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POLITY AND GOVERNANCE

1.1. JOJARI RIVER POLLUTION: SUPREME COURT'S ENVIRONMENTAL SAFEGUARDS

Context:

- Recently, The **Supreme Court has banned construction and development activities within 100 metres of the Jojari River in Rajasthan** to curb pollution and protect the river ecosystem.
- It has also prohibited **hazardous industries within 500 metres** of either side of the river's existing flow path and directed the authorities to prepare a **20-point plan** to address pollution.

About Jojari River

- The **Jojari (Jojri) River** is a **seasonal river of Rajasthan** and forms part of the **Luni River system**.
- It passes through **Pali and Jodhpur districts** and ultimately joins the **Luni River near Balotra**.

Environmental Principles & Constitutional Linkages

- **Precautionary Principle:** Prevent environmental harm even without complete scientific certainty.
- **Polluter Pays Principle:** Polluter bears the cost of preventing and remedying environmental damage.
- **Sustainable Development:** Balance development with environmental protection and **inter-generational equity**.
- **Public Trust Doctrine:** State holds natural resources like **rivers, forests and water bodies** in trust for the public.
- **Constitutional Basis: Article 21** – clean environment as part of right to life; **Article 48A** – State's duty to protect environment; **Article 51A(g)** – citizens' duty to protect nature.

About Luni River

- **Origin:** Near the **Pushkar Valley/Ajmer region of Rajasthan**.
- **Direction:** Flows generally towards the **southwest**.
- **Important tributaries: Jojari, Sukri, Bandi and Jawai**.
- **Characteristic:** It is an **ephemeral/seasonal river** in much of its course.
- **Lower course:** Its water becomes increasingly **saline**.
- **Terminal region:** The river system ultimately drains towards the **Rann of Kachchh**.

1.2. CAUVERY WATER DISPUTE: INTER-STATE RIVER WATER SHARING

Context:

- Tamil Nadu has complained that Karnataka is not releasing its **proportionate share of Cauvery water**, leading to a shortage in Tamil Nadu. Karnataka has said that its own water availability is affected by rainfall and reservoir levels.

The Supreme Court has asked Tamil Nadu to take the issue to the **Cauvery Water Management Authority (CWMA)**, which manages water sharing between the two States.

About the Cauvery River Dispute

- The **Cauvery River Dispute** is a long-running conflict over sharing Cauvery water, mainly between **Karnataka and Tamil Nadu**, with Kerala and Puducherry also involved. The dispute arises because **Karnataka, the upper-riparian state, needs water for its farmers and cities**, while **downstream Tamil Nadu depends heavily on Cauvery water for agriculture and drinking needs**.
- The **Supreme Court in 2018** led the formation of the Cauvery Water Management Authority (**CWMA)** to **implement its Cauvery water-sharing arrangement** and **monitor, regulate and manage the sharing and release of water** among Karnataka, Tamil Nadu, Kerala and Puducherry.
- **It is recurring problem due to Poor rainfall and drought** often lead to disagreements over how much water Karnataka should release.

Cauvery Water Management Authority (CWMA)

- **It was** Set up under the **Cauvery Water Management Scheme, 2018**, following the Supreme Court's final verdict on the Cauvery dispute.
- It implements the Tribunal's award and regulates **storage, sharing and release of Cauvery water** among Karnataka, Tamil Nadu, Kerala and Puducherry.
- Headed by a **full-time Chairman**, with members from the **Ministry of Jal Shakti, CWC** and representatives of the four States.
- **Cauvery Water Regulation Committee (CWRC)** is the subordinate technical body assisting the **CWMA** with real-time monitoring of reservoir storage and water releases.

Legal Framework for Inter-State River Disputes

- **Constitutional Basis: Article 262** empowers Parliament to provide for adjudication of inter-State river water disputes and to bar the jurisdiction of the Supreme Court and other courts in such matters.
- The **Inter-State River Water Disputes Act, 1956** provides for constitution of tribunals; the **River Boards Act, 1956** provides for boards to regulate and develop inter-State rivers.

- **The Cauvery Tribunal:** The **Cauvery Water Disputes Tribunal** was constituted in **1990**; its final award, given in **2007**, was modified by the Supreme Court in its **2018** judgment.

About The River Cauvery

- **Origin & Course:** The **Cauvery River** originates at **Talakaveri in Karnataka**, flows through Karnataka and Tamil Nadu, and finally drains into the **Bay of Bengal**.
- **Major Dams:** Important dams include **Krishna Raja Sagara (KRS) and Kabini in Karnataka**, and **Mettur Dam in Tamil Nadu**.
- **Importance:** It is a major source of **irrigation, drinking water and hydropower**, especially for Karnataka and Tamil Nadu.

1.3. MGNREGA: STATUTORY RIGHT TO WORK AND RURAL LIVELIHOOD SECURITY

Context:

- The **Supreme Court**, while hearing a petition concerning **delayed payment of wages under MGNREGA**, observed that the scheme is a **"good, effective scheme"** and should be implemented properly.

About MGNREGA

- **Full Name: Mahatma Gandhi National Rural Employment Guarantee Act, 2005**
- Initially enacted as the **National Rural Employment Guarantee Act (NREGA), 2005**.
- Renamed **MGNREGA in 2009**.
- Implemented by the **Ministry of Rural Development**.

Objective

- To enhance the **livelihood security of rural households** by providing at least **100 days of guaranteed wage employment** in a financial year to every rural household whose adult members volunteer to undertake **unskilled manual work**.

