near Dungarpur.
- He died on 19th January 1597 and was succeeded by his son Amar Singh, who submitted to Emperor Jahangir in 1614.

Read More: [Birth Anniversary of Maharana Pratap](#)

National Technology Day 2025

National Technology Day 2025 was observed on 11th May 2025 with the theme “YANTRA – Yugantar for Advancing New Technology, Research & Acceleration”.

- **Yugantar** marks India’s rise as a global tech leader, while **YANTRA** embodies India’s scientific heritage, innovation, and scalable solutions.
- Celebrations in 2025 focused on advancing **deep-tech**, precision engineering, and transformative R&D with participation from policymakers, scientists, and industry leaders.
- The day commemorates the events of 11th May 1998, when India successfully conducted nuclear tests under **Operation Shakti** and saw the maiden flight of the **Hansa-3 aircraft**.
 - The day was officially declared in 1999 by then Prime Minister Atal Bihari Vajpayee to honor these achievements.
- It serves as a platform for honoring scientific excellence, showcasing innovations, and promoting partnerships between science, industry, and society.

Read More: [National Technology Day](#)

UN Vesak Day 2025

United Nations Vesak Day (International Day of Vesak) was held in May 2025 in Ho Chi Minh City, Vietnam, with delegates from 85 countries, themed “Solidarity and Tolerance for Human Dignity: Buddhist Wisdom for World Peace and Sustainable Development.”

- In another development, India successfully intervened to stop the auction of **Piprahwa Buddhist relics** by Sotheby’s Hong Kong auction house.

UN Vesak Day

- **Vesak Day**, is the holiest day in Buddhism, observed on the full moon of May, marks the birth, enlightenment, and Mahaparinirvana of **Lord Buddha**, all of which happened on the same day.
- Recognized by the UN since 1999, Vesak has been celebrated at the UN Headquarters and worldwide with Buddhist organizations, with the first official event being held in 2000 in New York.

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- It highlights the global significance of **Buddhist philosophy** in promoting peace, compassion, and ethical living.

Piprahwa Buddhist Relics

- **Excavated in 1898** at the **Piprahwa Stupa near Kapilavastu** (Siddharthnagar, UP), the relics were **originally deposited by the Sakya clan**, Buddha's kinsmen.
- They include **bone fragments, soapstone and crystal caskets**, a sandstone coffer, and **offerings** (gold and gemstones), which are confirmed to be linked to Buddha by a **key Brahmi inscription**.
- In **1899**, most relics were moved to the **Indian Museum, Kolkata**, and are protected under the **Antiques Act, 1972** and the **Treasure Trove Act, 1878**, prohibiting their sale or export.
 - Some relics were gifted to the **King of Siam (Thailand)** by the British.

Read More: [Vesak Celebration](#), [Buddhism in India](#)

IMDEX Asia 2025

INS Kiltan (P30) participated in **International Maritime Defence Exhibition (IMDEX) Asia 2025** at Singapore's **Changi Exhibition Centre**, reaffirming India's strategic maritime presence and strengthening naval ties in the **Indo-Pacific**.

IMDEX Asia

- **About:** IMDEX Asia, held biennially in Singapore since 1997, is a premier maritime and defence exhibition in the Asia-Pacific region.
 - It serves as a global platform for navies, coast guards, and maritime defence industries to showcase naval platforms, debut advanced technologies, and engage in strategic policy dialogue.
- **Key Features:** The **International Maritime Security Conference (IMSC)**, a key component of IMDEX Asia, brings together navy chiefs, coast guard heads, policymakers, and maritime experts to foster mutual security, and advance cooperative solutions to global maritime challenges.

- It also features the **Maritime Information Sharing Exercise (MARISX)**, a scenario-based exercise to improve coordination and share best practices in maritime security.

INS Kiltan

- INS Kiltan is an **indigenously-built anti-submarine warfare stealth corvette** and the **3rd of four Kamorta-class ships** under **Project 28**.
 - The ship is named after an island in the **Aminidivi group** of the strategically located Lakshadweep and Minicoy islands.
- It is India's **first major warship with a carbon fibre composite superstructure**, enhancing stealth, reducing weight, and cutting maintenance costs.
- The ship carries the legacy of the former **Petya Class ship 'Kiltan (P79)**', which participated in **'Operation Trident'** during the **1971 Indo-Pak war**.



Read More: [Indian Naval Ships Strengthen Maritime Partnerships](#)

SVAMITVA Scheme & WB Land Conference 2025

At the **World Bank Land Conference 2025**, India showcased its pioneering initiatives in land governance—the **SVAMITVA Scheme** and the **Gram Manchitra** platform as part of the plenary session on **"Good Practices and Challenges in Land Tenure and Governance Reform"**.

- **SVAMITVA Scheme:** The SVAMITVA (Survey of Villages and Mapping with Improved Technology in Village Areas) was launched by the **Ministry of Panchayati Raj** in 2020.

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SCAN ME

- It is a **central sector scheme** to provide **legal ownership of residential properties in rural areas** using **drone** and **GIS technology**.
- It aimed at creating a **Record of Rights for rural property owners**, focusing on **abadi areas (inhabited regions)**.
- As of April 2025, the **scheme has issued property cards to 24.4 million households** in 1.6 lakh villages, unlocking land value worth USD 1.162 trillion.
- **Gram Manchitra Platform:** It is a GIS-based platform designed to empower **rural governance** and planning.
 - It **integrates geospatial data with existing schemes** to provide visual insights for effective decision-making at the grassroots level.
- **World Bank Land Conference:** It is a **global forum on land governance, bringing together stakeholders** to share research, address technical challenges, and promote best practices in land management.

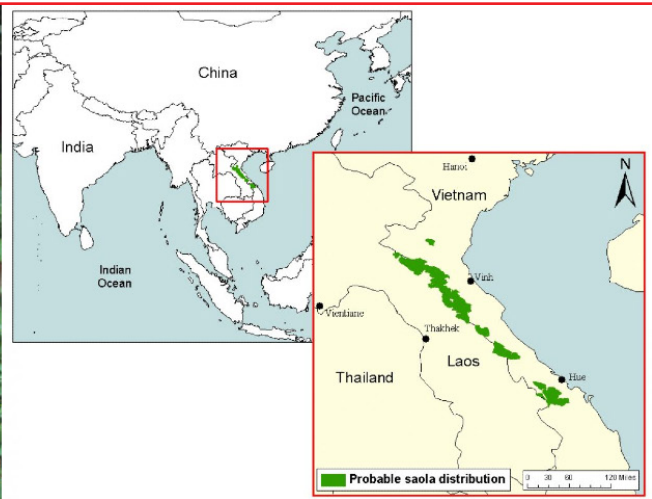
Read More: [58 Lakh SVAMITVA Property Cards Distribution](#)

Saola

Scientists have mapped the **genome** of the **Saola** (*Pseudoryx nghetinhensis*) to aid conservation and found that the species split into two populations 5,000 to 20,000 years ago, coinciding with habitat changes during and

after the **Last Glacial Maximum (about 20,000 years ago)**. Agricultural expansion in Vietnam further isolated the populations. **Saola:**

- **Saola:** Often called the “Asian unicorn,” it is the **rarest large land mammal** and belongs to the **bovid genus**. It has a **dark, antelope-like body, soft fur, white facial markings**, and long parallel horns present in both sexes.
 - Its name, “**Saola**,” in Lao means “**spinning wheel posts**,” referencing the shape of its horns.
- **Habitat and Survival Threats:** The saola is found in the misty highland forests of the **Annamite mountain range between Vietnam and Laos**.
 - It is classified as Critically Endangered (**IUCN Status**) and is primarily threatened by **habitat loss, poaching, and indiscriminate snaring**.
- **Behavior:** Saola are **diurnal** (active during daylight hours) and are **herbivores** (folivores).
 - They are mostly solitary, although small groups of 2–3 individuals have been observed. **Males are territorial** and mark their territory by rubbing secretions from their maxillary glands on rocks and vegetation.
- **Reproduction:** Females give birth to a single calf after a **gestation period of 7–8 months**. The saola’s lifespan is estimated to be 8–11 years in the wild.



Read More: [Bishnoi, Blackbuck and Chinkara](#)

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Predatory Pricing

The [Competition Commission of India \(CCI\)](#) has notified the **Determination of Cost of Production Regulations, 2025**, to regulate [predatory pricing](#), particularly targeting [e-commerce](#) and [quick commerce platforms](#).

- Predatory pricing, defined under the [Competition Act, 2002](#), refers to a strategy where a company **deliberately lowers its prices below the cost of production** to reduce competition and eliminate competitors.
 - Once **competitor firms** are **weakened or eliminated**, the company typically raises prices to recoup its losses and consolidate [market control \(monopoly\)](#).
- **New regulations replaced** the 2009 rules by removing **market value** as a benchmark and redefining **total cost** to include **depreciation** and exclude **financing overheads** (daily business expenses) for greater clarity.
 - It uses a **sector-agnostic (neutral), case-by-case approach**, better suited for dynamic digital markets.
- CCI is a **statutory body** established under the [Competition Act, 2002](#) to promote fair competition, prevent anti-competitive practices, and protect consumer interests.

Terms Related to Anti-Competitive Practices

Cartels	Associations of independent businesses or countries to regulate pricing and production (typically illegal).
Mergers	Mergers combine companies into one entity , potentially reducing competition and attracting regulatory scrutiny.
Price Discrimination	Charging different prices to different customers for the same product/service.

Price Fixing Agreements

Competitors agreeing to set a **fixed price for their products/services**, eliminating competition and inflating prices.

Read More: [Market Monopoly and Anti-Competitive Practices](#)

Geostrategic Passes Connecting Kailash Mansarovar Yatra

India announced the resumption of the [Kailash Mansarovar Yatra \(KMY\)](#) after a 5-year pause, halted by China in 2020 due to [Covid-19](#) and [Line of Actual Control \(LAC\)](#) tensions. KMY has been operational since 1981.

- **About KMY:** KMY is a **pilgrimage** organized by the **Ministry of External Affairs (India)** to [Mount Kailash](#) (6,638 m) and [Lake Mansarovar](#) (4,600 m) in the **Tibet Autonomous Region (TAR)** of China.
- **Official Operational Routes (as of 2025):**
 - **Lipulekh Pass (Uttarakhand):** It is the shortest route to **Mansarovar (50 km from the border)**, but rough terrain extends the trek to 200 km.
 - It was the **first Indian border post opened for trade with China** in 1992, followed by **Shipki La (1994)** and **Nathu La (2006)**.
 - **Nathu La Pass (Sikkim):** This 1,500 km fully motorable route (it is one of the world's highest motorable roads) opened in 2015; easier for pilgrims, no trekking needed.
 - Nathu La connects **Sikkim with China's TAR** and is part of the ancient [Silk Road](#).
- **Mount Kailash:** [Mount Kailash](#), a **diamond-shaped black rock peak** in **Tibet**, is sacred to Hindus, Buddhists, Jains, and Bons, and is the source of major Asian rivers like the [Brahmaputra](#), [Sutlej](#), [Indus](#), and [Karnali](#).

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MAJOR PASSES IN INDIA



FACTS

- Umling La pass located in Eastern Ladakh has recently become the world's highest motorable pass (Project Himank).
- Lipu Lekh Pass is located close to the tri junction of Uttarakhand (India), China and Nepal.
- Nathu La (Sikkim) is situated on the Indo-Tibetan border. It is one of the three open trading passes between India and China (other two: Shipki La and Lipu Lekh Pass).
- Naku La, located in Sikkim, was recently in news due to the Indo-China face-off along the LAC at the pass.
- Zoji La links Leh with Srinagar and is known as the "Mountain Pass of Blizzards". The Zojila tunnel is Asia's longest tunnel.
- Dungri La (or Mana) Pass connects India and Tibet. It is located in the Nanda Devi Biosphere Reserve of the Zaskar mountain range (Uttarakhand). Even Indian nationals need prior permits from the Army to travel through this pass.
- Rohtang Pass (Himachal Pradesh) is situated in the Pir Panjal Range of the great Himalayas and connects Kullu Valley with Lahaul and Spiti Valleys.
- The widest gap of Western Ghats is at Palakkad (or Pal Ghat) in Kerala adjoining Tamil Nadu.



Read More: [Kailash Mansarovar Yatra](#)

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Bhimgad Wildlife Sanctuary

Public intrusion into the [eco-sensitive zone](#) of Bhimgad Wildlife Sanctuary (BWS) has triggered serious concern among conservationists, highlighting threats to the region's fragile ecosystem and biodiversity.

