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APRIL-2026





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INDEX

1. POLITY & GOVERNANCE	1
1.1. Out-Of-State MPLADs Fund Utilization	1
1.2. Karnataka & Andhra Pradesh Social Media Ban for Children	2
1.3. Appointments and Transfers for Governors	4
1.4. VB-G Ram G Act, 2025	6
1.5. Rights of Persons with Disabilities (RPWD) Act, 2016	7
1.6. Jal Jeevan Mission (JJM)	8
1.7. Speaker of the Lok Sabha	10
1.8. The Right to Die with Dignity	11
1.9. Digital Personal Data Protection (DPDP) Act	13
1.10. Bharat Ratna & Padma Awards	14
1.11. Guillotine in Parliamentary Procedure	16
1.12. Joint Parliamentary Committee (JPC)	17
1.13. Foreign Contribution (Regulation) Act	18
<i>UPSC Prelims Practice Questions</i>	20
2. INTERNATIONAL RELATIONS	24
2.1. India-US Foundational Defense Pacts: A Strategic Roadmap	24
2.2. Gulf Cooperation Council (GCC)	25
2.3. BRICS	26
2.4. Place in News	27
2.4.1. Iran Mapping	27
2.4.2. Finland Mapping	28
2.4.3. Kurdistan Region	30
2.4.4. Diego Garcia	31
<i>UPSC Prelims Practice Questions</i>	33
3. SECURITY	36
3.1. Exercise Milan 2026	36
3.2. 11 th Edition of Exercise Lamitiye-2026	38
3.3. Operation Sankalp	30
3.4. Border Security and Diplomacy on the India-Myanmar Frontier	40
<i>UPSC Prelims Practice Questions</i>	42
4. ECONOMY	44
4.1. Securities and Exchange Board of India (SEBI)	44
4.2. Coconut Cultivation	45
4.3. Morbi Ceramic Industry	47
4.4. India's Oil and Gas Imports	48
4.5. Fertilizer Crisis & Price Surge	49
4.6. Impact of Iran-Israel War on India's Exports to Gulf Countries	52
4.7. Open Market Operations (OMO)	53

4.8. India's LPG Dependence and Recent Crisis	54
4.9. Economic Stabilisation Fund (ESF)	56
4.10. Pulses	57
4.11. Public Insurance Registry (PIR)	58
4.12. Bharat Audyogik Vikas Yojana (BHAVYA)	60
4.13. AgriPV	61
<i>UPSC Prelims Practice Questions</i>	63
5. ENVIRONMENT & GEOGRAPHY	67
5.1. India's Air Quality Crisis: Analyzing the 2026 CREA Report	67
5.2. Project Cheetah & Kuno-Gandhi Sagar Corridor	68
5.3. Global Warming Acceleration & Aerosols	70
5.4. Sand Mining	71
5.5. Crab	73
5.6. Tropical Forest Forever Facility (TFFF)	73
5.7. India's Carbon Strategy: CCUS Vs. Nature-Based Credits	75
5.8. Ethyl Chloroformate	76
5.9. World Frog Day	77
<i>UPSC Prelims Practice Questions</i>	79
6. SCIENCE & TECHNOLOGY	82
6.1. Metabolic Disease	82
6.2. The Quest for Thermal Independence	84
6.3. WHO Pandemic Agreement	86
6.4. NAVIC and Global/Regional Satellite Navigation Systems	87
6.5. Discovery of Room-Temperature Superconductivity	88
6.6. Bio-Pharma Shakti	90
6.7. Assam's Satellite Initiative for Flood Monitoring	91
6.8. Discovery of 15 New Moons	92
<i>UPSC Prelims Practice Questions</i>	94
7. HISTORY & CULTURE	97
7.1. Sangita Kalanidhi Award	97
7.2. Keeladi Excavation	97
7.3. Kakori Martyrs	99
<i>UPSC Prelims Practice Questions</i>	102
8. MISCELLANEOUS	104
8.1. SHINE	104
8.2. Project Nanhi Kali	104
<i>UPSC Prelims Practice Questions</i>	107

POLITY & GOVERNANCE

1.1. OUT-OF-STATE MPLADS FUND UTILIZATION

Context:

According to an analysis based on data from the Empowered Indian MPLADS dashboard, a significant portion of MPLADS funds recommended for works outside a Member of Parliament's (MP's) home State or constituency is being directed toward a single State in India.

1. MPLADS Fund Utilization Patterns

- **Geographical Concentration of Funds:**
 - Uttar Pradesh received over **84%** of all MPLADS funds recommended for works outside an MP's home State or constituency.
 - Uttar Pradesh utilizes more than **twice** the MPLADS funds compared to the second-highest State, Tamil Nadu, which accounts for around 9% of the total funds.

2. About MPLADS Scheme

- The MPLAD Scheme is a Central Sector Scheme (introduced in 1993), fully funded by the Government of India.
- **The main objective of the Scheme:** To enable each Member of Parliament to recommend works of developmental nature with emphasis on the creation of **durable community assets** based on the locally felt needs of the people.
- **Nodal Ministry:** Initially, MPLADS was administered by the Ministry of Rural Development, but since October 1994 it has been managed by the **Ministry of Statistics and Programme Implementation**.
- **Funds Allocation: Each MP is entitled to ₹5 crore per annum**
 - **An elected Lok Sabha MPs** can recommend works in their Lok Sabha constituencies. **Rajya Sabha MPs** can recommend works within the state of election.
 - **Nominated members** can recommend works anywhere in the country.
 - However, an elected MP can recommend works anywhere in the country outside their usual area, with a limit of **₹25 lakh per financial year**, except in cases of calamity.
- **Special Provisions:** MPs are to recommend every year, works costing **at least 15 per cent** of the MPLADS entitlement for the year for areas inhabited by Scheduled Caste population and **7.5 per cent** for areas inhabited by **S.T. population**.
- **Nature of Funds:** This fund is non-lapsable and can be carried forward if not utilised in a given year.



- **Types of Projects Funded under MPLADS:**
 - Construction of roads, pathways, and small bridges
 - Environment, wild animals, forest and other natural resources
 - Installation of street lights and drainage systems
 - Building school classrooms, libraries, and labs
 - Providing drinking water facilities in schools
 - Development of health centres and purchase of medical equipment
 - Creation of drinking water supply systems and hand pumps
 - Construction of community halls, parks, and playgrounds
 - Building sanitation facilities and Anganwadi centres
 - Energy supply and distribution systems

3. Monitoring and Implementation:

- **Ministry of Statistics and Programme Implementation** shall regularly monitor the implementation of the MPLADS, including overall position of funds released, cost of works sanctioned, funds utilized, etc.
- **Role of Central Nodal Agency:** It shall periodically review the physical and financial progress of MPLADS funds, and take up the matter with the State Nodal Authority, Nodal District Authority, or the Implementing District Authority.
- **Role of the State/ UT Governments:** It shall designate a Department of the State/ UT to be the State Nodal Department, and the Administrative Secretary of that department to be the State Nodal Authority to coordinate and monitor the implementation of the MPLADS in that State/ UT. A State Monitoring Committee, **chaired by the Chief Secretary**, reviews MPLADS implementation and fund utilization with concerned authorities and MPs at least once a year.
- **Role of the District Authority:**
 - They shall be responsible for overall monitoring and supervision of the works under the scheme at the district level.
 - They shall inspect at least 10% of the works under implementation every year.

1.2. KARNATAKA & ANDHRA PRADESH SOCIAL MEDIA BAN FOR CHILDREN

Context:

Recently, the state governments of **Karnataka** and **Andhra Pradesh** have proposed significant legislative measures to ban or strictly restrict the use of social media for children. While presenting the State Budget for 2026-27, Karnataka Chief Minister Siddaramaiah announced a proposed ban on social media for children **under the age of 16** to curb digital addiction and protect mental health.



Simultaneously, Andhra Pradesh Chief Minister N. Chandrababu Naidu stated that his government is working to implement a similar restriction for children **below 13 years** of age within 90 days, while also deliberating on extending the policy to the 13-16 age group.

Key Highlights of the Proposal

1. State-Specific Provisions

- **Karnataka:** The proposal was introduced in the **2026-27 Budget**. It targets children below 16 years, citing concerns over "excessive screen time," "eye fatigue," and "academic decline."
- **Andhra Pradesh:** The state plans to enforce a ban for those below 13 years within **90 days**. A **Group of Ministers (GoM)** led by Nara Lokesh is currently studying the technical feasibility and international models.

2. Major Objectives

- **Mental Health:** Combatting rising cases of anxiety, depression, and body image issues among adolescents.
- **Safety:** Protecting minors from cyberbullying, online grooming, and exposure to age-inappropriate content.
- **Digital Literacy:** Encouraging physical activities and reading habits through campaigns like Karnataka's '**Mobile Bidi, Pustaka Hidi**' (Leave the phone, pick a book).

3. Global Trends

The moves by Indian states align with a growing global "Age-Gate" movement:

- **Australia:** Passed a landmark law in late 2025 banning social media for anyone under 16.
- **France:** Introduced a "digital puberty" age of 15, requiring parental consent for social media.
- **Spain:** Mandated age verification for minors under 16.

4. Legal and Constitutional Challenges

- **Jurisdictional Issue:** Under the **Seventh Schedule** of the Indian Constitution, "Communication" and "Information Technology" (Intermediaries) fall under the **Union List**. Critics argue that states may lack the legislative competence to mandate platform-level blocks.
- **Fundamental Rights:** The ban may be challenged under **Article 19(1)(a)** (Freedom of Speech and Expression), as even minors possess certain rights to access information, subject to "reasonable restrictions."
- **Digital Personal Data Protection (DPDP) Act, 2023:** This central law already defines a "child" as someone under 18 and mandates **verifiable parental consent** before processing their data.
- **Implementation Hurdles:** Difficulties in "Age Verification" without infringing on the **Right to Privacy** (K.S. Puttaswamy judgment).

1.3. APPOINTMENTS AND TRANSFERS FOR GOVERNORS

Context:

The President of India recently announced new appointments and transfers for Governors across seven States and Lieutenant Governors (L-Gs) for two Union Territories. This reshuffle comes amidst significant political shifts, upcoming Assembly elections, and the resignation of high-profile officials like West Bengal Governor C.V. Ananda Bose.

I. Recent Appointments and Key Changes

The latest round of appointments highlights the constitutional power of the President to move and appoint heads of states:

- **West Bengal:** R.N. Ravi (formerly Governor of Tamil Nadu) has been appointed as the new Governor.
- **Tamil Nadu:** Rajendra Vishwanath Arlekar (Governor of Kerala) has been given the additional charge of Tamil Nadu.
- **Bihar:** Lt. Gen. (Retd.) Syed Ata Hasnain has been appointed as the Governor, replacing Arif Mohammed Khan.
- **Transfers:** Shiv Pratap Shukla was moved from Himachal Pradesh to Telangana, and Jishnu Dev Varma was transferred from Telangana to Maharashtra.
- **Union Territories:** Vinai Kumar Saxena was moved from Delhi to Ladakh, while Kavinder Gupta was elevated from Ladakh L-G to Governor of Himachal Pradesh.

II. Static Linkages: The Office of the Governor

1. Constitutional Provisions (Polity)

- **Article 153:** Mandates that there shall be a Governor for each State. The 7th Constitutional Amendment Act of 1956 facilitated the appointment of the same person as a Governor for two or more States (relevant to the additional charge given for Tamil Nadu).
- **Article 155:** The Governor is appointed by the President by warrant under his hand and seal.
- **Article 156:** The Governor holds office during the pleasure of the President. The article also mentions a standard term of five years, but this is subject to the President's pleasure.
- **Article 163:** There is a Council of Ministers with the Chief Minister at the head to aid and advise the Governor in the exercise of his functions, except in some conditions where discretion is allowed.

APPOINTMENTS & TRANSFERS FOR GOVERNORS
Why Important for UPSC?

- Constitutional relevance: Appointment of the Governor of an Indian State is governed by provisions related to the President of India.
- Federalism debate: The Governor's appointment often raises issues of Centre-State relations, an important theme in Indian Polity.
- Supreme Court rulings: Cases like B.P. Singhal v. Union of India clarify removal and tenure of Governors.
- Exam relevance: Frequently asked in UPSC Prelims and Mains regarding powers, appointment process, and constitutional role.

Recent Appointments and Transfers

- Constitutional Provisions (Polity)
- Appointment Process
- Lieutenant Governors vs. Governors

Constitutional Provisions (Polity)

- Article 163: Governor for each State
- Article 153: Governor is appointed by the President
- Article 156: Governor remains Governor
- Article 163: Council of Ministers aids & advises Governor

Recent Appointments and Transfers

- R.N. Ravi Appointed Governor of West Bengal
- Rajendra Vishwanath Arlekar. Given additional charge of Tamil Nadu, remains Governor of Kerala
- Tamil Nadu Governor is appointed by Tamil Nadu
- Vinai Kumar Saxena. Moved from Delhi L-G to Ladakh L-G
- Delhi L-G to Ladakh L-G
- Kavinder Gupta Promoted from Ladakh L-G to Governor of Himachal Pradesh.

Appointment Process

- Appointed by the President of India
- Not elected—unlike the President
- Term: 5 years but serves at the President's pleasure

Lieutenant Governors vs. Governors

- L-G
- Governor

Recent Appointments (Polity)

- Article 153: Mandates a Governor of for each State
- Article 155: Governor is appointed by the President
- Article 156: Governor holds office during the president's pleasure

Privileges of the Governor

- Personal immunity from criminal proceedings during their term (Article 361)
- Cannot be arrested or imprisoned while in office

2. What is the Appointment Process for the Governor?

- The **Governor of an Indian State** is the **constitutional head and chief executive of the state**. The office has been **inspired by the Canadian constitutional model**.
- By convention, the Governor is usually **appointed from outside the state** to keep the office free from local political influences.
- Although the **President of India** appoints the Governor, it is generally expected that the **Chief Minister of the concerned state** is consulted to facilitate smooth functioning of the constitutional system.
- Unlike the **President of India**, the Governor is **neither directly elected by the people nor indirectly elected by an electoral college**.
- Instead, the Governor is **appointed by the President through a warrant under his hand and seal**. The Governor **holds office at the pleasure of the President** and may be removed at any time.

3. Key Conditions of the Governor's Office

- **Legislative Separation:** The Governor cannot be a member of either House of Parliament or any House of a State Legislature. If a sitting member is appointed, they are deemed to have vacated their seat on the date they assume office.
- **No Other Office of Profit:** The Governor must not hold any other position of profit.
- **Official Residence:** The Governor is entitled to use the official residence (Raj Bhavan) without paying rent.
- **Emoluments and Allowances:** Parliament determines the salary, allowances, and privileges of the Governor. These cannot be reduced during their term.
- **Shared Expenses:** If one person acts as Governor for two or more states, the expenses and salaries are shared among the states as determined by the President.
- **Immunity:** The Governor enjoys immunity from criminal proceedings for personal acts during their term, and civil proceedings require two months' notice.
- **Qualification:** Must be a citizen of India and Must have completed 35 years of age(Article 157).

4. Lieutenant Governors vs. Governors

- **Governors:** Act as the constitutional head of a State, bound by the aid and advice of the Council of Ministers (except in discretionary matters).
- **Lieutenant Governors (L-Gs):** Administer Union Territories (UTs) like Delhi, Ladakh, and Puducherry as representatives of the President. Their powers often differ based on whether the UT has a Legislative Assembly.

5. Privileges:

- Under **Article 361 of the Constitution of India**, the **Governor of an Indian State** enjoys **personal immunity from legal liability for acts performed in the exercise of official powers**.
- During the tenure of office, the Governor is **immune from criminal proceedings**, even for actions of a personal nature, and **cannot be arrested or imprisoned**.

- However, **civil proceedings related to personal acts may be initiated during the term**, provided a **two-month prior notice** is given.

1.4. VB-G RAM G ACT, 2025

Context:

The Union Rural Development Ministry is currently in the process of framing rules and "objective parameters" for the implementation of the **Viksit Bharat – Guarantee for Rozgar and Ajeevika Mission (Gramin) or VB-G RAM G Act, 2025**. This new legislation seeks to replace the Mahatma Gandhi National Rural Employment Guarantee Act, 2005 (MGNREGA).

The VB-G RAM G Act, 2025: Key Provisions

- **Employment Guarantee:** Increases guaranteed employment from **100 to 125 days** per rural household annually. Unemployment allowance after **15 days without work** remains.
- **Fund Sharing:** Scheme to function as a **Centrally Sponsored Scheme**.
 - **60:40** Centre–State ratio (general states)
 - **90:10** (North-Eastern & Himalayan states) States will continue paying **unemployment allowance and delay compensation**.
- **Excess Expenditure:** Centre will set **state-wise normative allocations**. Any expenditure beyond this will be **borne by the State government**.
- **Pause During Agricultural Season:** States may declare up to **60 days annually** when MGNREGA works are paused during **peak sowing/harvesting periods**.
- **Planning Framework: Gram Panchayats** prepare work plans focusing on
 1. Water security
 2. Rural infrastructure
 3. Livelihood infrastructure
 4. Climate/extreme weather mitigation



Plans integrated with PM Gati Shakti National Master Plan.

- **Implementation & Monitoring:** Creation of **National and State Steering Committees** for oversight, planning, and coordination.
- **Use of Technology:** Biometric authentication, **geospatial planning, mobile dashboards**, and **weekly public disclosure systems** for transparency.

Implementing and Monitoring Authorities

- The Act establishes a clear institutional framework to ensure coordinated, accountable, and transparent implementation of the Mission across national, State, district, block, and village levels.
- **Central and State Gramin Rozgar Guarantee Councils** provide policy guidance, review implementation, and strengthen accountability.
- **Panchayati Raj Institutions** lead planning and execution, with Gram Panchayats implementing at least half of the works in terms of cost.
- **District Programme Coordinators and Programme Officers** manage planning, compliance, payments, and social audits.
- **Gram Sabhas** play a strengthened role in conducting social audits and ensuring transparency through access to all records.

MGNREGA	Viksit Bharat-G RAM G
100 days of wage employment per rural household	125 days of wage employment per rural household
Multiple and scattered categories of works with limited strategic focus	4 clearly defined priority areas focusing on water security, rural infrastructure, livelihoods and climate resilience
Center bears unskilled wage costs, states bear unemployment allowance	State cost-sharing for wages, 60:40 for most states, 90:10 for certain special-category regions
No explicit statutory "pause window"	States can notify up to 60 days in a FY when work will not be executed
Demand based funding with unpredictable allocations	Normative funding ensuring predictable budgeting while protecting the employment guarantee
Gram Panchayat planning is central	Integrates institutionalised convergence and infrastructure planning

Source: Ministry of Rural Development

1.5. RIGHTS OF PERSONS WITH DISABILITIES (RPWD) ACT, 2016

Context:

Recently, on March 9, 2026, the Supreme Court of India observed that if the Bharatiya Nyaya Sanhita (BNS) distinguishes between "throwing" and "administering" acid, the Rights of Persons with Disabilities (RPwD) Act, 2016 must also be updated to reflect this distinction. A Bench led by Chief Justice Surya Kant emphasized that the law must foresee and cover all forms of offences—

including forced ingestion of corrosive substances—to ensure survivors are not excluded from the protective umbrella of disability welfare schemes and medical benefits.



Salient Features of the RPwD Act, 2016

1. Legislative Background

- The Act was enacted to give effect to the **United Nations Convention on the Rights of Persons with Disabilities (UNCRPD)**, which India ratified in 2007.
- It replaced the erstwhile **Persons with Disabilities (Equal Opportunities, Protection of Rights and Full Participation) Act, 1995**.

2. Expanded Definition of Disability

- The Act increased the number of recognized disability categories from **7 to 21**.
- **Specified Disabilities include:** Blindness, Low-vision, Leprosy Cured persons, Hearing Impairment, Locomotor Disability, Dwarfism, Intellectual Disability, Mental Illness, Autism

Spectrum Disorder, Cerebral Palsy, Muscular Dystrophy, Chronic Neurological conditions, Specific Learning Disabilities, Multiple Sclerosis, Speech and Language disability, Thalassemia, Haemophilia, Sickle Cell disease, Multiple Disabilities, Acid Attack victims, and Parkinson's disease.

- The Central Government retains the power to add more types of disabilities to this list.

3. Rights and Entitlements

- **Benchmark Disabilities:** Defined as persons with at least **40%** of a specified disability.
- **Education:** Every child with a benchmark disability between **6 and 18 years** has the right to free education in a neighborhood school or special school of their choice.
- **Employment Reservation:** The Act mandates a reservation of not less than **4%** in government establishments for persons with benchmark disabilities (an increase from 3% in the 1995 Act).
- **Higher Education:** A minimum of **5%** reservation is provided in government and government-aided higher educational institutions.

4. Accessibility Mandates

- The Act imposes a legal obligation on the "appropriate government" to ensure that all public buildings are made accessible within a prescribed timeframe.
- It covers accessibility in the physical environment, transportation, and Information and Communication Technology (ICT) ecosystems.

5. Institutional Framework

- **Chief Commissioner and State Commissioners:** These offices act as regulatory bodies and grievance redressal agencies to monitor the implementation of the Act.
- **National and State Advisory Boards:** These serve as high-level policy-making bodies on disability matters.
- **District Level Committees:** Tasked with addressing local grievances and ensuring the delivery of services at the grassroots level.
- **Special Courts:** Designated in each district to ensure speedy trials for offenses committed against persons with disabilities.

1.6. JAL JEEVAN MISSION (JJM)

Context:

Recently, the Union Cabinet approved a significant extension of the **Jal Jeevan Mission (JJM)** up to **December 2028**, accompanied by an additional financial boost of **₹1.51 trillion** to accelerate rural tap water coverage. This decision marks the transition into **JJM 2.0**, which focuses on structural reforms, digital monitoring, and addressing regional implementation gaps. Simultaneously, the government launched the **Jal Mahotsav 2026** (March 8–22) to mark the formal handover of water assets to Gram Panchayats and reinforce community ownership.



Core Features of Jal Jeevan Mission (JJM)

1. **Launch and Objective:** Launched on August 15, 2019, the mission originally aimed to provide **Functional Household Tap Connections (FHTC)** to all rural households by 2024, ensuring a supply of **55 litres per capita per day (lpcd)** of potable water.
2. **Nodal Ministry:** It is implemented by the **Department of Drinking Water and Sanitation** under the **Ministry of Jal Shakti**.
3. **Nature of Scheme:** It is a **Centrally Sponsored Scheme** that follows a community-managed and decentralized approach.
4. **Funding Pattern:**
 - a. **100%** for Union Territories without legislature.
 - b. **90:10** for North-Eastern and Himalayan States (e.g., Himachal Pradesh, Uttarakhand).
 - c. **50:50** for all other States.
5. **Targeted Priorities:** The mission prioritizes water quality-affected habitations (arsenic / fluoride), Sansad Adarsh Gram Yojana (SAGY) villages, and Aspirational Districts.

Recent Developments: JJM 2.0 and Extension

- **Revised Timeline:** The mission has been extended to **December 2028** to ensure 100% saturation in difficult terrains.
- **JJM 2.0 Reforms:** The updated phase emphasizes **service delivery** over mere infrastructure creation, linking fund releases to actual water delivery and digital verification via the **Sujal Gaon ID module**.
- **Sustainability Measures:** Mandatory elements now include **Greywater Management** (reusing used water), rainwater harvesting, and groundwater recharge in convergence with MGNREGS.
- **Digital Monitoring:** Assets are geo-tagged, and the mission uses a real-time **IoT-enabled dashboard** for tracking water quality and quantity.

Implementation Status (As of March 2026)

- **National Coverage:** India has crossed **81% rural tap water coverage**, increasing from just 16.7% (3.23 crore households) in 2019 to over **15.82 crore households** in March 2026.
- **100% Certified States/UTs:** Goa, Arunachal Pradesh, Haryana, Punjab, Himachal Pradesh, Mizoram, Gujarat, Telangana, and UTs like Puducherry and A&N Islands have reported full coverage.
- **Community Ownership:** Over **1.8 lakh villages** are now "Har Ghar Jal" certified, meaning every household and public institution (Schools/Anganwadis) has a functional tap.

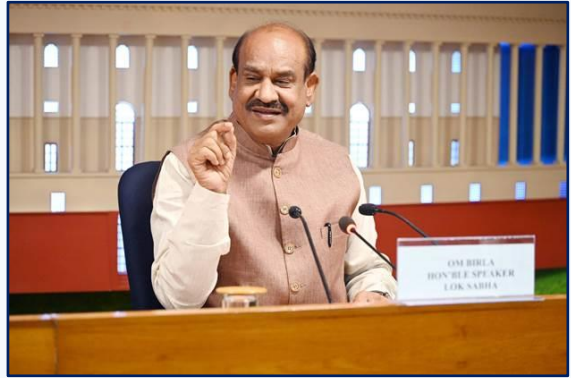
Significant Impacts

- **Health:** According to the **World Health Organization (WHO)**, the mission has the potential to prevent **4 lakh diarrheal deaths** and save **14 million Disability Adjusted Life Years (DALYs)**.
- **Gender Empowerment:** **SBI Research** reports that the mission has freed roughly **9 crore women** from the daily drudgery of fetching water, translating to a saving of **5.5 crore hours daily**.
- **Child Health:** Research by Nobel Laureate **Michael Kremer** indicates that safe water access through JJM can reduce under-5 child mortality by nearly **30%**.

1.7. SPEAKER OF THE LOK SABHA

Context:

Recently, the Lok Sabha witnessed a high-stakes debate as the Opposition moved a resolution for the removal of Speaker **Om Birla** under **Article 94(c)** of the Constitution, alleging partisan conduct and procedural irregularities during the Budget Session. This development marks only the fourth time in independent India's history that such a motion has reached the floor of the House. Simultaneously, the Supreme Court has



recently tightened its stance on the Speaker's role as a tribunal, warning that "indecision" in disqualification cases cannot be used as a shield to bypass the Anti-Defection Law.

Constitutional Provisions and Election

1. **Constitutional Basis: Article 93** mandates the Lok Sabha to choose two members of the House to be Speaker and Deputy Speaker as soon as may be.
2. **Election:** The Speaker is elected by a **simple majority** of the members present and voting. The date of the election is fixed by the **President**.
3. **Tenure:** The Speaker holds office from the date of election until immediately before the first meeting of the next Lok Sabha. They do not vacate office upon the dissolution of the House (**Article 94**).
4. **Resignation:** The Speaker submits their resignation in writing to the **Deputy Speaker** (and vice-versa).

Powers and Functions of the Speaker

- **Final Interpreter:** The Speaker is the final interpreter of the provisions of the Constitution of India, the Rules of Procedure and Conduct of Business of Lok Sabha, and parliamentary precedents within the House.
- **Money Bills:** Under **Article 110(3)**, the Speaker's decision on whether a bill is a Money Bill is final and cannot be questioned in any court, although the Supreme Court (Aadhaar Case) clarified that "colorable" exercises of this power are subject to judicial review.
- **Joint Sitting:** The Speaker presides over a joint sitting of both Houses of Parliament (**Article 108**).
- **Casting Vote:** The Speaker does not vote in the first instance but exercises a **casting vote** in case of a tie to resolve a deadlock (**Article 100**).

Administrative and Supervisory Powers

- **Head of Secretariat:** The Speaker is the ultimate head of the **Lok Sabha Secretariat** and exercises total control over the Parliament Estate, including security and infrastructure.
- **Committee Appointments:** The Speaker appoints the Chairpersons of all **Parliamentary Committees** of the Lok Sabha and supervises their functioning.
- **Ex-Officio Chairman:** The Speaker personally chairs three critical committees:
 - **Business Advisory Committee (BAC):** Regulates the House timetable and agenda.

- **Rules Committee:** Considers matters of procedure and conduct of business.
- **General Purposes Committee:** Deals with matters not falling under other committees.

Quasi-Judicial Role: The Tenth Schedule (Anti-Defection Law)

1. **Adjudicating Authority:** The Speaker decides on the disqualification of members on grounds of defection.
2. **Kihoto Hollohan Case (1992):** The Supreme Court ruled that while acting under the Tenth Schedule, the Speaker functions as a **Tribunal**. Therefore, their decisions are subject to **judicial review** on grounds of mala fides, perversity, or violation of constitutional mandate.
3. **Keisham Meghachandra Singh Case (2020):** The Supreme Court recommended that Speakers should decide disqualification petitions within a **reasonable period**, suggesting a limit of **three months**.
4. **Current Status:** In recent rulings (2025-26), the Court has emphasized that the Speaker cannot sit on petitions indefinitely, as this defeats the very purpose of the Anti-Defection Law.

Procedure for Removal

- **Article 94(c):** The Speaker can be removed by a resolution passed by a **majority of all the then members** of the Lok Sabha (known as an **Effective Majority**).
- **Notice Period:** At least **14 days' notice** must be given before moving such a resolution.
- **Admissibility:** At least **50 members** must support the leave to move the motion in the House.
- **Special Condition (Article 96):** When a resolution for removal is under consideration, the Speaker **cannot preside** over the sitting. However, they have the right to speak, participate in proceedings, and **vote in the first instance**, but they cannot vote in the case of a tie.