Key Features of MGNREGA

1. **Demand-Driven Employment**
   - Provides employment within **15 days of demand**.
   - Failure to provide work makes the applicant eligible for **unemployment allowance**.
2. **Statutory Guarantee**
   - Guarantees employment under an **Act of Parliament**.
   - The **Right to Work** is a **Directive Principle under Article 41**, not a Fundamental Right.
3. **Timely Wage Payment**
   - Wages should be paid within **15 days**.
   - Delay attracts **compensation**, as per applicable rules.

Constitutional Connection

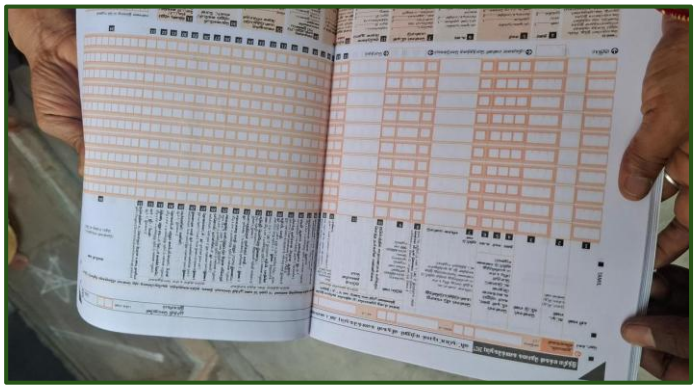
- **Article 21:** Guarantees the **Right to Life and Personal Liberty**, including life with dignity through judicial interpretation.
- **Article 41:** Directs the State to provide for the **Right to Work, Education and Public Assistance**, subject to its economic capacity.
- **MGNREGA employment is a statutory entitlement**, not a Fundamental Right.

About VB-G RAM G Act, 2025:

- MGNREGA, 2005 was repealed with effect from 1 July 2026 and replaced by the Viksit Bharat–Guarantee for Rozgar and Ajeevika Mission (Gramin**) [VB-G RAM G] Act, 2025**.
- The new Act provides a statutory guarantee of **125 days of wage employment** per rural household in a financial year, compared to **100 days under MGNREGA**.
- **Existing job cards and ongoing works** were transitioned to the new framework.

1.4. LADAKH TO LEAD INDIA'S FIRST CASTE ENUMERATION IN CENSUS 2027

Context:



- Ladakh will become the first place in independent India to enumerate caste as part of a regular Census in the Census 2027.
- Ladakh and other snow-bound areas will conduct population enumeration earlier, in **September 2026**, due to climatic constraints.

What is Census?

- A **Census** is the official, periodic enumeration of a country's population, collecting demographic, social and economic information for planning and policymaking.
- The **Census of India** is the **official population enumeration of India**, conducted by the **Office of the Registrar General and Census Commissioner, India**, under the **Ministry of Home Affairs**.
- **Key Points**
  - **First Census in India: 1872 —** conducted during the colonial period, but it was not conducted simultaneously throughout India.
  - **First synchronous Census: 1881 —** conducted simultaneously across India.
  - **Frequency:** Traditionally conducted **every 10 years**.
  - **Last completed Census: 2011**.
  - **Next Census:** The **2021 Census was postponed**; the Government has announced that the next population census will be conducted as **Census 2027**.
  - **Legal basis: Census Act, 1948**.
  - **Authority:** Registrar General & Census Commissioner, India.

Why will Ladakh conduct Census earlier?

- Severe winter conditions make enumeration difficult during the normal census period.
- Therefore, Ladakh and specified snow-bound areas of **Jammu & Kashmir, Himachal Pradesh and Uttarakhand** follow a **non-synchronous schedule**.
- This will also be the **first Census of Ladakh as a Union Territory**.

Caste-Based Census

- **Meaning:** A caste-based census involves collecting information on the **caste composition of the population** during a population census. Such data can help assess the **socio-economic conditions, inequalities and representation** of different caste groups and support evidence-based policymaking and affirmative action.
- **Background:** In **2011**, the Government conducted the **Socio-Economic and Caste Census (SECC)**. However, the caste-related data were **not officially published**, partly due to concerns over data quality and inconsistencies arising from variations in how people reported their caste identities.
- **Census 2027:** The upcoming **Census 2027** is significant because it is expected to include **caste enumeration as part of the regular Census**, making it the first regular Census after Independence to collect caste-wise population data.
- **Constitutional Framework:** The Constitution provides a framework for addressing the socio-economic backwardness of disadvantaged groups, particularly through **Articles 16(4) and 340**. However, the absence of comprehensive caste-wise population data has often posed challenges for evidence-based assessment of backwardness and representation.
- **Bihar Caste Survey:** In **2023, Bihar conducted a caste-based survey**, providing state-level data on the caste composition and socio-economic conditions of its population.

Legal & Constitutional Anchors

- **Census Act, 1948 –** statutory basis.
- **Census Rules, 1990 –** operational framework.
- Conducted by **Registrar General & Census Commissioner of India**, under the **Ministry of Home Affairs**.
- **Constitution:** Census is a **Union subject** under **Entry 69, Union List, Seventh Schedule**.

1.5. CANCER AS A NOTIFIABLE DISEASE: STRENGTHENING HEALTH SURVEILLANCE IN INDIA

Context:

- The **Supreme Court** has asked **19 States/Union Territories** that have not yet notified cancer to take steps towards declaring it a **"notifiable disease"**, following a PIL seeking uniform and mandatory reporting of cancer cases across India. The issue arises from the absence of a **nationwide mandatory cancer-reporting mechanism**.

What is a Notifiable Disease?