- **Eco-Sensitive Zones (ESZs)** are **buffer areas (up to 10 km)** around [national parks and wildlife sanctuaries](#), declared to reduce harmful human activities and are notified under the [Environment \(Protection\) Act, 1986](#) as per the [National Wildlife Action Plan \(2002–2016\)](#).
 - **Prohibited:** Commercial mining, polluting industries, major hydro projects, sawmills, commercial wood use, etc.
 - **Regulated:** Tree felling, construction of hotels/resorts, commercial water use, pesticide based farming etc.
 - **Permitted:** Traditional farming, rainwater harvesting, organic farming, use of renewable energy, and green technologies.
- **About Bhimgad Wildlife Sanctuary:** BWS is located in **Belgaum district**, Karnataka near the Goa border. It spans over the [Western Ghats](#) and was declared as a wildlife sanctuary in December **2011**.
 - It is named after **Bhimgad Fort**, built by Shivaji in the 17th century to defend against Portuguese forces.
 - It is home to diverse avifauna including the **Velvet-fronted Nuthatch**, **Malabar Grey Hornbill**, **Imperial Pigeon**, **Emerald Dove**, and the rare **Malabar Trogon**.
 - It is known as the **only known breeding site** of [Wroughton's Free-tailed Bat](#), found in the **Barapede Caves**.
 - The sanctuary includes the **Vajrapoha Waterfalls** and forms part of the [Mahadayi River](#)'s catchment area.

Read More: [Invasive Species and Food Crisis in Karnataka's Western Ghats](#)

US Places India on 'Priority Watch List'

The **United States Trade Representative's (USTR)** has placed **India** on its '[Priority Watch List](#)' (PWL) under **2025 Special 301 Report**, citing persistent challenges in [intellectual property rights \(IPR\)](#) protection and enforcement.

- **PWL:** It is a **classification** used in the [USTR Special 301 Report](#) that **flags countries** with **major shortcomings** in **IP protection and enforcement**, posing risks to US innovation and businesses.
- **Possible impact:**
 - The USTR **may initiate formal trade investigations** or **impose sanctions** if countries fail to demonstrate significant improvements.
 - India's placement on the priority watch list may **impact trade talks with the US**, but India maintains that its IP laws align with [WTO TRIPS](#) compliance.

Read More: [US Priority Watch List](#)

AI-Enabled Water Atlas

Haryana has launched the **Haryana Water Resource Atlas 2025**, an [Artificial Intelligence \(AI\)](#)-powered geospatial platform that **monitors, manages, and conserves** the state's rapidly [depleting water reserves](#).

AI-Enabled Water Atlas

- The platform offers **real-time insights** into **groundwater levels, surface water bodies, aquifers, recharge zones, canal systems, and cropping patterns**.
- It provides **real-time, data-driven support** for water conservation, sustainable farming, and infrastructure planning by integrating **satellite data, GPS surveys, IMD meteorological inputs, and data from Central Groundwater Board (CGWB)**, Irrigation, and Agriculture Departments.

India is taking strides in effective **water management** with the help of **AI**. Recently, **researchers from IIT Kharagpur** have also developed an **AI-based prediction model** for detecting **Arsenic pollution** in drinking water.

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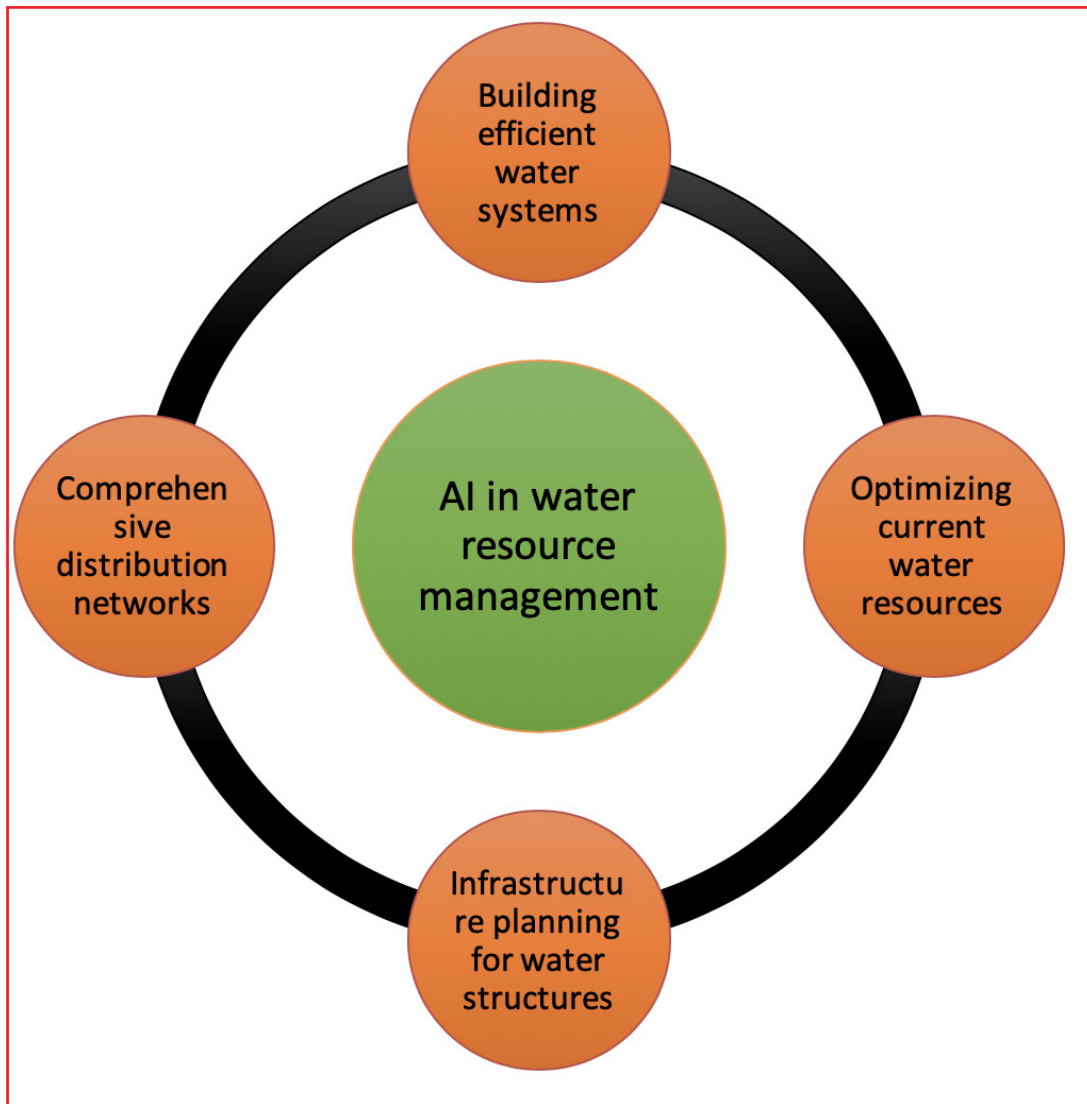


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Read More: [Making Water Management Effective in India](#)

SC Rules Licensed Stamp Vendors as ‘Public Servants’

The **Supreme Court (SC) of India** upheld the Delhi High Court’s view that **licensed stamp vendors are public servants** under the **Prevention of Corruption Act, 1988** because their role involves ensuring access to stamp papers, a key element in legal transactions.

- SC noted that licensed Stamp vendors receive remuneration from the **government through commission or discounts**, confirming their link to public service and state remuneration.
- **Public Servant:** The SC noted that under **Section 2(c) of the Prevention of Corruption Act, 1988**, a public servant is defined as any person **who is in the service or pay of the government**.
 - It also includes individuals who are **remunerated by the government** through fees or commission for performing any public duty.

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- The SC clarified that the term '**public servant**' must be interpreted widely and purposefully to uphold the objectives of the anti-corruption law.

Read more: [Prior Sanction to Prosecute Public Servants Under PMLA](#)

INS Tamal

The Indian Navy is set to receive **advanced stealth warship INS Tamal** from Russia.

- **About:** Tamal is a **stealth warship**, built as a part of the **2016 Indo-Russian deal**, with two ships built in **Russia** and two in **India**.
 - INS Tamal is the **2nd Russian-built frigate** in this batch, following [INS Tushil](#) (commissioned Dec 2024).
- **Advanced Features:**
 - **Precision Strikes:** Speeds up to **30 knots** and a range of **3,000 km per mission**.
 - **Anti-Submarine Weapons:** Equipped with **torpedoes** and **rocket systems** like BrahMos missile.
 - BrahMos is a **supersonic cruise missile** with a range of **nearly 300-400 km** and operates at near **Mach 3** speed, ensuring **quick engagement times**.
 - **Helicopter Deployment:** Can operate a **multi-role helicopter** for enhanced surveillance and combat.
 - **Stealth Design:** Built to **evade radar**, improving **survivability** in modern naval warfare.



Read More: [INS Tushil](#)

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Impact of Marine Pollution on Seabirds

A research highlights that **plastic ingestion** by seabirds not only causes physical harm but also disrupts their hormonal systems, posing long-term biological risks.

- Seabirds like **albatrosses, petrels, and shearwaters** (members of the order *Procellariiformes*) ingest highest rates of plastic ingestion due to their foraging behavior and unique digestive systems.
- Ingested plastic can cause physical harm (e.g., obstruction, perforation, malnutrition) and release toxic chemicals that affect hormones.
- **Marine Plastic Pollution:** Plastic pollution accounts for **80% of marine waste**, with **8–10 million metric tons entering oceans annually**. By 2050, plastic could outweigh all fish.
 - Currently, 50–75 trillion plastic pieces pollute our oceans, forming vast garbage patches or breaking into microplastic particles.
 - Marine pollution **harms biodiversity, reduces oxygen levels in ocean waters, disrupts deep-sea ecosystems**, contaminates the marine food chain, and negatively impacts human health, and coastal livelihoods.
- **Combating Marine Plastic Pollution:** The **Global Partnership on Plastic Pollution and Marine Litter (GPML)**, established in 2012, is a multi-stakeholder platform to combat plastic pollution globally.
 - The **UNEP Source-to-Sea Pollution Unit** serves as its secretariat, supporting knowledge-sharing and joint action.

- The **1972 London Convention** and **1978 Protocol to the International Convention for the Prevention of Pollution from Ships (MARPOL)** aim to prevent marine pollution from waste dumping and ship discharges.

Read more: [Plastic Marine Pollution](#)

Vembanad Lake

Vembanad Lake, India's longest lake, is facing **severe degradation** from **encroachment, pollution, and invasive species**, leading to a **66% decline** in fish catch and reduced flood control capacity.

Vembanad Lake:

- **Vembanad Lake**, largest in Kerala also known as **Vembanad Kayal**, and **Kochi Lake** (in Kochi), spanning **96.5 km** across **Alappuzha, Kottayam, and Ernakulam**.
- It has been a **Ramsar wetland** (second-largest Ramsar site after Sundarbans) **since 2002** and is part of the **National Wetlands Conservation Programme**.
- It is fed by 4 rivers—**Meenachil, Achankovil, Pampa, and Manimala**, and separated from the Arabian Sea by a narrow barrier island.
- It hosts the annual **Vallam Kali (Nehru Trophy Boat Race)** in August.
- The **Kumarakom Bird Sanctuary** lies on its **eastern shore**.
- In 2019, **Kochi's Willingdon Island** was formed from the lake.
- The **1,252 m-long Thanneermukkom Saltwater Barrage**, India's largest mud regulator, has been operational since 1976, **divides Vembanad Lake** into **freshwater and brackish water** sections.

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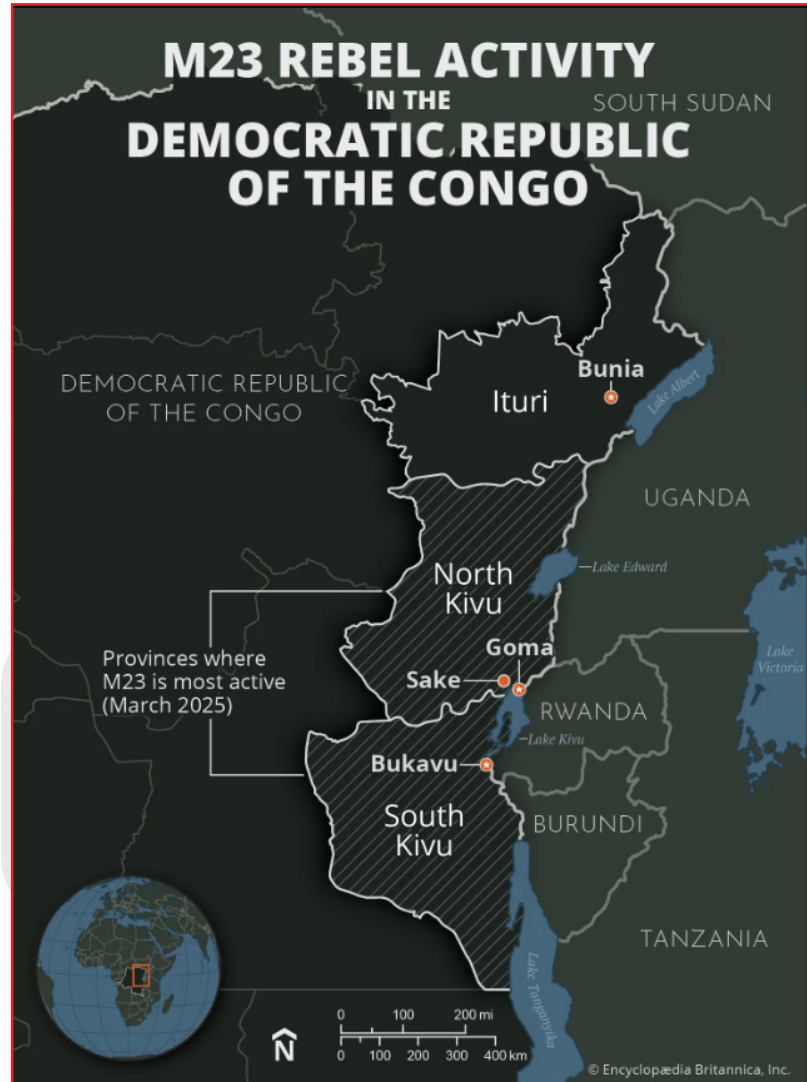


Read More: [Vembanad Lake](#), [World Wetlands Day 2025](#)

Democratic Republic of Congo (DRC)

The [Democratic Republic of Congo \(DRC\)](#) is holding peace talks with [Rwanda](#) and the [M23 militias](#) to protect its **mineral-rich regions** and ensure national stability.