1.8. THE RIGHT TO DIE WITH DIGNITY

Context:

Recently, the Supreme Court of India delivered a historic judgment on March 11, 2026, permitting the withdrawal of life support for a 32-year-old man who had been in a **Persistent Vegetative State (PVS)** for nearly 13 years. In this ruling, the Court emphasized that the state's interest in preserving life must become **subservient to an individual's dignity** when medical interventions become futile and invasive.

Significantly, the Bench directed that the term "passive euthanasia" should be replaced with "**Withdrawing or Withholding of Medical Treatment**" to reflect a more compassionate and medically accurate approach. This marks the first time since the 2018 *Common Cause* judgment that the apex court has directly authorized the cessation of clinically assisted nutrition and hydration (CANH) in such a specific case.



1. Evolution of the Right to Die in India

The legal journey has shifted from total prohibition to a nuanced recognition of dignity:

- **P. Rathinam v. Union of India (1994):** The SC initially held that the "Right to Life" under Article 21 includes the "Right to Die," effectively striking down Section 309 of the IPC (Attempt to Suicide).
- **Gian Kaur v. State of Punjab (1996):** A Constitution Bench **overruled** Rathinam, stating that Article 21 is a "Right to Life" and does not include the "Right to Die." However, it hinted that a **dignified death** is part of a dignified life.
- **Aruna Shanbaug v. Union of India (2011):** The SC permitted **Passive Euthanasia** under strict judicial monitoring for the first time, distinguishing it from Active Euthanasia.
- **Common Cause v. Union of India (2018):** A 5-judge bench declared the **Right to Die with Dignity** as a Fundamental Right under Article 21. It legalized **Living Wills**.

2. Active vs. Passive Euthanasia

Feature	Active Euthanasia	Passive Euthanasia (Withdrawal of Treatment)
Action	A positive act to end life (e.g., lethal injection).	Withholding or withdrawing life-support.
Legal Status	Illegal in India (treated as murder/culpable homicide).	Legal in India under specific SC guidelines.
Outcome	Intentional termination of life.	Allowing the natural course of death to occur.

3. Advance Medical Directives (Living Wills)

A "Living Will" is a document where a person specifies in advance that they should not be kept on artificial life support if they reach a terminal or irreversible medical state.

- **Execution:** Can be signed in the presence of two witnesses and attested by a **Notary or Gazetted Officer** (simplified in 2023 from the earlier requirement of a Judicial Magistrate).
- **Revocation:** An individual has the right to withdraw or change the directive at any time while they are competent.
- **National Health Digital Record:** In 2023, the SC directed that these documents be integrated into digital health records for easy access by hospitals.

4. Procedural Safeguards

The procedure involves two tiers of medical experts to prevent misuse:

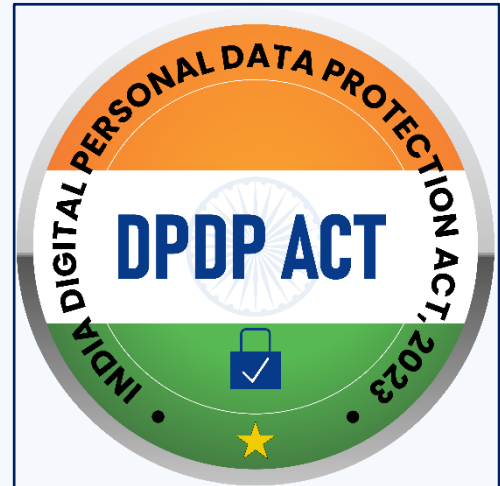
1. **Primary Medical Board:** Consists of three doctors (including the treating physician and two specialists with 5 years of experience). They must give an opinion within **48 hours**.
2. **Secondary Medical Board:** Consists of three experts (one nominated by the District Medical Officer). They also have a **48-hour** window to confirm the primary board's finding.
3. **Communication:** The hospital must intimate the **Judicial Magistrate of First Class (JMFC)** about the decision before implementation.

1.9. DIGITAL PERSONAL DATA PROTECTION (DPDP) ACT

Context:

Recently, the Supreme Court of India issued a formal notice to the Union Government in response to a petition challenging the constitutional validity of certain provisions of the **Digital Personal Data Protection (DPDP) Act, 2023** and the **DPDP Rules, 2025**.

The court is specifically examining whether the Act's broad exemptions for state agencies and the amendment to Section 8(1)(j) of the **Right to Information (RTI) Act** create a "compensation vacuum" for citizens and unconstitutionally restrict the public's right to know.



1. Applicability and Scope

- **Digital Focus:** The Act applies to the processing of personal data that is collected in **digital form** or collected offline and later **digitized**.
- **Territorial Jurisdiction:** It applies to data processing within India. It also has **extraterritorial jurisdiction** if the processing is in connection with offering goods or services to Data Principals in India.
- **Exclusions:** It does not apply to personal data processed by an individual for **personal or domestic purposes** or data made publicly available by the Data Principal themselves.

2. Key Definitions

- **Data Principal:** The individual to whom the personal data relates. For children (under 18) or persons with disabilities, this includes their parents or lawful guardians.
- **Data Fiduciary:** The entity (individual, company, or State) that determines the **purpose and means** of data processing.
- **Data Processor:** Any entity that processes data on behalf of a Data Fiduciary.
- **Consent Manager:** A registered entity that provides a single, interoperable platform for individuals to manage, review, and withdraw their consent.

3. Seven Core Principles of DPDP Act

The Act is built on a "SARAL" (Simple, Accessible, Rational & Actionable Law) framework based on:

1. **Consented & Lawful Use:** Data must be processed with explicit consent for lawful purposes.
2. **Purpose Limitation:** Use of data is restricted only to the purpose specified at the time of consent.
3. **Data Minimization:** Only the minimum necessary data should be collected.
4. **Accuracy:** Ensuring data is correct and updated.
5. **Storage Limitation:** Data should be deleted once the purpose is fulfilled.
6. **Security Safeguards:** Reasonable measures to prevent data breaches.
7. **Accountability:** Fiduciaries are responsible for compliance.

4. Significant Data Fiduciaries (SDF)

The Central Government can notify certain fiduciaries as **SDFs** based on factors like the volume of data processed and risk to national sovereignty. SDFs have additional obligations:

- Appointing a **Data Protection Officer (DPO)** based in India.
- Appointing an **independent data auditor**.
- Conducting **Data Protection Impact Assessments (DPIA)**.

5. Rights and Duties of Data Principals

- **Rights:** Right to access information, right to correction/erasure, right to grievance redressal, and the **Right to Nominate** (to exercise rights in case of death or incapacity).
- **Duties:** Data Principals must not furnish false information, suppress material facts, or file frivolous complaints. Violation of duties can lead to a penalty of up to **Rs 10,000**.

6. The Data Protection Board of India (DPBI)

- **Nature:** A quasi-judicial, digital-first body established to adjudicate breaches and complaints.
- **Powers:** It can summon witnesses, inspect documents, and impose financial penalties.
- **Appeals:** Decisions of the DPBI can be appealed before the **Telecom Disputes Settlement and Appellate Tribunal (TDSAT)**.

7. Penalties and Exemptions

- **Penalties:** Can range up to **Rs 250 crore** for failing to prevent a data breach. There is **no provision for criminal jail terms**; penalties are purely financial.
- **State Exemptions:** The Government can exempt its instrumentalities from the Act in the interest of **sovereignty, security of the state, or public order**.
- **RTI Amendment:** The Act amends Section 8(1)(j) of the RTI Act to prohibit the disclosure of all "personal information," removing the previous "public interest" exception.

1.10. BHARAT RATNA & PADMA AWARDS

Context:

In light of contemporary political discourse, there have been renewed public demands for the Bharat Ratna to be conferred upon prominent historical figures like Kanshi Ram. Furthermore, the 2026 award cycle has highlighted a significant shift towards recognizing "Unsung Heroes" and grassroots innovators, ensuring that India's highest civilian honors reflect diverse contributions from various strata of society.



Bharat Ratna: The Highest Civilian Honor

The Bharat Ratna is awarded in recognition of exceptional service or performance of the highest order in any field of human endeavor.

1. Key Features and Evolution

- **Inception:** Instituted in 1954, it was initially restricted to Art, Literature, Science, and Public Service, but the criteria were expanded in 2011 to include "any field of human endeavor."

- **Recommendations:** Unlike the Padma Awards, recommendations for the Bharat Ratna are made by the **Prime Minister** directly to the **President of India**. No formal committee is involved.
- **Cap on Awards:** The number of Bharat Ratna awards is generally restricted to a maximum of **three** in any particular year.
- **Benefits:** The award includes a *Sanad* (certificate) signed by the President and a medallion. It does not carry any monetary grant, but recipients receive several perquisites like "State Guest" status and a place in the Table of Precedence (7A).

2. Constitutional Status

- In the **Balaji Raghavan v. Union of India (1996)** case, the Supreme Court upheld the constitutional validity of these awards.
- The Court ruled that they are "**National Honours**" and not "titles" within the meaning of **Article 18(1)**.
- **Mandatory Restriction:** Recipients cannot use the award as a prefix or suffix to their names. Violation of this rule can lead to the forfeiture of the award.

The Padma Awards

The Padma Awards are the second, third, and fourth highest civilian honors in the country, announced annually on the eve of Republic Day.

1. Hierarchy and Criteria

- **Padma Vibhushan:** For exceptional and distinguished service.
- **Padma Bhushan:** For distinguished service of high order.
- **Padma Shri:** For distinguished service in any field.

2. Selection Process

- **Padma Awards Committee:** Formed every year by the Prime Minister, headed by the **Cabinet Secretary**.
- **Nominations:** The process is open to the public, including **self-nomination**.
- **Eligibility:** All persons without distinction of race, occupation, position, or sex are eligible. However, **Government servants** (including those in PSUs), except doctors and scientists, are **not eligible** for these awards while in service.

3. Highlights of 2026 Awards

- **Total Count:** A total of 131 awards were approved (5 Padma Vibhushan, 13 Padma Bhushan, 113 Padma Shri).
- **Diversity:** The 2026 list includes 19 women, 6 foreigners/NRIs, and 16 posthumous awardees.
- **Prominent Names:**
 - **Padma Vibhushan:** Dharmendra Singh Deol (Art), V.S. Achuthanandhan (Posthumous - Public Affairs).
 - **Padma Bhushan:** Alka Yagnik (Art), Mammooty (Art), Uday Kotak (Trade & Industry).
 - **Padma Shri:** Rohit Sharma (Sports), Harmanpreet Kaur (Sports), and several "Unsung Heroes" like Anke Gowda (Social Work).

1.11. GUILLOTINE IN PARLIAMENTARY PROCEDURE

Context:

Lok Sabha Speaker is expected to apply the **guillotine** to fast-track the passage of the outstanding Demands for Grants for the Union Budget 2026-27. This procedural move follows a period of frequent disruptions in the House, which limited the time available for detailed discussions on various ministerial expenditures. By invoking this measure, the remaining budgetary demands will be put to a vote simultaneously to ensure the Finance Bill is passed within the constitutional deadline.



1. What is the Guillotine?

In legislative parlance, to "guillotine" means to bunch together and fast-track the passage of financial business or clauses of a bill. It is a procedural tool used primarily in the **Lok Sabha** during the Budget Session to ensure that the government meets its financial deadlines.

2. The Budgetary Process and Guillotine

The application of the guillotine is the final stage of the discussion on the **Demands for Grants**:

- **Presentation & Recess:** After the Budget is presented, the House goes into a recess for about three weeks. During this time, **Departmentally Related Standing Committees (DRSCs)** examine the Demands for Grants of various ministries.
- **Discussion:** When the House reassembles, the **Business Advisory Committee (BAC)** schedules discussions for specific ministries (usually high-stakes ones like Defence, Home, and External Affairs).
- **The Deadline:** On the last day allotted for the discussion on Demands for Grants, the Speaker puts all the remaining undiscussed demands to vote, whether they have been debated or not. This specific act is called "applying the guillotine."

3. Classification as a Closure Motion

The guillotine is one of the four types of **Closure Motions** used to cut short the debate on a matter before the House:

- **Simple Closure:** A member moves that the matter has been sufficiently discussed and should be put to vote.
- **Closure by Compartments:** Clauses of a bill are grouped into parts; the debate occurs on the whole part, and the entire group is put to vote.
- **Kangaroo Closure:** Only important clauses are taken up for debate, and the intervening clauses are skipped and taken as passed.
- **Guillotine Closure:** Undiscussed clauses of a bill or resolution are put to vote along with the discussed ones due to a lack of time.

4. Constitutional and Functional Necessity

- **Article 113:** Mandates that any expenditure from the Consolidated Fund of India (other than charged expenditure) must be submitted to the Lok Sabha in the form of Demands for Grants.

- **Financial Year Deadlines:** The government must have the Appropriation Bill and Finance Bill passed before the new financial year begins on April 1st to ensure it has the legal authority to spend money.

1.12. JOINT PARLIAMENTARY COMMITTEE (JPC)

Context:

Recently, the Lok Sabha referred the **Corporate Laws (Amendment) Bill, 2026** to a Joint Parliamentary Committee (JPC) for detailed examination. Union Finance Minister Nirmala Sitharaman proposed the motion to allow for wider stakeholder scrutiny regarding amendments to the Companies Act, 2013, and the Limited Liability Partnership Act, 2008.



1. Nature and Status

- **Ad-hoc Committee:** A JPC is a temporary (ad-hoc) body constituted by the Parliament for a specific purpose and a fixed duration.
- **Dissolution:** The committee ceases to exist once it completes its assigned task and submits its report to the Parliament.
- **Bipartisan Representation:** It consists of members from both the ruling coalition and the opposition parties, ensuring a balanced scrutiny of controversial issues.

2. Composition and Formation

- **Creation:** A JPC is set up through a motion passed in one House (usually the Lok Sabha) and concurred with by the other House. Alternatively, the presiding officers of both Houses can communicate to form a joint committee.
- **Membership Ratio:** The strength of a JPC is not fixed by any permanent rule but is decided by the motion. Conventionally, the ratio of members from the **Lok Sabha to the Rajya Sabha is 2:1**.
Example: For a 31-member committee, 21 members are from the Lok Sabha and 10 from the Rajya Sabha.
- **Appointment:** Members are either elected or nominated by their respective Houses. The Chairperson is typically a member of the Lok Sabha, appointed by the Speaker.

3. Powers and Functions

- **Investigative Authority:** A JPC can investigate financial irregularities, major scams, or complex legislative bills (like the Corporate Laws Amendment Bill).
- **Summoning Powers:** It has the power to summon individuals, experts, or government officials to give oral evidence and can demand the production of confidential documents.
- **Confidentiality:** The proceedings of the committee are generally confidential, though the final report is tabled in the House.
- **Dispute Resolution:** Any dispute regarding the relevance of evidence or the production of documents is resolved by the Speaker of the Lok Sabha.

4. Recommendations and Accountability

- **Advisory Nature:** The recommendations made by a JPC are **persuasive and advisory**, meaning they are not legally binding on the Government.
- **Action Taken Report (ATR):** While the government may reject the recommendations, it is mandatory to submit an 'Action Taken Report' to the Parliament, explaining the steps taken or reasons for non-implementation.

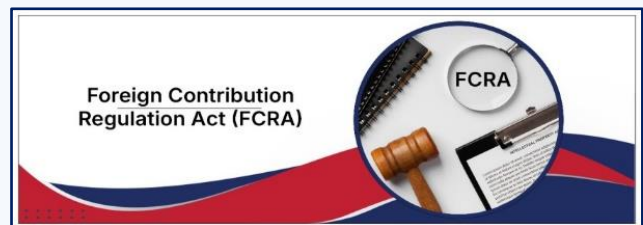
5. JPC vs. Standing Committees

Feature	Joint Parliamentary Committee (JPC)	Standing Committees (DRSCs)
Duration	Temporary (Ad-hoc)	Permanent (Reconstituted annually)
Scope	Specific issue or Bill	Subject-specific (Ministry-wise)
Powers	Higher investigative powers (Summoning)	Focused on budget and policy review

1.13. FOREIGN CONTRIBUTION (REGULATION) ACT

Context:

The Union Government is likely to introduce the **Foreign Contribution (Regulation) Amendment Bill, 2026**, during the ongoing session of Parliament to streamline the management of foreign funds and assets created by NGOs.



1. Key Proposed Legislative Changes

- **Designated Authority:** A new provision allows for the appointment of a "designated authority" to take over, manage, or dispose of assets created out of foreign funds by an NGO whose registration has been suspended, cancelled, or not renewed.
- **Expansion of "Key Functionary":** The definition of a "key functionary" of an NGO is being expanded beyond directors and office bearers to include partners, trustees, and the **Karta** of a Hindu Undivided Family.
- **Reduction in Penalties:** The Bill proposes to reduce the maximum imprisonment for FCRA-related offences from **five years to one year**.
- **Liability:** Key functionaries will now be held directly liable for offences committed under the Act.
- **Investigation Approval:** Law enforcement agencies or State governments must seek **prior approval** from the Central Government before initiating investigations into FCRA-related complaints (Amendment to Section 43).
- **Fund Utilization Timelines:** The Bill proposes fixed timelines for the utilization of foreign funds received under the "prior permission" category.

2. Understanding FCRA

- The FCRA, enacted in 1976 during the Emergency, governs the acceptance and utilization of foreign contributions by individuals, associations, and organizations in India.

- **Objective:** Safeguarding sovereignty and democracy; Ensures that foreign funds are not used to affect electoral politics, public opinion, or policymaking in ways that undermine **national interest**.
- **Governing Institution: The Union Ministry of Home Affairs (MHA)** is the nodal ministry responsible for the registration, monitoring, and enforcement of the FCRA.
- **FCRA, 2010 act:** It has been enacted by the Parliament **to consolidate the law to regulate the acceptance and utilization of foreign contribution** or foreign hospitality by certain individuals or associations or companies and to prohibit acceptance and utilization of foreign contribution or foreign hospitality for any activities detrimental to national interest and for matters connected therewith or incidental thereto.
- **In terms of FCRA, 2010 "person" includes –**
 - an individual;
 - a Hindu undivided family;
 - an association;
 - a company registered under section 25 of the Companies Act, 1956 (now Section 8 of Companies Act, 2013).
- **Prohibitions: Certain entities are strictly prohibited from receiving foreign contributions, including:**
 - Candidates for election.
 - Members of any Legislature (MP/MLA).
 - Political parties or their office-bearers.
 - Judges and government servants.
 - Publishers/Editors of registered newspapers.
- **Key Amendments (2020):**
 - **Aadhaar Requirement:** Made Aadhaar mandatory for all office-bearers of NGOs.
 - **FCRA Account:** Required all foreign contributions to be received only in a designated "FCRA Account" opened in the **State Bank of India, New Delhi Main Branch**.
 - **Administrative Expenses:** Capped the use of foreign funds for administrative purposes at **20%** (reduced from the earlier 50%).
 - **Prohibition on Transfer:** Prohibited the transfer of foreign contributions to any other person or organization.
- **2022 Amendments:**
 - **Higher threshold for reporting foreign funds (from relatives):** Limit increased from ₹1 lakh → ₹10 lakh.
 - **Extended reporting time (foreign contribution from relatives):** Time increased from 30 days → 3 months.

UPSC PRELIMS PRACTICE QUESTIONS

Q. In the context of the 16th Finance Commission's horizontal devolution formula, consider the following criteria:

- I. Income Distance
- II. Population (2011)
- III. Area
- IV. Forest and Ecology

How many of the above are proposed to be used as criteria for horizontal devolution among States?

- A) Only one
- B) Only two
- C) Only three
- D) All the four

Correct Answer: (d) All the four

Explanation:

Statement I – CORRECT: Income Distance continues to remain the most important criterion under the 16th Finance Commission framework as well, since fiscal equalisation among States is a core constitutional mandate under Article 280.

Statement II – CORRECT: Population based on the 2011 Census is retained in the devolution formula to reflect current demographic realities rather than historical population figures.

Statement III – CORRECT: Area is included to compensate States that face higher administrative, infrastructure and service delivery costs due to large geographical size.

Statement IV – CORRECT: Forest and Ecology is included to reward States that preserve forest cover and ecological assets that provide national and global environmental benefits.

Q. With reference to the Election Commission of India, consider the following statements:

1. The Chief Election Commissioner (CEC) and the other two Election Commissioners (ECs) enjoy the same constitutional protection regarding their removal from office.

2. A motion for the removal of the CEC can be initiated in either House of Parliament but requires a simple majority for its passage.
3. The grounds for the removal of the CEC are limited to "proved misbehaviour" and "incapacity" as per the Constitution.

How many of the statements given above are correct?

- A) Only one
- B) Only two
- C) All three
- D) None

Correct Answer: A) Only one

Explanation:

STATEMENT 1 IS INCORRECT: Only the CEC has the protection of being removed like a Supreme Court Judge. Other ECs can be removed by the President on the mere recommendation of the CEC.

STATEMENT 2 IS INCORRECT: The motion requires a Special Majority (majority of total membership AND 2/3rd of members present and voting), not a simple majority.

STATEMENT 3 IS CORRECT: Under Article 324(5), the CEC is removed on the same grounds as a SC Judge, which are specifically "proved misbehaviour" or "incapacity."

Q. With reference to the imposition of President's Rule in a state under Article 356, consider the following statements:

- I. A proclamation of President's Rule must be approved by a special majority in both Houses of Parliament within two months.
- II. The President has the power to revoke the proclamation at any time through a subsequent proclamation, which does not require parliamentary approval.

III. During President's Rule, the Parliament can delegate the power to make laws for the state to the President or any other authority specified by him.

Which of the statements given above are correct?

- A) I and II only
- B) II and III only
- C) I and III only
- D) I, II and III

Answer: B) 2 and 3 only

Explanation:

STATEMENT I IS INCORRECT: While the timeline of two months is correct, the proclamation of President's Rule requires only a Simple Majority (not a special majority) for approval in both Houses of Parliament.

STATEMENT II IS CORRECT: Under Article 356(2), a proclamation may be revoked or varied by a subsequent proclamation by the President. This revocation does not require the approval of Parliament.

STATEMENT III IS CORRECT: Under Article 357, when President's Rule is in force, the Parliament can confer the power of the State Legislature on the President and authorize him to delegate this power to other authorities.

Q. With reference to the 'Motion of Thanks' in the Indian Parliament, consider the following statements:

1. The President's Special Address is a constitutional obligation that must be delivered at the commencement of every session of Parliament.
2. The Motion of Thanks must be passed in both the Lok Sabha and the Rajya Sabha, and its defeat in either House necessitates the resignation of the government.

3. Amendments to the Motion of Thanks can be moved by members to highlight issues that were not mentioned in the President's Address.

How many of the statements given above are correct?

- A) Only one
- B) Only two
- C) All three
- D) None

Correct Answer: A (Only one)

Explanation:

STATEMENT 1 IS INCORRECT: Under Article 87, the Special Address is mandatory only at the commencement of the first session after a general election and the first session of each year, not every session.

STATEMENT 2 IS INCORRECT: While the motion must be passed in both Houses, only its defeat in the Lok Sabha amounts to a lack of confidence requiring the government's resignation. Defeat/amendment in the Rajya Sabha does not force a resignation.

STATEMENT 3 IS CORRECT: Members of Parliament have the right to move amendments to the motion to include matters they believe the Address failed to mention or to criticize specific policies.

Q. With reference to the appointment of the Director General of Police (DGP) in India, consider the following statements:

- I. The DGP of a State is appointed by the Governor upon the sole recommendation of the State Cabinet.
- II. According to Supreme Court guidelines, an officer must have at least six months of service remaining to be eligible for empanelment as DGP.
- III. The Supreme Court has mandated a fixed minimum tenure of two years for the DGP, regardless of their date of retirement.

Which of the statements given above are correct?

- A) I and II only
- B) II and III only
- C) I and III only
- D) I, II and III

Correct Answer: B

Explanation

STATEMENT I INCORRECT: The DGP is appointed by the State Government, but they must choose from a panel of three names prepared by the UPSC, not based on the sole recommendation of the Cabinet.

STATEMENT II CORRECT: As per the UPSC's 2023 revised guidelines, only police officers with at least six months of service left before retirement are considered for empanelment.

STATEMENT III CORRECT: The Prakash Singh judgment (2006) mandates a minimum tenure of two years for the DGP to protect the office from political whim and frequent transfers.



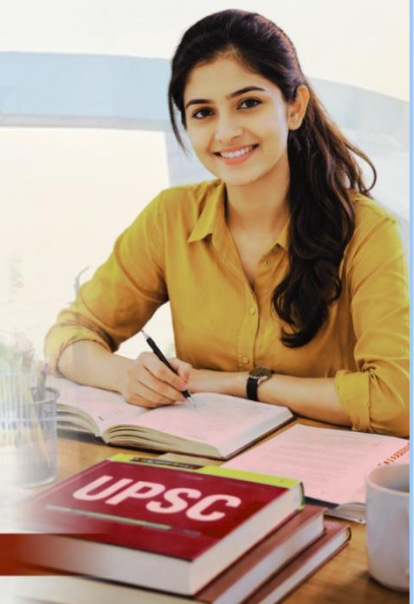
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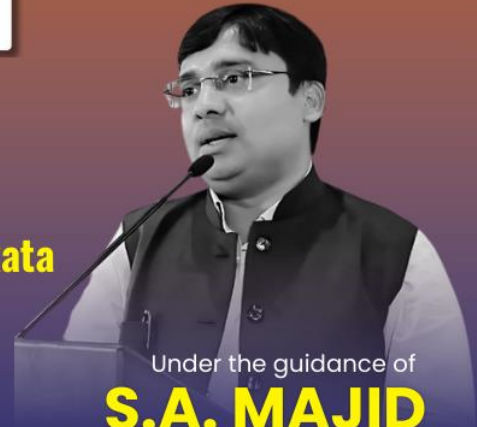
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KARUNA MISHRA
Experience – 07+ Yrs
Subject – Geography



PANKAJ SINGH
Experience – 10+ Yrs
Subject – AMC



DR. P M TRIPATHI
Experience – 25+ Yrs
Subject – Essay

Sealdah, Kolkata

Old Rajinder Nagar, New Delhi

At Adamas University

8100819447

9933118849

8100971442

INTERNATIONAL RELATIONS

2.1. INDIA-US FOUNDATIONAL DEFENSE PACTS: A STRATEGIC ROADMAP

Context:

Recently, the strategic partnership between India and the United States has gained significant momentum following the signing of a landmark **10-year Defence Framework Agreement** (2025–2035) and a major **Interim Trade Deal** in early 2026.

This progress is built upon the successful operationalization of the four "Foundational Agreements"—GSOMIA, LEMOA, COMCASA, and BECA—which have institutionalized military interoperability, secure communication, and real-time intelligence sharing between the two nations, particularly in the context of maintaining a free and open Indo-Pacific.



Foundational Agreements: An Overview

The U.S. signs these "foundational" or "enabling" agreements with its close partners to facilitate military cooperation. For India, these were modified into "India-specific" versions to address concerns regarding sovereignty and strategic autonomy.

1. GSOMIA (General Security of Military Information Agreement)

- **Signed:** 2002 (Extended by the **Industrial Security Annex/ISA** in 2019).
- **Function:** It allows the two militaries to share intelligence gathered by them.
- **Impact:** It provides a framework for the exchange of classified military information between the governments and, with the ISA, it now includes private sector defense manufacturers.

2. LEMOA (Logistics Exchange Memorandum of Agreement)

- **Signed:** 2016.
- **Function:** It provides a framework for mutual logistical support, allowing the militaries to use each other's bases for **replenishment and refueling**.
- **Key Point:** It is purely a logistical arrangement and **does not** involve the stationing of U.S. troops on Indian soil. It is particularly vital for Navy-to-Navy cooperation in the Indo-Pacific.

3. COMCASA (Communications Compatibility and Security Agreement)

- **Signed:** 2018 (India-specific version of CISMOA).
- **Function:** It allows the transfer of encrypted communication equipment so that Indian and U.S. military commanders, ships, and aircraft can communicate through secure, specialized networks.
- **Impact:** It ensures "interoperability" during joint exercises or disaster relief operations, preventing the interception of data by third parties.

4. BECA (Basic Exchange and Cooperation Agreement)

- **Signed:** 2020.

- **Function:** It facilitates the exchange of **geospatial intelligence**, including high-resolution maps, nautical/aeronautical charts, and satellite imagery.
- **Impact:** It significantly enhances the accuracy of Indian automated hardware and weapons systems, such as cruise missiles and armed drones, by providing high-quality GPS and topographical data.

5. Strategic Significance

- **Interoperability:** These agreements allow the two militaries to "talk" to each other and "act" together seamlessly.
- **Countering Regional Threats:** The pacts provide India with a technological edge, especially in monitoring movements in the Indian Ocean and along the Line of Actual Control (LAC).
- **Shift in Policy:** Moving from "Strategic Autonomy" in a traditional sense to "Strategic Convergence" with the U.S. without entering a formal military alliance.

2.2. GULF COOPERATION COUNCIL (GCC)

Context:

Recently, India co-sponsored a significant United Nations Security Council (UNSC) resolution on **March 11, 2026**, which condemned "egregious" attacks against GCC member nations and Jordan, while simultaneously demanding an immediate cessation of hostilities and threats to international navigation in the **Strait of Hormuz**.

This diplomatic move follows the formal launch of negotiations for a comprehensive **India-GCC Free Trade Agreement (FTA)** in February 2026, aimed at deepening economic integration and securing energy supply chains amidst rising regional instability.