- A **notifiable disease** is a disease whose occurrence must be **reported to designated public-health authorities by law**.
- Notification enables the government to **collect systematic data, monitor disease trends, identify high-burden areas and formulate targeted interventions**.
- **Important:** *Notifiable does not necessarily mean communicable.* Cancer is a **non-communicable disease (NCD)**, but mandatory reporting can still be used for surveillance and planning.

Why is Cancer Notification Important?

- **Early detection:** Helps identify disease patterns and high-risk populations.
- **Disease surveillance:** Provides more comprehensive data on incidence, mortality and geographical distribution.
- **Resource allocation:** Helps governments plan cancer hospitals, diagnostic facilities, specialists and medicines.
- **Targeted prevention:** Allows identification of regional risk factors such as **tobacco use, pollution and occupational exposures**.
- **Policy formulation:** Enables evidence-based cancer-control strategies.

Current Status in India

- **Cancer is NOT a nationally notifiable disease** in India.
- However, several States/UTs have independently made cancer notifiable.
- **Telangana became the latest state in April 2026**, joining the existing group and bringing the total to **17 States/UTs**.
- Therefore, the absence of a **uniform national mechanism** creates gaps in cancer reporting.
- **Why is this a problem?**
    - India's cancer surveillance relies significantly on the **National Cancer Registry Programme (NCRP)**, but registry coverage is limited and does not provide a complete real-time picture of the country's cancer burden.

About National Cancer Registry Programme (NCRP)

- **Established:** 1981
- **Implemented by: ICMR – National Centre for Disease Informatics and Research (ICMR-NCDIR)**.
- **Purpose:** Collection and analysis of data on **cancer incidence, mortality and patterns**.
- Uses **Population-Based Cancer Registries (PBCRs)** and **Hospital-Based Cancer Registries (HBCRs)**.
- A major limitation is that registry-based coverage does not encompass the entire Indian population.

1.6. PRESIDENT'S COLOUR: PUDUCHERRY POLICE BECOMES 18TH RECIPIENT

Context:

- Union Home Minister **Amit Shah presented the President's Colour to Puducherry Police**, the highest honour for a police force, for its **dedication to internal security and public service**. It highlights the importance of **policing, national security and constitutional governance in Union Territories**.

Key Facts of the Puducherry Presentation

- With this conferment, **Puducherry Police** becomes the **18th State/Union Territory police force** in the country to receive the honour, joining earlier recipients such as the **Indian Navy** and the **Indian Coast Guard**; the force, numbering fewer than **5,000 personnel**, secures a Union Territory whose jurisdiction spans non-contiguous enclaves in **Tamil Nadu**, **Andhra Pradesh (Yanam)** and **Kerala (Mahe)**.
- **Approval Date:** Conferment approved by **President Droupadi Murmu** on **8 May 2026**.
- **Venue: Puducherry Armed Police Ground**, Gorimedu.
- **Recipient:** Colour handed over to the **Ensign Officer, Puducherry Police**, in the presence of **DGP Shalini Singh**.
- **Dignitaries Present:** Lt Governor **K. Kailashnathan**, Chief Minister **N. Rangasamy**, and Home Minister **A. Namassivayam**.

Related Announcements During the Visit

- **New Criminal Laws:** Described as resting on three pillars -- **technology, timeline and trust**.
- **Har Ghar Tiranga Yatra:** Flagged off at **Murugaa Theatre Signal**; this year's edition focuses on **150 years of Vande Mataram**.

Significance

- **Puducherry** becomes the **18th State/Union Territory** police force to receive the President's Colour.
- Reinforces cooperative federalism in the recognition of internal security institutions.
- Underscores India's shift toward a technology-driven, time-bound criminal justice framework.

About the President's Colour

- **Origin:** First conferred on the **Indian Navy** on **27 May 1951** by President **Rajendra Prasad**.
- **Eligibility:** A minimum of **25 years** of exemplary, meritorious service in peace and war.
- **Also Known as:** The **Nishaan**; recipient-unit officers wear a special emblem on the left uniform sleeve.
- **Approving Authority:** Conferred by the **President of India** as Supreme Commander, on recommendation of the **Ministry of Home Affairs**.

1.7. RAT-HOLE COAL MINING IN MEGHALAYA: ENVIRONMENTAL AND LEGAL CHALLENGES

Context:

- A **High Court-constituted committee headed by retired Justice B.P. Katakey** has criticised the Meghalaya Government for failing to adopt a comprehensive policy for **closing and securing abandoned rat-hole coal mines**.
- The committee has highlighted the risks posed by thousands of abandoned mine openings to **human beings, livestock and the environment**, and has stressed the need for immediate preventive measures.

What is Rat-Hole Mining?

- **Rat-hole mining** is an unscientific and hazardous method of extracting coal through **very narrow horizontal tunnels** dug into coal seams.
- The tunnels are often so narrow that workers have to **crawl through them**.
- It became particularly prevalent in **Meghalaya**, where coal seams are often thin and shallow.
- Mining has traditionally taken place on **privately or community-owned tribal land**, creating a complex relationship between customary land rights and statutory mining regulation.

Why is it called "Rat-Hole"?

- The narrow tunnels resemble the **small burrows of rats**, through which miners enter the coal seams.

Why is Rat-Hole Mining Dangerous?