- The [US](#) is facilitating peace talks aiming to secure peace and establish **bilateral critical mineral deals** with the [DRC](#).
 - In February 2025, Rwanda-backed **M23 militia** seized cities like **Goma** and **Bukavu**, and threatened the **Bisie tin mine**, world's 4th-largest producer of **tin concentrates**.
- The **North and South Kivu provinces** in DRC are rich in **tin, tungsten, and tantalum (coltan ore)** (3T minerals).
 - The [DRC](#) is the largest source of **cobalt** (70% of global supply) and 40% of the world's **coltan**, used in **tantalum capacitors** for electronics due to its **high charge retention**.
- The **M23 militia**, a **Tutsi-led rebel group** in eastern [DRC](#), fights to protect **Tutsi communities**. They battle the [DRC government](#) and a **Hutu-linked militia** connected to the **1994 Rwandan genocide**.
 - **M23** is believed to be supported by **Rwanda**, while **Hutu** has backing from some **Hutu groups** in the region.
- The [DRC](#), Africa's 2nd-largest country, has the **mineral-rich Katanga Plateau** (cobalt, copper, tin, uranium, diamonds).
 - Its capital **Kinshasa** lies on the **Congo River**, the only African river to **cross the equator twice**.



Read More: [DRC Conflict and M23 Militia](#)

Cloud Seeding

The Delhi Cabinet has approved a project to conduct **cloud seeding trials** aimed at addressing air pollution and water scarcity.

- **Cloud Seeding:** It is a **weather modification technique** that enhances precipitation by dispersing chemicals like **silver iodide, potassium iodide, or dry ice into clouds**, serving as nuclei for water droplet formation, leading to rainfall.
 - It can help combat **air pollution, especially during periods of high Air Quality Index (AQI) readings**.
 - Cloud seeding may increase water availability and result in economic, environmental, and human health benefits.

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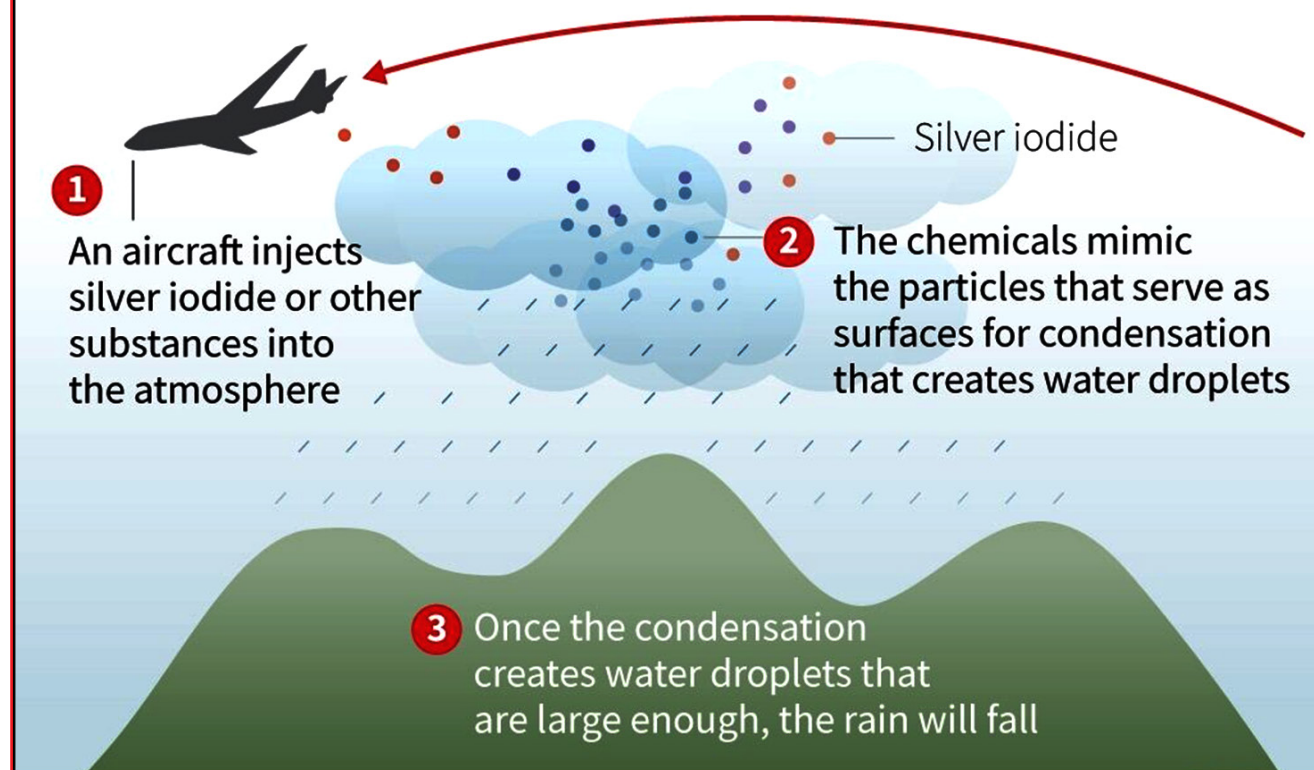
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- **Types of Cloud Seeding:** Static cloud seeding, which involves introducing ice nuclei into cold clouds to form ice crystals or snowflakes.
 - **Dynamic cloud seeding**, which stimulates rainfall by enhancing vertical air currents and promoting rain cloud growth.
 - **Hygroscopic cloud seeding**, which uses fine particles of salts to increase cloud droplet size.
 - **Glaciogenic cloud seeding**, which induces ice formation in supercooled clouds to trigger precipitation. It is used for enhancing snowfall, increasing mountain snowpack, inducing rain in drought-hit areas, and reducing air pollution.

Cloud seeding

Traditional method of rainmaking, in use since the 1940s



Read more: [Cloud Seeding to Reduce Air Pollution](#)

300th Birth Anniversary of Ahilyabai Holkar

The Maharashtra Cabinet held its maiden meeting outside Mumbai in Chondi to mark the 300th birth anniversary (31st May 2025) of [Malwa Queen Ahilyabai Holkar](#) and to honor her legacy.

- **Birth & Background:** Ahilyabai was born on **31st May 1725** in **Chondi**, Ahmednagar (Maharashtra), her father, **Mankoji Rao Shinde**, was the village head.
- **Marriage & Early Life:** She was married to **Khanderao Holkar in 1733**, the son of **Malhar Rao Holkar**, the ruler of Malwa and the founder of the **Holkar dynasty**.

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- Ahilyabai was widowed in **1745** after Khanderao died in the **siege of Kumher Fort**.
- Malhar Rao Holkar prevented Ahilyabai from committing **sati** and **trained her in military and administrative matters**.
- **Ascension to Power:** After the death of Malhar Rao Holkar in 1766 and her son Male Rao Holkar in 1767, Ahilyabai Holkar took charge of Malwa and became the ruler of Indore in 1767.
- She appointed **Tukoji Rao Holkar** as army commander and made **Maheshwar in Madhya Pradesh** the Holkar dynasty's capital.
- **Social and Economic Contributions:** Ahilyabai Holkar rebuilt the **Somnath and Kashi Vishwanath temples**, restoring **key Jyotirlingas of Lord Shiva**. She patronised scholars like **Khushali Ram**, Marathi poet **Moropant**, and **Shahir Anantaphandi**.
- She promoted **women's education**, **widow remarriage**, and opposed practices like **sati**, while uplifting **Bhil, Gond tribes**, and lower castes.
- She made Maheshwar and Indore major trade hubs, promoting the Maheshwari weaving industry and **making Maheshwari sarees renowned across India**, now registered with a **Geographical Indication (GI) tag**.

Insider Trading

The **Securities and Exchange Board of India (SEBI)** has alleged the nephew of the billionaire Gautam Adani, shared **unpublished price sensitive information** and breached regulations aimed at preventing **insider trading**.

- **About Insider Trading:** **Insider trading** refers to the **illegal practice of buying or selling** a publicly traded company's **stock or securities** based on **material, non-public information (MNPI)** about the company.
- It gives the trader an **unfair advantage** over other investors and undermines market fairness.
- An insider can include **company executives, directors, employees** with access to confidential

data (impacts stock prices), their **relatives or associates**, and professionals such as **lawyers, bankers, or auditors** working with the company.

- In India, **insider trading** is prohibited under the **SEBI Act, 1992**, and regulated by the **SEBI (Prohibition of Insider Trading) Regulations, 2015**, which set the rules for prohibiting and restricting insider trading.
- **Front-running** is an **illegal practice** where traders or brokers use **advance knowledge of pending client trades** to profit from expected price movements.
 - Unlike insider trading, it **exploits knowledge of large orders** rather than non-public company information.
 - Both practices are **prohibited** under SEBI regulations in India.

Read More: **Front Running and Insider Trading**

Genetic Adaptations in the Haenyeo

The **Haenyeo**, a group of **women divers** from **South Korea's Jeju Island**, have been found to exhibit both **genetic adaptations** and **physiological changes** related to their unique diving practices.

- Long-term **diving practice** and **natural selection** have shaped traits like **bradycardia (slowing of heart rate)**, **blood pressure regulation**, and **cold tolerance**.
- **About Haenyeo:** They dive up to **10 meters underwater** to harvest shellfish like **abalone** and **sea urchins** for a living, **without the use of oxygen masks**.
 - Their culture has been recognized by **UNESCO** as part of the **Intangible Cultural Heritage** since 2016.
- **About Jeju Island:** It is a **volcanic island** (made of **basalt** and **lava**) in South Korea, and home to the country's tallest mountain **Hallasan (dormant volcano, 1,950 meters)**.
 - The **Jeju Volcanic Island and Lava Tubes** are a **UNESCO World Heritage Site**, known for their unique geology and **360 satellite volcanoes** around the main volcano.

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Read More: [UNESCO's List of Intangible Cultural Heritage \(ICH\)](#)

International Thalassemia Day

International Thalassemia Day is observed every year on **8th May** as a global effort for prevention, awareness and early diagnosis for **inherited blood disorder disease Thalassemia**.

➤ The theme for **2025** is **"Together for Thalassemia: Uniting Communities, Prioritizing Patients"**.

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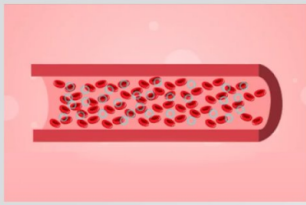
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➤ About Thalassemia:



World Thalassemia Day



Definition

Thalassemia (thal-uh-SEE-me-uh) is an inherited blood disorder. It affects your body's ability to produce normal hemoglobin. If you have thalassemia, your body produces fewer healthy hemoglobin proteins, and your bone marrow produces fewer healthy red blood cells.

Statistics Around Thalassemia

Thalassemia affects approximately **4.4** out of every **10,000** live births throughout the world.

Types

➤ **Alpha Thalassemia:** Four genes are inherited, two from each parent, that make alpha globin protein chains. When one or more genes are defective, alpha thalassemia is developed.

➤ **Beta Thalassemia:** Two beta-globin genes, one from each parent are inherited. Your anemia symptoms and how severe your condition is depends on how many genes are defective and which part of the beta globin protein chain contains the defect.

Symptoms of Thalassemia

Asymptomatic

- (no symptoms)

Mild to Moderate Symptoms

- Growth problems
- Delayed puberty
- Bone abnormalities, such as osteoporosis
- An enlarged spleen

Severe Symptoms

- Poor appetite.
- Pale or yellowish skin (jaundice).
- Urine that's dark or tea-colored.
- Irregular bone structure in your face.