1. Overview and Establishment

- **What it is:** A regional, intergovernmental, political, and economic union.
- **Established:** May 25, 1981, through the Charter of the Cooperation Council.
- **Headquarters:** Riyadh, Saudi Arabia.
- **Genesis:** Formed in the aftermath of the **Iranian Revolution (1979)** and the **Iran-Iraq War** to ensure collective security and economic stability among Arab monarchies.

2. Member States

The GCC consists of six Arab nations bordering the Persian Gulf:

1. **Saudi Arabia** (Absolute Monarchy)
2. **United Arab Emirates (UAE)** (Federal Monarchy)
3. **Qatar** (Constitutional Monarchy)
4. **Kuwait** (Constitutional Monarchy)
5. **Oman** (Absolute Monarchy)
6. **Bahrain** (Constitutional Monarchy)

Note: Iraq and Iran are **not** members of the GCC, despite bordering the Persian Gulf.

3. Organizational Structure

- **Supreme Council:** The highest authority, consisting of the Heads of State. The presidency rotates **annually in alphabetical order**.
- **Ministerial Council:** Comprises Foreign Ministers; they meet every three months to formulate policies and coordinate implementation.
- **Secretariat General:** The administrative arm based in Riyadh, headed by a Secretary-General (currently Jasem Mohamed Albudaiwi).

4. Economic and Strategic Significance

- **Energy Powerhouse:** GCC countries collectively control nearly **33% of the world's proven oil reserves** and 20% of global natural gas reserves.
- **Economic Integration:** The bloc established a **Customs Union** in 2003 and a **Common Market** in 2008, allowing for the free movement of capital and labor among citizens.
- **Security:** The **Peninsula Shield Force** serves as the joint military intervention arm of the GCC.

5. India-GCC Relations (2025-26 Data)

- **Trade:** The GCC is India's **largest trading partner bloc**. Bilateral trade reached approximately **\$178.56 billion** in FY 2024-25.
- **Energy Security:** India imports roughly **35% of its oil** and **70% of its gas** requirements from the GCC region.
- **Remittances & Diaspora:** Nearly **10 million Indians** live in GCC countries, contributing the largest share of India's inward foreign remittances (approx. 30%).
- **FTA Negotiations (2026):** India and GCC signed the **Terms of Reference (ToR)** in February 2026 to conclude a broad-based FTA covering goods, services, and digital trade.

2.3. BRICS

Context:

Recently, India assumed the **BRICS Presidency for 2026**, positioning itself to host the 18th BRICS Summit later this year. India is currently facilitating high-level diplomatic negotiations through the "Sherpa channel" to forge a consensus among



members regarding the ongoing volatility in West Asia. This presidency follows the historic expansion of the bloc and comes at a time when the grouping, now often referred to as **BRICS+**, represents over 40% of the world's population and approximately 30% of the global GDP.

Key Pillars and Institutional Framework

- **The Three Pillars of Cooperation:** BRICS operations are structured around three main areas:
 - **Political and Security:** Aimed at reforming the global governance architecture, including the UN Security Council and the WTO.
 - **Economic and Financial:** Focused on intra-BRICS trade, de-dollarization (using national currencies), and infrastructure funding.
 - **Cultural and People-to-People Exchanges:** Enhancing ties through forums, youth summits, and academic cooperation.

- **New Development Bank (NDB):** Headquartered in **Shanghai**, it was established in 2014 to mobilize resources for infrastructure and sustainable development. Unlike the World Bank, the NDB provides **equal voting rights** to its founding members, and its membership is open to any member of the United Nations (e.g., Bangladesh and Uruguay have joined).
- **Contingent Reserve Arrangement (CRA):** Created to provide a liquidity cushion for member countries during short-term balance of payments pressures, acting as a regional alternative to the IMF.

Membership Evolution: From BRICS to BRICS+

The grouping has evolved through several distinct phases of expansion:

1. **2006–2011:** Formation of BRIC (Brazil, Russia, India, China) and the subsequent inclusion of South Africa.
2. **2024 Expansion:** Full membership was granted to **Egypt, Ethiopia, Iran, and the United Arab Emirates**. Saudi Arabia has also been invited and participates in activities, though its formalization status is often monitored.
3. **2025 Addition:** **Indonesia** was officially admitted as the 10th full member in early 2025, further strengthening the group's presence in Southeast Asia.
4. **Partner Country Category:** A new "Partner Country" tier was established at the Kazan Summit (2024), including nations like Malaysia, Thailand, Vietnam, and Nigeria, to allow for cooperation without full membership obligations.

2.4. PLACE IN NEWS

2.4.1. IRAN MAPPING

Context:

Recently, Iran has become a central focus of global geopolitics following significant military escalations in the Middle East. Israeli and U.S. strikes targeted key Iranian strategic locations, including the capital **Tehran**.

These events have reignited concerns regarding the security of the **Strait of Hormuz**, a vital global energy chokepoint, and the stability of the **International North-South Transport Corridor (INSTC)**, which connects India to Eurasia via the Iranian port of **Chabahar**.



1. Political Geography and Borders

Iran is a West Asian country situated at the crossroads of Central Asia, South Asia, and the Middle East. It shares land borders with seven nations:

- **North:** Armenia, Azerbaijan, and Turkmenistan.
- **East:** Afghanistan and Pakistan.
- **West:** Iraq and Turkey.

- **Maritime Borders:** The **Caspian Sea** to the north (shared with Russia, Kazakhstan, Turkmenistan, and Azerbaijan) and the **Persian Gulf** and **Gulf of Oman** to the south.

2. Major Mountain Systems

Iran's topography is dominated by a rugged mountainous rim surrounding a central plateau.

- **Alborz Mountains:** Located in the north, they run along the southern coast of the Caspian Sea. They house **Mount Damavand**, a dormant stratovolcano and the highest peak in Iran (approx. 5,671 m).
- **Zagros Mountains:** This massive fold-and-thrust belt stretches from the northwest (borders with Turkey/Iraq) to the southeast (Strait of Hormuz). It is a major source of Iran's oil and gas reserves located in its western foothills.
- **Kopet Dag:** Forms the northeastern border with Turkmenistan.

3. The Central Plateau and Deserts

The interior of Iran consists of the **Iranian Plateau**, which is largely arid and contains two of the world's most extreme deserts:

- **Dasht-e Kavir (Great Salt Desert):** Located in the north-central region, it is characterized by salt marshes and "Kavirs" (salt wastes).
- **Dasht-e Lut (Desert of Emptiness):** Located in the southeast, it is one of the hottest places on Earth and is a UNESCO World Heritage site known for its spectacular "Yardangs" (wind-sculpted rock formations).

4. Critical Water Bodies and Ports

- **Lake Urmia:** Situated in the northwest, it is an endorheic (terminal) hypersaline lake. It was once the largest lake in the Middle East but has faced significant shrinking due to drought and damming.
- **Strait of Hormuz:** A narrow waterway connecting the Persian Gulf to the Gulf of Oman. It is the world's most important oil chokepoint, through which nearly **20% of global oil consumption** passes.
- **Chabahar Port:** Located on the Makran coast in the Sistan-Baluchistan province (Gulf of Oman). It is strategically vital for India as it bypasses Pakistan to provide a trade route to Afghanistan and Central Asia.

2.4.2. FINLAND MAPPING

Context:

Recently, the President of Finland, Alexander Stubb, conducted a significant four-day state visit to India (March 4–7, 2026) to participate in the Raisina Dialogue and hold bilateral talks with Prime Minister Narendra Modi. During this visit, both nations elevated their relationship to a **Strategic Partnership in**

Digitalization and Sustainability, focusing on trade, critical technologies, and a shared commitment to a rules-based international order.



1. Geographical Location and Borders

Finland is a Nordic country situated in **Northern Europe**. It is the northernmost country in the European Union.

- **Land Borders:**

- **East:** Russia (shares a massive 1,340 km border, now the longest NATO-Russia frontier).
- **North:** Norway.
- **Northwest:** Sweden.

- **Water Bodies:**

- **South:** Gulf of Finland (separates Finland from Estonia).
- **West:** Gulf of Bothnia (separates Finland from Sweden).
- **Southwest:** Baltic Sea.

2. Physical Features

- **The Fennoscandian Shield:** Finland sits on an ancient, stable segment of the Earth's crust known as the Baltic or Fennoscandian Shield, composed of Precambrian granites.
- **Land of Lakes:** Known as "the land of a thousand lakes," Finland actually has approximately **188,000 lakes**. **Lake Saimaa** is the largest and is famous for the endangered Saimaa ringed seal.
- **Archipelagos:** The **Åland Islands**, an autonomous, Swedish-speaking region of Finland, lie at the entrance to the Gulf of Bothnia. The **Archipelago Sea** between the Finnish mainland and Åland contains the world's largest number of islands.
- **The Arctic Circle:** About **one-third** of Finland lies north of the Arctic Circle (66.5° N), encompassing the region of **Lapland**.
- **Highest Point: Mount Halti** (Haltitunturi), located on the border with Norway.

3. Key Maritime Geography

Feature	Details
Gulf of Bothnia	The northernmost arm of the Baltic Sea; water salinity is very low (brackish) due to numerous calving rivers.
Gulf of Finland	Extends between Finland (north), Estonia (south), and Russia (east). Helsinki and Tallinn face each other across this gulf.
Saimaa Canal	A transportation canal that connects Lake Saimaa to the Gulf of Finland, passing through Russian territory (Vyborg).

4. Climate and Vegetation

- **Taiga Biome:** Finland is Europe's most heavily forested country (over 70% coverage), dominated by Scots pine, Norway spruce, and birch.
- **Isostatic Rebound:** Due to the removal of heavy ice sheets after the last Ice Age, the land in Finland is still rising (post-glacial rebound), particularly in the Kvarken Archipelago (a UNESCO World Heritage site).

2.4.3. KURDISTAN REGION

Context:

The **Kurdistan Free Life Party (PJAK)**, an armed Kurdish group in Iran, has asserted its independence from foreign influence despite regional tensions. The group seeks a "Democratic Republic of Iran" to ensure the rights of all ethnic minorities.

This highlights the ongoing "Kurdish Question" in West Asia, where an ethnic group of nearly 35–40 million people remains without a sovereign state, spread across four primary nations.



1. Who are the Kurds?

- **Ethnic Identity:** The Kurds are an Indo-European ethnic group, mostly Sunnis, who speak the Kurdish language.
- **Population:** They are the **fourth-largest ethnic group** in West Asia but have never obtained a **permanent nation-state**.
- **Capital city of Kurdistan: Erbil City**
- **The Region (Kurdistan):** A roughly defined geo-cultural region spanning:
 - **Turkey:** (Northern Kurdistan) - Home to the largest Kurdish population.
 - **Iran:** (Eastern Kurdistan / Rojhelat) - Home to PJAK.
 - **Iraq:** (Southern Kurdistan) - The only region with a semi-autonomous government (KRG).
 - **Syria:** (Western Kurdistan / Rojava) - Gained prominence during the fight against ISIS.

2. Geographical Features:

- **Mountains:** Zagros Mountains dominate the landscape, providing natural borders with Iran and Turkey.
- **Rivers:** The Tigris and Greater Zab Rivers flow through the region, supporting agriculture and settlements.

3. Key Organizations Mentioned

- **PJAK (Kurdistan Free Life Party):** An armed group fighting for Kurdish autonomy within a democratic Iran.
- **PKK (Kurdistan Workers' Party):** A militant political organization based in Turkey and Iraq. It is listed as a terrorist organization by Turkey, the US, and the EU. PJAK is often seen as the Iranian wing/affiliate of the PKK.

2.4.4. DIEGO GARCIA

Context:

Recently, the United Kingdom and the United States have faced heightened security concerns regarding the **Diego Garcia** military base following reports of unsuccessful missile strikes targeted at the facility amidst escalating regional tensions in the Middle East.



1. Geographical Location

- **Archipelago:** It is the largest landmass in the **Chagos Archipelago**, which consists of 58 individual tropical islands.
- **Coordinates:** Situated approximately **7° South of the Equator** in the central Indian Ocean.
- **Proximity:** It lies about 1,800 km southwest of India (Kanyakumari) and roughly 1,200 km south of the Maldives.
- **Physical Feature:** It is a **horseshoe-shaped coral atoll** with a large, deep natural lagoon that provides excellent anchorage for naval vessels.

2. Historical Background and Sovereignty Dispute

- **Colonial Era:** Originally explored by the Portuguese, the islands were later settled by the French and eventually ceded to the **United Kingdom** under the **Treaty of Paris (1814)**.
- **Separation from Mauritius:** In 1965, three years before Mauritius gained independence, the UK detached the Chagos Archipelago from Mauritius to create the **British Indian Ocean Territory (BIOT)**.
- **Expulsion of Inhabitants:** Between 1967 and 1973, the UK forcibly evicted the indigenous **Chagossian population** (also known as Îlois) to Seychelles and Mauritius to facilitate the construction of the US military base.

3. The 2025 Sovereignty Deal

- **Recognition of Sovereignty:** Under the landmark treaty signed in May 2025, the UK acknowledged Mauritius as the sovereign authority over the entire Chagos Archipelago.
- **Lease Agreement:** A critical caveat of the deal is that **Diego Garcia** remains under the administrative control of the UK for an initial period of **99 years** to ensure the continued operation of the joint military base.
- **Resettlement:** The treaty allows Mauritius to implement a resettlement program on the "outer islands" of the archipelago, though resettlement on Diego Garcia itself remains restricted due to military requirements.

4. Strategic and Military Significance

- **Power Projection:** Often called an "unsinkable aircraft carrier," the base allows the US to project power across the **Indo-Pacific**, Middle East, and East Africa.
- **Operational History:** It served as a vital launchpad for operations during the **Gulf War (1991)**, the war in **Afghanistan (2001)**, and the **Iraq War (2003)**.

- **Facilities:** It hosts a 3,700-meter runway capable of supporting long-range bombers (like B-52s and B-2 Stealth bombers) and a deep-water port for nuclear-powered submarines and aircraft carriers.

5. International Legal Perspective

- **ICJ Advisory Opinion (2019):** The International Court of Justice ruled that the decolonization of Mauritius was not lawfully completed and that the UK is under an obligation to end its administration of the Chagos Archipelago.
- **UN General Assembly (2019):** Passed a resolution demanding the UK withdraw its colonial administration, affirming the ICJ's stance.
- **ITLOS Ruling (2021):** The International Tribunal for the Law of the Sea also upheld Mauritius' claim to the archipelago.

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UPSC PRELIMS PRACTICE QUESTIONS

Q. With reference to the League of Arab States (LAS), consider the following statements:

1. Every member state has one vote in the Council, and decisions are binding on all members regardless of whether they voted in favor.
2. India holds the status of a Permanent Observer in the League of Arab States.
3. The "Alexandria Protocol" of 1944 provided the foundational framework for the establishment of the League.
4. All member states of the Gulf Cooperation Council (GCC) are also members of the League of Arab States.

Which of the statements given above are correct?

- (a) Only one statement
- (b) Only two statements
- (c) Only three statements
- (d) All four statements

Answer: (c) Only three statements

Explanation:

STATEMENT 1 IS INCORRECT: According to the LAS Charter, decisions made by the Council are binding only on those states that have voted for them. If a decision is made by consensus, it is binding on all.

STATEMENT 2 IS CORRECT: India was granted Observer Status in 2002, making it the first non-Arab country to have such a formal link with the organization.

STATEMENT 3 IS CORRECT: The Alexandria Protocol signed in 1944 by Egypt, Iraq, Lebanon, Syria, and Transjordan (Jordan) laid the groundwork for the formal Pact signed in 1945.

STATEMENT 4 IS CORRECT: All six members of the GCC (Saudi Arabia, UAE, Qatar, Kuwait, Oman, and Bahrain) are integral members of the 22-nation League of Arab States.

Q. With reference to the 'New START Treaty', which was recently in the news, consider the following statements:

1. It is a multilateral treaty signed under the aegis of the United Nations to eliminate all tactical and strategic nuclear weapons.
2. The treaty limits the number of deployed strategic nuclear warheads for both the United States and Russia to 1,550 each.
3. Under the treaty's provisions, a state party can only extend the agreement once for a maximum period of five years.

How many of the statements given above are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Answer: (b) Only two

Solution:

STATEMENT 1 IS INCORRECT: The New START is a bilateral treaty specifically between the United States and the Russian Federation, not a multilateral UN-led treaty. It focuses on strategic (long-range) weapons, not tactical ones.

STATEMENT 2 IS CORRECT: One of the core pillars of the treaty is the cap of 1,550 deployed strategic warheads for each side.

STATEMENT 3 IS CORRECT: According to the treaty text, it allowed for one single extension for a period of up to five years, which was exercised by Presidents Biden and Putin in early 2021.

Q. With reference to the Gulf Cooperation Council (GCC), consider the following statements:

1. It is a regional intergovernmental union comprising all the littoral states of the Persian Gulf.
2. The Supreme Council is the highest authority of the GCC, and its presidency rotates periodically among the Member States.
3. As of 2025, the GCC as a bloc has surpassed the United States and the European Union to become India's largest merchandise trading partner.

How many of the statements given above are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Answer: (b) (Only two)

Explanation

STATEMENT 1 IS INCORRECT: While the GCC countries are located around the Persian Gulf, the council does not include all littoral states. Specifically, Iran and Iraq are littoral states of the Persian Gulf but are not members of the GCC.

STATEMENT 2 IS CORRECT: The Supreme Council, consisting of the Heads of State, is the top decision-making body, and its presidency rotates among members in alphabetical order.

STATEMENT 3 IS CORRECT: According to the latest trade data (2024-25), India's total bilateral merchandise trade with the GCC stood at \$178.5 billion, which is higher than

its trade with the EU (\$136.5 billion) and the US (\$132.1 billion).

Q. With reference to the Chabahar Port, consider the following statements:

- I. Chabahar Port is Iran's only oceanic port with direct access to the Indian Ocean.
- II. India operates the Shahid Beheshti terminal at Chabahar through India Ports Global Limited (IPGL).
- III. The port provides India a direct land route to Afghanistan and Central Asia bypassing Pakistan.
- IV. The project is part of the International North–South Transport Corridor (INSTC).

Which of the statements given above are correct?

- (a) I, II and III only
- (b) I, II and IV only
- (c) I, III and IV only
- (d) I, II, III and IV

Answer: (d) I, II, III and IV

Explanation:

Statement I is correct: Chabahar is Iran's only oceanic port, located on the Gulf of Oman, giving it direct access to the Indian Ocean.

Statement II is correct: India operates the Shahid Beheshti Terminal through India Ports Global Limited (IPGL) under an agreement with Iran.

Statement III is Correct: Chabahar provides India a direct connectivity route to Afghanistan and Central Asia, bypassing Pakistan, which is strategically significant.

Statement IV is correct: The port is a key component of the International North–South Transport Corridor (INSTC), linking India with Central Asia, Russia, and Europe.

Q. With reference to the defense relations between India and Greece, consider the following statements:

1. The first-ever bilateral maritime exercise between the Indian Navy and the Hellenic Navy was conducted in the Mediterranean Sea in 2025.
2. Greece is a signatory to the International Solar Alliance (ISA) and supports India's permanent membership in the UN Security Council.
3. 'Exercise INIOCHOS' is a bilateral army exercise conducted annually between the Indian and Greek special forces.

Which of the statements given above are correct?

- (a) 1 and 2 only
- (b) 2 and 3 only
- (c) 1 and 3 only
- (d) 1, 2, and 3

Answer: (a) 1 and 2 only

Explanation:

- **STATEMENT 1 CORRECT:** In September 2025, the Indian Navy (INS Trikand) and the Hellenic Navy successfully conducted their maiden bilateral naval exercise in the Mediterranean Sea.
- **STATEMENT 2 CORRECT:** Greece has ratified the ISA framework and consistently backs India's core foreign policy objectives, including UNSC reforms and the Kashmir issue.
- **STATEMENT 3 INCORRECT:** 'Exercise INIOCHOS' is a **multinational air force exercise** hosted by Greece, not a bilateral army exercise. India participated in it with Su-30 MKI aircraft to enhance aerial combat interoperability.



Scan to attempt more questions

SECURITY

3.1. EXERCISE MILAN 2026

Context:

Recently, the 13th edition of **Exercise MILAN 2026** concluded off the coast of Visakhapatnam, marking a historic milestone as one of the largest multilateral naval engagements in the Indo-Pacific. The exercise culminated on February 25, 2026, with a grand closing ceremony held onboard India's indigenous aircraft carrier, **INS Vikrant**. The event gained further international attention



following the tragic sinking of the Iranian frigate **IRIS Dena** in the Indian Ocean while it was returning from participating in this exercise and the concurrent International Fleet Review (IFR) 2026.

1. Overview and Evolution

- **Nature:** It is a **biennial** (held every two years) multilateral naval exercise hosted by the **Indian Navy**.
- **Inception:** The exercise was first launched in **1995** at the Andaman and Nicobar Command.
- **Expansion:** It began with just four foreign navies—**Indonesia, Singapore, Sri Lanka, and Thailand**. Over the decades, it has grown exponentially, transitioning from a regional gathering to a global maritime platform.
- **Shift in Venue:** Traditionally held at Port Blair, the exercise shifted to **Visakhapatnam** (Eastern Naval Command) starting from the 2022 edition to accommodate the increasing scale and complexity of participating assets.

2. Objectives and Theme

- **Theme:** The overarching theme is '**Camaraderie, Cohesion, Collaboration**'.
- **Aims:**
 - To enhance professional interaction between friendly foreign navies.
 - To foster interoperability and share best practices in maritime operations.
 - To project India as a '**Preferred Security Partner**' and a responsible maritime power.
 - To ensure a free, open, and inclusive Indo-Pacific based on a rules-based international order.

3. Highlights of MILAN 2026

- **Participants:** Over **70 countries** participated, making it the most inclusive edition to date.
- **New Entrants:** For the first time, countries like **Germany, the Philippines, and the United Arab Emirates (UAE)** participated with military assets.

4. Policy Alignment

Exercise MILAN serves as a practical manifestation of several Indian foreign policy and maritime initiatives:

- **Act East Policy:** Strengthening ties with Southeast and East Asian nations.
- **SAGAR (Security and Growth for All in the Region):** India's vision for cooperative maritime security in the Indian Ocean.
- **MAHASAGAR:** An initiative for collective maritime approach in the IOR.

5. Other Major Military Exercises

To excel in the Prelims, it is essential to distinguish between different types of exercises. Below are the most important ones involving India:

I. Multilateral Naval Exercises

Exercise Name	Participants	Strategic Importance
MALABAR	India, USA, Japan, Australia	Primarily a Quad engagement focusing on a free and open Indo-Pacific.
RIMPAC	25+ Nations (led by USA)	World's largest international maritime exercise; India is a regular participant.
La Pérouse	India, France, USA, UK, Japan, Australia	Conducted in the Indian Ocean to enhance French-led cooperation in the region.

II. Bilateral Exercises

● Naval Exercises:

- **VARUNA:** With France (Focus: Carrier Battle Group operations).
- **JIMEX:** With Japan (Focus: Maritime security and ASW).
- **SIMBEX:** With Singapore (India's longest uninterrupted naval exercise with any foreign country).
- **KONKAN:** With the United Kingdom (Focus: Surface and sub-surface warfare).
- **SLINEX:** With Sri Lanka (Focus: Interoperability and anti-piracy).

● Army Exercises:

- **YUDH ABHYAS:** With USA (Focus: Counter-terror and high-altitude warfare).
- **SHAKTI:** With France (Focus: Semi-desert and counter-terror operations).
- **DHARMA GUARDIAN:** With Japan (Focus: Jungle and semi-urban warfare).
- **SURYA KIRAN:** With Nepal (Focus: Mountain warfare and HADR).

● Air Force Exercises:

- **GARUDA:** With France.
- **COPE INDIA:** With USA.
- **DESERT FLAG:** With UAE and other multilateral partners.

III. Tri-Service Exercises

- **TIGER TRIUMPH:** With USA (Focus: Humanitarian Assistance and Disaster Relief - HADR).
- **INDRA:** With Russia (India's first major tri-service exercise with a foreign nation).
- **TROPEX:** Domestic (The largest theatre-level exercise of the Indian Navy).

3.2. 11th EDITION OF EXERCISE LAMITIYE-2026

Context:

The 11th edition of the joint military exercise between India and Seychelles is currently being conducted at the **Seychelles Defence Academy** from **March 9 to 20, 2026**. This edition is a major milestone as it is the **first-ever Tri-Service edition**, involving the Army, Navy, and Air Force from the Indian side.

1. Core Characteristics of 'LAMITIYE'

- **Etymology:** The word 'LAMITIYE' translates to "**Friendship**" in the **Creole** language (the local language of Seychelles).
- **Frequency:** It is a **biennial** training event (held every two years).
- **History:** The exercise has been conducted in Seychelles since **2001**.
- **Objective:** To enhance synergy and interoperability in **Sub-conventional Operations** in a **Semi-Urban environment** under the United Nations (UN) Charter for Peacekeeping Operations.

2. Participants & Assets (2026 Edition)

- **Indian Army:** Personnel from the **ASSAM Regiment** (Southern Command).
- **Indian Navy:** Deployment of the stealth frigate **INS Trikand**.
- **Indian Air Force:** Deployment of a **C-130J Super Hercules** transport aircraft.
- **Host Nation:** Seychelles Defence Forces (SDF).

3. Key Operational Focus Areas

- **Tactical Drills:** Neutralization of threats in semi-urban settings, close-quarter battle (CQB), and room intervention drills.
- **Specialized Scenarios:** Hijacked bus scenarios and hostage situation response tactics.
- **Technology Showcase:** Exploitation of new-generation equipment, including discussions on **Artificial Intelligence (AI)** in disaster management and tactical combat.
- **Maritime Component:** The Seychelles Coast Guard and Special Forces demonstrate **VBSS (Visit, Board, Search and Seizure)** procedures.
- **HADR:** Sessions on Humanitarian Assistance and Disaster Relief, specifically the role of helicopters in casualty evacuation and reconnaissance.

11th Edition of Exercise LAMITIYE-2026
India-Seychelles Tri-Service Joint Military Exercise

1. Core Characteristics of 'LAMITIYE'

- **Etymology:** The word 'LAMITIYE' translates 'Friendship' in Creole language.
- **Frequency:** Every 2 Years
- **History:** Conducted in Seychelles since 2001.

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- **Maritime Component:** Seychelles **Coast Guard** and Special Forces demonstrate **VBSS (Visit, Board, Search and Seizure)**

4. India's Major Military Exercises (2026)

Exercise Name	Partner Nation(s)	Type	Edition / Venue (2026)	Strategic Significance &
LAMITIYE-2026	Seychelles	Tri-Service (Army, Navy to DoD)	11th Edition / Seychelles Defence Academy	L. HADR, issue their humanitarian aid to various generations, build better capacity for Peacekeeping, Cyber (military) (Sachin)
MILAN 2026	Multilateral (50+ Nations)	Naval	Visakhapatnam, India	Proches: the India, Brain (military) (Sachin), build the Special edition of armaz. And (military)
DHARMA GUARDIAN	Japan	Army	India (Foreign Training Nodes)	Focus on disaster relief, cybersecurity, counterterrorism, terrorism
DUSTLIK-2026	Uzbekistan (Tactical cooperation / (military) (Sachin))	Army	Termez, Uzbekistan / India	Commit to 100 (military) (Sachin)
SAMPRI 2026	Bangladesh (Tactical cooperation / (military) (Sachin))	Army	Alternating (India/Bangladesh)	Commit to 100 (military) (Sachin)

4. India's Major Military Exercises (2026)

Exercise Name	Partner Nation(s)	Type	Edition / Venue (2026)	Strategic Significance & Key Focus
LAMITIYE-2026	Seychelles	Tri-Service (Army, Navy, Air Force)	11th Edition / Seychelles Defence Academy	First-ever Tri-Service edition. Focuses on sub-conventional operations, semi-urban warfare, and maritime security under India's SAGAR vision.
MILAN 2026	Multilateral (50+ Nations)	Naval	Visakhapatnam, India	India's largest multilateral naval exercise. Projects India as a "Preferred Security Partner" in the Indo-Pacific and enhances collective maritime domain awareness.
DHARMA GUARDIAN	Japan	Army	India (Foreign Training Nodes)	Strengthens the India-Japan Special Strategic Partnership. Focuses on urban combat and disaster relief (HADR) in the context of the QUAD framework.
DUSTLIK 2026	Uzbekistan	Army	Termez, Uzbekistan / India	Focuses on counter-terrorism in mountainous and rural terrains. Key to India's "Connect Central Asia" policy.
SAMPRITI 2026	Bangladesh	Army	Alternating (India/Bangladesh)	Enhances synergy for UN Peacekeeping missions and border security. Central to the "Neighbourhood First" policy.

3.3. OPERATION Sankalp

Context

- **Recently**, the Indian Navy has successfully escorted three Indian-flagged merchant vessels—the LPG carriers **Shivalik** and **Nanda Devi**, and the crude oil tanker **Jag Laadki**—from the **Gulf of Oman** after they transited the volatile **Strait of Hormuz**. These warships are operating under **Operation Sankalp** to provide a "safe corridor" amidst the ongoing U.S.-Israel-Iran conflict which has effectively disrupted navigation in the Persian Gulf.



1. Overview of the Mission

- **Launch Date:** Officially launched on **June 19, 2019**.