1. **Human Safety**
   - Narrow and unstable tunnels increase the risk of **collapse, flooding and entrapment**.
   - Abandoned shafts remain dangerous even after mining operations stop.
2. **Environmental Damage**
   - Unscientific coal extraction causes **land degradation and soil instability**.
   - Acidic mine drainage can contaminate **streams, rivers and groundwater**.
   - It can adversely affect **forests, biodiversity and aquatic ecosystems**.
3. **Abandoned Mine Openings**
   - Open mine shafts can become death traps for **people and livestock**.
   - Therefore, merely stopping mining is insufficient; **mine closure and land restoration** are also necessary.

NGT Ban – 2014

- The **National Green Tribunal (NGT)** ordered the Meghalaya Government in **April 2014** to stop **rat-hole mining and illegal coal mining throughout the State**.

Supreme Court Judgment – 2019

- In **State of Meghalaya v. All Dimasa Students Union**, the Supreme Court upheld the NGT's action against **unscientific rat-hole mining**.

What is the Katakey Committee Highlighting?

- **Absence of a comprehensive mine-closure policy**.
- Large numbers of **abandoned mine openings** that remain unsecured.
- Need for **fencing and immediate preventive measures**.
- Need for **land restoration and rehabilitation**.
- Delays in implementing proposals for mine closure and restoration.
- The committee has also highlighted restoration projects prepared by the **Central Mine Planning and Design Institute (CMPDI)** for Meghalaya.

Major Laws Relevant to Mining

- Mines and Minerals (Development and Regulation) Act, 1957 (MMDR Act)
- Mines Act, 1952
- Environment (Protection) Act, 1986
- Water (Prevention and Control of Pollution) Act, 1974
- Air (Prevention and Control of Pollution) Act, 1981

1.8. EX-AGNIVEERS: 50% RESERVATION IN CAPFS AND ASSAM RIFLES

Context:

- The Government has created a separate **"Ex-Agniveer" recruitment category** for **Constable (General Duty) in CAPFs** and **Rifleman in Assam Rifles**, with **50% reservation of vacancies**. The move addresses post-service employment opportunities for Agniveers completing their four-year tenure.

Key Provisions

- **Reservation:** 50% of vacancies for Ex-Agniveers in the specified posts.
- **Age Relaxation:** 3 years beyond the prescribed upper age limit; **5 additional years** for the first batch.
- **Recruitment Exemptions:** Ex-Agniveers are exempted from the **written examination, Physical Standards Test (PST) and Physical Efficiency Test (PET)**.
- **Dedicated Wing:** An **Ex-Agniveer Wing** has been established under the Ministry of Home Affairs to coordinate their further progression.

About Agnipath Scheme

- Under **Agnipath**, Agniveers serve in the Armed Forces for **four years**.
- After four years, **up to 25%** of a batch may be retained for regular military service, subject to selection.
- The remaining personnel transition out as **Ex-Agniveers**, for whom post-service employment mechanisms are important.

1.9. NAMASTE SCHEME: MECHANISING SANITATION FOR SAFETY AND DIGNITY

Context:

- Recently, the Union Government has proposed expanding the **National Action for Mechanised Sanitation Ecosystem (NAMASTE) scheme** from **urban to rural areas**. The proposed expansion will also cover drain cleaners and workers engaged in Sewage Treatment Plants (STPs) and Faecal Sludge Treatment Plants (FSTPs).

About NAMASTE

- **NAMASTE** stands for **National Action for Mechanised Sanitation Ecosystem**.
- **Launched:** 2023–24
- **Objective:** To promote the **mechanisation of sanitation work** and ensure the **safety and dignity of sanitation workers**.
- **Nodal Ministry:** Ministry of Social Justice and Empowerment, in convergence with the **Ministry of Housing and Urban Affairs (MoHUA)**.
- **Initial Focus:** Sewer and Septic Tank Workers (SSWs).
- **Later Expanded to Include:** Waste Pickers.
- To eliminate hazardous and unsafe sanitation practices and move towards zero fatalities in sewer and septic tank cleaning.

Key Components of NAMASTE

1. **Identification & Profiling**
   - Identifies and profiles sanitation workers for welfare and safety support.
   - **90,915 SSWs** and **1.3 lakh Waste Pickers** profiled so far.
2. **Mechanisation & Safety**
   - Promotes mechanised cleaning, **PPE**, training and skill development.
3. **Emergency Response**
   - Supports **Emergency Response Sanitation Units (ERSUs)** in **Urban Local Bodies (ULBs)**.
4. **Livelihood Support**
   - Promotes self-employment and sanitation enterprises.

- Provides **capital subsidy of up to 50%** of the project cost.
- Also supports **Private Sanitation Service Organisations (PSSOs)**.

Proposed Expansion

The Ministry of Social Justice and Empowerment has proposed expanding NAMASTE to:

- **Rural areas**
- **Drain cleaners**
- Workers engaged in **Sewage Treatment Plants (STPs)**
- Workers engaged in **Faecal Sludge Treatment Plants (FSTPs)**

Proposed Outlay

- **₹498.73 crore**
- Proposed implementation period: **up to 2030–31**

1.10. PROOF OF LIFE: REGISTRATION OF BIRTHS AND DEATHS (AMENDMENT) BILL, 2026

Context:

- The **Registration of Births and Deaths (Amendment) Bill, 2026** amends **Section 13(3)** of the **Registration of Births and Deaths Act, 1969**, requiring **Judicial Magistrate approval** for birth registrations delayed by more than **two years**. The amendment follows the **2023 reforms**, which made birth certificates the primary proof of identity for accessing key public services.

Introduction

Birth registration is the foundation of **legal identity**, enabling access to education, welfare schemes, voting rights and public services. While the 2026 amendment aims to curb fraudulent registrations and strengthen document credibility, it also raises concerns regarding accessibility, administrative burden and the exclusion of vulnerable citizens.