- **Burden:** India, termed the “Thalassemia capital,” has **50 million beta thalassemia carriers** and contributes to **25% of global cases**.
- **Treatment:** It includes **regular blood transfusions** to maintain **healthy red cell levels**, managed with **iron chelation therapy** to prevent iron overload.
 - In severe cases, **bone marrow** or **stem cell transplant** offers a potential cure.
- **Initiatives for Eradication:**
 - Under the **National Health Mission (NHM)**, States/UTs receive support for **thalassemia screening, treatment, and related infrastructure**.

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- The government recommends integrating **thalassemia testing** into the **Reproductive and Child Health (RCH)** program for early **carrier detection** and **genetic counseling** to reduce the disease burden.
- **National Program for Prevention and Control of Hemoglobinopathies (NPPCH)** to raise awareness, offer **counseling and testing services** for affected individuals.
- **Thalassemia Bal Sewa Yojana (TBSY)** provides financial aid for Bone Marrow Transplants through **Coal India Ltd.'s CSR** in **17 empanelled hospitals** nationwide.

Read More: [International Thalassemia Day](#)

World Red Cross and Red Crescent Day

World Red Cross and Red Crescent Day is observed annually on 8th May to honour the humanitarian efforts of millions of volunteers worldwide.

- **Theme 2025: "Keeping Humanity Alive"** reflects a commitment to humanitarian service amid rising inequalities, health crises, and conflicts.
- **Historical Background:** The day was established in 1948 to commemorate the birth of **Henry Dunant**, born on 8th May 1828, who was the founder of the **International Committee of the Red Cross (ICRC)** and the **first Nobel Peace Prize laureate**, sharing the award with **Frédéric Passy**.
 - After witnessing the horrors of the **Battle of Solferino (1859)**, Dunant advocated for humanitarian aid bodies, leading to the formation of the ICRC in 1863 and later the **Geneva Conventions**.
 - The **International Red Cross and Red Crescent Movement**, with over 80 million members, includes the **ICRC**, 191 National Societies, it provides protection and aid during conflicts and disasters, upheld by the **red cross, red crescent, and red crystal** emblems.
- **Significance:** The day honors volunteers aiding in emergencies, wars, and disasters, while promoting principles of humanity, impartiality, and neutrality.

- **Indian Red Cross Society (IRCS):** Founded in 1920, provides disaster relief and healthcare, with the **President of India** as its **President** and the **Union Health Minister** as its **Chairman**.

Read more: [World Red Cross Day](#)

Green Hydrogen Certification Scheme of India (GHCI)

The Ministry of New and Renewable Energy (MNRE) has launched the **Green Hydrogen Certification Scheme of India (GHCI)** under the **National Green Hydrogen Mission (NGHM)**.

- **About:** It is an initiative to create a robust framework for **certifying green hydrogen (GH)** production and ensuring **transparency, traceability, and market credibility**.
- **Objective:** Promote a Green Hydrogen market in India, sourced from renewables to cut carbon emissions, drive exports, and encourage energy-intensive sectors to adopt the fuel.
 - International port cities like **Kandla, Paradip, and Tuticorin** have been chosen as **main centers** for producing **green hydrogen for export**.
 - It will **curb greenwashing**, where companies **deceptively portray** themselves as **eco-friendly** through **false or exaggerated claims**.
- **Certification Process:** It will be verified by the **Bureau of Energy Efficiency (BEE) Accredited Carbon Verification (ACV) Agency** to ensure compliance.
 - The certificate is **non-transferable, non-tradeable**, and **cannot** be used to **claim emission reduction credits**.
 - BEE has also announced an **offset mechanism** for **hard-to-abate sectors** (e.g., **cement**) using **green hydrogen** under **CCTS**, to allow them to **earn and trade credit**.
- **Applicability:** The certification scheme **applies** only to **green hydrogen** production from **electrolysis or conversion of biomass**.

Read More: [National Green Hydrogen Mission](#)

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INS Sharda to Maldives for HADR

INS Sharda arrived at Maafileafushi Atoll, Maldives, for a joint Humanitarian Assistance and Disaster Relief (HADR) exercise with the Maldives National Defence Force (MNDF).

- The exercise is part of India's "**MAHASAGAR (Mutual and Holistic Advancement for Security and Growth Across Regions)**" vision in the **Indian Ocean Region (IOR)**.
 - Earlier, following the **2004 Indian Ocean tsunami**, the Indian Navy, as part of its HADR operations, launched **Operation Castor** to provide vital relief to the Maldives during the crisis.
- The HADR exercise aims to enhance interoperability between the Indian Navy and MNDF to respond effectively to humanitarian challenges.
- **INS Sharda (P55)**, a Sukanya-class patrol vessel, was awarded the 'On the Spot Unit Citation' for rescuing 19 hostages from the hijacked Iranian vessel **Omari off Somalia in 2024**, showcasing operational excellence and reinforcing India's maritime security role in the IOR.
- **Exercises Between India and Maldives:** Bilateral exercises include "**Ekuverin (Army)**" and "**Ekatha (Navy)**", while the trilateral coast guard exercise "**Dosti**" is conducted with Sri Lanka.

Atoll: An atoll is a ring-shaped coral reef, island, or series of islets. It surrounds a body of water called a lagoon.



Read more: [Strengthening India-Maldives Defence Cooperation](#)

Bagram Airfield

The US President claimed that **China** now occupies the **Bagram Airfield**, which American forces had vacated before pulling out from **Afghanistan** in 2021.

- **About Bagram Airfield:** It is the **largest air base in Afghanistan** that lies some 60 km to the north of Kabul, in the **strategic Parwan province**.
 - Parwan is **key to controlling** much of Afghanistan because the 2.6 km-long **Salang tunnel** in the Parwan province connects **Kabul to Mazar-e-Sharif** and other cities in the north, while **highways** provide linkages to **Ghazni and Kandahar** in the south, and **Bamiyan** to its west.



- Built by the **Soviets** in the **1950s**, it became vital during the **Cold War** and the **Soviet-Afghan War (1979–89)**.
 - After **2001**, it became the **operational hub of US forces** during the **War on Terror**.
- Bagram's strategic location makes it **vital**, and China's growing Taliban ties signal a careful push to gain a **strategic foothold in the region**.
 - **Lop Nur** in **Xinjiang**, where **China** tested its **first atom bomb** in **1964**, lies **2,000 km** from Bagram, while the **Koko Nur nuclear weapons facility** is located further east in **Qinghai province, China**.

Read More: [CPEC's Extension to Afghanistan](#)

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Genome-edited Rice Varieties

India has released its first **genome-edited rice varieties** namely 'DRR Dhan 100 (Kamala)' and 'Pusa DST Rice 1' aimed at enhancing **yields, climate resilience, and resource efficiency** without introducing foreign DNA.

- They have been **developed by ICAR** using advanced **CRISPR-Cas9** genome-editing technology. No foreign DNA is introduced, making them comparable to traditionally bred crops.
- **DRR Dhan 100 (Kamala)**: It is based on the popular **Samba Mahsuri** variety. Edited using **Site Directed Nuclease 1 (SDN1)** technology targeting the **Cytokinin Oxidase 2 (CKX2) gene (Gn1a)** to improve grain number.
 - It results in **early maturity (Harvested 15–20 days earlier)**, **drought-tolerant**, high **nitrogen-use efficiency**.
- **Pusa DST Rice 1**: It is based on **Maruteru 1010** variety and enhances **drought and salt tolerance**. Developed through **SDN1 genome-editing**, it targets the **drought and salt tolerance (DST) gene**.
 - It results in **30.4% higher yield** in coastal salinity, **14.66% higher** in alkaline soils and **9.67% higher** in inland salinity.
- **Site-Directed Nuclease Technology**: It is a **genome-editing technique** that introduces precise changes in DNA using enzymes called **nucleases**.
 - **SDN-1** introduces **small insertions/deletions** without using **foreign DNA**, while **SDN-2** uses a **template DNA** (similar to the host) to introduce **specific desired changes**.

Read More: [Climate Resilient Agriculture](#)

Kaleshwaram Lift Irrigation Project

The **Kaleshwaram Lift Irrigation Project (KLIP)** in **Telangana** is under scrutiny after the **National Dam Safety Authority (NDSA)** reported significant structural damage and design flaws in the project.

KLIP:

- KLIP is the **world's largest multi-stage lift irrigation project** on the **Godavari River**, located in **Bhupalpally district, Telangana**.

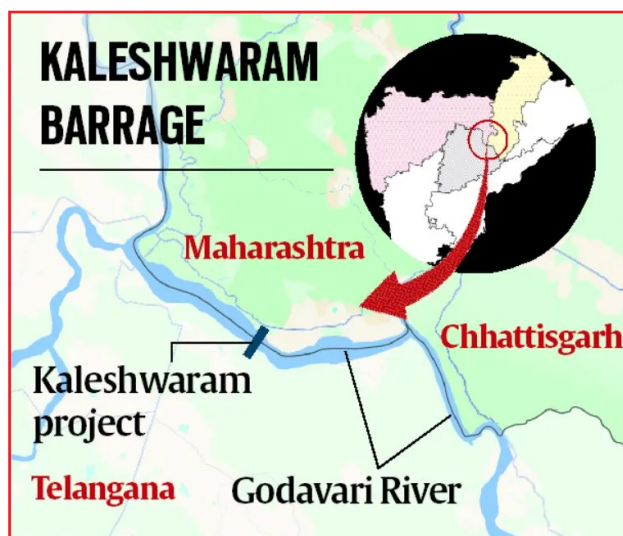
- It spans over **500 km** across **13 districts**, with a **canal network of 1,800 km**.
- The construction of the project began in **June 2019** and it aims to provide **240 TMC (Thousand Million Cubic feet)** of water for various uses, with **70% earmarked** for irrigation.
- The project starts at the **confluence of the Pranhita and Godavari rivers**.
- KLIP uses **massive pump systems and surge pools** to **lift water** to elevated delivery chambers for distribution across a vast command area.

River Godavari:

- **Godavari**, often called **Dakshin Ganga**, is **India's second-longest river (after Ganga)**, originating from **Trimbakeshwar** in **Maharashtra**.
- It flows **1,465 km eastward**, draining in **Maharashtra, Telangana, Andhra Pradesh, Chhattisgarh, and Odisha**, before emptying into the **Bay of Bengal**.
- **Major tributaries**: **Purna, Pranhita, Indravati, and Sabari (Left-Bank)** and **Pravara, Manjira, and Manair (Right Bank)**.

NDSA:

- **NDSA** is a **statutory body** headquartered in **New Delhi**, established under the **National Dam Safety Act, 2021** to **regulate and oversee dams, formulate policies, resolve disputes and conduct awareness programs**.



Read More: [Kaleshwaram Lift Irrigation Project](#).

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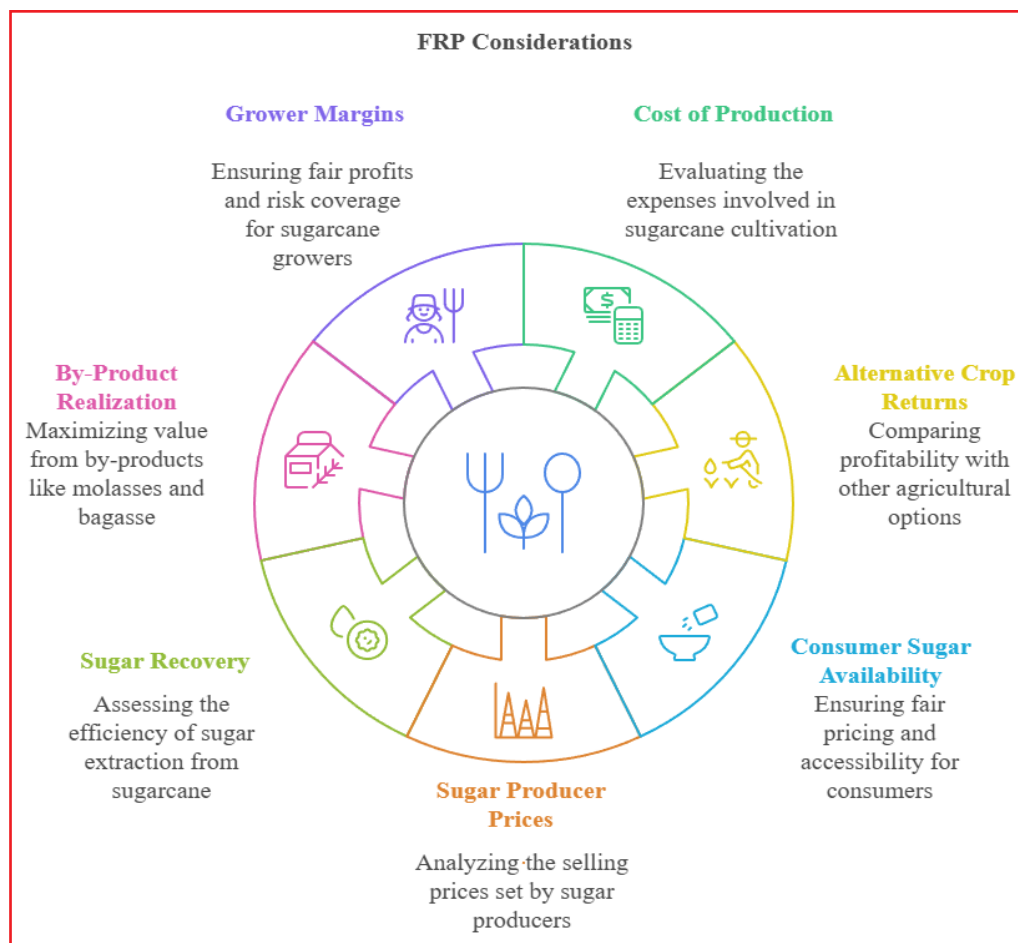
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Increase in Fair and Remunerative Price

The **Cabinet Committee on Economic Affairs (CCEA)** increased the **Fair and Remunerative Price (FRP)** of sugarcane for the 2025-26 sugar season.