- **Objective:** To ensure the **safe passage** of Indian-flagged merchant vessels transiting through the Gulf region (specifically the Strait of Hormuz) and to provide a sense of reassurance to the maritime community.
- **Meaning:** "Sankalp" is a Sanskrit word meaning "**Commitment.**"
- **Agencies Involved:** It is an integrated effort involving the **Ministry of Defence, Ministry of External Affairs, Ministry of Shipping, Ministry of Petroleum and Natural Gas,** and the **Director General of Shipping.**

2. Geographical and Strategic Focus

- **Key Chokepoints:** The operation focuses on the **Strait of Hormuz, Gulf of Oman,** and the **Persian Gulf.**
- **Trade Significance:** Nearly **62% of India's oil imports** and a significant portion of its natural gas pass through the Strait of Hormuz.
- **Extended Reach:** In response to the 2023-2024 Red Sea crisis, the Navy expanded the scope of Operation Sankalp to the **Central and North Arabian Sea** and the **Gulf of Aden** to counter Houthi drone threats and Somali piracy.

3. Key Assets and Operations

- **Deployment:** The Navy maintains a continuous presence with at least one **Destroyer or Frigate** (e.g., INS Talwar, INS Chennai, INS Kolkata) and regular aerial surveillance using **P-8I Neptune** maritime patrol aircraft and **Sea Guardian drones.**
- **The "First Responder" Role:** India has established itself as the **Preferred Security Partner** in the Indian Ocean Region (IOR), evidenced by successful rescue operations like those of **MV Ruen** and **MV Chem Pluto.**
- **MARCOS Involvement:** Elite Marine Commandos (MARCOS) are frequently deployed for boarding operations and to neutralize pirate threats.

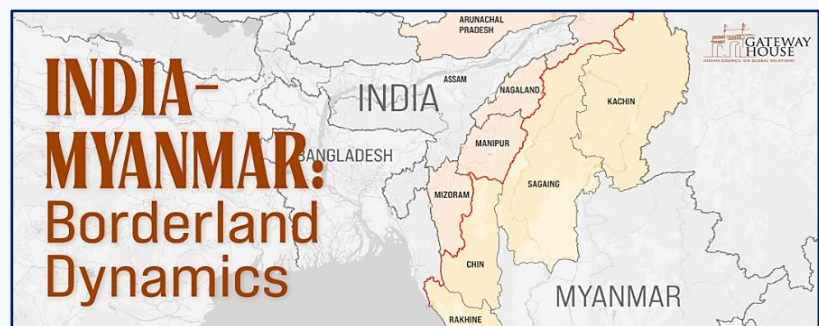
4. Legal Framework

- **Maritime Anti-Piracy Act 2022:** This act provides the legal teeth to the Indian Navy to prosecute pirates apprehended during these operations, moving beyond mere "deterrence" to "legal accountability."

3.4. BORDER SECURITY AND DIPLOMACY ON THE INDIA-MYANMAR FRONTIER

Context:

The unfenced border between India and Myanmar has gained strategic attention following the arrest of seven foreign nationals (six Ukrainians and one U.S. citizen) in Mizoram. They were allegedly involved in training armed ethnic groups in Myanmar in weapons handling and drone operations.



1. Geography of the India-Myanmar Border

- **Total Length:** Approximately **1,643 km.**
- **Bordering States:** Four Indian states share a border with Myanmar:
 1. Arunachal Pradesh

2. Nagaland
3. Manipur
4. Mizoram

- **River:** The **Tiau River (or Tyao) and the Kaladan River** (known as Chhimtuipui in India) are the primary rivers forming part of the 1,643-km international border between India and Myanmar.
- **Fencing Status:** Currently, the border is largely unfenced. Out of the 1,643 km, only about **43.75 km** of fencing has been completed so far.

2. The Free Movement Regime (FMR)

- **Definition:** A unique institutional arrangement between India and Myanmar that allowed tribes living along the border to travel into each other's territory **without a visa**.
- **Historical Context:** People on both sides share deep ethnic, social, and cultural ties.
- **Recent Changes:** In February 2024, the Union Home Ministry announced the **scrapping of the FMR** to check illegal migration and insurgent activities.
 - Prior to being scrapped, it was restricted to **10 km** from the border (reduced from the original **16 km**).
 - Movement is now regulated through designated gates requiring biometrics and gate passes.

3. Security and Agencies Involved

- **National Investigation Agency (NIA):** The primary agency investigating the illegal crossing and the importation of drones from Europe to Myanmar via India.
- **Assam Rifles:** (Note: While not explicitly named in the snippet, they are the primary "Border Guarding Force" for the Myanmar border).
- **Security Challenges: EAGs (Ethnically Armed Groups):** Insurgent groups active in Myanmar that sometimes use Indian territory for transit or logistics.
 - **Counter-Drone Mechanism:** A joint mechanism with monthly reporting has been instituted to monitor the use of drones by insurgents.
 - **Trafficking and Migration:** The unfenced nature of the border facilitates illegal human trafficking and migration.

4. Key Infrastructure and Technology

- **Smart Fencing:** The project includes the installation of gates that record **biometrics and photographs** of individuals crossing the border.
- **Challenges in Construction:** The fencing project has faced resistance from local communities and coordination challenges with the Myanmar Army and security agencies.
- **Functional Gates:** Out of 43 proposed entry/exit gates, the number has declined to 38, with only **20 currently functional**.

UPSC PRELIMS PRACTICE QUESTIONS

Q. With reference to the 'MILAN' Naval Exercise and other military drills of India, consider the following statements:

1. Unlike Exercise Malabar, which is a Quad-specific engagement, MILAN is a multilateral exercise hosted by the Indian Navy that includes participants beyond the Quad members.
2. The 13th edition of MILAN (2026) was shifted to Visakhapatnam primarily to leverage the strategic depth of the Andaman and Nicobar Command.
3. Exercise 'SIMBEX' holds the record for being the longest uninterrupted bilateral naval exercise conducted by India with any foreign navy.

How many of the statements given above are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Answer: (b)

Explanation:

- **Statement 1 Is Correct:** MILAN is an open multilateral exercise hosted by India with 70+ nations (inclusive), while Malabar is specifically restricted to the Quad nations (India, USA, Japan, Australia).
- **Statement 2 Is Incorrect:** While MILAN was shifted to Visakhapatnam, it was done to move it **away** from the Andaman and Nicobar Command to the Eastern Naval Command in Visakhapatnam to provide more sea room and better infrastructure for the significantly larger number of participants.
- **Statement 3 Is Correct:** SIMBEX (Singapore-India Maritime Bilateral Exercise) has been conducted annually since 1994, making it India's longest-running uninterrupted bilateral naval exercise.

Q. In the context of Exercise LAMITIYE-2026, the Indian Army's participation was represented by which of the following regiments?

- (a) Gorkha Rifles
- (b) Rajputana Rifles
- (c) Assam Regiment
- (d) Madras Regiment

Answer: (c)

Explanation:

Assam Regiment: In 2026, the Indian Army's participation was led by the **Assam Regiment**. They were selected due to their specialized training in rugged terrain and sub-conventional warfare (counter-insurgency/terrorism), which is the primary focus of the urban-combat drills in Seychelles.

Q. With reference to 'Operation Sankalp', recently seen in the news, consider the following statements:

1. It was launched by the Indian Navy specifically to combat the impact of oil spills in the Arabian Sea.
2. The operation involves close coordination between the Ministry of External Affairs and the Ministry of Petroleum and Natural Gas.
3. The scope of the operation is limited strictly to the territorial waters of India.

How many of the statements given above are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Answer: (a)

Explanation:

- **STATEMENT 1 IS INCORRECT:** Operation Sankalp was launched in 2019 to ensure the safe passage of Indian merchant vessels amid regional tensions, not for oil spill management.

- **STATEMENT 2 IS CORRECT:** It is a multi-ministerial effort involving Defence, External Affairs, Shipping, and Petroleum ministries to safeguard trade and energy interests.
- **STATEMENT 3 IS INCORRECT:** The operation is conducted in international waters, specifically the Persian Gulf, Gulf of Oman, and the North Arabian Sea, far beyond India's territorial waters.

Q. Consider the following statements regarding the India–Myanmar border:

1. The India–Myanmar border is approximately 1,643 km long and fully fenced.
2. The Free Movement Regime (FMR) allowed border tribes to cross without visas but was scrapped in 2024.
3. The National Investigation Agency is investigating illegal cross-border activities involving drones.
4. Assam Rifles is the primary force guarding the India–Myanmar border.

Which of the statements given above are correct?

- (a) 1 and 2 only
- (b) 2, 3 and 4 only
- (c) 1, 3 and 4 only
- (d) 2 and 4 only

Answer: (b)

Explanation:

- **Statement 1 is incorrect:** While the India–Myanmar border is indeed approximately 1,643 km long, it is **not fully fenced**.

- In fact, as of early 2024, only about **43 km** of the total length has been fenced, with the government recently approving plans to fence the remaining stretch to check illegal migration and insurgent activities.
- **Statement 2 is correct:** The **Free Movement Regime (FMR)** was a unique arrangement that allowed tribes living within 16 km of the border on either side to cross without a visa. However, due to security concerns, the Union Home Ministry announced the **scrapping of the FMR in February 2024**.
- **Statement 3 is correct:** The **National Investigation Agency (NIA)** is actively investigating cases involving foreign nationals and the illegal importation/use of **drones** by ethnically armed groups (EAGs) across the Myanmar border.
- **Statement 4 is correct:** The **Assam Rifles** is the oldest paramilitary force in India and is the designated **"Border Guarding Force"** specifically for the India–Myanmar border.



Scan to attempt more questions

ECONOMY

4.1. SECURITIES AND EXCHANGE BOARD OF INDIA (SEBI)

Context:

- Recently, the Securities and Exchange Board of India (SEBI) has intensified its technological crackdown on market manipulators and "finfluencers" to preserve market integrity. Chairman **Tuhin Kanta Pandey** highlighted the successful deployment of '**Sudarshan**', an AI-powered surveillance system that has already led to the removal of over 1.2 lakh misleading financial posts.
- Furthermore, SEBI launched the '**SEBI Check**' tool within the UPI interface to help investors verify registered intermediaries before making payments.



1. Evolution and Legal Status

- Origin:** SEBI was first established on **April 12, 1988**, as a non-statutory body through a government resolution.
- Statutory Status:** It was granted statutory autonomous status through the **SEBI Act, 1992**, following the Harshad Mehta scam to provide the regulator with enforcement powers.
- Headquarters:** The main office is located in **Mumbai**, with regional offices in New Delhi, Kolkata, Chennai, and Ahmedabad.

2. Composition of the Board

The SEBI Board is a multi-member body consisting of **nine members**:

- Chairman:** Nominated by the Union Government of India.
- Two Members:** Officers from the Union Ministry of Finance.
- One Member:** From the Reserve Bank of India (RBI).
- Five Other Members:** Nominated by the Union Government, of which at least three must be whole-time members.

Note on Appointment: The Chairman is recommended by the **Financial Sector Regulatory Appointments Search Committee (FSRASC)**, headed by the Cabinet Secretary. The final appointment is approved by the Appointments Committee of the Cabinet (ACC).

3. Functions of SEBI

SEBI operates as a watchdog for the capital markets with three primary objectives:

- Protective Functions:** Prohibiting insider trading, preventing price rigging, and promoting fair trade practices while educating investors.
- Developmental Functions:** Promoting the training of intermediaries, encouraging self-regulatory organizations (SROs), and modernizing trading infrastructure.

- **Regulatory Functions:** Registering and regulating stockbrokers, merchant bankers, mutual funds, and credit rating agencies.

4. Triple Powers of SEBI

SEBI is one of the most powerful regulators in India because it combines three types of powers:

- **Quasi-Legislative:** It drafts regulations and rules for the capital market (e.g., Listing Obligations and Disclosure Requirements).
- **Quasi-Executive:** It conducts investigations, audits, and inspections. It has the power to call for data, including telephone call records, during investigations into insider trading.
- **Quasi-Judicial:** It passes rulings and orders. It can impose heavy monetary penalties and bar entities from accessing the capital markets.

5. Regulatory Ambit and Important Mechanisms

- **Collective Investment Schemes (CIS):** SEBI regulates any money-pooling scheme involving **₹100 crore or more**, ensuring they are not fraudulent "ponzi" schemes.
- **SCORES:** The **SEBI Complaints Redress System** is a web-based centralized platform for investors to lodge grievances against listed companies or intermediaries.
- **Appellate Mechanism:** Any entity aggrieved by an order of SEBI can appeal to the **Securities Appellate Tribunal (SAT)**. A further appeal against SAT's order can be made directly to the **Supreme Court of India**.

4.2. COCONUT CULTIVATION

Context:

- Recently, a scientific study highlights that the **future of coconut cultivation depends more on sustainability practices than simply increasing productivity**, due to climate change, soil degradation, water stress, and market risks.
- **The Union Budget 2026–27** announced a **Coconut Promotion Scheme** to boost productivity by rejuvenating old, unproductive gardens with high-yield varieties and promoting new coastal plantations.
- **The Coconut Development Board** is already running a similar scheme that has rejuvenated old gardens and expanded coconut cultivation into non-traditional regions like Gujarat and Assam, helping partly offset disease-related losses in Kerala and Tamil Nadu.



1. Key Aspects of Coconut Promotion Scheme

- **Primary Objective:** To improve productivity by rejuvenating old, low-yielding gardens and establishing new plantations..
- **Shift in Focus:** The scheme must move beyond just distributing high-yield seedlings.
- **Priority Areas:**
 - Development and mass multiplication of **climate-resilient varieties** for farms along the east coast and in peninsular regions.

- Development of **wilt-tolerant varieties** for coconut-growing regions along the west coast.

2. Challenges to Productivity and Sustainability

- **Climate Change:**
 - Research projects that temperatures in regions with plantations may rise by **1.6-2.1°C by 2050** and up to **3.2°C by 2070**.
 - Increased temperatures and significant changes in rainfall patterns will increase moisture deficit and intensify **drought stress**.
- **Geographical Vulnerability:**
 - Parts of interior peninsular India, including **Karnataka and Andhra Pradesh**, along with southern **Tamil Nadu** and the east coast, could be less suitable for coconut cultivation due to climate change and diseases.
- **Disease Impact:**
 - Widespread destruction of coconut palms in **Kerala and Tamil Nadu** has been caused by diseases.

3. Basic of Coconut

I. Production Status and Ranking

- **Global Position:** India is the **largest producer and consumer** of coconuts in the world.
- **Livelihood:** Approximately **30 million people** and nearly **10 million farmers** in India depend on coconut cultivation for their livelihoods.
- **Major Producing States:** As of 2023-2024 **Karnataka is the top coconut-producing state** in India, accounting for over 28% of the total, followed closely by Tamil Nadu and Kerala, with these three southern states contributing over 90% of the national output.
- **Expansion:** Cultivation is expanding to non-traditional areas, including the North-Eastern states (Assam and Tripura) and coastal regions of Odisha and West Bengal.

Coconut Cultivation in India
Promotion & Sustainability

Union Budget 2026–27

- **Coconut Promotion Scheme**
 - Rejuvenate Old Gardens (High-yield varieties)
 - New Plantations (Coastal Areas)

India's Position

- World's Largest Producer & Consumer
- **30 Million** People Dependent
- **Top States:** Karnataka, TN, Kerala (**90%+** output)

Challenges

- **Climate Change**
↑ Temp: **1.6–3.2°C by 2070**
- Rainfall Variability & **Drought**
- **Soil Degradation & Water Stress**
- **Diseases – Loss in Kerala, TN**

Focus on Sustainability

- **Climate-Resilient Varieties** (East Coast & Peninsular India)
- **Wilt-Tolerant Types** (West Coast)
- **Water Management** (Drip, Rainwater Harvesting)
- **Soil Health** (Organic Manure, Compost)

Basic Needs for Coconut

- **Temp:** 22–32°C
- **Rainfall:** 1300–2300 mm
- **Sunlight:** 2000 hrs /year
- **Soil pH:** 5.0 – 8.0

Coconut Development Board (CDB)
Min. of Agri., Estb. 1981, Kochi

- Productivity, Diversification, Tech Support
- **MSP for Copra**

II. Climatic and Geographical Requirements

- **Nature of Crop:** It is essentially a **tropical plant**, typically grown between **20°N and 20°S latitudes**.

- **Temperature:** It requires an ideal mean annual temperature of **22°C-32°C**. Reproductive growth is hindered if temperatures fall below **10°C**.
- **Rainfall:** A well-distributed annual rainfall of **1300 mm to 2300 mm** is preferred. In areas with uneven rainfall, irrigation is essential.
- **Sunlight:** The palm requires plenty of sunlight (roughly **2000 hours** of sunshine annually) and **does not thrive in heavily shaded or cloudy regions**.
- **Soil:** It can grow in diverse soil types including laterite, coastal sandy, alluvial, and saline soils. A pH range of **5.0 to 8.0** is tolerable, provided there is proper drainage.

III. Institutional and Regulatory Framework

- **Coconut Development Board (CDB):** It is a **statutory body** established in 1981 under the **Ministry of Agriculture and Farmers Welfare**. Its headquarters is located in **Kochi, Kerala**.
- **Mandate:** The CDB focuses on integrated development, productivity increase, product diversification, and providing technical advice to the coconut industry.
- **Minimum Support Price (MSP):** The government fixes the MSP for **Milling Copra** and **Ball Copra**.

4.3. MORBI CERAMIC INDUSTRY

Context:

The escalating military turmoil in West Asia, involving Israel, the U.S., and Iran, has severely disrupted energy supply chains. This has direct consequences for energy-dependent industrial clusters in India, specifically the ceramic industry in **Morbi, Gujarat**.

1. Key Geographic Bottleneck: The Strait of Hormuz

- **Significance:** It is a major global passage for vessels carrying petroleum and gas shipments from the Gulf countries.
- **Conflict Impact:** The strait is currently closed to vessels due to the war.
- **Strategic Control:** The article identifies the Strait of Hormuz as being under Iran’s control.

2. Industrial Profile: Morbi Ceramic Cluster

- **Location:** It is situated on the **Kathiawar peninsula**. The city is on the **Machhu River**.
- **Scale:** Morbi is famously known as the **"Ceramic City of India."** This city plays a vital role in producing a wide range of ceramic products and is recognized for its significant contribution to the industry. Morbi is the **second-largest ceramic production hub** in the world.



MORBI CERAMIC INDUSTRY IN CRISIS
Impact of the West Asia Conflict

Morbi Ceramic Cluster (Gujarat)

- The Strait of Hormuz Blocked:** Key Chokepoint Under Iran's Control. Vital route for oil & gas shipments. Closed due to conflict.
- Energy Crisis Impact:**
 - SUPPLY DISRUPTIONS:** Imports Stuck Due to Strait Closure.
 - PORT ACCIDENT:** Saudi Port Mishap Feb 23.
 - ECONOMIC FALLOUT:** 30-45 Days Shutdown & Rising Fuel Costs.
- THREAT TO INDUSTRY:**
 - Prolonged Conflict in West Asia
 - Small Units at Risk of Survival

Cluster Details:

- 2nd Largest Ceramic Hub Globally
- Products: Tiles & Sanitary Ware
- 2-4 Lakh Workers Employed
- 80% Units Depend on Propane, LPG & Natural Gas

- **Products:**
 - **Ceramic tiles:** Floor tiles, wall tiles, vitrified tiles, and digital tiles.
 - **Sanitary ware:** Toilets, Basins, and bathroom accessories.
- **Employment:** It provides direct and indirect livelihoods to an estimated 2 to 4 lakh workers.
- **Energy Dependency:** The industry relies heavily on **propane, LPG, and natural gas** for firing kilns and drying processes.
 - Nearly 80% of units are dependent on propane.
 - Natural gas is primarily supplied to the region by **Gujarat Gas Ltd.**

3. Vulnerabilities in Energy Supply Chains

- **Import Reliance:** Essential fuels like propane and natural gas for this sector are sourced from the Gulf region.
- **Supply Disruptions:** Shipments are stuck due to the closure of the Strait of Hormuz.
 - Propane supplies were further hampered by an accident at a port in Saudi Arabia on February 23.
- **Economic Impact:** A prolonged conflict (4 weeks or more) could lead to an industry-wide shutdown lasting 30 to 45 days, with sharp rises in fuel prices threatening the survival of smaller units.

4.4. INDIA'S OIL AND GAS IMPORTS

Context:

- **Recently**, the Union Minister of Petroleum and Natural Gas, Hardeep Singh Puri, briefed the media on India's robust energy preparedness amidst escalating hostilities in West Asia and potential disruptions in the **Strait of Hormuz**.
- India has witnessed a significant strategic shift in its oil sourcing; while Russia remained a top supplier for much of 2025, imports from Russia fell to a 44-month low in January 2026 as India increased procurement from **Saudi Arabia** and the **United States** to balance geopolitical pressures and emerging trade frameworks.



1. High Import Dependency & The Energy Basket

- **Crude Oil:** India's dependence on imported crude has climbed to a record **88.5%** in FY 2025-26. This is driven by a steady 3-4% annual rise in fuel demand coupled with declining domestic production from mature fields.
- **Natural Gas (LNG):** India imports roughly **50%** of its natural gas. The government is rapidly expanding regasification capacity, aiming for an 80% increase by 2026 to support the goal of a "**Gas-based Economy**" (targeting 15% share in the energy mix by 2030).
- **LPG:** India is the world's second-largest LPG consumer. It imports over **60%** of its LPG, with a historic first-ever long-term contract signed with the **U.S. Gulf Coast** in late 2025 to supply 10% of India's annual requirement starting in 2026.

2. Strategic Shift in Import Destinations (2025-26)

Destination	Current Status (2026)	Strategic Context
Russia	Significant Decline	Share fell to ~19% due to regulatory risks and a pivot toward U.S./Gulf sources.
Iraq	Top Supplier	Consistently India's #1 or #2 source due to refinery compatibility and stable pricing.
Saudi Arabia	Major Rebound	Reclaimed a larger share (~17.5%) as India re-strengthened ties with OPEC+ leaders.
USA	Emerging Partner	Share rose to 6.8% ; imports include crude oil, LNG, and now large-scale LPG.

3. Energy Security: Strategic Petroleum Reserves (SPR)

India manages its vulnerability through a "9.5 + 64.5" day buffer system:

- **Phase I (Completed):** 5.33 MMT capacity in underground rock caverns at **Visakhapatnam (AP), Mangaluru (KA), and Padur (KA)**. This covers roughly 9.5 days of India's crude requirement.
- **Phase II (Ongoing):** Includes additional commercial-cum-strategic facilities at **Chandikhole (Odisha)** and a second unit at **Padur**.
- **Institutional Framework:** Managed by **ISPRL** (Indian Strategic Petroleum Reserves Ltd), a subsidiary of the Oil Industry Development Board (OIDB).

4. Economic Impact

- **Current Account Deficit (CAD):** Every **\$10/barrel** increase in global crude prices typically widens India's CAD by approximately **\$9 billion** (0.4% of GDP).
- **Trade Chokepoint:** Over **50%** of India's crude and **60%** of its LNG pass through the **Strait of Hormuz**. Any disruption here forces ships to take the longer **Cape of Good Hope** route, increasing freight costs by 3-5% and insurance premiums significantly.

5. Mitigation: Transitioning to Self-Reliance

- **E20 Mandate:** From **April 1, 2026**, the government has mandated a **20% Ethanol Blending (E20)** in petrol nationwide. This is expected to save over **₹45,000 crore** in foreign exchange annually.
- **Green Hydrogen:** Part of the **National Green Hydrogen Mission** to replace "Grey Hydrogen" in refineries and fertilizer plants, further cutting gas imports.

4.5. FERTILIZER CRISIS & PRICE SURGE

Context:

The escalation of war-like situations in West Asia has triggered a significant hike in the prices of critical fertilizers such as **Urea** and **DAP (Di-ammonium Phosphate)**. This is driven by rising crude oil prices and the shortage of **Liquefied Natural Gas (LNG)**, which serves as a key feedstock for fertilizer production.



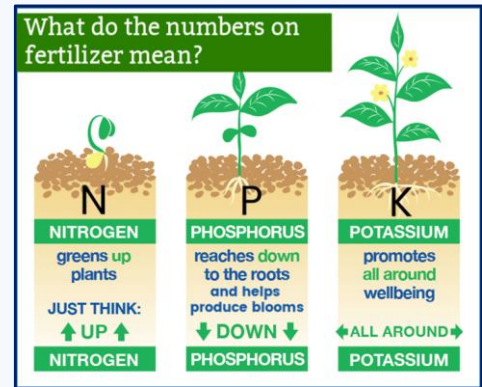
1. Market Dynamics: Urea and DAP Prices

- **Price Projections:** Urea and DAP prices are expected to breach the **\$1,000 per tonne** mark due to supply disruptions and rising demand for India's upcoming sowing season.

- **Feedstock Dependency:** Urea production is highly sensitive to the price of **LNG**, which is trending upward due to the conflict.
- **Impact of Global Alliances:** Fertilizer industry experts note that military actions by the U.S.-Israel alliance against Iran have triggered immediate price spikes (e.g., DAP reaching \$530 per tonne in some regions).

2. India's Fertilizer Statistics (April–December 2025-26)

- Today, India stands as the **second-largest consumer** and the **third-largest producer** of fertilizers globally.
- Around 87% of urea consumption is domestically met.
- **90% of NPK Fertilizers** are also produced within the country.
- However, for **DAP**, only about **40%** comes from local production.
- In the case of **Muriate of Potash (MOP)**, **100% is still imported**.
- **Sector-Wise Contribution** (During 2023–24):
 - The **public sector** contributed about 17.43% to total Fertilizer production.
 - The **cooperative sector** accounted for 24.81%.
 - The **private sector** contributed the largest share at 57.77%.



3. Global Resource Concentration

- **Phosphate Reserves:** **Morocco** holds **70%** of the world's phosphate reserves, which are essential for DAP production.
- **Potash Producers:** **Canada and Belarus** are the primary global producers of **Potash**.

4. Government's Initiatives in the Fertilizer Sector

- Fertilizer Subsidy and Budgetary Support:
 - For 2024–25, the Department of Fertilizers received a final budget of ₹1,91,836 crore, a notable rise from the ₹1,68,131 crore originally allocated. This increase was made possible through supplementary demands approved by Parliament.
 - Under the **Nutrient Based Subsidy scheme**, the allocation was raised from ₹45,000 crore in Budget Estimate (BE) 2024-25 to ₹54,310 crore, ensuring sustained support for **phosphatic and potassic Fertilizers**.
 - **Nano Fertilizer Initiatives:** Nano Fertilizers are plant nutrients that are packed within very small particles called nanomaterials. This coating allows the nutrients to be released slowly and steadily into the soil. The controlled release ensures that plants absorb them more effectively and with less wastage.
 - **Neem Coated Urea (NCU):** Neem-coated urea is urea fertilizer coated with neem oil that slows nitrogen release in soil. This improves crop growth, reduces nitrogen loss and fertilizer misuse, and allows farmers to use about 10% less urea for similar results.
 - **One Nation One Fertilizer (ONOF):** One Nation One Fertilizer aims to ensure uniform branding and transparency by selling all subsidised fertilizers under the common **"Bharat" brand (e.g., Bharat Urea, Bharat DAP)**, with the manufacturer's name shown in smaller font.

Nutrient Based Subsidy scheme

- The Government introduced the Nutrient Based Subsidy (NBS) scheme on **1 April 2010** for **phosphatic and potassic Fertilizers**. Under this scheme, a **fixed subsidy** is provided for subsidised **P and K Fertilizers**, including **di-ammonium phosphate**, based on their nutrient content.
- **Coverage:** Applicable to Phosphatic and Potassic (P&K) fertilizers, including DAP.
- **Subsidy Basis:** A fixed subsidy per nutrient content is announced annually or bi-annually.
- **Pricing:** The P&K fertilizer sector is decontrolled; companies can fix MRP, monitored by the government.
- **Urea exclusion:** Urea is not covered under NBS

Fertilizer Crisis & Price Surge

Rising Conflict in West Asia & LNG Shortage Driving Fertilizer Prices Up



Market Dynamics: Fertilizer Price Surge

- \$ Urea & DAP prices may exceed \$1,000/tonne**
- LNG price hikes fueling production costs**
- U.S.-Israel tensions spiking DAP to \$530/tonne**

India's Fertilizer Stats (Apr–Dec 2025-26)

- 87%** Urea Consumption Met Domestically
- 90%** NPK Fertilizers Produced Locally
- 40%** Only 40% of DAP Locally Produced
- 100%** MOP Fully imported
- 17.43%** Public Sector
- 24.81%** Cooperative Sector

Global Resource Concentration

- 70% of World's Phosphate in Morocco**
- Key Potash Producers: Canada & Belarus**

Govt. Initiatives in Fertilizer Sector

- ₹ 1.91 Lakh Cr. Fertilizer Subsidy Budget 2024-25**
- Nutrient Based Subsidy (NBS) for P&K Fertilizers**
- Nano Fertilizers**
Controlled Release Formula
- Neem Coated Urea**
Reduces Nitrogen Loss
- One Nation One Fertilizer**
"Bharat" Brand for All Subsidized Fertilizers

4.6. IMPACT OF IRAN-ISRAEL WAR ON INDIA'S EXPORTS TO GULF COUNTRIES

Context:

- **Recently**, the security architecture of West Asia has faced severe destabilization following direct military escalations between **Iran and Israel** in early March 2026. This conflict has moved beyond proxy warfare to direct strikes on sovereign territories and strategic maritime corridors, including the **Strait of Hormuz**. Reports indicate that the escalation has triggered "War Risk Surcharges" and significant disruptions in the shipping lanes of the Persian Gulf, directly impacting India's trade momentum with the **Gulf Cooperation Council (GCC)** countries.
- The ongoing conflict poses a multi-dimensional threat to the **USD 180 billion** annual trade with the GCC and Iran.