Constitutional and Governance Dimensions

- **Article 14 – Equality Before Law:** Administrative procedures must be fair, reasonable and non-discriminatory, ensuring equal treatment of all citizens, especially vulnerable groups.
- **Article 21 – Right to Life and Personal Liberty:** Access to legal identity documents is increasingly recognised as essential for securing dignity, livelihood and access to basic rights and public services.
- **Accessibility:** Public services should be easy to access without imposing unnecessary procedural or financial barriers.
- **Transparency:** Registration procedures should be clear, predictable and based on objective criteria to promote public trust.

- **Accountability:** Authorities must be answerable for registration decisions and provide effective mechanisms for appeal and grievance redressal.
- **Citizen-Centric Service Delivery:** Governance should prioritise citizens' needs by making identity registration simple, inclusive and responsive.
- **Ease of Access to Public Services:** Identity verification systems should facilitate, rather than hinder, timely access to welfare schemes and essential government services.

Why is the Amendment Significant?

1. **Strengthens Authenticity of Birth Registration**
   - The amendment requires **Judicial Magistrate approval** for birth registrations delayed beyond two years, introducing a higher level of legal scrutiny.
   - It aims to curb fraudulent or fabricated registrations and enhance the credibility and reliability of India's civil registration system.
2. **Birth Certificate has Become the Core Identity Document**
   - Since the **2023 amendment**, the birth certificate has become the primary proof of date and place of birth for school admissions, passports, Aadhaar, driving licences, electoral rolls and government jobs.
   - As a gateway to essential rights and public services, stricter verification directly impacts citizens' access to welfare, education and employment.
3. **Supports Digital Governance**
   - The amendment complements the development of integrated **national and state-level digital birth registries**, enabling seamless data sharing with the Registrar General.
   - A robust digital registration system improves administrative efficiency, reduces duplication and strengthens evidence-based governance and service delivery.

Why Did the Government Introduce Judicial Scrutiny?

- **Prevent identity fraud:** To curb the creation of fake or fraudulent birth records used to obtain identity documents and government benefits.
- **Ensure stronger legal verification:** To subject delayed registrations to independent judicial scrutiny for greater legal credibility.
- **Increase public confidence in civil registration:** To strengthen trust in the authenticity and reliability of birth registration records.
- **Reduce allegations of arbitrary executive decisions:** To shift decision-making from the executive to the judiciary, ensuring greater neutrality and transparency.
- **Maintain integrity of digital identity databases:** To protect national digital identity systems by ensuring that only verified records are entered into official databases.

Key Concerns associated with Amendment Bill

1. **Greater Burden on Vulnerable Citizens**
   - Many genuine birth registrations are delayed due to **remote locations, lack of awareness, migration, poverty, illiteracy and gaps in institutional deliveries** rather than fraudulent intent.

- Requiring approval from a Judicial Magistrate may increase procedural hurdles, discouraging legitimate applicants from obtaining legal identity.

2. **Increased Cost and Delay**
   - Judicial verification involves legal formalities, repeated visits to courts and longer processing timelines, making registration more time-consuming.
   - The additional financial and administrative burden is likely to fall disproportionately on economically weaker and socially marginalised sections.
3. **Risk of Exclusion**
   - Birth certificates are now essential for accessing **education, welfare schemes, employment, voting rights and other identity documents**, making them critical to citizenship benefits.
   - Delays or inability to obtain a certificate can result in exclusion from public services and denial of socio-economic opportunities.
4. **Lack of Evidence-Based Policy**
   - The government has not provided empirical evidence explaining why registrations delayed beyond two years pose a significantly higher fraud risk.
   - The absence of a clear rationale for the two-year threshold or consideration of less restrictive alternatives raises concerns about the proportionality of the amendment.
5. **Evidentiary Standards Remain Unchanged**
   - The amendment changes the **approving authority** from an Executive Magistrate to a Judicial Magistrate but retains the same evidentiary requirements.
   - Without strengthening documentation or verification standards, the amendment may increase procedural complexity without effectively reducing fraud.
6. **Judicial Workload**
   - Assigning delayed birth registration cases to Judicial Magistrates could add to the already high pendency of cases in subordinate courts.
   - This may divert judicial time and resources from core adjudicatory functions, affecting the overall efficiency of the justice delivery system.
7. **Balancing Inclusion and Integrity (Wider Governance Debate)**
   - The amendment highlights the governance challenge of balancing **preventing fraudulent inclusion** with **avoiding the wrongful exclusion of genuine citizens**. A welfare state must ensure robust identity verification without creating procedural barriers that deny deserving individuals access to rights and public services.

Way Forward

1. **Strengthen evidentiary standards:** Prescribe clear and robust documentation requirements to improve verification without relying solely on judicial approval.
2. **Adopt risk-based verification:** Subject only suspicious or high-risk applications to enhanced scrutiny instead of applying uniform procedures to all delayed registrations.
3. **Simplify registration for vulnerable groups:** Introduce citizen-friendly procedures and relax procedural barriers for genuine applicants facing socio-economic disadvantages.

4. **Enhance awareness and outreach:** Conduct awareness campaigns and strengthen registration infrastructure in remote and underserved areas to reduce delays.
5. **Promote digital governance with grievance redressal:** Digitise registration systems while ensuring accessible, transparent and time-bound mechanisms for appeals and corrections.
6. **Undertake evidence-based policy review:** Periodically assess the effectiveness of the two-year judicial threshold using empirical data and stakeholder feedback.
7. **Balance security with inclusion:** Ensure that efforts to prevent fraud do not undermine the constitutional commitment to inclusive governance and universal access to legal identity.