- **About FRP:** FRP is the minimum price at which sugar mills are legally required to purchase sugarcane from farmers in India.
 - It is governed by the **Sugarcane Control Order, 1966** issued under the **Essential Commodities Act (ECA), 1955**.
 - Under the **Sugarcane Control Order, 1966**, payment must be made **within 14 days** of cane delivery; delays attract up to **15% interest**, and **unpaid FRP** can be recovered by **attaching mill properties**.
 - The FRP is based on the **Rangarajan Committee report (2012)** on reorganizing the sugarcane industry.
 - Its determination is based on **recommendations** from the **Commission for Agricultural Costs and Prices (CACP)** and after consultations with **State Governments** and other **stakeholders**.
 - CACP, under the **Ministry of Agriculture and Farmers Welfare**, is an **advisory body** with **non-binding recommendations**.
- **Factors Considered in FRP:**



Read More: [Fair and Remunerative Price \(FRP\)](#)

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Mt. Makalu

The Indo-Tibetan Border Police (ITBP) successfully scaled **Mt. Makalu**, the fifth highest peak in the world.

- **Mt. Makalu:** Resides in the **Mahalangur range of the Nepal Himalayas**, straddling the border between Nepal and Tibet, and is 8,485 meters above sea level.
 - Located southeast of Mount Everest, Makalu is renowned for its striking **pyramid shape with four sharp ridges**.
 - Mt. Makalu, located in **Makalu Barun National Park**, overlooks the scenic **Barun Valley**.
 - Makalu also features two prominent subsidiary peaks, **Makalu I and II**, located about 3 km from the main summit. The Mt. Makalu was first ascended in 1955 by a French expedition led by Jean Franco.
- **ITBP:** The ITBP under the Ministry of Home Affairs, is a **Central Armed Police Force** specializing in high-altitude border guarding along the 3,488 km India-China border.
 - ITBP has now climbed 6 of the world's 14 'eight-thousanders', and 229 peaks overall, including **Mt. Everest**, **Mt. Kanchenjunga**, **Mt. Dhaulagiri**, **Mt. Lhotse**, and **Mt. Manaslu**



Read more: [New Height for Mount Everest](#)

Red-Crowned Roofed Turtle

The **Red-Crowned Roofed Turtle (Batagur kachuga)** has been **reintroduced into the Ganga River** after 30-years, marking a major success under the **Namami Gange Mission** and the **Turtle Survival Alliance India (TSAFI)** project.

- Turtles were released in the **Haiderpur Wetland**, a **Ramsar site** located near the **Bijnor Ganga Barrage** within the **Hastinapur Wildlife Sanctuary**, Uttar Pradesh.

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Red Crowned Roofed Turtle:



- **About:** It is a **freshwater turtle** belonging to the family **Geoemydidae**. Also known as **Bengal Roof Turtle**, they are one of the **24 species** endemic to India.
- **Key Characteristics:** The females grow up to **56 cm** and **25 kg**, while males are smaller and exhibit **bright red, yellow, white, and blue** markings on the face and neck.
 - The **carapace** (upper shell) is **strongly keeled**, particularly in juveniles and **plastron** (lower shell) is **laterally angulated** in younger individuals, giving them a **sharp-edged appearance**.
 - This **herbivorous** species feeds on **aquatic plants** and lays **11–30 eggs** during **March–April**.
- **Habitat & Distribution:** It was historically found in the river systems of **India, Nepal, and Bangladesh**, particularly in **large, deep rivers** like the **Ganga, Chambal, and Brahmaputra**.
 - Due to **habitat degradation, sand mining, and pollution**, it disappeared from the Ganga's main channel.
 - It has now been **reintroduced** into the **Haiderpur Wetland** in **Uttar Pradesh**, India, which connects to the Ganga and offers a suitable environment for its revival.
- **Major Threats:** **Habitat loss** due to **pollution, dam construction, and water extraction**. **Sand mining and seasonal agriculture** destroy its nesting sandbars, **illegal fishing nets** cause drowning and **poaching** and the **illegal pet trade**.
- **Protection Status:**
 - **IUCN Red List** : Critically Endangered
 - **Wildlife Protection Act (WPA), 1972**: Schedule I
 - **CITES** : Appendix II

Turtle Survival Alliance India (TSAFI)

- **TSAFI** is the Indian chapter of the global **Turtle Survival Alliance (TSA)**, formed in **2001** under **IUCN** to protect freshwater turtles and tortoises from threats like **habitat loss, illegal trade, and climate change**, with the mission of **“Zero Turtle Extinctions in the 21st Century**.

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Few Turtle Species



Loggerhead Sea Turtle

- Species of oceanic turtle
- Spend most of their life in saltwater and estuarine habitat
- IUCN status: **Vulnerable**

Leatherback Turtle

- The largest of the seven species of sea turtles
- Able to maintain high body temperature using metabolically generated heat
- IUCN status: **Critically Endangered**



Green Turtle

- Named after the greenish colour of their cartilage
- Found in tropical and subtropical waters
- IUCN Status: **Endangered**

Olive Ridley Turtle

- Smallest and most abundant of all sea turtles
- Carnivores
- They practice Unique Mass Nesting called Arribada
- IUCN Status: **Vulnerable**



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#FewTurtleSpecies

Read More: [Red Crowned Roofed Turtle](#), [Olive Ridley Turtles in India](#)

69th Foundation Day of ED

The 69th Foundation Day of the **Enforcement Directorate (ED)**, held in New Delhi, reaffirmed the agency's pivotal role in combating economic offences and money laundering, as India strives toward the vision of Viksit Bharat 2047.

- **ED:** Established on 1st May 1956, as the '**Enforcement Unit**' under the Department of Economic Affairs to tackle violations of the **Foreign Exchange Regulation Act (FERA), 1947**, and renamed as the Enforcement Directorate in 1957. Its headquarters is located in **New Delhi**.

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- Transferred to the **Department of Revenue in 1960**, the ED now functions under the **Union Ministry of Finance**, enforcing the criminal provisions of the **Prevention of Money Laundering Act, 2002 (PMLA)** and **Fugitive Economic Offenders Act, 2018 (FEOA)**, and civil provisions of **Foreign Exchange Management Act (FEMA)**.
- The ED is headed by a **Director** (not below the rank of Additional Secretary, to the Government of India).
- Core functions of ED include curbing money laundering, financing of terrorism, and organised crime, ensuring economic security.
- **Achievements of ED:** In FY 2024–25, the ED issued provisional attachment orders worth **Rs 30,036 crore**,

reflecting a 44% increase in number and a 141% increase in value over 2023–24.

- As of 2025, the total value of assets under provisional attachment stood at Rs 15.46 lakh crore.
- Between 2014 and 2024, ED initiated around 5,000 new PMLA investigations, showcasing a significant increase in enforcement activities.

Read more: [Enforcement Directorate](#)

Rise in Leopard Poaching

Poachers are **now targeting leopards** more often because strict protection laws make **tigers** harder to hunt, while leopards are easier to find and less protected, making them a common substitute for tiger body parts in the international market.



EAT

- True carnivores that are excellent ambush predators
- Feed on anything they can overpower, from mid-size ungulates, to domestic livestock, dogs, birds, and rodents

ACTIVITY

- Mostly solitary, nocturnal creatures, also seen at dusk and dawn in forests. Entirely nocturnal close to human presence
- Territorial.
- Leopard densities can reach 5 animals per 100 sq km in densely populated human landscapes like western India

BLACK PANTHER

- Dark morphs or black leopards, often called black panthers, are the same species, but with recessive melanistic genes
- Spots are hidden under the dark coat

PANTHERA PARDUS FUSCA

INDIAN LEOPARD

Highly adaptable big cat can live close to humans

POPULATION around 7,910 (2014 census in surveyed areas); thought to be around 12,000-14,000 across India	WEIGHT 50-77 kg (males); 29-34 kg (females)	GEOGRAPHIC RANGE Indian subcontinent (all states), Nepal, Pakistan, Bangladesh, Bhutan, Myanmar, China	HABITAT Forest, shrubland, savanna, grassland, rocky areas, mountains, desert
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Large head, powerful jaws

Coats have black rosettes

Each coat pattern is unique and makes individuals identifiable

Have an easily recognisable sawing/rasping call

CUBS

- Females usually give birth to two cubs after a gestation period of 90-105 days
- Only the female cares for the cubs, who remain with the mother for about 1.5-2 years

AGILE CAT

- Excellent at climbing trees
- Can run down a tree head-first
- Can carry large prey up a tree to protect it from other carnivores including tigers and wild dogs

THREATS

- A TRAFFIC study reports that between 2001-2010 at least **2 leopards were killed each week** for the illegal wildlife trade in India
- Population has declined by **75-90%** in the last two centuries
- **Poisoning** and retaliatory killing
- **Poaching** for pelts and body parts.
- Become **roadkill** when roads and highways run through forests
- Conflict with **livestock herders**
- **Hunting**

PROTECTION STATUS:
VULNERABLE on the IUCN Red List

- According to **CITES**, around **12,000 leopards and their parts** were traded between **2020 and 2023** worldwide.
- Leopards have been **eliminated from 75% of their natural habitat** across **Africa**, the **Middle East**, and **Asia** due to poaching and habitat destruction.
- **Leopards** are being **poached** and **misabeled as tigers** in illegal wildlife trade, especially in **Asia**, to meet demand for **traditional medicine**, **luxury items**, and **trophies**.

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- South Africa's weak laws and captive breeding industry fuel global illegal big cat trade.
- **Leopard Population in India (2024):**
 - **Total: 13,874** (1.08% annual growth since 2018).
 - **Highest population:** Madhya Pradesh, followed by Maharashtra, Karnataka, and Tamil Nadu.
 - **Conservation Status:** [IUCN Red List](#) (Vulnerable), [CITES](#) (Appendix-I) and [Wildlife \(Protection\) Act, 1972](#) (Schedule-I).

Read More: [Status of Leopards in India 2022](#)

Red Admiral Butterfly

The **Red Admiral butterfly** (*Vanessa atalanta*) has been sighted for the first time in India's **Dhauladhar mountain range** in Himachal Pradesh.

- **Size and Family:** The Red Admiral butterfly belongs to the *Nymphalidae* family and has a wing span ranging from 67-72mm (male to female).
 - Morphologically, the Red Admiral resembles the [Indian Red Admiral](#) (*Vanessa indica*) but can be distinguished by its narrower, deeper crimson discal band and the consistent presence of a diagnostic spot in the upper forewing (a feature absent in the Indian species).
- **Global Distribution:** The Red Admiral butterfly is found in **North and South America, Europe, and Asia** (no confirmed records from China, Mongolia, or Afghanistan).
- **Habitat:** Common in urban and disturbed landscapes, but also found in **moist forested areas, and wetlands**, where it requires water, minerals, and sugars to survive.
- **Behavior:** Male Red Admirals are highly territorial and often chase rivals from their roosting spots.
 - Its larvae feed on **stinging nettle** (*Urtica dioica*), found abundantly in the Western Himalayas.

- **Climate Adaptation:** The species is resilient to climate change due to its diverse host plants, primarily from the **nettle family** (*Urticaceae*), but may face challenges from habitat loss and environmental changes affecting plant populations.

Read more: [Butterflies Adaptation and Evolution Processes](#)

Jagannath Dham Temple in Digha

The Jagannath Dham temple in Digha, West Bengal, inaugurated in April 2024, marks a significant **religious and architectural development**.