1. General Impact on Logistics and Costs

- **Freight and Insurance:** Shipping companies have hiked freight rates by **30–50%**. The Indian Rice Exporters Federation has advised members to avoid **CIF (Cost, Insurance, and Freight)** contracts due to "unacceptable" insurance risks.
- **Strait of Hormuz & Bab el-Mandeb:** Disruptions here force rerouting via the **Cape of Good Hope**, adding approximately **two weeks** to transit times and significantly compressing profit margins.
- **Payment & Regulatory Hurdles:** Banking sanctions on Iran and heightened KYC scrutiny in the region are causing severe payment settlement delays.

2. Sector-Wise Impact on India's Exports

2.1 Agricultural Exports (Basmati Rice)

India is the world's largest exporter, with the Middle East (Saudi Arabia, Iran, Iraq, UAE, and Yemen) accounting for nearly **50% of export value (₹50,000 crore)**.

- **Price Drop:** Following the late February 2026 escalation, domestic prices fell by **5–6%** as shipments stalled.
- **Iran Specifics:** India's exports to Iran (~\$1.24 billion) consist largely of rice, tea, and sugar, all of which are now deemed "unviable" due to airspace closures and port congestion.

2.2 Petroleum Product Exports

India leverages its massive refining capacity in **Jamnagar, Vadinar, and Paradip**.

- **Volume at Risk:** Approximately **74,000 bpd** of refined products flow through the Strait of Hormuz.
- **The Paradox:** While rising oil prices theoretically benefit refiners, the physical inability to transport products profitably neutralizes these gains.

2.3 Gems, Jewellery, and Diamonds

This sector is critically dependent on **Dubai** as a global re-export center.

- **Supply Chain:** About **50–60%** of India’s gold imports transit through Dubai.
- **Manufacturing Risk:** Airspace closures disrupt the pipeline of rough diamonds bound for cutting and polishing centers in **Surat and Mumbai**.

2.4 Pharmaceuticals

India is the world’s "pharmacy," but the conflict strains the supply of **APIs (Active Pharmaceutical Ingredients)**.

- **Double Squeeze:** Sustained disruption adds cost to the processing of Chinese APIs in India for re-export to the Middle East and Iran.

2.5 Textiles, Engineering Goods, and Chemicals

- **Textiles:** Manufacturers in **Tiruppur and Surat** face thin margins as freight costs to Europe and North America skyrocket.
- **Chemicals:** Rising crude prices increase the cost of **petrochemical feedstocks**, while simultaneously high freight costs compress the margins of export-heavy players.

3. Summary of Major Products and Status

Gulf Country	Major Export Products	Present Status & Impact
UAE	Gems & Jewellery, Refined Petroleum.	Disrupted: Dubai hub operations are hampered by airspace closures and high insurance.
Saudi Arabia	Basmati Rice, Engineering Goods.	Stalled: New contracts are being avoided; massive inventory build-up at Indian ports.
Iran	Tea, Rice, Pharmaceuticals.	Critical: Trade is at a near standstill due to sanctions and kinetic warfare.
Oman	Minerals, Textiles, Engineering.	Strategic Hub: Ports like Duqm are serving as vital alternative landing points.

4.7. OPEN MARKET OPERATIONS (OMO)

Context

Recently, the Reserve Bank of India (RBI) announced a substantial liquidity injection plan involving the purchase of Government of India securities worth **₹1 lakh crore** through Open Market Operations (OMO). This decision, involves two separate auction tranches of ₹50,000 crore each, scheduled for **March 9 and March 13, 2026**. The move is



strategically timed to counteract expected liquidity tightening in the banking system due to significant cash outflows from mid-month **advance tax payments** and Goods and Services Tax (GST) collections.

1. What is OMO?

Open Market Operations are one of the **quantitative (general)** monetary policy tools used by the central bank (RBI) to regulate the money supply in the economy. It involves the **outright purchase or sale** of government securities (G-Secs) and Treasury Bills in the open market.

2. Mechanism of OMO

The RBI manages liquidity by interacting with the secondary market:

- **OMO Purchase (Liquidity Injection):** When the RBI buys G-Secs from the market, it pays the commercial banks/financial institutions in cash. This increases the **reserves of the banks**, leading to a higher money supply and potentially lower interest rates.
- **OMO Sale (Liquidity Absorption):** When the RBI sells G-Secs, it takes cash out of the banking system. This reduces the **loanable funds** available with banks, thereby decreasing the money supply and controlling inflationary pressures.

3. Impact on Bond Yields

There is an **inverse relationship** between the price of a bond and its yield:

- During an **OMO Purchase**, the demand for bonds increases, which pushes the bond prices up. As bond prices rise, the **bond yield falls**.
- During an **OMO Sale**, the supply of bonds in the market increases, causing bond prices to fall and **bond yields to rise**.

4. Comparison with Other Tools

Feature	OMO	Repo Rate (LAF)
Duration	Generally for durable or long-term liquidity.	Used for short-term (overnight to 14 days) liquidity.
Nature	Outright buying and selling; ownership changes.	Repurchase agreement; securities act as collateral.
Flexibility	RBI can choose specific securities to buy/sell.	Uniformly applicable to all eligible participants.

5. Key Participants and Platform

- **Platform:** OMOs are conducted electronically on the **E-Kuber system**, which is the Core Banking Solution (CBS) platform of the RBI.
- **Participants:** Commercial banks, primary dealers, and other designated financial institutions.

4.8. INDIA'S LPG DEPENDENCE AND RECENT CRISIS

Context:

Recently, India has been grappling with a nationwide **LPG supply crisis** primarily triggered by the escalating **Iran-Israel conflict** in West Asia, which has disrupted maritime traffic through the **Strait of Hormuz**. On March 11, 2026, the Government of India invoked the **Essential Commodities Act** to prioritize LPG supply for domestic households over commercial and industrial consumers. Furthermore, Union Ministers have confirmed that domestic LPG production has been ramped up by **25%** as an emergency measure to mitigate the shortfall caused by the effective halt of shipments from key suppliers like Qatar and Saudi Arabia.



1. Basics of LPG (Liquefied Petroleum Gas)

- **Composition:** LPG is a flammable mixture of hydrocarbon gases, primarily consisting of **Propane (C₃H₈)** and **Butane (C₄H₁₀)**. It may also contain small amounts of propylene and butylene.
- **Properties:** It is **colorless and odorless** in its natural state; however, a powerful odorant called **Ethyl Mercaptan** is added to help detect leaks.
 - LPG is **heavier than air**, meaning it tends to settle in low-lying areas (like basements) if a leak occurs, posing an explosion risk.
 - It has a **high calorific value**, making it highly efficient for cooking.
- **Production:** It is obtained as a by-product during **Petroleum Refining** (crude oil processing) and from **Natural Gas** fractionation.
- **Storage:** It is stored as a liquid under moderate pressure to reduce its volume (approx. 250 times), allowing for easier transportation in cylinders.

2. India's LPG Dependence

- **Import Reliance:** India is the world's third-largest consumer of LPG. Approximately **60-65%** of India's total LPG requirement is met through imports.
- **Regional Concentration:** Nearly **90% of India's LPG imports** originate from the West Asian region (Middle East), specifically from Saudi Arabia, UAE, Qatar, and Kuwait.
- **Vulnerability (Strait of Hormuz):** A significant portion of these imports passes through the Strait of Hormuz. Any regional instability here directly threatens India's energy security, as seen in the 2026 crisis.
- **Storage Capacity:** India's strategic LPG storage capacity is relatively low compared to crude oil, typically lasting for only about **10-15 days** of national consumption.

3. The 2026 LPG Crisis & Government Response

- **Cause:** Maritime disruptions in the Persian Gulf due to regional warfare have blocked the primary supply route for Indian gas tankers.
- **Emergency Measures:**
 - **Essential Commodities Act (ECA):** Invoked to prevent hoarding and ensure that available stocks are diverted strictly to "Domestic Use" (households).
 - **Production Hike:** Refineries have been ordered to maximize LPG output and divert chemical streams (like propane/butane used in plastics) into the fuel pool.
 - **Refill Restrictions:** The minimum gap between booking two domestic refills has been temporarily increased (from 21 to 25 days) to manage inventory.
 - **DAC Expansion:** The **Delivery Authentication Code (DAC)** system (OTP-based delivery) is being scaled to 90% coverage to prevent black marketing.

4. Major Government Schemes

- **Pradhan Mantri Ujjwala Yojana (PMUY):** Launched in 2016 to provide clean cooking fuel to BPL households. By 2026, **Ujjwala 3.0** is active, focusing on migrant families and providing additional subsidies (currently ₹300 per cylinder for up to 12 refills).
- **PAHAL (DBTL):** The world's largest cash transfer program, ensuring LPG subsidies are credited directly to the beneficiary's bank account via **Direct Benefit Transfer**.

4.9. ECONOMIC STABILISATION FUND (ESF)

Context:

Recently, the Union Finance Minister announced the creation of a ₹1 lakh crore Economic Stabilisation Fund (ESF) as part of the second batch of supplementary demands for grants in the Lok Sabha. This move comes in response to intensifying global headwinds, particularly the volatility in energy prices and supply chain disruptions caused by the ongoing West Asia conflict.



The fund is designed to provide the Indian government with the necessary **fiscal headroom** to absorb external macroeconomic shocks without compromising the fiscal deficit target, which remains at **4.4% of GDP** for the financial year 2025-26.

Core Concept of the Economic Stabilisation Fund

An Economic Stabilisation Fund is a dedicated financial reserve established by a government to protect the domestic economy from external shocks and revenue volatility. Unlike developmental funds, its primary purpose is **stabilisation** rather than long-term infrastructure investment.

- **Buffer Mechanism:** It acts as a "rainy-day fund" that accumulates surpluses during periods of high growth or stable prices and is deployed during economic downturns or price spikes.
- **Counter-Cyclical Fiscal Policy:** By providing a cushion, the government can avoid drastic cuts in social spending or capital expenditure when revenue is hit by global crises.
- **Targeting Volatility:** In the Indian context, the fund is specifically aimed at mitigating the impact of high crude oil prices (which recently touched \$100/barrel) and ensuring the stability of the rupee.

Key Features and Significance

1. **Fiscal Headroom:** The fund allows the government to meet additional spending requirements (such as fuel or fertilizer subsidies) without breaching the **Fiscal Responsibility and Budget Management (FRBM)** targets.
2. **Absorption of External Shocks:** It targets "black swan" events, such as the disruption of the **Strait of Hormuz**, which is critical for India's LPG and crude oil imports.
3. **Inflation Control:** By absorbing the cost of global price hikes, the fund helps prevent the pass-through of high energy costs to the domestic consumer, thereby anchoring inflation expectations.
4. **Sovereign Resilience:** It functions similarly to a Sovereign Wealth Fund (SWF) but with a specific mandate for macroeconomic stability rather than purely commercial returns.

Comparison: ESF vs. NIIF

Feature	Economic Stabilisation Fund (ESF)	National Investment & Infrastructure Fund (NIIF)
Primary Goal	Macroeconomic stability and shock absorption.	Catalyzing investment in infrastructure.
Nature	Counter-cyclical and precautionary.	Pro-growth and developmental.

Usage	Deployed during crises (e.g., oil price spikes).	Invested in greenfield and brownfield projects.
Funding	Budgetary allocations / Supplementary grants.	Anchored by Govt (49%) + International Investors.

4.10. PULSES

Context:

Recently, the Supreme Court of India directed the Central Government to diversify agricultural practices and encourage farmers to cultivate pulses to move away from the current cereal-centric crop cycle. This judicial intervention aligns with the government's Second Advance Estimates for 2025–26, which project a robust increase in domestic pulse production, and the active implementation of the "Mission for Aatmanirbharta in Pulses" launched to eliminate import dependence by 2030.



Technical Overview of Pulses

Pulses are the edible seeds of leguminous plants harvested solely for the dry grain. They belong to the **Leguminosae (Fabaceae)** family.

1. Climatic and Soil Requirements

- **Temperature:** They thrive in temperatures ranging between **20°C and 27°C**.
- **Rainfall:** Pulses are primarily rain-fed crops requiring moderate rainfall of **25 cm to 60 cm**.
- **Soil Type:** Sandy-loamy soils are most suitable, though they can grow in varied terrains except for heavy alkaline or saline soils.
- **Cropping Seasons:**
 - **Kharif:** Arhar (Tur), Urad (Blackgram), Moong (Greengram).
 - **Rabi:** Gram (Chickpea), Lentil (Masur), Peas.
 - **Summer:** Moong and Urad are also grown as short-duration summer crops.

2. Ecological and Nutritional Importance

- **Nitrogen Fixation:** Most pulses (except Arhar/Pigeon pea to a lesser extent) have nodules in their roots containing *Rhizobium* bacteria, which fix atmospheric nitrogen, thereby improving soil fertility and reducing the need for chemical fertilizers.
- **Water Efficiency:** They are highly water-efficient compared to cereals like rice and wheat.
- **Protein Source:** Pulses contribute nearly **20% to 25%** of the total protein intake in Indian diets, making them vital for combating protein-energy malnutrition.

3. India's Position in the Pulse Sector

- **Global Rank:** India is the **world's largest producer (25%), consumer (27%), and importer (14%)** of pulses.

- **Production Statistics:** As per the 2025–26 Second Advance Estimates, total production is showing a steady increase, with **Gram** accounting for nearly **50%** of the total pulses share.
- **Import Trends:** While imports have significantly declined (by approximately 45% in FY26), India still procures pulses like Yellow Peas and Lentils from countries such as Canada, Myanmar, and Australia to bridge the demand-supply gap.
- **Top Producing States (2025-26):**
 - **Madhya Pradesh** (Largest producer).
 - **Rajasthan.**
 - **Maharashtra.**
 - **Uttar Pradesh.**

4. Key Government Initiatives

Mission for Aatmanirbharta in Pulses (2025–2031)

- **Outlay:** ₹11,440 crore.
- **Goal:** Reach **350 lakh tonnes** of production and **310 lakh hectares** of cultivation area by 2030–31.
- **Key Feature:** Assured **100% procurement** of Tur, Urad, and Masoor at MSP for four years to provide price stability.

SATHI Portal

The **Seed Authentication, Traceability & Holistic Inventory (SATHI)** portal ensures the quality of seeds by tracking the entire lifecycle from production to certification, helping farmers access high-yielding and climate-resilient varieties.

PM-AASHA

The **Pradhan Mantri Annadata Aay SanraksHan Abhiyan** integrates the Price Support Scheme (PSS) and Price Deficiency Payment Scheme (PDPS) to ensure farmers receive the Minimum Support Price.

4.11. PUBLIC INSURANCE REGISTRY (PIR)

Context:

Recently, the Insurance Regulatory and Development Authority of India (IRDAI) proposed the establishment of a **Public Insurance Registry (PIR)** to consolidate insurance data across all stakeholders and modernize the information architecture of the Indian insurance sector.

This move, discussed during a high-level stakeholder meeting in New Delhi, aims to create a unified, consent-driven digital infrastructure that tracks the entire lifecycle of an insurance policy from issuance to dispute resolution.



1. Key Features and Details of Public Insurance Registry (PIR)

- **Definition and Governance:** The PIR is envisioned as a structured, interoperable information infrastructure governed by the **IRDAI** to act as a centralized database for the insurance industry.
- **Consent-Driven Framework:** It is designed to be a legally compliant, digital platform where data sharing is based strictly on the **explicit consent** of the policyholder, ensuring privacy and security.
- **Comprehensive Lifecycle Coverage:** The registry will host data covering every stage of an insurance policy, including its issuance, premium payments, claims processing, grievance redressal, and final dispute resolution.
- **Integration with Bima Sugam:** The PIR will work in tandem with **Bima Sugam** (an e-marketplace) to enable seamless access to insurance policies and enhance the overall customer experience by providing a single source of truth for policy data.
- **Interoperability:** The system is built to be interoperable across various insurance entities, including life, general, and health insurers, ensuring that data can be seamlessly exchanged between authorized stakeholders.

2. Objectives and Significance

- **Reducing Information Asymmetry:** By consolidating data in one place, the PIR aims to provide a transparent view of the insurance landscape to both regulators and consumers.
- **Fraud Detection and Mitigation:** A centralized registry allows for better cross-verification of claims and policyholder history, making it significantly easier to identify and prevent fraudulent activities.
- **Data-Driven Oversight:** The IRDAI will be able to perform more effective regulatory oversight using real-time, high-quality data to monitor the solvency and conduct of insurance companies.
- **Enhancing "Insurance for All by 2047":** It aligns with the national goal of achieving universal insurance coverage by reducing administrative friction and lowering costs for both insurers and the insured.

3. Institutional & Statutory Facts

- **Malhotra Committee (1994):** The foundational committee that recommended the opening of the insurance sector and the creation of IRDAI.
- **Statutory Status:** IRDAI was established under the **IRDAI Act, 1999**. It is a 10-member body (1 Chairman, 5 full-time, 4 part-time members) appointed by the Government of India.
- **FDI Limit:** The Foreign Direct Investment limit in the insurance sector has been hiked to **74%**, while it is **100%** for insurance intermediaries (brokers).

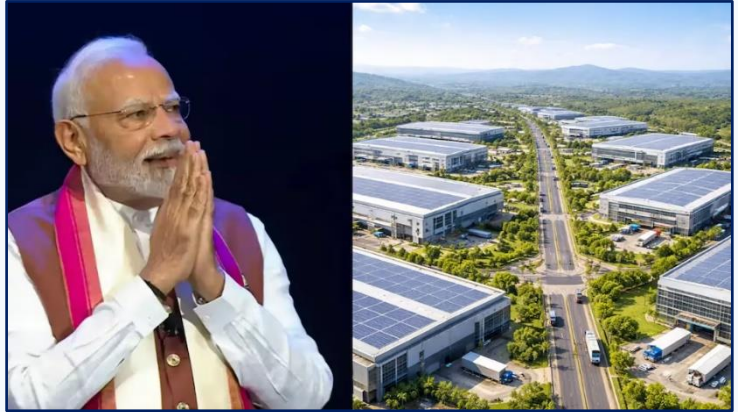
4. Critical Economic Terms

- **Insurance Penetration:** The ratio of premium underwritten in a year to the **GDP**. (India: approx. **3.8% to 4%**).
- **Insurance Density:** The ratio of premium to the **total population** (measured in USD per capita).

4.12. BHARAT AUDYOGIK VIKAS YOJANA (BHAVYA)

Context:

Recently, the Union Cabinet chaired by the Prime Minister has approved the **Bharat Audyogik Vikas Yojana (BHAVYA)**. This flagship scheme, with a significant financial outlay of **₹33,660 crore**, aims to transform India's manufacturing landscape by developing 100 high-end "plug-and-play" industrial parks across the country. The move is seen



as a strategic step to counter "premature de-industrialization" and achieve the goal of a *Viksit Bharat* by enhancing domestic manufacturing capabilities and generating approximately 15 lakh direct jobs.

1. Overview and Objectives

The Bharat Audyogik Vikas Yojana (BHAVYA) is a central sector initiative designed to provide world-class, investment-ready infrastructure.

- **Goal:** To build **100 industrial parks** that allow companies to move from "intent to production" with minimal delay.
- **Primary Target:** Boosting the manufacturing sector's contribution to the GDP and creating large-scale employment.
- **Focus Areas:** Ease of Doing Business (EoDB), deregulation, and streamlined single-window clearances.

2. Infrastructure and Funding Model

The scheme introduces a robust financial support mechanism to ensure the quality of these industrial ecosystems:

- **Grant Support:** The Central Government will provide a grant of up to **₹1 crore per acre** for core infrastructure development.
- **External Connectivity:** The Centre will fund up to **25% of the cost** for external infrastructure (roads, rail links, etc.) to ensure seamless multimodal connectivity.
- **Scale of Parks:** General Regions: Minimum area of **100 acres** (scaling up to 1,000 acres).
 - North-Eastern and Hilly States: Minimum area of **25 acres** to suit the local terrain.

3. Key Features of BHAVYA

- **Plug-and-Play Facilities:** These parks will offer ready-to-use factory sheds, testing laboratories, and pre-approved environmental and building clearances.
- **Challenge Mode Selection:** Projects will be selected through a competitive "Challenge Mode" among states to ensure only high-quality, reform-oriented proposals receive funding.
- **PM GatiShakti Alignment:** The parks are designed based on the **National Master Plan (NMP)** for multimodal connectivity, ensuring efficient logistics and "no-dig" underground utility corridors.
- **Social Infrastructure:** Unlike traditional industrial zones, BHAVYA includes provisions for **worker housing**, health centers, and basic amenities within the park to support the workforce.

4. Implementation Agency

The **National Industrial Corridor Development Corporation (NICDC)**, under the Department for Promotion of Industry and Internal Trade (**DPIIT**), will be the lead agency for executing the scheme in partnership with State Governments and the private sector.

4.13. AgriPV

Context:

A proposal for a **National Agri-photovoltaics Mission** has been introduced to achieve a target of 10 GW capacity, aiming to resolve the "food vs. energy" land-use conflict as India strives for 300 GW of solar power by 2030.

1. Understanding Agri-photovoltaics (AgriPV)

AgriPV (also known as *Agrisolar* or *Dual-use Solar*) is the simultaneous use of **land for both solar energy generation** and agricultural production.

Key Technical Features

- **Elevated Mounting:** Panels are fixed **2–3 meters high** (standard elevation at least 2.1m) to allow movement of laborers and farm machinery (like tractors) beneath them.
- **Optimal Tilting:** Panels are often tilted at an angle (approx. 30°) or use **manual/automated tracking** to balance light for crops with energy capture.
- **Bifacial Panels:** Modern systems use panels that capture sunlight from both sides, often installed vertically to save space.



2. Synergies and Benefits

- **Micro-climate Control:** Partial shading reduces **evapotranspiration**, helping soil retain moisture longer (reducing irrigation needs by up to 29%).
- **Yield Protection:** Protects sensitive crops from heat stress, hail, and extreme weather.
- **Water Conservation:** Systems can incorporate **rainwater harvesting**, capturing up to 80% of rain falling on panels for irrigation/cleaning.
- **Economic Stability:** Provides a secondary, stable revenue stream for farmers (lease rent or selling surplus power to the grid).

3. Institutional & Policy Framework

- **PM-KUSUM Scheme:** The primary anchor.
 - **Component A:** Decentralized ground-mounted plants (500 kW to 2 MW) on barren/fertile land.
 - **Component B & C:** Standalone solar pumps and solarization of existing pumps.
- **Nodal Agencies:** Ministry of New and Renewable Energy (**MNRE**) and the National Solar Energy Federation of India (**NSEFI**).
- **India Agrivoltaics Alliance (IAA):** An initiative to integrate solar infrastructure with agricultural spaces.

4. Challenges and Regulatory Barriers

- **High CAPEX:** Installation costs are roughly **11% higher** than traditional ground-mounted solar due to specialized elevated structures.
- **Technical Suitability:** Not all crops are "shade-tolerant." Success depends on matching specific crops (e.g., leafy greens, tomatoes, onions) with panel density.
- **Policy Gaps:**
 - **Land Use Classification:** Ambiguity in laws regarding whether AgriPV land is "agricultural" or "industrial," affecting tax and subsidies.
 - **Yield Thresholds:** Unlike Japan (which mandates 80% yield maintenance), India lacks standardized minimum agricultural yield thresholds.
- **Grid Limitations:** Rural areas often face intermittent grid connectivity, hindering the sale of surplus power back to **DISCOMs**.

5. Global Best Practices for Comparison

- **Germany (DIN SPEC 91434):** Requires at least **66% of original yield** to be maintained; only 15% of arable land can be used for infrastructure.
- **Japan:** Requires specific panel heights and periodic reviews every 3 years to ensure agricultural productivity isn't compromised.

6. Crops for Agri-photovoltaics (AgriPV) in India

Crop Category	Suitable Crops	Reason for Suitability
Leafy Vegetables	Spinach (Palak), Lettuce, Fenugreek (Methi)	These are naturally shade-tolerant and require less direct intense sunlight to prevent wilting.
Root/Tuber Crops	Potato, Onion, Radish, Ginger, Turmeric	Shading keeps the soil cooler, which is beneficial for the growth of underground bulbs and tubers.
Fruit Vegetables	Tomato, Chilli, Brinjal (Eggplant)	These show resilience under partial shade, though yields must be monitored against light-saturation points.
Fodder Crops	Alfalfa, Napier Grass	High biomass production is possible with reduced water evaporation under panels.
Aromatic/Medicinal	Aloe Vera, Lemongrass, Mint	Many medicinal plants prefer the diffused light and stable micro-climate provided by solar structures.

UPSC PRELIMS PRACTICE QUESTIONS

Q. Consider the following statements regarding the Securities and Exchange Board of India (SEBI):

- I. It is a statutory body that regulates both the securities market and any money-pooling scheme with a corpus of ₹100 crore or more.
- II. The Chairman of SEBI is appointed by a committee specifically headed by the Governor of the Reserve Bank of India.
- III. An appeal against the order of the Securities Appellate Tribunal (SAT) lies directly with the Supreme Court of India.
- IV. SEBI has the power to act as a quasi-judicial body but lacks the authority to draft its own regulations.

How many of the above statements are correct?

- (a) Only one
- (b) Only two
- (c) Only three
- (d) All four

Answer: (b)

Explanation:

- **Statement 1 Correct:** SEBI is a statutory body (SEBI Act, 1992) and has the authority to regulate Collective Investment Schemes (CIS) with a corpus of ₹100 crore or more.
- **Statement 2 Incorrect:** The Chairman is recommended by the **Financial Sector Regulatory Appointments Search Committee (FSRASC)**, which is headed by the **Cabinet Secretary**, not the RBI Governor.
- **Statement 3 Correct:** Under the SEBI Act, any person aggrieved by an order of the SAT may file an appeal to the **Supreme Court** on any question of law.
- **Statement 4 Incorrect:** SEBI is a **quasi-legislative** body as well, meaning it has the specific power to draft and notify regulations (like the SEBI ICDR or LODR Regulations).

Q. With reference to coconut cultivation and its status in India, consider the following statements:

- I. India is currently the largest producer and consumers of coconuts globally.
- II. The Coconut Development Board is a statutory body headquartered in Chennai, Tamil Nadu.
- III. The Union Budget 2026-27 has proposed a scheme to replace senile and unproductive trees with high-yielding varieties.

How many of the statements given above is/are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Answer: (b)

Explanation:

Statement I is correct: India is currently the **world's largest producer and consumer** of coconuts. While other countries like Indonesia and the Philippines are major players, India's domestic prices for tender coconut and copra remain higher than prevailing international prices.

Statement II is incorrect: While the article mentions that the **Coconut Development Board (CDB)** is already implementing schemes to rejuvenate old gardens, it does not state that it is headquartered in Chennai.

(Note: The CDB is a statutory body, but its headquarters is actually located in **Kochi, Kerala**, not Chennai).

Statement III is correct: The **Union Budget 2026–27** explicitly introduced the **Coconut Promotion Scheme** to rejuvenate old plantations with high-yielding saplings.

Q. Which Indian City is Known as Ceramic City of India?

- (a) Morbi
- (b) Sri Nagar
- (c) Udaipur
- (d) Coimbatore

Answer: (a)

Explanation:

Morbi is a city in Gujarat, India, famously known as the "Ceramic City of India." This city plays a vital role in producing a wide range of ceramic products and is recognized for its significant contribution to the industry. Morbi is the second-largest ceramic production hub in the world.

Q. Consider the following statements regarding India's energy import profile in 2026:

1. From April 2026, India has mandated a nationwide 20% ethanol blending in petrol, aiming to reduce the volume of crude oil imports.
2. The United States has recently overtaken Iraq as India's largest supplier of Liquefied Petroleum Gas (LPG) through long-term structured contracts.
3. The Strategic Petroleum Reserves (SPR) are exclusively used for emergency military requirements and are managed by the Ministry of Defence.

How many of the statements given above are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Answer: (a)

Explanation:

- **Statement 1 Is Correct:** The government has officially mandated **E20 (20% ethanol blend)** across all states and UTs starting **April 1, 2026**, to curb the import bill and lower emissions.

- **Statement 2 Is Incorrect:** While India signed its first major structured LPG contract with the **U.S.** in late 2025, the U.S. supplies roughly **10%** of India's LPG. The majority still comes from traditional West Asian sources like Saudi Arabia and Qatar.
- **Statement 3 Is Incorrect:** The SPRs are managed by **ISPRL** under the **Ministry of Petroleum and Natural Gas**, not the Ministry of Defence. They are intended for national energy security during supply disruptions, covering both civilian and strategic needs.

Q. Consider the following statements with reference to the fertilizer Sector in India:

- I. In the case of Muriate of Potash (MOP), 100% is still imported.
- II. The public sector contributed about 57.43% to total Fertilizer production.
- III. Neem-coated urea is urea fertilizer coated with neem oil that slows nitrogen release in soil.