Conclusion

The **Registration of Births and Deaths (Amendment) Bill, 2026** seeks to strengthen the integrity of India's identity system through greater judicial oversight. However, fraud prevention must be balanced with **inclusive access**, ensuring that genuine citizens are not denied legal identity and welfare due to procedural barriers.

1.11. WHY ARE GOVERNMENT SCHOOLS SHUTTING DOWN?

Context:

- Several Indian states—including **Uttar Pradesh, Madhya Pradesh, Rajasthan, Odisha, Maharashtra, Punjab, and Bihar**—have initiated **school rationalisation** by merging or closing government schools with very low enrolment. However, concerns have emerged regarding **children's access to education, increased dropouts, gender inequality, and the constitutional Right to Education (RTE).**

Introduction

Education is not merely a welfare measure but a **fundamental right guaranteed under Article 21A of the Constitution**. The **Right of Children to Free and Compulsory Education (RTE) Act, 2009** seeks to ensure universal access to elementary education. While school rationalisation aims to improve efficiency by consolidating underutilized schools, indiscriminate closure of government schools—especially in rural, tribal and remote areas—may undermine **equity, inclusiveness and constitutional commitments**.

What is School Rationalisation?

School rationalisation refers to the **merging, relocation or closure of schools** with extremely low enrolment and redeployment of teachers and infrastructure to schools with better student strength.

Objectives

- Efficient utilisation of teachers
- Better pupil-teacher ratio

- Optimum use of infrastructure

Why Are Government Schools Being Shut Down?

1. **Declining Student Enrolment**

   Government schools are witnessing continuous decline in enrolment because of:

   - Preference for private schools
   - Better English-medium education
   - Perceived higher quality
   - Migration towards urban centres
   - **Government Findings**
   - **UDISE+** data shows a gradual decline in enrolment in many government elementary schools while private school enrolment has increased over the last decade in several states.

2. **Extremely Low Student Strength**

   Thousands of schools have:

   - Less than 20 students
   - Single-digit enrolment

3. **Teacher Shortage and Unequal Distribution**

   Many schools have:

   - Only one teacher
   - Vacant teaching posts
   - Subject teacher shortages

4. **Fiscal Constraints**

   Governments face increasing expenditure on:

   - Salaries
   - Infrastructure
   - Maintenance
   - Administrative costs

5. **Infrastructure Consolidation**

   Governments argue that larger schools provide:

   - Science laboratories
   - Libraries
   - Digital classrooms
   - Sports facilities
   - Better extracurricular activities

   Instead of maintaining multiple poorly equipped schools.

Implications of Government School Closures

1. **Reduced Educational Access**

   Closure increases the distance to the nearest school. Consequences include:

   - Higher transportation costs
   - Safety concerns

- Irregular attendance
- Increased absenteeism

Remote and tribal children are disproportionately affected.

2. **Increase in Dropout Rates**

Longer travel discourages attendance, particularly among:

- Girls
- Tribal children
- Children with disabilities
- Economically weaker sections

This undermines the objective of universal elementary education.

3. **Gender Inequality**

Girls face:

- Safety concerns
- Social restrictions
- Lack of transport
- Early marriage risks

Parents may discontinue girls' education if schools are distant.

4. **Impact on Marginalised Communities**

Most affected groups include:

- Scheduled Tribes
- Scheduled Castes
- Minorities
- Forest dwellers
- Aspirational districts

Educational inequality may widen.

5. **Violation of RTE Spirit**

Although schools may technically be merged, practical accessibility may decline, weakening:

- Neighbourhood school concept
- Equity
- Inclusion
- Universal education

6. **Teacher Displacement**

Rationalisation may involve:

- Frequent transfers
- Administrative burden
- Reduced community engagement
- Teacher dissatisfaction

Government Reports and Findings on implication

1. **UDISE+ (Unified District Information System for Education)**

Highlights:

- Significant number of schools have fewer than 30 students.
- Teacher vacancies continue in many states.
- Infrastructure has improved but quality disparities remain.

2. **ASER (Annual Status of Education Report)**

   Findings include:

   - Persistent learning deficits in reading and arithmetic.
   - Foundational learning gaps remain despite improved enrolment.
   - School quality influences parental preference more than proximity.

3. **National Education Policy (NEP) 2020**

   NEP recommends:

   - **School Complex/Cluster Model**
   - Sharing teachers
   - Resource pooling
   - Better academic support
   - Improved governance

   Importantly, NEP does **not advocate indiscriminate closure**, but strengthening access through school complexes while ensuring equitable availability.

4. **NITI Aayog – School Education Quality Index (SEQI)**

   Highlights:

   - Learning outcomes vary significantly across states.
   - Governance reforms and teacher quality are central to improvement.
   - Educational quality is as important as enrolment.

Way Forward

1. **Adopt NEP 2020 School Complex Model**

   Instead of closing schools, create:

   - School clusters
   - Shared teachers
   - Shared laboratories
   - Shared digital facilities
   - Common administrative support

2. **Distance-Based Rationalisation**

   Closure should never occur where students must travel beyond RTE neighbourhood norms or where geography creates access barriers.

3. **Child Impact Assessment**

   Before any closure, governments should assess:

   - Travel distance
   - Dropout risk
   - Gender impact
   - Disability access
   - Tribal implications

4. **Strengthen Foundational Learning**

   Implement the **NIPUN Bharat Mission** to improve foundational literacy and numeracy, making government schools more attractive through better learning outcomes.