- Inspired by Odisha's 12th-century Jagannath Temple (Puri), it is built in **Kalinga-style architecture**, housing idols of **Lord Jagannath, Balabhadra, and Subhadra** on the **Ratnabedi**.
- It features four main structures i.e., **Vimana (sanctum), Jagamohan (assembly hall), Nat Mandir (dance hall), and Bhog Mandap (offering hall)**.
- Built using **Bansi Paharpur sandstone**, the temple houses **stone idols**, unlike Puri's **Darubrahma deities** carved from **neem wood**.
- **About Jagannath Temple, Puri:** It was built by King **Anantavarman Chodaganga Deva** of the **Eastern Ganga dynasty** in the 12th century CE.
 - The **idols** are made of **wood (neem logs)** and are replaced every **12–19 years** in the **Nabakalebara ritual**.
 - It is an example of **Kalinga architecture** (a sub-style of [Odisha temple architecture](#)).
 - It is one of the **Char Dham** pilgrimage sites along with **Badrinath, Dwarka, and Rameswaram** and a major **Vaishnavism** centre.
 - The **flag atop the temple flies against the wind**, and the **Sudarsana Chakra** appears the same from every angle (optical illusion).

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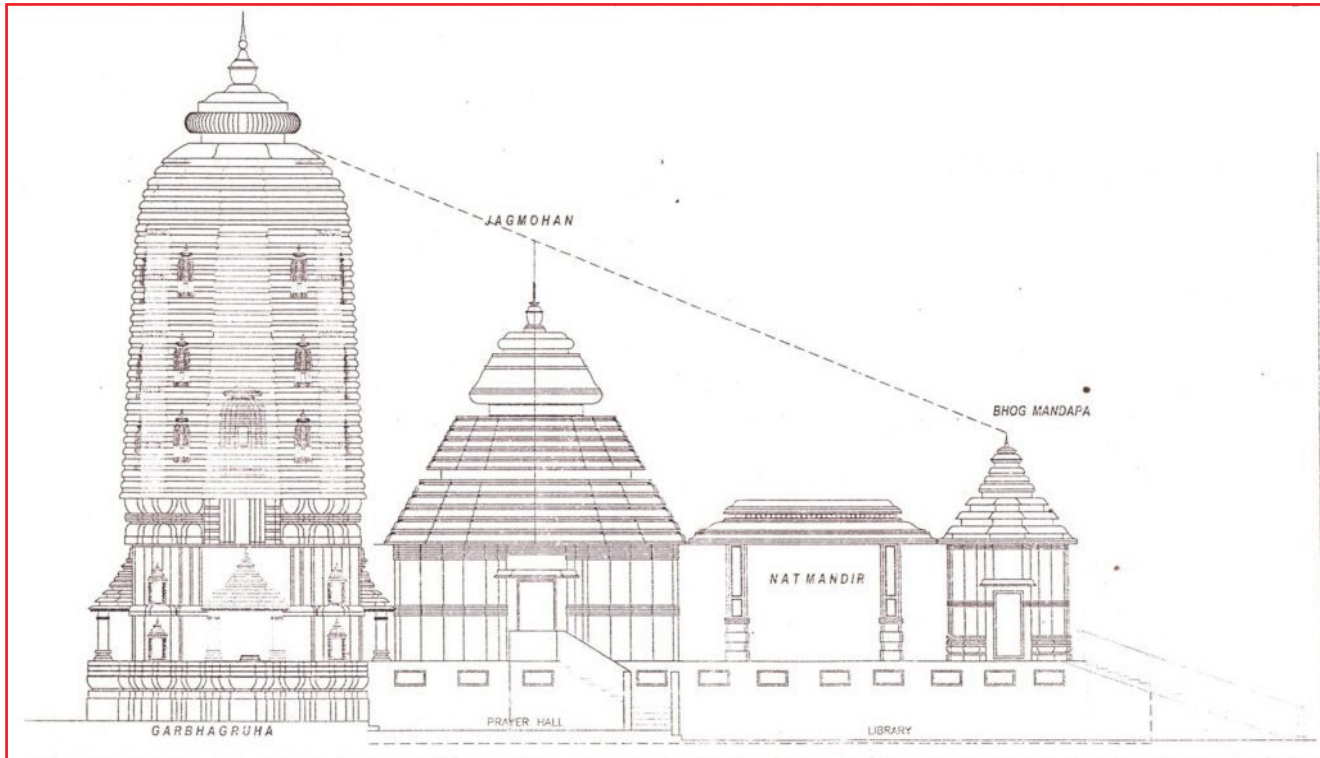


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Read More: [Jagannath Temple](#)

Orange Economy

The Prime Minister highlighted India's rising role in the global creative economy at the **WAVES 2025 (World Audio Visual and Entertainment Summit)**, focusing on the concept of an **"orange economy"** that emphasizes creativity, culture, and intellectual property.

- **Orange Economy:** The creative economy (also known as the orange economy) refers to knowledge-based activities that **integrate culture, creativity, technology, and IP** to drive economic, social, and cultural development, with strong potential to support sustainable development goals.
 - India's creator economy is projected to grow at an **18% Compound annual growth rate**, rising from **Rs 19 billion in 2023 to Rs 34 billion by 2026**, according to Ernst & Young.
- **WAVES 2025:** It is the **first World Audio Visual & Entertainment Summit**, held at the **Jio World Convention Centre, Mumbai**, and hosted by the Government of India.
 - It aims to position India as a global hub for **Media & Entertainment (M&E)**, intellectual property, and technological innovation.
 - The summit highlights India's prowess in content creation and tech innovation across **Broadcasting, Films, Animation, Gaming, Digital Media, Artificial Intelligence**, and more.
 - WAVES 2025 features the **WAVES Bazaar**, a global digital marketplace connecting creators with buyers and investors.

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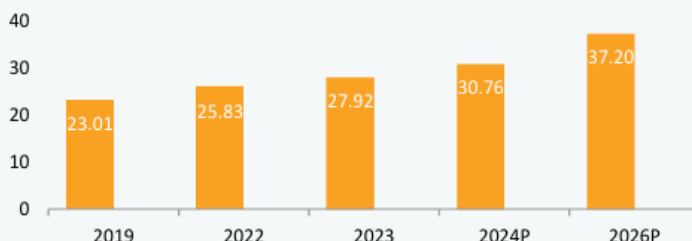


MEDIA AND ENTERTAINMENT



MARKET SIZE

Total Media and Entertainment Market (US\$ billion)

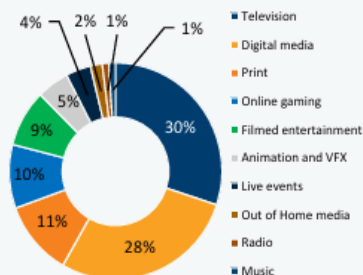


Note: P-Projected



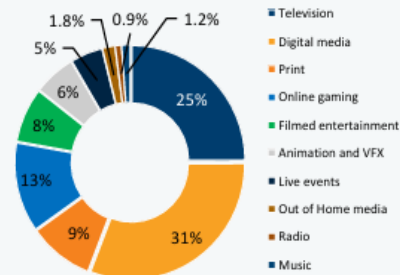
SECTOR COMPOSITION

Share of Major Industry Segments 2023



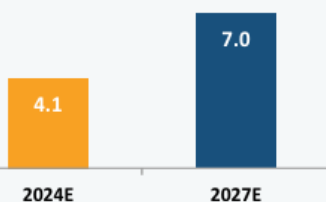
Note: P-Projected

Share of Major Industry Segments 2026P



KEY TRENDS

India OTT Video Services (Video-on-Demand and Live) Market (US\$ billion)



Note: E- Estimated

Advertising Revenue (US\$ billion)



Read more: [WAVES 2025 and Creative Economy](#)

Hyena

27th April was observed as International Hyena Day 2025 which aims at promoting awareness of hyenas' ecological importance and challenging negative perceptions.

Hyenas (Hyaenidae)

➤ **About:** They belong to the family *Hyaenidae*, which are a group of **carnivorous mammals** like dogs.

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TYPES OF HYENAS



Spotted Hyena



Brown Hyena



Striped Hyena



Aardwolf Hyena

- **Habitat:** Hyenas are found across **diverse habitats** in **Africa and parts of Asia**.
 - They are often mischaracterised as the '**villain of the African Savanna**', given its haunting howls and unconventional appearance.
- **Diet:** **Spotted hyenas are both a skilled predator and scavenger**, actively hunting in groups. They frequently engage in **kleptoparasitism**, where they steal food from other predators.
 - **Striped hyenas** are **omnivores**, brown hyenas mainly scavenge but also eat small animals and fruits, while **aardwolves feed almost exclusively on termites**.
- **Behaviour:** **Spotted hyenas live in female-led clans** with complex social systems and high intelligence.
 - **Striped hyenas are nocturnal and solitary**, brown hyenas form small clans with nomadic males, and aardwolves are monogamous, living alone or in pairs.
- **Ecological Role:** Hyenas play a vital ecological role by **controlling herbivore populations as predators, preventing disease as scavengers, and recycling nutrients**.

Read More: [Conservation Breeding in Indira Gandhi Zoological Park \(IGZP\)](#)

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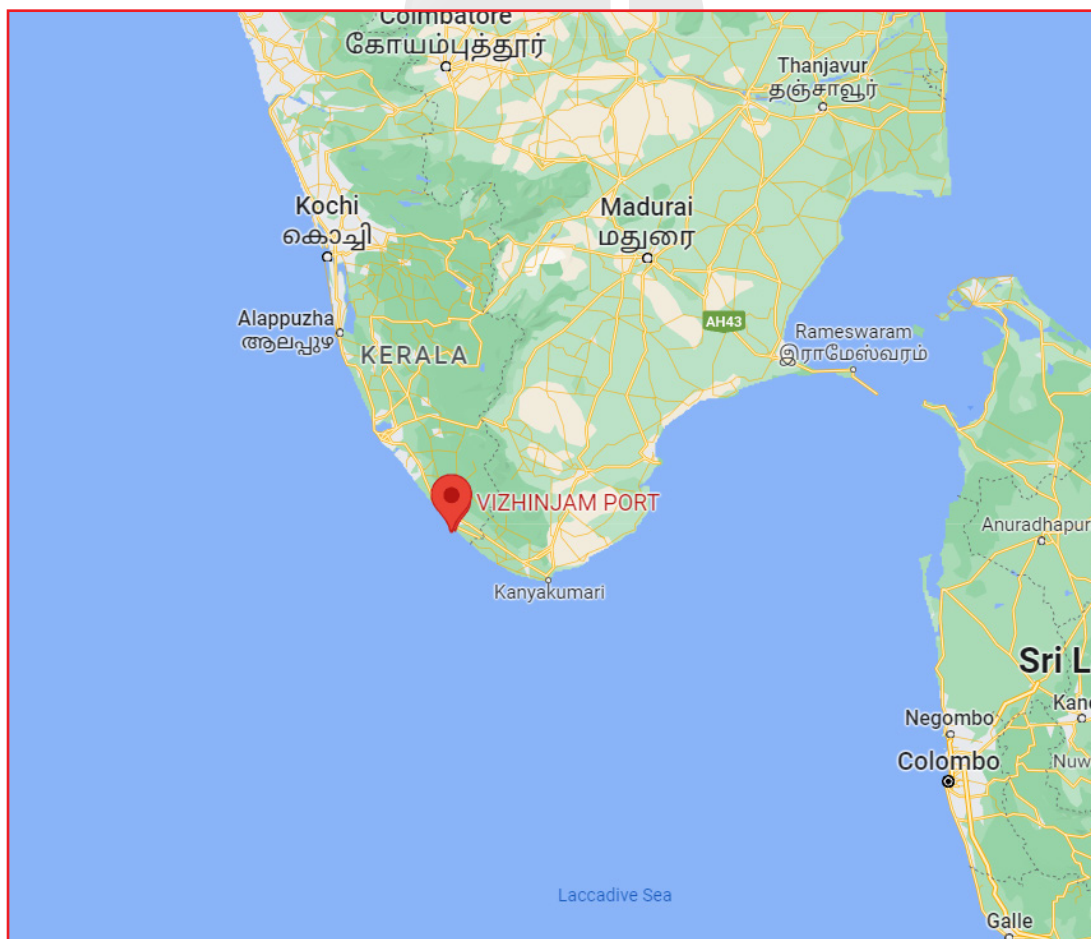


PM Inaugurates Vizhinjam International Seaport

Prime Minister Narendra Modi inaugurated the **Vizhinjam International Seaport (VIS)** in Kerala, marking a significant milestone in India's maritime infrastructure.

- **Vizhinjam International Seaport:** It is India's first **deep-water transshipment port**, designed for container and multi-purpose cargo.
 - The port is developed under the **Public-Private Partnership (PPP)** on a **Design, Build, Finance, Operate, and Transfer (DBFOT)** basis.
- **Strategic Location:** VIS, positioned just **10 nautical miles from major international shipping routes** connecting Europe, the Persian Gulf, and the Far East, enhances accessibility for large vessels (depth of 18 to 20 meters).