Which of the following statements given above is/are correct?

- (a) I only
- (b) I and III only
- (c) III only
- (d) II and III only

Answer: B

Explanation:

- **Statement I is correct:** India lacks significant domestic reserves of potash. Consequently, 100% of the demand for **Muriate of Potash (MOP)** is met through imports, primarily from countries like Canada and Belarus.
- **Statement II is incorrect:** While the public sector plays a significant role, it does not dominate production to that extent. Based on current data, the cooperative sector (like IFFCO) and the private sector contribute the majority of production. For instance, recent data shows that local output for urea fell by 3% to 22.44 mt, while imports surged to 8 mt.

- **Statement III is correct: Neem-coated urea** is a specialized fertilizer where urea is coated with neem oil. This coating acts as a **nitrification inhibitor**, which slows down the rate of nitrogen release into the soil, thereby increasing nutrient-use efficiency and preventing misuse of urea for non-agricultural purposes.



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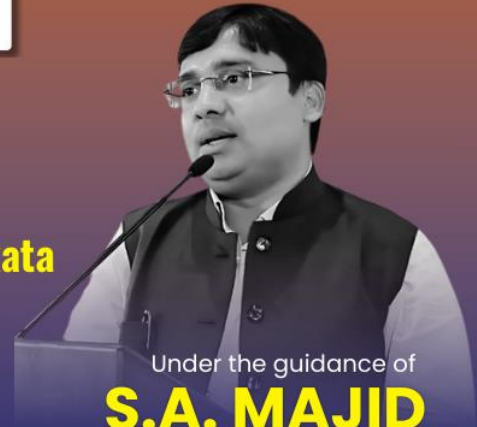


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ENVIRONMENT & GEOGRAPHY

5.1. INDIA'S AIR QUALITY CRISIS: ANALYZING THE 2026 CREA REPORT

Context:

Recently, an air quality analysis by the **Centre for Research on Energy and Clean Air (CREA)** revealed that **204 out of 238** monitored Indian cities failed to meet the **National Ambient Air Quality Standards (NAAQS)** for PM 2.5 during the winter season of 2025–26.

This marks a significant deterioration from the previous winter, when 173 cities breached the national limits. The study, based on data from the Central Pollution Control Board (CPCB), identified **Ghaziabad** as the most polluted city in India, followed by **Noida** and **Delhi**, underscoring the persistent failure of current mitigation strategies like the National Clean Air Programme (NCAP) to achieve nationwide clean air targets.



Key Highlights of the CREA 2026 Report

1. Extent of Non-Compliance

- **Breach of Standards:** 204 out of 238 cities (approx. 86%) recorded PM2.5 levels exceeding the Indian national standard of **60 ug/m³** (24-hour average).
- **Global Comparison:** Not a single monitored city in India complied with the **World Health Organization (WHO)** daily safe guideline of **15 ug/m³**.
- **Regional Clusters:** The **Indo-Gangetic Plain (IGP)** remains the most affected region, with 75 out of 79 monitored cities exceeding the national limits.

2. City Rankings (Winter 2025–26)

- **Most Polluted:** **Ghaziabad** topped the list with an average PM2.5 concentration of 172 ug/m³, followed by **Noida** (166 ug/m³) and **Delhi** (163 ug/m³).
- **Cleanest City:** **Chamarajanagar** in Karnataka was recorded as the cleanest, with an average PM2.5 of 19 ug/m³. Notably, 8 of the top 10 cleanest cities are located in **Karnataka**.

3. National Clean Air Programme (NCAP) Performance

- The report highlights a "structural disconnect" in the NCAP. Out of 96 NCAP cities with adequate data, **84 failed** the national standards.
- **Funding Issues:** Although nearly **₹13,415 crore** has been released since the NCAP's inception (2019), only about **74%** has been utilized.
- **Skewed Spending:** Approximately **68%** of the funds were spent on road dust management, while critical sectors like industrial emission control and public outreach received less than **1%** of the allocation.

4. Major Air Pollution Policies of India

- **National Clean Air Programme (NCAP):** Ministry of Environment, Forest and Climate Change (MoEFCC) launched National Clean Air Programme (NCAP) in January, 2019 with an aim to improve air quality in 131 cities (non-attainment cities and Million Plus Cities) in 24 States/UTs by engaging all stakeholders.
 - The programme envisages to achieve reductions up to 40% or achievement of National Ambient Air Quality Standards for Particulate Matter₁₀ (PM₁₀) concentrations by 2025-26.
- **National Ambient Air Quality Standards (NAAQS):** These standards, set by the **Central Pollution Control Board (CPCB)**, provide a legal framework to ensure air quality in both industrial and residential areas.
- **Indo-Gangetic Plain (IGP) Focus:** Special monitoring is carried out in northern Indian states during winter to address pollution, as **75 cities in this region were listed for violating air quality standards in the 2026 report.**

5.2. PROJECT CHEETAH & KUNO-GANDHI SAGAR CORRIDOR

Context

Recently, the National Tiger Conservation Authority (NTCA) observed that two India-born cheetah cubs, KP2 and KP3, travelled from the Kuno National Park (KNP) in Madhya Pradesh to the Baran district in Rajasthan. This movement, spanning nearly 70 km, has been termed as "natural territorial behaviour" by officials, reinforcing the urgent need for the



proposed **17,000-sq. km Kuno-Gandhi Sagar inter-state wildlife corridor** to facilitate safe animal dispersal across state boundaries.

1. Project Cheetah: Overview

- **Objective:** To reintroduce cheetahs in India after they were declared extinct in the country in **1952** (the only large carnivore to go extinct in independent India).
- **Status:** It is the world's first intercontinental large wild carnivore translocation project.
- **Source Populations:** Cheetahs have been brought from **Namibia** (2022), **South Africa** (2023), and most recently from **Botswana** (February 2026).
- **Nodal Agency:** The National Tiger Conservation Authority (NTCA) implements the project in collaboration with the Wildlife Institute of India (WII) and State Forest Departments.

2. Natural Territorial Behaviour of Cheetahs

(a) Social Structure and Territoriality

Unlike most other big cats, cheetahs exhibit a unique social system where the territoriality of males and females differs significantly.

- **Male Coalitions:** Adult males are often social and form "coalitions," typically consisting of two to three brothers from the same litter. These coalitions are highly territorial.

- **Solitary Females:** Female cheetahs are generally solitary, except when they are accompanied by their dependent cubs. They do not defend territories in the traditional sense but instead occupy vast "home ranges."

(b) Home Range vs. Territory

- **Males:** Territorial males defend relatively small areas (often 15 to 30 sq. miles) that are rich in prey and cover. They marking these areas with urine and feces to warn off rivals. Coalitions can hold territories for longer periods and defend them more effectively than solitary males.
- **Females:** Their home ranges are much larger than male territories, sometimes exceeding 800 sq. km in prey-scarce environments. A single female's range often overlaps with the territories of several different male coalitions, which maximizes her mating opportunities.

(c) Long-Distance Dispersal

- **Exploratory Nature:** Cheetahs are known for "long-distance dispersal," where young adults move far from their natal (birth) areas to find unoccupied habitats or mates.
- **Landscape Connectivity:** In the context of India, this behavior means cheetahs will naturally venture out of the 748 sq. km Kuno National Park. The **Project Cheetah Action Plan** explicitly anticipates this movement, emphasizing that cheetahs require large, interconnected landscapes rather than small, isolated pockets of forest.

3. The Kuno-Gandhi Sagar Inter-State Corridor

- **Geography:** Spans approximately **17,000 sq. km** across Madhya Pradesh (8 districts) and Rajasthan (7 districts).
- **Key Components:**
 - **Kuno National Park (MP):** The primary release site.
 - **Gandhi Sagar Wildlife Sanctuary (MP):** Identified as the second home for cheetahs to reduce density pressure at Kuno.
 - **Wildlife Corridor:** Links Kuno and Gandhi Sagar with Rajasthan's **Mukundra Hills Tiger Reserve** and various conservation reserves in Baran and Kota districts.
- **Strategic Rationale:** Cheetahs are known for "long-distance dispersal." A connected landscape prevents "island populations" and ensures genetic health through natural movement.

4. National Tiger Conservation Authority (NTCA)

- **Type: Statutory Body** under the Ministry of Environment, Forest and Climate Change (MoEFCC).
- **Origin:** Established in 2005 under the provisions of the **Wildlife (Protection) Act, 1972** (amended in 2006).
- **Composition:** Chaired by the Union Minister of Environment; includes experts and Members of Parliament.
- **Function:** While primarily for Tigers, it oversees "Project Cheetah" and "Project Lion" to ensure standardized conservation protocols and inter-state coordination.

5. Comparative Analysis: African vs. Asiatic Cheetah

Feature	African Cheetah (<i>Acinonyx jubatus jubatus</i>)	Asiatic Cheetah (<i>Acinonyx jubatus venaticus</i>)
IUCN Status	Vulnerable	Critically Endangered
Distribution	Around 7,000 left in Africa (Namibia, South Africa, etc.).	Only in Iran (less than 50 individuals).
Size	Slightly larger with a sturdier build.	Smaller and more slender; often has a thicker coat.
Reintroduction	Currently being introduced in India.	Native subspecies of India, now extinct here.

5.3. GLOBAL WARMING ACCELERATION & AEROSOLS

Context

Recently, a study published in *Geophysical Research Letters* (March 2026) by researchers from the University of Potsdam confirmed that global warming has entered a phase of **significant acceleration since 2015**. By stripping away natural "noise" such as volcanic eruptions and solar cycles, the study revealed that the warming rate has jumped from 0.2°C per decade to approximately **0.35°C per decade**, largely attributed to the "unmasking" effect of reduced aerosol pollution.



1. The Warming Trend: From Steady to Accelerated

- **The Baseline:** From the 1970s until 2015, the Earth warmed at a relatively steady rate of **0.2°C per decade**.
- **The Shift:** Since 2015, the rate has increased by nearly **75%**, reaching an estimated **0.35°C per decade**.
- **Statistical Significance:** Researchers used "piecewise linear models" to identify 2015 as a "change point," confirming with **98% confidence** that this is not a result of natural variability (like El Niño) but a structural shift in the climate system.

2. The Role of Aerosols: The "Double-Edged Sword"

Aerosols are minute solid particles or liquid droplets suspended in the atmosphere. They influence the climate in two primary ways:

Feature	Cooling Aerosols (Reflective)	Warming Aerosols (Absorptive)
Examples	Sulphates, Nitrates, Sea salt, Mineral dust.	Black Carbon (Soot), Brown Carbon.
Mechanism	Reflect incoming solar radiation back into space (Increase Albedo).	Absorb solar energy and radiate heat; decrease albedo when settling on ice.
Source	Volcanic eruptions, Coal/Fossil fuel combustion.	Biomass burning, Diesel engines, Cookstoves.

Cloud Impact	Act as Cloud Condensation Nuclei (CCN), making clouds brighter and longer-lasting (Cooling).	Can dissipate clouds by heating the surrounding air.
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3. The "Aerosol Unmasking" Effect

- **The "Faustian Bargain":** For decades, sulphate pollution from industrial activities acted as a "parasol," masking roughly **0.4°C to 0.5°C** of the warming caused by Greenhouse Gases (GHGs).
- **Cleaning the Air:** As nations (notably China and India) implement stricter air quality standards and shift away from coal, the concentration of these reflective aerosols drops.
- **Consequence:** Removing the "cooling mask" allows the full force of accumulated GHGs to be felt, leading to a sudden spike in temperatures.

4. Implications for the Paris Agreement

- **1.5°C Threshold:** The Paris Agreement aims to limit warming to 1.5°C above pre-industrial levels.
- **Revised Timeline:** At the current accelerated rate, the 1.5°C limit is projected to be breached **by 2030**, much earlier than previous IPCC estimates of the mid-2030s.
- **Net-Zero Urgency:** The findings suggest that "Net-Zero" targets for 2050 or 2070 may need to be advanced to prevent irreversible tipping points.

5.4. SAND MINING

Context

Recently, the Supreme Court of India intervened to protect the National Chambal Sanctuary from **illegal sand mining**. The Court directed a **three-member committee** to monitor and control illegal mining activities in the river system.

The action followed a report submitted by the **National Green Tribunal (NGT)** highlighting that **unchecked sand extraction in the Chambal River basin is damaging the habitat of several endangered aquatic and riverbank species.**

1. About National Chambal Sanctuary

- **Location:** The sanctuary is located along the **Chambal River** and spreads across **three states**:
 - Madhya Pradesh
 - Rajasthan
 - Uttar Pradesh

SAND MINING
Preserving National Chambal Sanctuary

Context
Recently, the Supreme Court stepped in to protect the National Chambal Sanctuary from illegal sand mining. The National Green Tribunal's report highlighted unchecked sand extraction damaging the habitat of endangered species.

1 About National Chambal Sanctuary

- **Location:** The sanctuary is located along the Chambal River and spreads across three states:
 - 1 Madhya Pradesh
 - 1 Rajasthan
 - 1 Uttar Pradesh
- **Type:**
 - 1 Riverine wildlife sanctuary.
- **Major Species Protected:**
 - ✓ Gharial
 - ✓ Gangetic dolphin
 - ✓ Indian skimmer
 - ✓ Mugger crocodile
 - ✓ Several migratory birds and turtles.

2. Sand Mining: Legal and Regulatory Framework

- **Classification:** Under the Mines and Minerals (Development and Regulation) Act, 1957 (MMDR Act).
- **Regulatory Authority:** States have the power to grant leases and prevent illegal mining.
- **National Guidelines:**
 - ✓ Sustainable Sand Mining Management Guidelines (2016) and Enforcement & Monitoring Guidelines (2020)
 - ✓ Drones and Surveillance Guidelines (2020)

3. Ecological and Hydrological Impacts of Sand Mining

- ✓ **River Morphometry: Incision**
 - Deepens "river channel thalior."
- ✓ **Groundwater Depletion**
 - Faster runoff lowers table.
- ✓ **Coastal erosion**
 - Shoreline erosion.
- ✓ **Biodiversity Loss**
 - Destroys the Habitat.

4. Alternatives to Natural Sand

- **M-Sand (Manufactured Sand)**
 - Produced from hard granite rocks.
 - Reduces load on riverbeds.
- **Industrial By-products:**
 - Use of Fly Ash (from thermal plants) and Copper Slag as partial replacements in construction.

M-Sand (pharmedhanay)

- Produced from hard granite rocks.
- Reduces load on riverbeds.

FLY ASH

- Use of Fly Ash (from thermal plants) and Copper Slag as partial replacements in construction.

- **Type: Riverine wildlife sanctuary**
- **Major Species Protected:** The sanctuary is famous for protecting:
 - Gharial
 - Gangetic Dolphin
 - Indian Skimmer
 - Mugger Crocodile
 - Several migratory birds and turtles.

2. Sand Mining: Legal and Regulatory Framework

- **Classification:** Under the **Mines and Minerals (Development and Regulation) Act, 1957 (MMDR Act)**, sand is classified as a "**Minor Mineral.**"
- **Regulatory Authority:** The administrative and legislative power to frame rules for "Minor Minerals" entirely belongs to the **State Governments** (not the Central Government).
 - State governments have the power to grant leases and prevent illegal mining.
- **National Guidelines:** The **Sustainable Sand Mining Management Guidelines (2016)** and the **Enforcement & Monitoring Guidelines (2020)** issued by the Ministry of Environment, Forest and Climate Change (MoEFCC) emphasize the use of **drones and night-vision surveillance** to track illegal activities.
- Further, Ministry of Mines, through Indian Bureau of Mines, has developed the Mining Surveillance System (MSS), in coordination with Bhaskaracharya Institute for Space Applications and Geo-informatics (BISAG), Gandhinagar and Ministry of Electronics and Information Technology (MEITY), to use space technology for curbing illegal mining activity in the country.

3. Ecological and Hydrological Impacts of sand mining

- **River Morphometry:** Excessive mining causes **riverbed incision** (deepening), which can lower the water table of the surrounding floodplains, affecting agriculture and drinking water.
- **Groundwater Depletion:** Sand acts as a "sponge" that recharges groundwater. Removing it leads to faster runoff and reduced seepage.
- **Coastal Erosion:** Sand mining in estuarine and coastal areas destroys natural barriers against **storm surges** and leads to **saline water intrusion** into freshwater aquifers.
- **Biodiversity Loss:** It destroys the breeding grounds of sensitive species like the **Gharial** (Critically Endangered) and various species of river turtles.

4. Alternatives to Natural Sand

- **M-Sand (Manufactured Sand):** Produced by crushing hard granite rocks. It is ecologically superior as it reduces the load on riverbeds.
- **Industrial By-products:** Use of **Fly Ash** (from thermal plants) and **Copper Slag** as partial replacements in construction.

5.5. CRAB

Context:

Researchers have discovered a unique biological phenomenon in a freshwater crab species within the **Silent Valley National Park** (Kerala). This marks the first-ever reported instance of **gynandromorphy** within the freshwater crab family **Gecarcinucidae**.



1. Key Biological Term: Gynandromorphy

- **Definition:** A rare biological condition in which an individual organism exhibits **both male and female physical characteristics** on the same body.
- **Mechanism:** In this specific case (*Vela carli*), the crabs displayed male reproductive structures alongside female features, such as **gonopores** (genital pores in crustaceans).
- **Occurrence:** While documented in some marine and freshwater crustacean families, it was previously unknown in the **Gecarcinucidae** family.

2. The Species: *Vela carli*

- **Status:** An **endemic** freshwater crab.
- **Habitat:** Found only in the forests and streams of the **Central Western Ghats**.
- **Behavioral Note:** The specific specimens in this study were found living in **tree holes**.

3. Geographical Context: Silent Valley National Park

The location is a frequent subject for UPSC map-based and ecology questions.

- **Location:** Palakkad district, Kerala (within the Nilgiri Biosphere Reserve).
- **Ecosystem:** It contains some of the last undisturbed tracts of **South Western Ghats mountain rain forests** and tropical moist evergreen forests.
- **River:** The **Kunthipuzha River** flows through the entire length of the valley (from north to south).
- **Flora/Fauna:** Famous for the **Lion-tailed Macaque** (Endangered).

5.6. TROPICAL FOREST FOREVER FACILITY (TFFF)

Context

- **Recently**, the **Tropical Forest Forever Facility (TFFF)** has come into the spotlight as several tropical nations gathered in Brazil to finalize its launch for **COP30**. This new \$125 billion global fund is unique because it moves away from traditional "charity" or "carbon credits." Instead, it treats standing forests like a **financial asset**, offering countries a fixed annual payment for every hectare of tropical forest they keep intact.



- This development is significant as it provides a steady income to developing countries—including potential benefits for India's own tropical regions—provided they keep their deforestation rates near zero.

1. What is the TFFF?

- **Nature:** A permanent, multi-billion dollar **trust fund** designed to incentivize the conservation of tropical forests.
- **Proponent:** It was spearheaded by **Brazil** at COP28 and has now gained support from over 60 nations.
- **Shift in Approach:** Unlike the REDD+ mechanism (which pays for *reducing* deforestation), the TFFF pays for *preserving* what already exists. It rewards "standing forests."

2. How the Money Works (The \$125 Billion Model)

- **The Corpus:** The fund aims to raise **\$125 billion** through a mix of investments from wealthy countries and private institutional investors.
- **Investment Returns:** This money is invested in safe global financial markets. The **interest/profit** earned from these investments is then distributed to tropical countries.
- **Fixed Payment:** A country receives a specific dollar amount (e.g., \$4 per hectare) every year, as long as its forest cover remains protected.

3. Who is Eligible?

- **The Tropical Belt:** Up to **74 developing countries** located between the Tropics of Cancer and Capricorn are eligible.
- **Low Deforestation Rule:** To receive payments, a country must keep its annual deforestation rate below a strict threshold (currently proposed at **0.5%**).
- **Strict Monitoring:** Forest cover is verified annually using **high-resolution satellite imagery** to ensure no "factual mistakes" or false claims are made regarding forest loss.

4. Key Social Safeguard: The 20% Rule

- **Indigenous Focus:** A mandatory **20% of the payout** must be given to **Indigenous Peoples and Local Communities (IPLCs)**.
- **Reasoning:** These communities are the frontline protectors of the forest, and the TFFF ensures they are financially compensated for their stewardship.

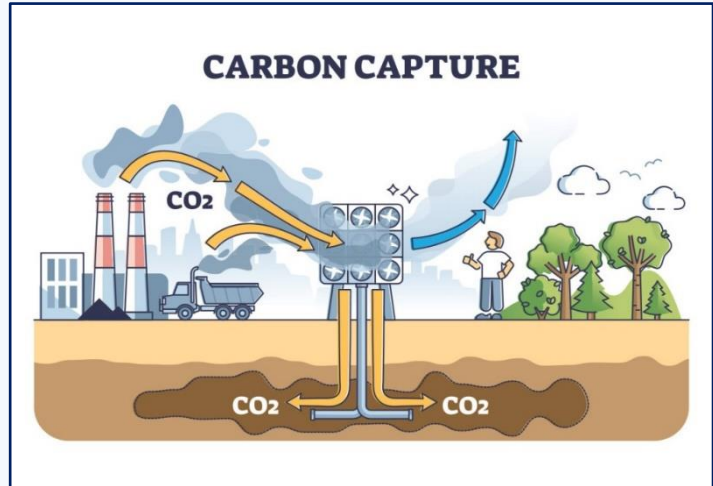
5. India's Role and Benefit

- **Observer Status:** India currently acts as an **Observer**, helping shape the rules of the facility.
- **Potential:** If India joins as a member, its vast tropical stretches in the **Western Ghats, Northeast, and Andaman Islands** could generate significant annual revenue for the government and local tribal communities.

5.7. INDIA'S CARBON STRATEGY: CCUS VS. NATURE-BASED CREDITS

Context:

The **Union Budget 2026** announced a massive **₹20,000 crore outlay** for a carbon credit programme. While there has been public debate regarding whether this fund is for farmers or industry, technical documents from the **Department of Science and Technology (DST)** clarify that this specific allocation is dedicated to **Carbon Capture, Utilization, and Storage (CCUS)** technologies for heavy industries.



1. The CCUS Programme for "Hard-to-Abate" Sectors

The DST's "R&D Roadmap for CCUS" (released in December 2025) serves as the technical basis for the ₹20,000 crore budgetary provision.

- **Objective:** Large-scale deployment of CCUS technologies over five years to capture CO₂ from factory flue gases for industrial use or underground storage.
- **Target Sectors:** The roadmap explicitly identifies "hard-to-abate" industries where emissions are concentrated and technically challenging to eliminate via renewable energy alone:
 - Power
 - Steel and Cement
 - Refineries and Chemicals
- **Significance:** These sectors are responsible for approximately **one-quarter of India's total emissions**.

2. CCUS vs. Carbon Dioxide Removal (CDR)

The DST roadmap draws a clear technical distinction between preventing new industrial emissions and removing existing atmospheric CO₂.

- **CCUS (Industrial Focus):** Targets point-source capture from smokestacks; it is biologically mediated and suited for concentrated emissions.
- **CDR (Nature-Based Focus):** Involves drawing down existing atmospheric CO₂ through agricultural and forestry practices.
- **Exclusion of Agriculture from CCUS:** Agriculture is excluded from CCUS strategies because its emissions (primarily methane and nitrous oxide) are **diffuse** and not suited to point-source capture technology.

3. Key Aspects of CCUS Technology

- Capture Methods:
 - **Post-combustion:** Removes CO₂ from flue gases after burning fossil fuels.
 - **Pre-combustion:** Converts fuel into a CO₂-hydrogen mix; CO₂ is extracted before combustion.

- **Oxy-fuel combustion:** Burns fuel in pure oxygen to produce high-concentration CO₂ and steam.
- **Advanced Technologies:** Includes membrane-based capture, cryogenic separation, and modular systems like **CycloneCC**.
- Carbon Clean's CycloneCC is a revolutionary, modular industrial carbon capture technology with a footprint 10x smaller than conventional systems.

4. The "Farmer Carbon Credit" Narrative

While the ₹20,000 crore fund is industrial, a parallel narrative exists regarding a domestic carbon market for agriculture.

- **Key Mechanisms:** Agriculture contributes to carbon sequestration through:
 - **Soil Carbon Sequestration:** Enhancing soil organic carbon.
 - **Biochar and Agroforestry:** Utilizing trees and charcoal to lock away carbon.
- **Current Status:** These are currently part of the **evolving voluntary carbon market** in India, driven by private sector initiatives and some state-level pilot programmes rather than this specific Budget 2026 outlay.

5.8. ETHYL CHLOROFORMATE

Context:

India recently opened an **anti-dumping investigation** into ethyl chloroformate imports from China after a domestic producer alleged the chemical, used in pharmaceutical and agrochemical manufacturing, was being sold at unfairly low prices.

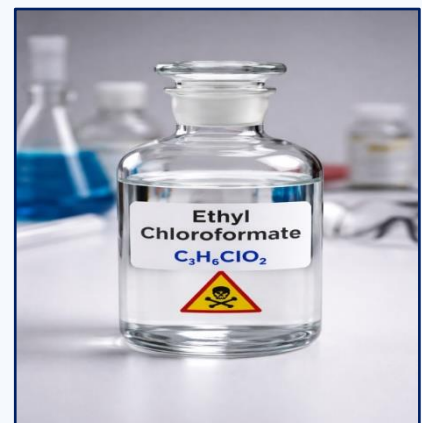
Key Aspects of Anti-Dumping Investigations

- Anti-dumping investigations are trade remedies initiated by governments to protect domestic industries from unfair competition, where foreign firms sell goods below their home market price or production cost.
- In India, the **Directorate General of Trade Remedies (DGTR)** investigates these cases.
- The **World Trade Organization (WTO)** permits **anti-dumping measures** as a tool for ensuring fair competition, which is typically imposed for five years.

About Ethyl Chloroformate

Ethyl chloroformate is an organic chemical intermediate widely used in pharmaceutical and agrochemical manufacturing

- **Appearance:** It is a **colorless to light yellow** liquid.
- **Odor:** It possesses a **pungent, irritating** odor.
- **Volatility:** It is a **highly flammable** liquid and vapor.
- **Solubility:** It decomposes in water to form toxic and corrosive fumes, including Hydrogen Chloride.
- **Uses:** In Pharmaceuticals, Pesticides



Health Hazards and Safety

- **Toxicity:** It is **fatal if swallowed** or inhaled.
- **Corrosivity:** Causes **severe skin burns** and eye damage.
- **Respiratory Impact:** Inhalation leads to severe irritation of the respiratory tract and can cause pulmonary edema.
- **Environmental Impact:** It is **toxic to aquatic life** with long-lasting effects

5.9. WORLD FROG DAY

Context:

World Frog Day (**March 20**) highlights the ecological importance of frogs, the most numerous group of amphibians. Despite their vital role, they are currently the **most threatened vertebrate group** globally, according to the IUCN.

1. Ecological Significance of Frogs

- **Interface Species:** They bridge the gap between **freshwater** and **terrestrial** ecosystems.
- **Biomass Conversion:** They play a critical role in converting **insect biomass** (by eating insects) into **vertebrate biomass** (by being eaten by birds, reptiles, and mammals).
- **Pest Control:** They act as natural biological controllers of agricultural pests.
- **Ecosystem Indicators:** Their permeable skin makes them highly sensitive to environmental changes (pollution, climate), acting as "ecological sentinels."



2. Major Threats to Amphibians

- **Chytridiomycosis:** A devastating fungal disease caused by:
 1. *Batrachochytrium dendrobatidis* (in frogs).
 2. *Batrachochytrium salamandrivorans* (in salamanders).
 - **Mechanism:** It attacks the skin, disrupting respiration and electrolyte balance.
 - **Origin:** Asia (spread globally via the pet trade and frog leg exports).
- **Climate Change (39%):** Now the leading driver of extinction. It causes a "seasonal mismatch" (e.g., false monsoon cues followed by droughts).
- **Habitat Loss (37%):** Significant threat due to land-use changes.

3. The Indian Scenario

- **Diversity:** India is home to over **450 amphibian species**.
- **Conservation Status:** Roughly **1/4th** are 'Threatened'.
 - **1/5th** are 'Data Deficient' (lack of long-term monitoring).
- **Legal Protection:** Out of 157 threatened species, only **six** are protected under the **Wildlife Protection Act, 1972**.
- **Regional Trends:** Mass mortality due to fungi is lower in India compared to the Americas/Australia, likely because the fungi originated in Asia.

4. Key Conservation Initiatives in India

- **Jorepokhri Salamander Sanctuary (WB):** Created in 1985 for the Himalayan Salamander.
- **Dissection Ban:** In 2011, the **UGC** banned the dissection of frogs for educational purposes.
- **Breeding Programmes: Padmaja Naidu Himalayan Zoological Park (Darjeeling):** Conservation breeding for the Himalayan Salamander.
- **Tillari Conservation Reserve (Maharashtra):** Long-term monitoring of stream frogs.
- **Citizen Science Projects: Mapping Malabar Tree Toad Project** (Western Ghats).
 - **Amphibian Recovery Project** (Munnar, Kerala).
 - **Naturalist:** A portal for citizens to share photographs and recordings of frogs.