5. **Improve School Quality**

   Focus on:

   - Teacher training (NISHTHA)
   - Smart classrooms
   - Libraries
   - Laboratories
   - Sports infrastructure
   - ICT-enabled education
   - Regular teacher recruitment

6. **Digital and Hybrid Education**

   Expand:

   - PM eVIDYA
   - DIKSHA Platform
   - SWAYAM
   - Digital classrooms

   While ensuring adequate digital infrastructure and connectivity.

Conclusion

- Restructuring of government schools must uphold the constitutional guarantee under **Article 21A**, protect the **neighbourhood school principle**, and ensure that **no child—especially girls, tribal children, children with disabilities, or those from economically weaker sections—is deprived of access to quality education**.
- A balanced approach, combining **NEP 2020's School Complex model, data-driven planning, community participation, safe transportation, and sustained investment in learning outcomes**, can transform rationalisation into an instrument of educational inclusion rather than exclusion.

1.12. FCRA AMENDMENT BILL, 2026: REGULATING FOREIGN CONTRIBUTIONS AND NGOs

Context:

- The **Foreign Contribution (Regulation) Amendment Bill, 2026** was re-introduced in Parliament to establish **statutory oversight** and prevent the potential misuse of **foreign funding** by **non-governmental organisations (NGOs)**.

Introduction

The **FCRA Amendment Bill, 2026** seeks to enhance **transparency**, **corporate governance**, and **accountability** in foreign contributions through a statutory **Designated Authority** and **centralised investigation approvals**.

While intended to safeguard **national security**, severe **asset-forfeiture mandates** and broad **executive discretion** have sparked debates regarding **civil society autonomy**.

What is the FCRA Amendment Bill, 2026?

- It is a legislative reform designed to regulate the acceptance, utilization, and asset management of **foreign contributions** by **NGOs**, **cultural**, and **religious institutions**.
- The framework establishes statutory oversight on **asset management**, **compliance timelines**, and **key functionary liabilities**.
- It aims to align foreign funding governance with **national security** and **sovereign financial interests**.

Key Provisions

- **Designated Authority (Section 16A):** Establishes a statutory authority to assume control of **foreign funds** and **assets** if registration is **cancelled**, **expired**, **surrendered**, or **not renewed**.
- **Full Asset Forfeiture:** Mandates that asset vesting applies to the **entire property**, even if created only **partially** using foreign contributions.
- **Centralised Investigation Approval:** Requires prior **Central Government clearance** before initiating any formal investigations against recipient entities.
- **Expanded "Key Functionary" Liability:** Extends personal legal liability to **directors**, **trustees**, and **office-bearers** for compliance defaults.
- **Rationalisation of Penalties:** Reduces maximum imprisonment for violations to **one year** (or a fine), down from the previous **five-year cap**.

Significance of FCRA Amendment Bill, 2026

1. **Strengthening National Security**
    - Prevents **foreign contributions** from being diverted into activities that threaten **public order**, **internal security**, or **sovereign political processes**.
2. **Improved Asset Governance**
    - The creation of a **Designated Authority** ensures that assets built via foreign grants are not commercialised or privately liquidated upon **organisation closure**.
3. **Preventing Fund Misuse**
    - **Time-bound utilization** mandates prevent the indefinite accumulation of capital and mitigate **money laundering risks**.
4. **Uniformity in Investigation**
    - **Centralised approval** protects non-profits from arbitrary **multi-agency harassment** and inconsistent state-level enforcement.
5. **Promoting Responsible Governance**
    - Expanding personal liability to **key functionaries** encourages robust **internal audits** and institutional accountability.

Challenges Associated with FCRA Amendment Bill, 2026

1. **Excessive Executive Discretion**

- Vague cancellation grounds like **"public interest"** confer unguided power, risking targeted action against **dissenting NGOs**.

2. **Constitutional Concerns under Article 300A**
   - Permanent state vesting of **entire assets** partially built with foreign grants deprives entities of property without adequate **judicial oversight**.
3. **Chilling Effect on Civil Society**
   - Stringent compliance burdens and threats of **asset forfeiture** restrict legitimate civil society participation in **social advocacy** and **human rights work**.
4. **Discrimination Risks under Article 14**
   - Broad executive powers to grant exemptions under **Clause 16L** lack clear **intelligible differentia**, inviting constitutional challenges.
5. **Administrative Burden on Small NGOs**
   - Automated **registration lapses** and rigid timelines impose severe operational strains on **grassroots non-profits** with limited legal resources.

Way Forward

1. **Institutionalise Judicial Oversight**
   - Establish **independent appellate tribunals** to review registration cancellation and asset-vesting orders prior to permanent state takeover.
2. **Statutorily Define "Public Interest"**
   - Provide precise, objective legal definitions for ambiguous statutory terms to minimize **subjective executive discretion**.
3. **Adopt Proportional Asset Vesting Rules**
   - Restrict state takeover strictly to the **proportional share** of assets generated directly through foreign contributions.
4. **Safeguard Fundamental Freedoms**
   - Harmonise enforcement mechanisms with **Article 19(1)(c)** to preserve the fundamental **freedom of association**.
5. **Differentiated Compliance Structure**
   - Implement a **tiered regulatory regime** that applies simplified compliance norms for **grassroots non-profits**.
6. **Transparent Exemption Criteria**
   - Frame clear, objective criteria for granting exemptions under **Clause 16L** to ensure adherence to **Article 14** principles.