- **Technological Advancement:** Vizhinjam seaport, India's first semi-automated port, is equipped with an **AI-driven control room** and the country's **first Indigenous Vessel Traffic Management System (VTMS)**.
 - It reduces vessel turnaround times, optimizes traffic flow, and enhances capacity for large ships with real-time updates.
- **Economic Impact:** The port aims to reduce India's reliance on international facilities, as 75% of transshipment cargo is currently handled abroad.
 - By handling transshipment domestically, the port is expected to save India USD 200-220 million in potential revenue loss annually.
- **Future Development:** The second and third phases of the Vizhinjam port will increase its capacity from 1 million (twenty-foot equivalent units) TEUs to 3 million TEUs annually by 2028.



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Read more: [Vizhinjam International Seaport Project](#)

Sandy Cay Reef

The **Sandy Cay reef** dispute between **China and the Philippines** has sparked renewed tensions, with both **claiming sovereignty** amid growing militarization.

- Tensions rose as **US and Philippine forces** conducted **Balikatan war drills**, which **China** has condemned as **provocative**.
- Sandy Cay lies near **Pag-asa Island (Thitu)** in the **Spratly Islands** of the **South China Sea (SCS)**. **Tiexian Reef** is a part of Sandy Cay.
 - The reef is claimed by **China, the Philippines, Taiwan, and Vietnam**.
- **About SCS Dispute:** It refers to ongoing **territorial conflicts** over the **sovereignty** of various **islands, reefs, and maritime zones** in SCS.
 - **China** claims most of the South China Sea through the **"Nine-Dash Line,"** using **island-building** and **naval patrols** to assert control.
 - It is a **U-shaped line** on Chinese maps covering nearly **90% of the South China Sea**.



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- **Claimants of SCS:** China, Vietnam, Philippines, Malaysia, Brunei and Taiwan.
- **Disputed Islands:** Paracel Islands, Spratly Islands, and Scarborough Shoal etc.
- In 2016, Hague based **Permanent Court of Arbitration** ruled that **China's claims have no legal basis**, but **China rejected** the ruling and continues to assert them.

Read More: [India Stands with the Philippines in the South China Sea](#)

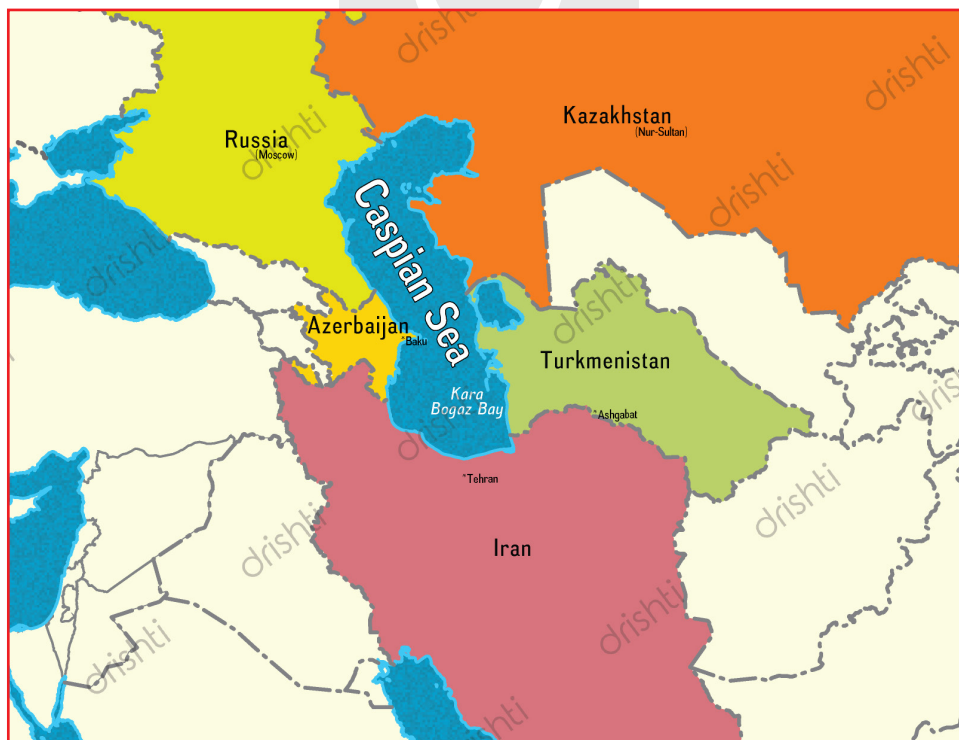
Climate Change Threatens Caspian Sea

The **Caspian Sea** is rapidly **shrinking** from climate-driven **evaporation**, endangering **biodiversity**, **livelihoods**, and **regional stability**.

- **Projected Decline in Water Levels:** Even if **global warming** stays below **2°C**, the **Caspian Sea** is projected to drop **5–10 m**, and up to **21 m** by **2100** if temperatures rise further.

Impacts:

- **Biodiversity Loss:** It threatens **endemic species** like the **Caspian seal** (**IUCN Endangered**) and **Beluga sturgeon** (an ancient family of large fish, critically endangered).
- **Industry:** Ports like **Baku** (**Azerbaijan**), **Anzali** (**Iran**), **Aktau** (**Kazakhstan**), **Turkmenbashi** (**Turkmenistan**), and **Lagan** (**Russia**) could be stranded inland.
 - The **Volga river**, the Caspian's **sole maritime link** to the outside world, could become **nonviable**.
 - Hydrocarbon production sites like **Kashagan** (**Kazakhstan**) and **Filanovsky** (**Russia**) will become **landlocked**.
- **Public Health Risks:** Dry seabeds could release **dust** contaminated with **industrial pollutants** and **salt**, akin to the **Aral Sea disaster**.
- **About Caspian Sea:** It is a **tectonic lake** and the **world's largest inland water body**.
 - Three major rivers **Volga**, **Ural**, and **Terek** empty into the Caspian.
 - It is bordered by **Russia**, **Azerbaijan**, **Iran**, **Turkmenistan** and **Kazakhstan**.



Read More: [Caspian Sea](#)

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65th Statehood Day of Maharashtra and Gujarat

On 1st May 2025, Maharashtra and Gujarat celebrated 65 years of their formation, commemorating the historic reorganization of Bombay State along linguistic lines in 1960.

- The **Samyukta Maharashtra Movement** (1956) demanded a **Marathi-speaking state** comprising **Mumbai** and **Vidarbha**, playing a crucial role in the creation of Maharashtra.
 - The **Mahagujarat Movement** (1928–1950s) called for a **Gujarati-speaking state** that included **Saurashtra** and **Kutch**, promoting **regional self-identity**.
- Both states today are **economic powerhouses** and examples of how **linguistic identity** and **federal cooperation** can coexist.

Read More: [Statehood Day of Maharashtra and Gujarat](#)

National Security Advisory Board

The government has reconstituted the **National Security Advisory Board (NSAB)** with a new set of appointments, including former **Research and Analysis Wing (R&AW)** chief **Alok Joshi** as **chairman**, along with 7 other members. This comes amidst growing discussions on India's response to the **Pahalgam terror attack**.

- **National Security Advisory Board:** Established in 1998, it operates under the **National Security Council Secretariat (NSCS)** and works alongside two other key bodies; the **Strategic Policy Group (SPG)** and the **Joint Intelligence Committee (JIC)**.
- **Functions:** NSAB advises the **National Security Council (NSC)** on external threats, internal stability, and emerging challenges. It provides **independent, long-term analysis**, recommends policy options.

- NSAB contributed to the **Nuclear Doctrine (2001)** and **National Security Review (2007)**.

- **Composition:** The NSAB, is headed by a **Chairperson**, usually a former senior official, and comprises members from diverse fields such as diplomacy, military, academia, economics, and science & technology.
 - **NSAB never has a fixed number of members**, allowing flexibility in its composition based on evolving national security needs.
- **Tenure:** The board's members are appointed for a **term of two years**.

Read more: [Office of NSA & India's National Security Framework](#)

Agent Orange

30th April 2025 marked the **50th anniversary of the Vietnam War's end (1954–75)**. However, millions of Vietnamese still suffer the **lasting effects of Agent Orange**, a toxic chemical **used by the US during the war**.

- **Agent Orange:** A Blend of herbicides **used to defoliate trees and shrubs**, depriving enemy troops of cover.
 - It was composed of two herbicides (**2,4-D** and **2,4,5-T**)—mixed with the **highly toxic contaminant dioxin**.
 - Dioxin has a **half-life of up to 20 years in the human body** and can persist in soil and water for up to 100 years, **causing long-term contamination**.
 - In radioactivity, **half-life is the time it takes for half of the atoms in a radioactive sample to decay**.
- **Impacts:**
 - Health issues—birth defects, **cancer, diabetes**, and **neurological disorders**.
 - **Areas sprayed with the chemical were unfit for agriculture for years**, severely damaging wildlife, soil quality, and disrupting livelihoods, with long-lasting impacts on ecosystems.
- **Vietnam War:** It was a conflict between communist North Vietnam (Saigon), led by Ho Chi Minh, and South Vietnam's government, supported by the US.

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- It was **part of the broader Cold War** between the US and the Soviet Union, with North Vietnam backed by communist allies (Soviet Union and China).



Read More: [Cold War](#)

Emden Deep

Emden Deep in the Philippines Trench, is the **world's third-deepest point after Challenger Deep (Mariana Trench) and Horizon Deep (Tonga Trench).**

- The **Emden Deep**, also known as the **Galathea Deep**, was first discovered by the **German ship Emden in 1927**. It was later explored in greater detail by the **Danish ship Galathea in 1951**, earning its second name.
 - The **Emden Deep** shares its name with the **German cruiser SMS Emden**, which bombed Chennai (then Madras) during World War I.
- **Philippines Trench:** The Philippine Trench is a narrow, deep oceanic trench in the western Pacific Ocean, located to the east of the **Philippines Sea**.
 - Formed around 8-9 million years ago during the Plio-Pleistocene epoch, the trench is a seismically active region, experiencing frequent earthquakes due to the convergence of tectonic plates.

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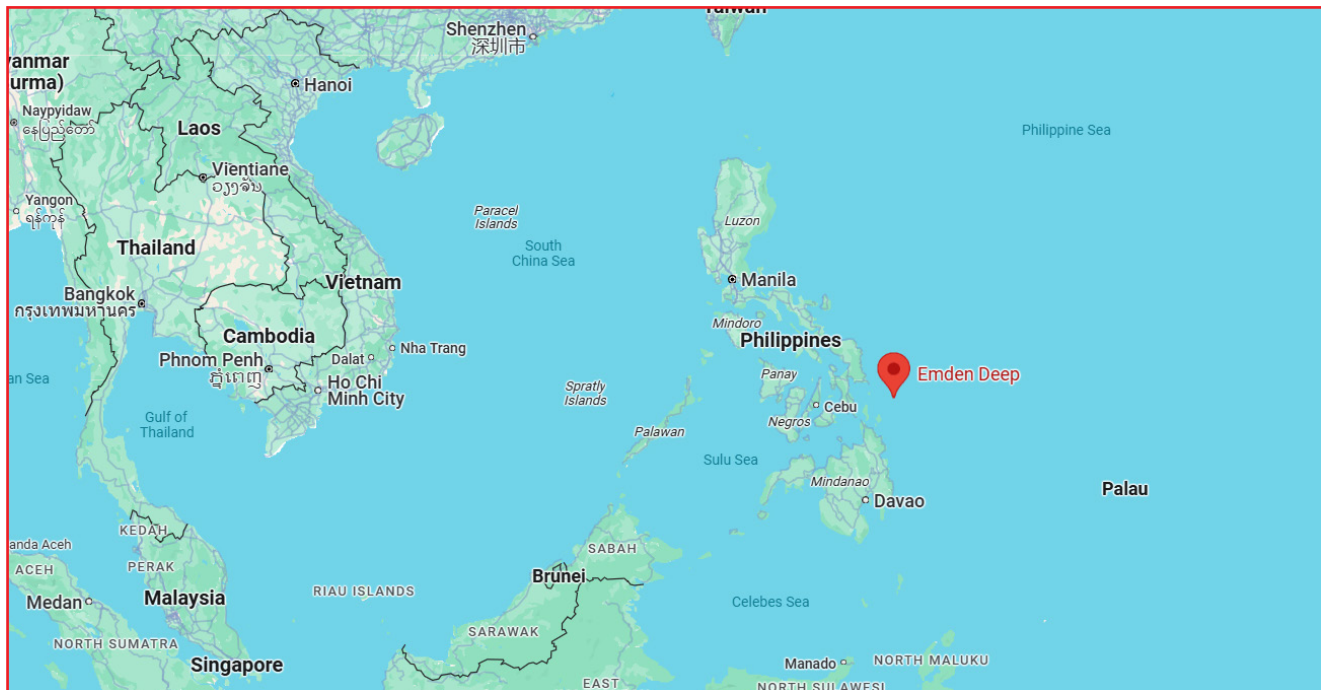


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Read more: [Mission to Explore Ocean Deeps](#)

Locust Swarms

A new study reveals that **locust swarms** are guided by a **cognitive decision-making** model, not random behavior. Locusts use multiple visual cues for movement, leading to coordinated swarms through decentralized decision-making. This model helps predict swarm behavior and improve early intervention strategies.