5. Important Biological Facts for Prelims

- **Metamorphosis:** The transition from aquatic **tadpoles** (algae eaters) to terrestrial **froglets/adults** (insect eaters).
- **Skin Functions:** In amphibians, the skin is an organ for **protection, respiration, and ion exchange** (electrolyte balance).
- **IUCN Assessment:** The 2023 Global Amphibian Assessment confirmed 37 species have gone extinct recently.

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UPSC PRELIMS PRACTICE QUESTIONS

Q. With reference to the National Clean Air Programme (NCAP) and India's air quality standards, consider the following statements:

1. The NCAP aims to achieve a reduction of 40% in particulate matter concentrations by 2026, using 2017 as the baseline year.
2. The National Ambient Air Quality Standards (NAAQS) in India cover 12 pollutants, including Carbon Dioxide and Methane.
3. According to the 2026 CREA report, the majority of the cleanest cities in India are located in the Southern Peninsula, specifically Karnataka.

How many of the statements given above are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Answer: (b)

- **STATEMENT 1 IS CORRECT:** The NCAP target was revised in 2022 to aim for a 40% reduction in PM10 and PM2.5 by 2026.
- **STATEMENT 2 IS INCORRECT:** While NAAQS covers 12 pollutants (including SO₂, NO₂, PM10, PM2.5}, Ozone, Lead, CO, NH₃, Benzene, Benzopyrene, Arsenic, and Nickel), it **does not** include greenhouse gases like **Carbon Dioxide (CO₂)** or **Methane (CH₄)**.
- **STATEMENT 3 IS CORRECT:** The CREA 2026 winter report identified Chamarajanagar as the cleanest city and noted that 8 of the top 10 cleanest cities are in Karnataka.

Q. With reference to the 'Project Cheetah' in India, consider the following statements:

1. The project involves the reintroduction of the Asiatic Cheetah, which is currently found only in Iran.

2. The National Tiger Conservation Authority (NTCA) is the statutory body responsible for the implementation of the project.
3. The proposed Kuno-Gandhi Sagar wildlife corridor is an inter-state initiative involving Madhya Pradesh, Rajasthan, and Uttar Pradesh.

Which of the statements given above is/are correct?

- (a) 1 and 2 only
- (b) 2 only
- (c) 2 and 3 only
- (d) 1, 2, and 3

Answer: (b)

- **STATEMENT 1 INCORRECT:** The project involves the translocation of the **African Cheetah**, not the Asiatic Cheetah. The Asiatic Cheetah is too few in number (Critically Endangered in Iran) to be spared for translocation.
- **STATEMENT 2 CORRECT:** The NTCA is indeed the statutory body (under the Wildlife Protection Act, 1972) that oversees the implementation and funding of the project.
- **STATEMENT 3 INCORRECT:** While the article mentions future possibilities for UP (Jhansi/Lalitpur), the *current* 17,000-sq. km corridor strategically links **Madhya Pradesh and Rajasthan** only. UP is not part of the active corridor being monitored for this specific dispersal.

Q. With reference to 'Atmospheric Aerosols' and their impact on Global Warming, consider the following statements:

1. Most aerosols, such as sulphates and nitrates, have a net cooling effect on the Earth by increasing the planet's albedo.

2. Black carbon is a short-lived climate pollutant that contributes to warming by absorbing solar radiation.
3. Reducing industrial aerosol pollution leads to a decrease in the rate of global warming because it removes harmful pollutants from the atmosphere.

Which of the statements given above is/are correct?

- (a) 1 and 2 only
- (b) 2 and 3 only
- (c) 1 and 3 only
- (d) 1, 2, and 3

Answer: (a)

- **STATEMENT 1 CORRECT:** Sulphate and nitrate aerosols are reflective in nature. They scatter incoming sunlight and act as cloud condensation nuclei, which increases Earth's reflectivity (albedo), thereby cooling the surface.
- **STATEMENT 2 CORRECT:** Black carbon (soot) is a warming agent. Unlike sulphates, it absorbs solar energy. It is considered a "Short-Lived Climate Pollutant" (SLCP) because it remains in the atmosphere for only days to weeks.
- **STATEMENT 3 INCORRECT:** Reducing industrial aerosol pollution actually **accelerates** global warming. This is because these pollutants were previously "masking" or offsetting some of the warming caused by greenhouse gases. Removing them allows the full warming effect of CO₂ and Methane to take place (the "Unmasking Effect").

Q. Consider the following statements regarding the National Chambal Sanctuary:

1. It is spread across three states.
2. It is primarily created to conserve the Gharial.
3. It is located on the Yamuna River.

Which of the statements given above are correct?

- (a) 1 and 2 only
- (b) 2 only
- (c) 1 and 3 only
- (d) 1, 2 and 3

Answer: (a)

Based on the geographical and ecological facts regarding the National Chambal Sanctuary, here is the evaluation of the statements:

- **Statement 1 is Correct:** The National Chambal Sanctuary (also known as the National Chambal Gharial Wildlife Sanctuary) is a tri-state protected area. It is spread across **Rajasthan, Madhya Pradesh, and Uttar Pradesh.**
- **Statement 2 is Correct:** It was set up in 1979 specifically to protect the **Gharial (*Gavialis gangeticus*)**, which is listed as Critically Endangered on the IUCN Red List. It also protects the Red-crowned roof turtle and the Endangered **Ganges River Dolphin.**
- **Statement 3 is Incorrect:** The sanctuary is located on the **Chambal River**, not the Yamuna River. While the Chambal River is a major tributary of the Yamuna, the sanctuary itself is situated along the pristine stretch of the Chambal.

Q. Consider the following statements:

1. Silent Valley National Park's Kunthipuzha River provides habitat for freshwater crab species.
2. Crabs in the park play a role in nutrient cycling and ecosystem balance.
3. Lion-tailed Macaque preys extensively on crabs in the river.

Which of the statements given above is/are correct?

- (a) 1 and 2 only
- (b) 2 and 3 only
- (c) 1 and 3 only
- (d) 1, 2 and 3

Answer: (a)

Here is the detailed UPSC-style breakdown of the statements based on the recent findings and ecological facts:

Analysis of Statements

- **Statement 1 is correct:** As per the recent discovery in **Silent Valley National Park**, the freshwater crab species *Vela carli* is endemic to the streams and forests of the Central Western Ghats. The **Kunthipuzha River**, which flows through the entire length of the park, provides the primary perennial freshwater habitat for such species.
- **Statement 2 is correct:** In any forest ecosystem, especially in the Western Ghats, freshwater crabs are vital "**ecosystem engineers.**"
They assist in **nutrient cycling** by breaking down leaf litter and detritus. They also serve as a crucial link in the food chain, acting as prey for various birds, small mammals, and reptiles, thereby maintaining the ecological balance.

- **Statement 3 is incorrect:** While the **Lion-tailed Macaque (LTM)** is the flagship species of Silent Valley, it is primarily **frugivorous** (fruit-eating). Its diet consists mainly of fruits, seeds, and occasionally insects or small tree-dwelling animals. They do not "extensively prey" on riverine crabs; most of their foraging happens in the upper canopy of the rainforest, not in the river beds.



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6.1. METABOLIC DISEASE

Context:

A recent study published in the journal *Metabolism*, based on the **Global Burden of Disease (GBD) Study (1990-2023)**, highlights that India and China now possess the highest absolute metabolic disease burdens in the Asia-Pacific region.

The report indicates that India has overtaken China in terms of **Disability-Adjusted Life Years (DALYs)** for specific metabolic conditions as of 2023.

1. Key Findings of the Report

- Major Conditions Tracked:** The study analyzed five specific metabolic diseases and risk factors: **Type 2 diabetes mellitus**, high systolic blood pressure (BP), high body mass index (BMI), **high LDL cholesterol**, and metabolic dysfunction-associated steatotic liver disease (MASLD).
- India's 2023 Statistics:**
 - Type 2 Diabetes:** Accounted for approximately **21 million DALYs** and **5.8 lakh deaths**.
 - High Systolic BP:** Caused nearly **3.8 crore DALYs** and approximately **15.7 lakh deaths**.
- Leading Position:** In terms of DALYs, India replaced China (which held the top spot in 1990) to lead the list of the top 5 countries in the Asia-Pacific region.
- Disability-Adjusted Life Year (DALY):** This is a critical metric used to measure the overall disease burden, expressed as the number of years lost due to ill-health, disability, or early death.

2. Static Linkages

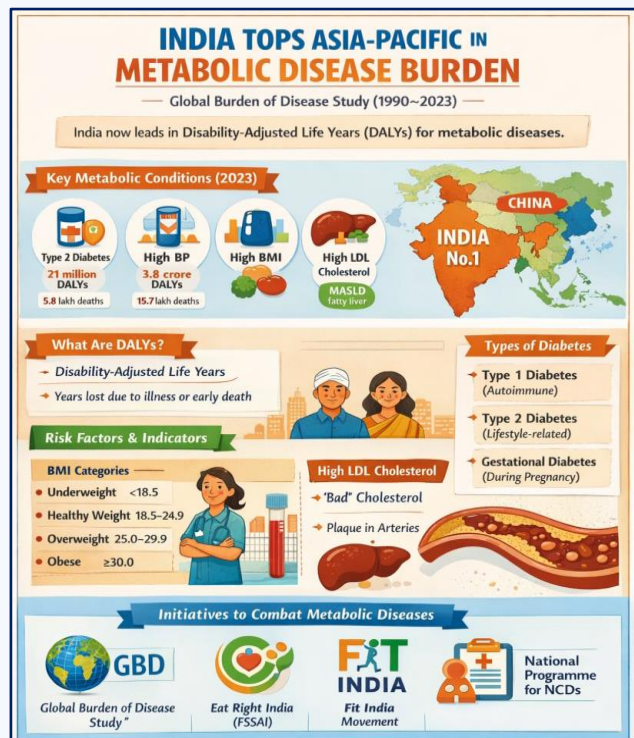
A. Metabolic Diseases

- Mechanism:** These diseases occur when the body's normal process of breaking down, storing, or using energy from food is disrupted.

B. Types of Diabetes

Type 1 Diabetes

- An **autoimmune condition** where the body attacks insulin-producing cells in the pancreas, where the pancreas produces little to no insulin.



- Usually develops in **children or young adults**.
- Requires **lifelong insulin therapy**.

Type 2 Diabetes

- The **most common type**.
- Occurs when the body becomes **resistant to insulin** or does not produce enough insulin.
- Often linked to **lifestyle factors** such as obesity and lack of physical activity.

Gestational Diabetes

- Develops **during pregnancy**.
- Usually disappears after childbirth but **increases the risk of Type 2 diabetes later**.

C. Metabolic Dysfunction-Associated Steatotic Liver Disease (MASLD): It involves the buildup of excess fat in the liver not caused by heavy alcohol use. It is often asymptomatic but can progress to inflammation (MASH), cirrhosis, and liver cancer.

3. Indicators and Risk Factors

- **BMI (Body Mass Index):** A measure of body fat based on height and weight. Rising BMI is cited as a steady risk factor in the Indian population.
- **BMI Categories for Adults (Age 20+):**
 - Underweight: Below 18.5
 - Healthy Weight: 18.5 – 24.9
 - Overweight: 25.0 – 29.9
 - Obese: 30.0 or higher
- **LDL (low-density lipoprotein) Cholesterol:** Often termed "bad" cholesterol; LDL carries cholesterol from the Liver to different parts of the body; high levels can lead to a buildup of plaque in arteries.

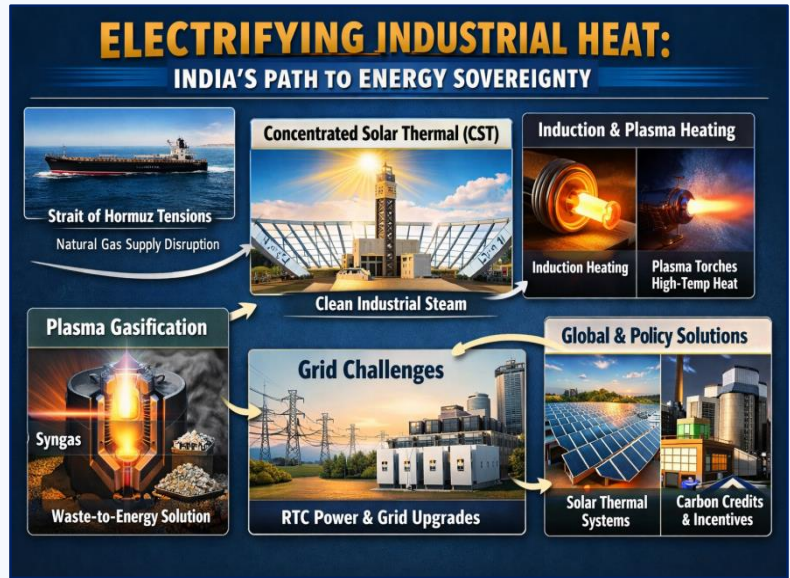
4. Holistic Overview: Relevant Global & National Frameworks

Initiative	Description
Global Burden of Disease (GBD)	A comprehensive regional and global research program of disease burden.
Eat Right India (FSSAI)	A flagship movement by the Indian government to ensure safe, healthy, and sustainable food.
Fit India Movement	A nation-wide movement to encourage Indians to include physical activity in their lives.
National Programme for NCDs	National program focused on preventing and controlling Non-Communicable Diseases. Funded by the Centre and States (60:40 ratio), with special support (90:10) for Northeastern/hilly states.

6.2. THE QUEST FOR THERMAL INDEPENDENCE

Context:

India is facing a "geopolitical ultimatum" due to the volatility in the **Strait of Hormuz** (a critical artery for India's natural gas imports). As the Ministry of Petroleum and Natural Gas slashes gas allocations to non-priority industrial sectors (like ceramics and textiles), India must transition from burning hydrocarbons to **Electrification of Industrial Heat** and **Concentrated Solar Thermal (CST)** to achieve "sovereignty of heat."



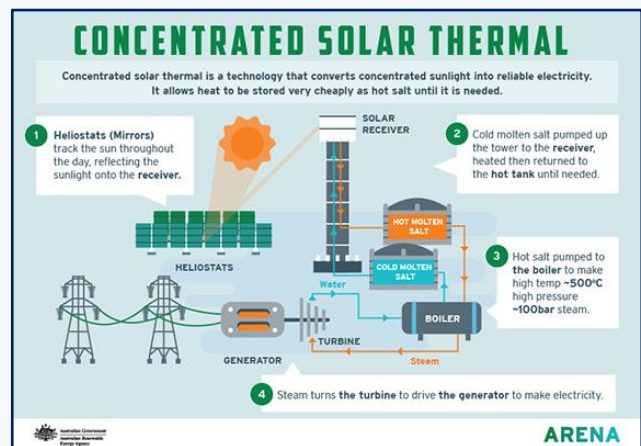
1. Key Technologies for Industrial Decarbonization

A. Concentrated Solar Thermal (CST)

- **Mechanism:** Uses precisely controlled mirrors to concentrate sunlight onto a receiver to heat fluids (water or molten salt) up to **400 °C**.
- **Utility:** Ideal for textile processes (scouring/bleaching) requiring steam between **100 °C and 180 °C**.
- **Other Applications:** Primarily used for high-temperature industrial process heat (heating, cooling, drying) and utility-scale electricity generation via steam turbines.
- **Advantage:** Unlike solar PV, CST systems can efficiently store heat in molten salt or other materials, enabling electricity production at night.
- **India's Potential:** Estimated at **15 GW** by the MNRE.

B. Induction and Plasma Heating

- **Induction Heating:** Uses electromagnetic fields to generate heat directly inside the material (e.g., metal). Efficiency rates can exceed **90%** because there is no intermediary substance (like air or steam) to lose heat.
- **How it Works:**
 - A high-frequency **Alternating Current (AC)** is passed through a copper coil.
 - This creates a rapidly fluctuating **magnetic field** around and inside the coil.
 - When a conductive workpiece (like a steel rod) is placed inside this field, **Eddy Currents** are induced within the material.
 - The material's internal resistance to these currents generates heat instantly (Joule heating).



- **Key Physics Concept: Skin Effect.** At high frequencies, the current tends to flow on the surface of the material. By adjusting the frequency, engineers can control whether they want to heat just the "skin" (surface hardening) or the entire core of the metal.
- **Industrial Use:** Melting metals, brazing, and surface hardening in automotive and aerospace manufacturing.
- **Plasma Torches:** Used in high-temperature industries. Instead of a solid workpiece, the induction coil surrounds a gas stream (e.g., argon, oxygen), creating a high-frequency electrodeless discharge that ionizes the gas into plasma.
- **How it Works:**
 - An electric arc is struck between two electrodes.
 - A gas (like Argon, Nitrogen, or even compressed air) is passed through this arc.
 - The intense energy strips electrons from the gas atoms, creating **Plasma**—a soup of ions and electrons.
 - This plasma "torch" can reach temperatures of **5,000°C to 10,000°C** or more.
- **Industrial Use:** Plasma cutting, specialized waste-to-energy (plasma gasification), and high-end metallurgy.
- Plasma gasification is a high-temperature waste treatment process that uses plasma torches (**about 3,000°C–10,000°C**) to break down waste into elemental components. It converts organic waste into **syngas (mainly carbon monoxide and hydrogen)** and transforms inorganic materials into **inert vitrified slag**, providing a sustainable alternative to landfills.

2. Infrastructure & Grid Challenges

The transition to electric heat poses significant engineering challenges for India's power sector:

- **Grid Collapse Risk:** Shifting the 25% of India's energy consumption currently served by gas pipes to electric wires could overwhelm the current grid.
- **Baseload Requirement:** Most factories operate 24/7, necessitating **Round-the-Clock (RTC)** renewable power, battery storage, and **Pumped Hydro Storage**.
- **Last-Mile Constraints:** Local grids in industrial clusters (like Ludhiana) have aging high-voltage substations. DISCOM reports suggest 25–33% of distribution transformers are already critically loaded during peak hours.

3. Global Policy Lessons & Hybrid Models

- **Oman (Project 'Miraah'):** One of the world's largest CST plants integrated with gas-fired operations. Solar generates steam during the day (reducing gas use by 80%), while gas boilers remain on standby for nighttime.
- **Spain (Solatom):** Use of **plug-and-play solar thermal units** (pre-assembled, containerized mirrors) that can be installed on factory roofs or parking lots.
- **Denmark:** Reformed energy markets to support **'Heat Purchase Agreements'**, where an external provider maintains the system and the factory pays a fixed rate for the heat.

4. Policy Recommendations for India

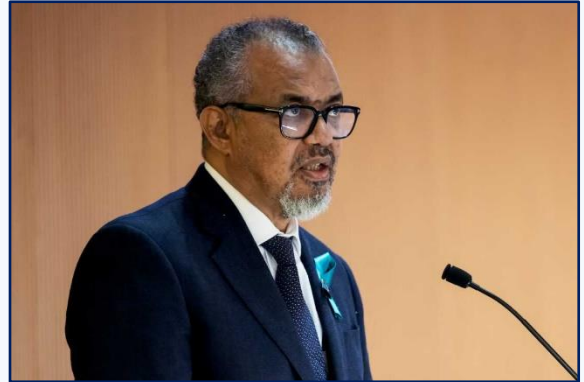
- **National Thermal Policy:** Necessary to survive the LPG/Natural Gas crisis.

- **Incentive Parity:** Extend **Production-Linked Incentives (PLI)** to CST mirror manufacturers (currently focused on PV cells).
- **Carbon Market Reform:** Allow factories to sell "avoided emissions" through the **Carbon Credit Trading Scheme** to offset the high capital cost of electric/plasma kilns.

6.3. WHO PANDEMIC AGREEMENT

Context:

- **Recently**, India joined a coalition of developing nations, known as the "Group for Equity," to demand a legally enforceable benefit-sharing system during the ongoing negotiations for the **Pathogen Access and Benefit-Sharing (PABS)** system in Geneva.
- These crucial talks aim to finalize the "rule book" or the Annex of the **WHO Pandemic Agreement**, which was formally adopted by the World Health Assembly in May 2025.



Key Features of the Pandemic Agreement

The Pandemic Agreement is a historic, legally binding international treaty designed to prevent a repeat of the inequities witnessed during the COVID-19 pandemic.

- **Legal Basis:** It is negotiated under **Article 19** of the WHO Constitution. It is only the second such treaty in WHO history, following the 2003 Framework Convention on Tobacco Control (FCTC).
- **Pathogen Access and Benefit-Sharing (PABS) System:** This is the "soul" of the agreement. It mandates that countries rapidly share information on pathogens with pandemic potential. In exchange, manufacturers using this data must provide **20% of their real-time production** of pandemic products (10% as a donation and 10% at affordable prices) to the WHO for equitable distribution.
- **The "One Health" Approach:** The agreement recognizes that 75% of emerging infectious diseases are zoonotic. It promotes an integrated framework that links human, animal, and environmental health to detect spillovers early.
- **Sovereignty Safeguards:** Critically, the treaty explicitly states that it **cannot** empower the WHO to mandate national lockdowns, compulsory vaccinations, or travel bans. Each member state retains full sovereign rights over its domestic public health policies.
- **Institutional Framework:** * **Global Supply Chain and Logistics (GSCL) Network:** To ensure the fair movement of medical countermeasures.
 - **Coordinating Financial Mechanism:** To assist developing countries in building laboratory and surveillance capacities.

India's Stand and Concerns

India has emerged as a leading voice for the **Global South** in these negotiations, focusing on three primary pillars:

1. **Equity over Charity:** India opposes the "voluntary" nature of benefit-sharing, demanding that pharmaceutical companies be legally bound to share technology and products.
2. **Access to Raw Materials:** India has highlighted that sharing pathogen data is meaningless if developing nations cannot access the raw materials needed to manufacture vaccines locally.
3. **Traditional Medicine:** India successfully advocated for the inclusion of holistic health and traditional medicine systems within the broader pandemic preparedness framework.

6.4. NAVIC AND GLOBAL/REGIONAL SATELLITE NAVIGATION SYSTEMS

Context:

Recently, India's indigenous navigation system, **NavIC** (Navigation with Indian Constellation), faced a technical challenge following the failure of an atomic clock onboard the **IRNSS-1F** satellite in March 2026. This development is significant as it reduces the number of fully operational satellites providing precise Positioning, Navigation, and Timing (PNT) services.



While the satellite remains in orbit for one-way messaging, the loss of its timing frequency highlights the critical need for India to accelerate the launch of its **second-generation NVS series** satellites to maintain a robust and independent regional navigation network.

1. NavIC: India's Indigenous Navigation System

NavIC, formerly known as the **Indian Regional Navigation Satellite System (IRNSS)**, is an independent regional system developed by **ISRO**.

- **Constellation Design:** It originally consisted of 7 satellites.
 - **3 satellites** are in **Geostationary Orbit (GEO)** (appearing fixed over the equator).
 - **4 satellites** are in **Geosynchronous Orbit (GSO)** (inclined at 29° to the equatorial plane).
- **Coverage Area: Primary Service Area:** Entire Indian landmass and an area extending up to **1,500 km** beyond its borders.
- **Services Provided:**
 1. **Standard Positioning Service (SPS):** Open for all civilian users (accuracy < 20 meters).
 2. **Restricted Service (RS):** An encrypted service for authorized users (military and strategic applications).
- **Frequency Bands:** Initially used **L5 and S bands**. The new NVS satellites have added the **L1 band**, which is common in civilian GPS, making NavIC compatible with most smartphones and wearable devices.

2. Global vs. Regional Systems

The world's navigation systems are categorized based on their coverage:

System Name	Country/Region	Type	Number of Satellites
GPS	USA	Global (GNSS)	24+ (MEO)
GLONASS	Russia	Global (GNSS)	24+ (MEO)

Galileo	European Union	Global (GNSS)	30 (MEO)
BeiDou	China	Global (GNSS)	35+ (MEO/GEO/GSO)
NavIC	India	Regional	7 (GEO/GSO)
QZSS	Japan	Regional	4 (GSO/GEO)

Note: Global systems primarily use **Medium Earth Orbit (MEO)** to ensure worldwide visibility, whereas regional systems like NavIC use higher orbits (**GEO/GSO**) to remain focused over a specific geography.

3. The Role of Atomic Clocks

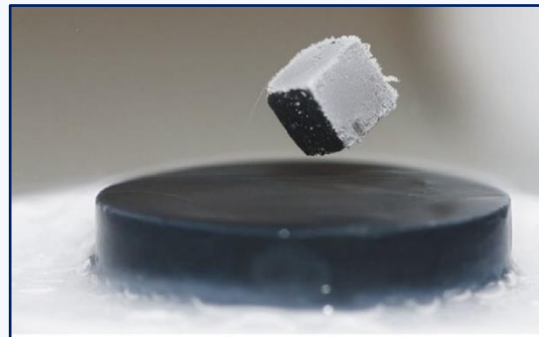
Atomic clocks are the "heart" of navigation satellites. They measure time based on the vibrations of atoms (usually **Rubidium** or **Cesium**).

- **Principle:** Navigation works via **trilateration**. The satellite sends a signal with a timestamp; the receiver calculates distance based on the time delay.
- **Precision:** Even a nanosecond error can lead to a positioning error of several meters.
- **Indigenous Progress:** Earlier IRNSS satellites used imported rubidium clocks which faced frequent failures. ISRO has now developed **indigenous Space-qualified Rubidium Atomic Clocks**, first flown in the **NVS-01** satellite in 2023.

6.5. DISCOVERY OF ROOM-TEMPERATURE SUPERCONDUCTIVITY

Context:

Scientists have reportedly discovered a new material—a **lutetium-hydride compound doped with nitrogen**—that exhibits superconductivity at **room temperature (21°C)**, though it still requires high pressure (10 kilobars) to function. This discovery aims to overcome the "**temperature barrier**" that has historically limited the use of superconductors to extreme laboratory conditions.



1. What is a Superconductor?

A superconductor is a material that can conduct electricity or transport electrons from one atom to another with **zero resistance**.

- **Critical Temperature:** The specific temperature below which a material becomes superconducting.
- **Energy Efficiency:** Because there is no resistance, no energy is released as heat, making the transmission of electricity 100% efficient.

2. Key Physical Properties

- **The Meissner Effect:** This is the hallmark of superconductivity. When a material transitions to a superconducting state, it **expels all internal magnetic fields**. This allows for **quantum levitation** or magnetic levitation (Maglev).

- This is the most important and defining property of superconductivity. When a material is cooled below a certain **critical temperature**, it enters the superconducting state and completely expels all internal magnetic fields. As a result, the material behaves as a perfect **diamagnet**.
- In this process, magnetic field lines cannot penetrate the material and are forced to move around its surface. This leads to the phenomenon where the material can float above a magnet—known as **quantum levitation or magnetic levitation (Maglev)**.
- In real-world applications, this effect is used in **Maglev trains**, enabling frictionless motion and very high speeds. It also plays a significant role in modern physics and advanced technologies.
- **Infinite Conductivity:** Current flowing through a closed loop of superconducting wire can persist indefinitely without a power source.
- **Exclusion of Magnetic Flux:** Superconductors are perfect diamagnets.

3. Materials

- Superconductivity is one of nature's most intriguing quantum phenomena. It was discovered more than 100 years ago in mercury cooled to the temperature of liquid helium (about -452°F, only a few degrees above absolute zero).
- Following the discovery of superconductivity in mercury, the phenomenon was also observed in other materials at very low temperatures..
- Superconductor material classes include **chemical elements** (e.g. mercury or lead), **alloys** (such as niobium–titanium, germanium–niobium, and niobium nitride), **ceramics** (YBCO and magnesium diboride), **superconducting pnictides** (like fluorine-doped LaOFes), single-layer materials such as **graphene and transition metal** dichalcogenides,[48] or **organic superconductors** (fullerenes and carbon nanotubes; though perhaps these examples should be included among the chemical elements, as they are composed entirely of carbon).

4. Applications

- **Medical Imaging:** Used in MRI (Magnetic Resonance Imaging) machines to create the powerful magnetic fields required for high-resolution body scans.
- **Transportation:** Maglev Trains use the Meissner effect for friction-less travel, reaching speeds of over 600 km/h.
- **Particle Accelerators:** Essential for the Large Hadron Collider (LHC) at CERN to steer subatomic particles.
- **Power Grids:** Superconducting cables could transmit power over long distances with zero line loss, solving the global energy wastage problem.
- **Quantum Computing:** Superconducting circuits act as "Qubits," the basic unit of information in quantum computers.

6.6. BIO-PHARMA SHAKTI

Context:

Recently, the Union Finance Minister, during the presentation of the **Union Budget 2026-27**, announced the launch of the **Biopharma SHAKTI** initiative to transform India into a global manufacturing hub for biopharmaceuticals. This move comes as a strategic response to India's shifting disease profile, where non-communicable diseases (NCDs) like cancer and diabetes now account for a significant portion of the national health burden.



1. What is Biopharma SHAKTI?

The **Biopharma SHAKTI** (Strategy for Healthcare Advancement through Knowledge, Technology and Innovation) is a flagship national initiative designed to bolster the domestic ecosystem for high-value biopharmaceutical products.

2. Key Features and Financial Outlay

- **Budgetary Allocation:** The government has proposed a total outlay of **₹10,000 crore** over a period of **five years**.
- **Targeted Goal:** The initiative aims to capture **5% of the global biopharmaceutical market share**, transitioning India from a "pharmacy of the world" (volume-based) to a global innovation hub (value-based).
- **Nodal Ministry:** It is steered by the **Department of Pharmaceuticals** under the Ministry of Chemicals and Fertilizers.