Locusts

Locusts are a type of grasshopper belonging to the family *Acrididae*. The Desert Locust (*Schistocerca gregaria*) is considered the most destructive migratory pest.

- Locusts are solitary insects until they undergo a transformation called **gregarisation**, where they become more social and congregate in large swarms.
 - A small swarm (1 km²) can contain **80 million locusts**, consuming as much food as 35,000 people in one day, while a large swarm **can eat up to 1.8 million metric tons of vegetation**.
- Locusts are migratory pests capable of flying hundreds of kilometers in swarms. They are a trans-border pest that travels between Africa, the Middle East, and South Asia.
- India's Scheduled Desert Area, encompassing the states of Rajasthan, Gujarat, and Haryana, covering over 2 lakh square kilometers, is particularly vulnerable to locust invasions, which often originate from regions such as Africa and the Gulf.
 - **Desert Locust** (*Schistocerca gregaria*), **Migratory Locust** (*Locusta migratoria*), **Bombay Locust** (*Nomadacris succincta*), and **Tree Locust** (*Anacridium* sp.) are reported in India.
 - India's **Locust Warning Organization**, along with 10 Locust Circle Offices in Rajasthan and Gujarat, monitors, surveys, and controls desert locusts in coordination with state governments in the Scheduled Desert Area.

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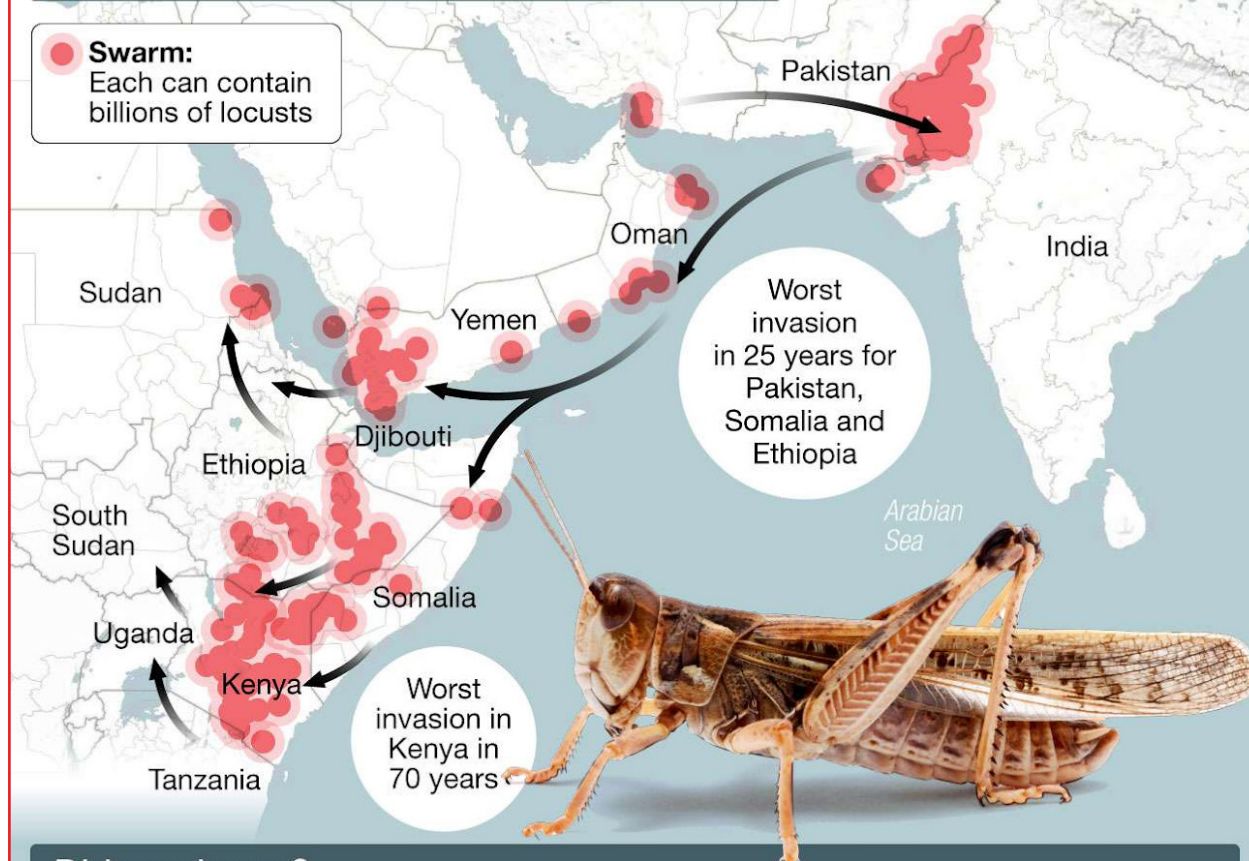


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Locust plague devastation

Swarm:
Each can contain
billions of locusts



Did you know?



Locusts can
eat their own
bodyweight in
food each day



A swarm can be
made up of more
than 50 billion
individual insects



A swarm can travel
up to 100km in a
day - eating
everything in its path



Without
intervention,
a plague can
last years



Weather plays a major role in plagues:

locusts gather in one place during dry spells. When the rain returns, an increase in food and breeding results in numbers exploding



Read more: [Swarm of Desert Locust](#)

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Caste Enumeration in the Upcoming Census

The Cabinet Committee on Political Affairs (chaired by Prime Minister) approved the inclusion of caste enumeration in the upcoming [population census](#).

- **Historical Context of Caste Data:** The last detailed caste data was recorded in the **1931 Census**. Although the **1941 Census** also collected caste information, it was not published due to the **onset of World War II**.
 - Since 1951, India's Census has included **Scheduled Castes (SCs) and Scheduled Tribes (STs)** data but the caste data for **Other Backward Classes (OBCs)** has been largely absent.
 - The absence of caste data has left estimates of **OBC population unclear**. The Mandal Commission (1979) estimated it at 52%.
 - The [2011 Socio-Economic Caste Census \(SECC\)](#) aimed at better welfare targeting, but much of its caste data remains unpublished, limiting its policy impact.
- **Census:** India's first synchronised census occurred in **1881 under W.C. Plowden**, the then **Census Commissioner of India**.
 - Currently, the Census is conducted by the **Ministry of Home Affairs** through the **Registrar General and Census Commissioner of India**.
 - While the **Census of India Act, 1948** provides the legal framework, it does not mandate a specific frequency, making the decennial pattern a convention, not a constitutional requirement.

Read more: [Uncertainty Regarding India's Next National Census](#)

Birth Anniversary of Air Force Marshal Arjan Singh

The **106th birth anniversary** of Marshal of the Indian Air Force **Arjan Singh** was commemorated with the unveiling of his **bust (stone model)** at Astha Senior Citizen Home, Delhi.

Air Force Marshal Arjan Singh

- He was **born in 1919** in Lyallpur (now in Pakistan), was commissioned into the **Royal Indian Air Force in 1939** and awarded the **Distinguished Flying Cross (DFC)** for his role in the **Burma Campaign during World War II**.
 - He became **Chief of Air Staff in 1964** at the age of 44.
- During the **1965 Indo-Pak war**, his decisive leadership enabled the **IAF to repel Pakistan's offensive in Akhnoor within hours**, earning him the **Padma Vibhushan**.
- In 2002, he became the **only IAF officer** to be conferred the **Five-Star rank of Marshal of the Air Force**.
- Post-retirement, he served as **ambassador** and **Lt Governor of Delhi**.

Five-Star Ranks in the Indian Armed Forces

- The five-star ranks in the Indian Armed Forces- **Field Marshal (Army)**, **Marshal of the Air Force (Air Force)**, and **Admiral of the Fleet (Navy)** represent the **highest military honours** and are **awarded for exceptional service**.
- These ranks are **rarely conferred** and are held for **life**, with the officers considered **serving personnel until death**.
- **Field Marshal** has been awarded only to **K.M. Cariappa** and **Sam Manekshaw**, while **Admiral of the Fleet**, have not yet been awarded.

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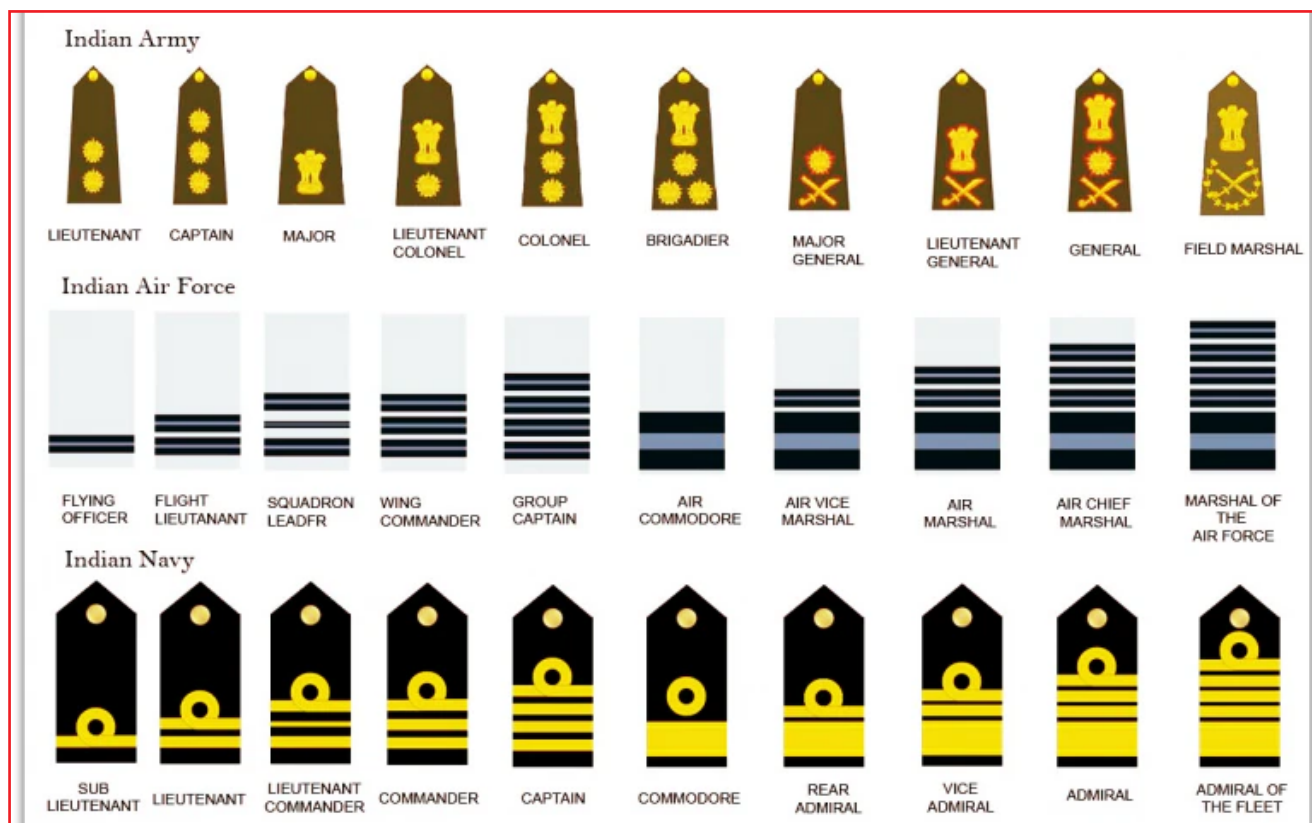


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Read More: [Defence](#), [Reforms in Defence Recruitment](#)

Military Exercise Dustlik 2025

The 6th edition of Joint Military Exercise Dustlik 2025 between India and Uzbekistan concluded in Pune. The 2024 edition of the exercise took place in Termez, Uzbekistan.

Exercise Dustlik 2025

- **Exercise Dustlik** (means 'friendship' in Uzbek) is an **annual bilateral military exercise** conducted alternately between India and Uzbekistan.
- The Indian contingent included a battalion of the **JAT Regiment** and the **Indian Air Force**, while the **Uzbekistan Army** represented the other side.
- The exercise focused on **joint multi-domain sub-conventional operations in a semi-urban scenario**, simulating responses to **terrorist activities** involving the **capture of territory**.
- It focused on **counter-terrorism operations**, **Joint Operations Centre**, **population control**, **raids**, **search-and-destroy missions**, and **use of air assets** with the aim to **boost interoperability** and **strengthen India-Uzbekistan defence ties**.

Uzbekistan

- Uzbekistan is a doubly landlocked country in Central Asia, situated between the **Syr Darya** and **Amu Darya** rivers. It borders **Kazakhstan**, **Kyrgyzstan**, **Tajikistan**, **Afghanistan**, and **Turkmenistan**.

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Read More: [Exercise DUSTLIK](#), [Major Military Exercises of India](#)

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