3. Strategic Focus: Biologics and Biosimilars

The scheme prioritizes the domestic production of complex medical products:

- **Biologics:** These are medicines derived from living organisms (cells, tissues, or microorganisms) rather than chemical synthesis. Examples include vaccines, gene therapies, and monoclonal antibodies.
- **Biosimilars:** These are "highly similar" versions of already approved biological medicines. They provide cost-effective alternatives to expensive branded biologics once patents expire.

4. Institutional and Infrastructure Strengthening

- **NIPER Network:** The plan includes the establishment of **three new National Institutes of Pharmaceutical Education and Research (NIPERs)** and the upgradation of seven existing ones to create a specialized workforce.
- **Clinical Trial Ecosystem:** The government intends to develop a network of over **1,000 accredited clinical trial sites** across India to facilitate faster and ethical human trials.
- **Regulatory Reform:** The **Central Drugs Standard Control Organisation (CDSCO)** will be strengthened with a dedicated **Scientific Review Cadre** and specialists to align Indian approval timelines with global standards.

5. Innovation and Startup Support

The initiative focuses on providing **early-stage innovation funding** and structured equity support to help startups move from "concept to commercialization."

- It seeks to foster collaboration between academia, research institutions, and the private industry to reduce the gestation period for new drug development.

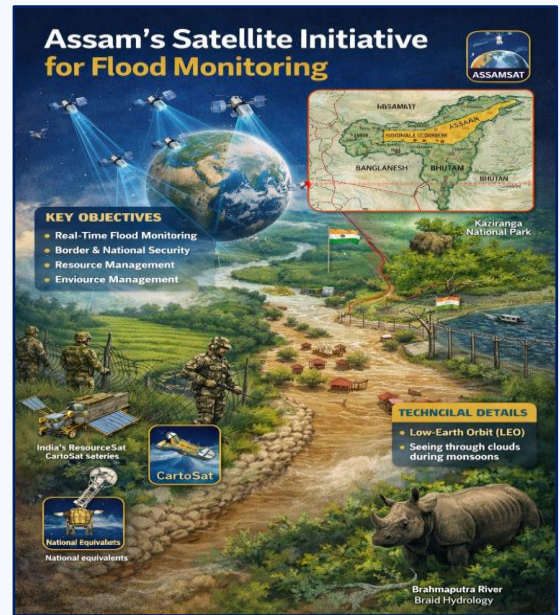
6.7. ASSAM'S SATELLITE INITIATIVE FOR FLOOD MONITORING

Context:

In a **first-of-its-kind** initiative by any Indian state, the Government of Assam has floated a tender to launch a constellation of **Earth-Observation (EO) Satellites**, named **AssamSAT**. This project aims to provide high-resolution, real-time data to tackle the state's chronic flood issues and enhance border security.

1. Key Objectives of the Project

- **Real-Time Flood Monitoring:** Tracking the Brahmaputra River's course and inundation levels during monsoons to improve disaster response.
- **Border & National Security:** Monitoring the **Siliguri Corridor** (Chicken's Neck) and porous international borders where traditional fencing is difficult.
- **Environmental Protection:** Detecting illegal logging, tracking drug trafficking routes, and preventing rhino poaching in **Kaziranga National Park**.
- **Resource Management:** Assessing crop health, forest cover, and urban planning across the state.



2. Technical Framework

- **Orbit:** The satellites will operate in **Low-Earth Orbit (LEO)**.
- **Constellation:** A network of at least **5 satellites** to ensure a high "revisit rate" (how often a satellite passes over the same spot).
- **Satellite Type:** Small satellites (Smallsats) or CubeSats, which are cost-effective and faster to deploy.

3. Science & Technology Linkages

A. Earth Observation Satellites (EOS)

- These are remote-sensing satellites designed for non-military uses such as environmental monitoring and meteorology.
- India's **RISAT** (Radar Imaging Satellite) and **Cartosat** series are the national equivalents used for similar purposes.

B. Low-Earth Orbit (LEO) vs. Geostationary Orbit (GEO) vs Geosynchronous

Feature	Low-Earth Orbit (LEO)	Geosynchronous Orbit (GSO)	Geostationary Orbit (GEO)
Altitude	160 km to 2,000 km	35,786 km	35,786 km
Orbital Period	Approx. 90 to 120 minutes	23 hrs, 56 mins, 4 secs (1 Sidereal Day)	23 hrs, 56 mins, 4 secs
Speed	Very High (~27,000 km/h)	Matches Earth's rotation speed	Matches Earth's rotation speed

Position from Earth	Constantly moving/ sweeping across the sky.	Returns to the same spot at the same time daily.	Appears fixed/stationary in the sky.
Inclination	Can be any (often Polar or Sun-synchronous).	Can be inclined (tilted relative to the equator).	Must be 0° (Directly over the Equator).
Latency (Delay)	Low (Minimal delay in signal).	High (Noticeable signal delay).	High (Noticeable signal delay).
Resolution	High Resolution (closer to Earth).	Lower resolution compared to LEO.	Lower resolution compared to LEO.
Primary Use Cases	Spy satellites, Remote Sensing, International Space Station (ISS), Starlink.	Specialized telecommunications, regional monitoring.	Satellite TV (DTH) , Weather satellites (e.g., INSAT), Global Communication.

C. Synthetic Aperture Radar (SAR) Technology

- **Why it matters for Assam:** Traditional optical cameras cannot see through clouds. During the monsoon, Assam is mostly cloud-covered.
- **Mechanism:** SAR uses radar pulses to create 2D or 3D images of landscapes. It can "see" through **clouds, smoke, and darkness**, making it essential for flood monitoring.

4. Strategic & Geographical Linkages

- **The Siliguri Corridor:** A narrow strip of land (~22km wide) in West Bengal that connects the North-Eastern states to the rest of India. It is a vital "choke point" for national security.
- **Brahmaputra Hydrology:** The river is "braided," meaning it constantly changes its path. Satellite data helps in mapping these morphological changes which lead to sudden embankments breaches.

6.8. DISCOVERY OF 15 NEW MOONS

Context:

The Minor Planet Centre (MPC) recently announced the discovery of **15 new moons**: 4 orbiting **Jupiter** and 11 orbiting **Saturn**.

1. The Minor Planet Centre (MPC)

- **Primary Role:** It serves as the world’s single repository for all observations of **small bodies** in the solar system, including asteroids, comets, and the moons of outer planets.



- **Location & Operation:** Located in Cambridge, Massachusetts, it operates at the **Smithsonian Astrophysical Observatory**.
- **Institutional Affiliation:** It functions under the auspices of the **International Astronomical Union (IAU)**.
- **Designation Process:** When a new object is discovered, the MPC verifies the observation, calculates the orbit, and assigns an **official designation** to ensure every minor planet has a unique identity.

2. Near-Earth Objects (NEOs) & Planetary Defense

- **Monitoring:** One of the MPC's most critical tasks is tracking **Near-Earth Objects (NEOs)**—space rocks that could potentially threaten Earth.
- **Collaboration:** It maintains a massive database with support from **NASA's Planetary Defense Coordination Office**.
- **Predictive Science:** The data allows scientists to predict if and when a celestial rock might come dangerously close to our planet.

3. Global Coordination

- **Communication:** The MPC facilitates global scientific communication by publishing **electronic circulars**.
- **Alert System:** These circulars alert researchers to new discoveries or interesting celestial events, allowing observatories worldwide to coordinate efforts quickly.



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UPSC PRELIMS PRACTICE QUESTIONS

Q. With reference to 'Disability-Adjusted Life Years' (DALYs), consider the following statements:

1. It is a measure of the gap between current health status and an ideal health situation where the entire population lives to an advanced age, free of disease and disability.
2. It combines the years of life lost due to premature mortality and the years lived with a disability.

Which of the statements given above is/are correct?

- (a) 1 only
- (b) 2 only
- (c) Both 1 and 2
- (d) Neither 1 nor 2

Answer: (c)

Explanation:

Statement 1 is correct: Disability-Adjusted Life Years (DALYs) are designed to quantify the "burden of disease" by measuring the gap between the current health status of a population and an ideal situation where everyone lives to the standard life expectancy in full health.

Statement 2 is correct: The DALY is a summary metric that adds together two distinct components:

1. **Years of Life Lost (YLL):** Calculated from the number of deaths multiplied by a standard life expectancy at the age at which death occurs.
2. **Years Lived with Disability (YLD):** Calculated by multiplying the prevalence of a disease or its complications by a weighted factor that reflects the severity of the disability.

Q. Consider the following statements regarding plasma gasification:

- I. It converts organic waste into syngas mainly consisting of carbon monoxide and hydrogen.
- II. It produces vitrified slag from inorganic materials.
- III. It operates at relatively low temperatures below 500°C.

Which of the statements given above is/are correct?

- (a) I and II only
- (b) II and III only
- (c) I only
- (d) I, II and III

Answer: (a)

Explanation:

Statement I is Correct: Plasma gasification uses a plasma torch to break down matter at the molecular level. This converts **organic waste** (like plastics and biomass) into **Syngas** (Synthetic Gas). Syngas is primarily a mixture of **Carbon Monoxide** and **Hydrogen**, which can be used to generate electricity or as a chemical feedstock.

Statement II is Correct: Unlike traditional incineration, this process does not produce ash. Instead, **inorganic materials** (like glass, metals, and soil) are melted into a molten state. When cooled, they form a **vitrified slag**—a glass-like, non-leachable solid that is safe for use in construction materials.

Statement III is Incorrect: This is the defining feature of the technology. Plasma gasification operates at **extremely high temperatures**, typically ranging from **4,000°C to 10,000°C** (and sometimes higher).

This is significantly hotter than standard incineration (which usually stays around 800°C–1,200°C). Operating below 500°C would not be sufficient to ionize gas into the plasma state.

Q. With reference to the 'WHO Pandemic Agreement' and the 'PABS System', consider the following statements:

1. The Pandemic Agreement is the first-ever legally binding instrument negotiated under Article 19 of the WHO Constitution.
2. Under the PABS system, pharmaceutical manufacturers are required to reserve a specific percentage of their production for the WHO during a pandemic emergency.
3. The Agreement grants the WHO the authority to mandate national lockdowns and travel restrictions in member states during a declared Public Health Emergency of International Concern (PHEIC).

How many of the statements given above are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Answer: (a)

Explanation:

- **STATEMENT 1 INCORRECT:** While it is a legally binding instrument under Article 19, it is the **second** such treaty. The first was the WHO Framework Convention on Tobacco Control (FCTC) adopted in 2003.
- **STATEMENT 2 CORRECT:** The PABS system includes a provision where manufacturers are expected to provide 20% of their real-time production of vaccines and therapeutics to the WHO (10% as donation, 10% at affordable prices).
- **STATEMENT 3 INCORRECT:** The Agreement explicitly protects **national sovereignty**. It states that the WHO has no power to override domestic laws or mandate lockdowns, vaccinations, or travel bans.

Q. With reference to the 'Navigation with Indian Constellation' (NavIC), consider the following statements:

1. NavIC provides global coverage similar to the Global Positioning System (GPS) of the United States.
2. The constellation uses a combination of satellites in Geostationary and Medium Earth Orbits.
3. The second-generation NVS satellites include the L1 frequency band to enhance interoperability with civilian devices.

Which of the statements given above is/are correct?

- (a) 1 and 2 only
- (b) 3 only
- (c) 2 and 3 only
- (d) 1, 2 and 3

Answer: (b)

Explanation:

- **STATEMENT 1 IS INCORRECT:** NavIC is a **regional** navigation system, not a global one. It covers India and an area of 1,500 km around it.
- **STATEMENT 2 IS INCORRECT:** NavIC uses a combination of **Geostationary (GEO)** and **Geosynchronous (GSO)** orbits, not Medium Earth Orbit (MEO). GPS, GLONASS, and Galileo use MEO.
- **STATEMENT 3 IS CORRECT:** The new NVS series satellites (starting with NVS-01) incorporate the **L1 band** to improve compatibility with commercial smartphones and wearables.

Q. With reference to superconductors, consider the following statements:

1. They conduct electricity with zero resistance.
2. They release heat during current flow.
3. They require a critical temperature to exhibit superconductivity.

Which of the statements given above is/are correct?

- (a) 1 and 3 only
- (b) 2 only
- (c) 1, 2 and 3
- (d) 1 only

Answer: (a)

Explanation:

Statement 1 is correct: Superconductors are materials that can conduct electricity or transport electrons from one atom to another with **zero resistance**.

Statement 2 is incorrect: Because there is no resistance, **no energy is released as heat** during the flow of current. This characteristic makes the transmission of electricity 100% efficient.

Statement 3 is correct: Materials only exhibit superconductivity below a specific temperature known as the **Critical Temperature**



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HISTORY & CULTURE

7.1. SANGITA KALANIDHI AWARD

Context:

Recently, The Music Academy announced that during its **100th Conference and Concerts**, scheduled to begin in December this year in Chennai, the prestigious **Sangita Kalanidhi** will be conferred upon renowned veena player Jayanthi Kumaresh.



1. Sangita Kalanidhi Award (2026)

- **Recipient:** **Jayanthi Kumaresh**, a renowned exponent of the **Saraswati Veena**.
- **Significance:** She is the first veena artiste to be selected for this honor in **34 years**.
- **Legacy:** Her selection coincides with the centenary year of her guru, the late **S. Balachander**.
- **Background:** She belongs to the musically prominent **Lalgudi G. Jayaraman** family and has collaborated with global maestros like Zakir Hussain.

2. Nritya Kalanidhi Award (2026)

- **Recipient:** **Narendra G.**, a distinguished **Bharatanatyam** dancer.
- **Timing:** The award will be presented during the inauguration of the 20th Annual Dance Festival of the Academy.

3. About Sangita Kalanidhi Award:

- It is considered the **highest award** in the field of Carnatic music.
- The award is conferred by the **Madras Music Academy**.
- Instituted in 1942, the Sangita Kalanidhi was earlier preceded by the practice of inviting a senior musician or expert to preside over the annual conference of The Music Academy.
- From 1942 onward, the presiding musician began to be formally honoured with the title, accompanied by a gold medal and a birudu patra (citation).

4. Madras Music Academy

- The Music Academy, Madras is a landmark institution in the history of the fine arts. It emerged as an offshoot of the **All India Congress Session held in Madras** in December 1927.
- A music conference was held along with it and during the deliberations, the idea of a Music Academy emerged.

7.2. KEELADI EXCAVATION

Context:

The **Archaeological Survey of India (ASI)** has officially granted permission to the **Tamil Nadu State Department of Archaeology (TNSDA)** to begin excavations at eight historical sites across the state. This follows a period of administrative delays and is crucial because the primary excavation window in Tamil Nadu is limited (January to July) due to the monsoon cycle.



1. Key Excavation Sites and Locations

Archaeological Site	District	Significance / Note
Keeladi (and its clusters)	Sivaganga	Entering its 11th phase of excavation; evidence of an urban civilization on the banks of the Vaigai River .
Pattanamardhur	Thoothukudi	Coastal/Interior research potential.
Karivalamvanthanallur	Tenkasi	Expansion of the Sangam era footprint.
Manikollai	Cuddalore	Located in the northern coastal belt.
Adichanur	Villupuram	<i>Note: Not to be confused with Adichanallur in Thoothukudi.</i>
Vellalore	Coimbatore	Historic trade hub known for Roman coin finds.
Telunganur-Mangadu	Salem	Research into Iron Age/Megalithic cultures.
Nagapattinam	Nagapattinam	Significant for maritime history and Buddhist influence.

2. About Keeladi

- **Location:** Tamil Nadu, on the banks of the **Vaigai River**.
- **Period:** Carbon dating suggests **6th century BCE to 1st century CE**, roughly overlapping with **Sangam Age**.
- **Significance:** Confirms urban settlement and advanced culture in Tamilakam much earlier than previously thought.

3. Material Culture and Daily Life

- **Artifacts found:** Pottery, beads, iron tools, graffiti on pots, terracotta figurines.
- Indicates **trade, craft specialization, and literacy**—like other ancient Indian regions:
 - Similar to **Northern Iron Age settlements** (like **Ujjain, Mathura**) in use of iron tools.
 - Script resemblance to **Tamil-Brahmi**, which links to early **Indian scripts evolution**

4. Urbanization in Ancient India

- Traditionally, urbanization is associated with **Indus Valley Civilization (c. 3300–1300 BCE)**.
- Keeladi shows **continuity of urban settlements in South India** post-Harappan decline, implying:
 - Advanced urban planning (brick structures, street layouts)
 - Drainage and water management systems

5. Trade and External Contacts

- **Beads, pottery styles, and semi-precious stones** suggest:
 - Internal trade within Tamilakam
 - Possibly maritime contacts (like **Roman trade with South India**, 1st century BCE onward)

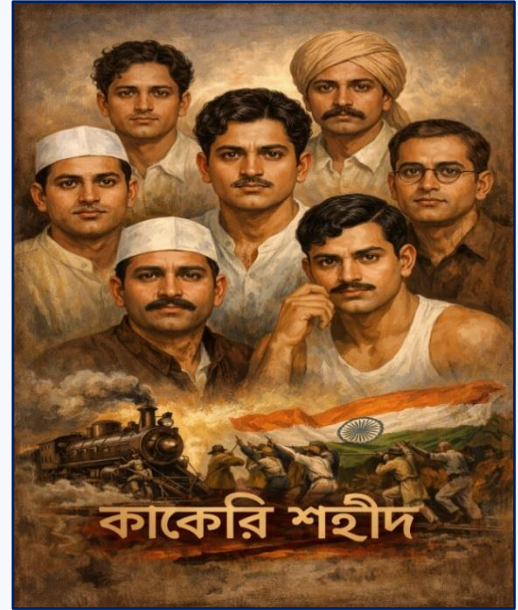
7.3. KAKORI MARTYRS

Context:

Recently, statues of the Kakori train action martyrs were allegedly demolished using a bulldozer during road construction work in Shahjahanpur, sparking outrage.

1. Key Facts of the Incident

- **Date:** August 9, 1925.
- **Location:** Kakori, a small village near **Lucknow**, Uttar Pradesh.
- **Target:** The **8-Down Train** traveling from Saharanpur to Lucknow, which was carrying government treasury money.
- **Organization Involved:** The **Hindustan Republican Association (HRA)**.
- **Objective:** To secure funds for the HRA's revolutionary activities and to challenge the authority of the British Raj through a high-profile act of resistance.



2. Important Personalities Involved

- **Ram Prasad Bismil:** The main mastermind and leader of the operation.
- **Ashfaqullah Khan:** The first Muslim to be hanged in a conspiracy case against the British Raj.
- **Chandrashekhar Azad:** Managed to escape the police net after the incident and later reorganized the HRA into the HSRA.
- **Other key participants:** Thakur Roshan Singh, Rajendra Lahiri, Sachindra Bakshi, Keshab Chakravarty, Banwari Lal, Mukundi Lal, and Manmath Nath Gupta.

3. Consequences and Legal Trial

- **The Kakori Conspiracy Case:** A long legal battle ensued. The British government arrested around 40 revolutionaries.
- **Sentences:**
 - **Death Penalty (Hanging):** Ram Prasad Bismil, Ashfaqullah Khan, Thakur Roshan Singh, and Rajendra Lahiri.
 - **Deportation (Kala Pani):** Sachindra Sanyal and Jogesh Chandra Chatterjee.

4. HRA vs. HSRA: Key Differences

Feature	HRA (1924)	HSRA (1928)
Influential Text	<i>The Revolutionary</i> (Manifesto).	<i>The Philosophy of the Bomb</i> (by Bhagwati Charan Vohra).
Key Events	Armed struggle and dacoities for funds (e.g., Kakori).	Responsible for the J.P. Saunders assassination in 1928 to avenge Lala Lajpat Rai's death and Central Assembly Bombing (1929) : To protest the Public Safety Bill and Trade Dispute Bill.

Key Leadership	Ramprasad Bismil, Jogesh Chandra Chatterjee, Sachin Sanyal.	Bhagat Singh, Chandrashekar Azad, Sukhdev, Rajguru.
Philosophy	Militant Nationalism.	Scientific Socialism and Internationalism.

UPSC Prelims Pointers:

- **Bandi Jiwan:** Written by **Sachindra Nath Sanyal**; it served as the "Bible" for HRA revolutionaries.
- **"To make the deaf hear":** The slogan used by **Bhagat Singh** and Batukeshwar Dutt during the Assembly Bombing to explain that their intent was not to kill, but to protest repressive laws.




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UPSC PRELIMS PRACTICE QUESTIONS

Q. With reference to the Sangita Kalanidhi, consider the following statements:

1. The award is conferred by the The Music Academy Madras and is regarded as one of the highest honours in the field of Carnatic music.
2. The title was instituted in 1942, when the presiding musician of the Academy's annual conference began to be formally honoured with the award.
3. The award carries a gold medal and a citation known as a *birudu patra*.
4. The The Music Academy Madras was established as an outcome of the All India Congress Session 1927.

Which of the statements given above are correct?

- (a) 1 and 2 only
- (b) 1, 2 and 3 only
- (c) 2, 3 and 4 only
- (d) 1, 2, 3 and 4

Answer: (d)

Explanation:

- **Statement 1 is correct:** The **Sangita Kalanidhi** is conferred by **The Music Academy Madras** (now Chennai) and is widely regarded as the highest accolade in the world of **Carnatic music**.
- **Statement 2 is correct:** While the Academy began holding annual conferences in 1929, the formal title of "Sangita Kalanidhi" was instituted in **1942**. From that year onward, the musician selected to preside over the annual conference was formally invested with this title.
- **Statement 3 is correct:** The award is a prestigious honor that includes a **gold medal** and a citation known as a **birudu patra**. The recipient (Sangita Kalanidhi-designate) presides over the academic

sessions of the conference and is conferred the title on the day of **Sadas** (the convocation of the Academy).

- **Statement 4 is correct:** The Music Academy Madras was an offshoot of the **All India Congress Session** held in Madras in **1927**. A music conference was held alongside the political session, which eventually led to the formal inauguration of the Academy in 1928.

Q. Which of the following statements correctly places Keeladi in the context of Ancient Indian history?

- (a) It was the first urban settlement in India
- (b) It shows South India had urbanization, trade, and literacy alongside North India after Harappan decline
- (c) It proves Indus Valley Civilization extended to Tamil Nadu
- (d) It was primarily a Roman colony in South India

Answer: (b)

Explanation:

Previously, it was believed that urbanization in South India occurred much later than in the Gangetic plains (North India). Keeladi's findings (dated to **6th century BCE**) prove that a highly developed, literate (Tamil-Brahmi script), and urban society existed in the Vaigai river valley contemporary to the Mahajanapada period in the North.

Q. With reference to the Kakori Conspiracy, consider the following statements:

1. It took place near Lucknow in Uttar Pradesh.
2. The target was a train carrying government treasury money.
3. It was carried out by the Hindustan Socialist Republican Association (HSRA).

Which of the statements given above is/are correct?

- (a) 1 and 2 only
- (b) 2 and 3 only
- (c) 1 only
- (d) 1, 2 and 3

Answer: (a)

Explanation:

Statement 1 is correct: The Kakori Train Action (historically known as the Kakori Conspiracy) took place on August 9, 1925, at **Kakori**, a small village located near **Lucknow** in present-day Uttar Pradesh.

Statement 2 is correct: The revolutionaries targeted the **8-Down Train** traveling from Saharanpur to Lucknow. Their objective was to seize the **British government treasury money** being transported in the guard's van to fund

their revolutionary activities and purchase weaponry.

Statement 3 is incorrect: The action was carried out by the **Hindustan Republican Association (HRA)**. The HSRA (Hindustan *Socialist* Republican Association) was not formed until **September 1928** at Feroz Shah Kotla, Delhi, following the reorganization of the HRA by Chandrashekhar Azad and Bhagat Singh.



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MISCELLANEOUS

8.1. SHINE

Context:

The Indian Railways has strengthened its workplace safety framework by launching a technology-driven grievance mechanism. This initiative, aligned with the Sexual Harassment of Women at Workplace (Prevention, Prohibition, and Redressal) Act, 2013, aims to provide a secure environment for women employees. It modernizes the implementation of the 1997 Vishakha guidelines through digital integration.

About SHINE: Sexual Harassment Incident Notification for Empowerment

- **Launch Occasion:** The app became operational on **International Women's Day** (8th March).
- **System Integration:** SHINE is integrated with the **Human Resources Management System (HRMS)** and the 'Employee Self Service' system.
- **Confidentiality:** The platform is designed to maintain strict **confidentiality** while addressing issues effectively with relevant authorities.



Expanded Scope and Inclusive Protection

- **Direct Beneficiaries:** Primarily designed for women employees of the Indian Railways to lodge complaints about sexual harassment at the workplace.
- **Third-Party Reporting:** In a significant move for inclusivity, the app allows for reporting incidents on behalf of **outsiders (visitors), contractual staff, students**, and others who may lack direct access to the application.
- **Complementary Mechanism:** It does not replace, but rather complements, existing **internal complaints committees** mandated by government directives.

8.2. PROJECT NANHI KALI

Context:

Recently, **Project Nanhi Kali** was honoured with the **Sports for Social Good Award** at the **Sportstar Aces Awards 2026**, in recognition of its long-standing efforts to empower girls from underserved communities through sports.

About the Project Nnanhi Kali

- Objective and Inception:** Launched in **1996**, the project focuses on empowering girls from underserved communities through a combination of **education and sport**.
- Implementing Organization:** The programme is managed by the **K.C. Mahindra Education Trust**.
- Geographical Reach:** It currently supports over 8.7 lakh girls across **15 States**, including Maharashtra, Gujarat, Karnataka, Andhra Pradesh, Punjab, Uttar Pradesh, Odisha, and West Bengal.
- Target Demographic:** The initiative primarily supports girls studying in **government schools**.
- Integration of Sport:**
 - In 2018, the project launched '**Sports for Life**' to promote fitness, leadership, and confidence among participants.
 - In FY25, approximately **94,000 girls** were engaged in the programme, including more than 18,000 participants in football.
- Recent Honors:** The project received the '**Sports for Social Good**' award at the Sportstar Aces Awards 2026.



Related Industrial/Sporting Context

- IndianOil Corporation Limited (IOCL):** Recognized as the '**Best PSU for Promotion of Sport**' at the same ceremony. This reaffirms its four-decade commitment to nurturing sporting talent in India's ecosystem.



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UPSC PRELIMS PRACTICE QUESTIONS

Q. Consider the following statements regarding SHINE (Sexual Harassment Incident Notification for Empowerment):

- I. SHINE is a digital grievance platform launched by Indian Railways to address workplace sexual harassment complaints in line with the Sexual Harassment of Women at Workplace (Prevention, Prohibition and Redressal) Act, 2013.
- II. The platform replaces the Internal Complaints Committees mandated under the 2013 Act and restricts complaints only to permanent railway employees.

Which of the statements given above is/are correct?

- (a) I only
- (b) II only
- (c) Both I and II
- (d) Neither I nor II

Answer: (a)

Explanation:

STATEMENT I IS CORRECT: SHINE (Sexual Harassment Incident Notification for Empowerment) is a digital grievance mechanism launched by Indian Railways. It strengthens workplace safety for women and aligns with the provisions of the Sexual Harassment of Women at Workplace (Prevention, Prohibition and Redressal) Act, 2013 by enabling technology-based complaint reporting.

STATEMENT II IS INCORRECT: The SHINE platform **does not replace Internal Complaints Committees (ICCs)** mandated under the 2013 Act. Instead, it **complements the existing mechanism**. Moreover, the system is **not restricted only to permanent railway employees**; it also allows **reporting incidents**

involving visitors, contractual staff, students, and other outsiders through third-party reporting.

Q. With reference to Project Nanhi Kali, consider the following statements:

1. The project was launched in 1996 to empower girls from underserved communities through education and sports.
2. The programme is implemented by the K. C. Mahindra Education Trust.

Which of the statements given above is/are correct?

- (a) 1 only
- (b) 2 only
- (c) Both 1 and 2
- (d) Neither 1 nor 2

Answer: (c)

Explanation:

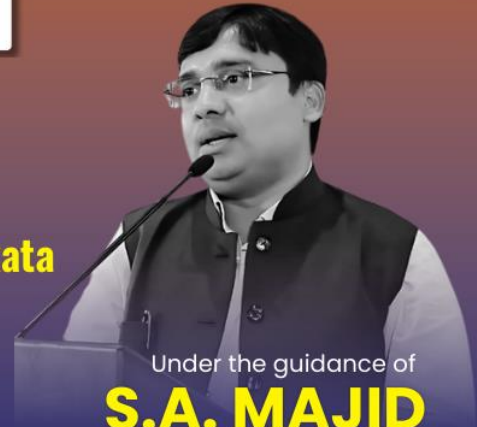
- **Statement 1 is correct:** The project was launched in **1996** with the primary objective of empowering girls from underserved communities. While it began with a focus on education, it later expanded to include sports, notably through the launch of the **'Sports for Life'** initiative in 2018.
- **Statement 2 is correct:** The programme is managed and implemented by the **K.C. Mahindra Education Trust**.



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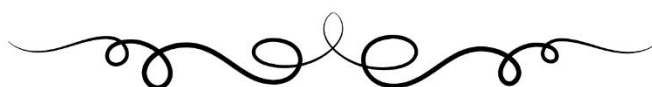
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Prof. (Dr.) Samit Ray

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