Conclusion

The **FCRA Amendment Bill, 2026** provides a structured framework to protect **national security** against unregulated foreign inflows. However, balancing regulatory rigor with **judicial oversight** and **proportional rules** remains crucial to preserve **civil society autonomy** in India's democracy.

1.13. JAMMU & KASHMIR STATEHOOD: FEDERALISM AND DEMOCRATIC GOVERNANCE

Context:

- Nearly seven years after the abrogation of Article 370 and Article 35A (5 August 2019), the demand for restoring statehood to Jammu & Kashmir has resurfaced. Despite Assembly elections, its continued Union Territory status has reignited debates on federalism, democratic representation, and constitutional governance.

Introduction

- Since Independence, Jammu & Kashmir enjoyed special constitutional status under **Article 370**, which was revoked by the **Jammu and Kashmir Reorganisation Act, 2019**, bifurcating the erstwhile state into the Union Territories of Jammu & Kashmir and Ladakh.
- **In Re: Article 370 (2023)**, the Supreme Court upheld the abrogation while directing the Union Government to restore statehood at the earliest, keeping the debate on federalism, democratic representation, and regional autonomy alive.

Historical Background

1. **Accession to India (1947)**
    - Maharaja Hari Singh signed the **Instrument of Accession** on **26 October 1947**, making Jammu & Kashmir a part of India amid the tribal invasion backed by Pakistan.
    - The accession initially covered **Defence, Foreign Affairs, and Communications**, while internal autonomy was largely retained.
2. **Article 370**
    - Article 370 granted Jammu & Kashmir a **special constitutional status**, reflecting its unique historical and political circumstances.
    - It enabled the State to have its **own Constitution, separate flag, and greater legislative autonomy**, with many Union laws requiring the State's concurrence.
3. **Article 35A (1954 Presidential Order)**
    - Introduced through a Presidential Order, Article 35A empowered the J&K Legislature to define **'permanent residents'** of the State.
    - It granted them exclusive rights over **land ownership, government employment, scholarships, and settlement**, aiming to protect the region's demographic and socio-cultural identity.

Present Status

1. **Constitutional Reorganisation (2019):** On **5 August 2019**, the Union Government abrogated **Article 370**, removed **Article 35A**, and enacted the **Jammu and Kashmir Reorganisation Act, 2019**.

2. **Creation of Two Union Territories:** The erstwhile State was bifurcated into the **Union Territory of Jammu & Kashmir (with a Legislature)** and the **Union Territory of Ladakh (without a Legislature)**.
3. **Restoration of Electoral Process:** Legislative Assembly elections have been conducted, restoring an elected government after several years of Central rule.
4. **Limited Powers of the Elected Government:** Key subjects such as **Public Order, Police, and Land** remain under the **Lieutenant Governor**, limiting the autonomy of the elected government.
5. **Pending Restoration of Statehood:** Despite repeated assurances and the Supreme Court's direction to restore statehood **"at the earliest,"** Jammu & Kashmir continues as a Union Territory, fuelling debates on **federalism and democratic governance**.

Why is Statehood Restoration Important?

1. **Strengthening Democratic Governance:** Statehood ensures that elected representatives exercise real executive authority, making governance more democratic and accountable.
2. **Upholding Constitutional Federalism:** Restoring statehood reinforces India's federal structure, recognised as part of the Constitution's Basic Structure by the Supreme Court.
3. **Promoting Constitutional Morality:** It reflects the constitutional values of representative government, democratic participation, and the rule of law.
4. **Enhancing Democratic Accountability:** A full-fledged state government is directly answerable to the legislature and citizens, ensuring greater public oversight.
5. **Improving Administrative Efficiency:** Statehood enables locally elected governments to respond more effectively to regional needs, development priorities, and governance challenges.
6. **Fostering Political Stability:** Restoration of statehood can strengthen public trust, encourage political participation, and improve Centre–State relations.

Challenges Delaying Statehood

1. **Security Concerns:** The Union Government cites the need to maintain effective control over **law and order and counter-terrorism** before restoring full statehood.
2. **Pakistan-Sponsored Terrorism:** Persistent challenges such as **cross-border infiltration, hybrid terrorism, drone-based smuggling, and the narcotics-terror nexus** continue to threaten regional stability.
3. **Strategic Border Management:** Jammu & Kashmir's proximity to **Pakistan and China** makes national security and border management a key consideration in governance.
4. **Political and Constitutional Issues:** Differences over **delimitation, regional representation, and the post-2019 constitutional framework** continue to delay political consensus.
5. **Stable Governance and Institutional Readiness:** The Centre argues that restoring statehood requires a **stable security environment, effective institutions, and sustained democratic functioning** to ensure long-term peace and governance.

Constitutional and Legal Dimensions

Article 1: J&K remains an integral part of India.

Article 3: Parliament has power to

- Create States
- Alter boundaries
- Change names
- Convert Union Territories into States

Article 239: Union Territories are administered by the President through the Lieutenant Governor.

Jammu & Kashmir Reorganisation Act, 2019

Provides legal framework for:

- Creation of two UTs
- Distribution of powers

Supreme Court Judgment (2023)

In Re: Article 370 (2023), the Supreme Court:

- Upheld the constitutional validity of the abrogation of Article 370.
- Held that Article 370 was a temporary provision.
- Directed the Union Government to restore **statehood to Jammu & Kashmir at the earliest** (excluding Ladakh).
- Directed timely conduct of elections to the Legislative Assembly.

Government Initiatives in Jammu & Kashmir

1. **Prime Minister's Development Package (PMDP):** Focuses on improving **infrastructure, connectivity, healthcare, education, and power** to accelerate socio-economic development.
2. **Industrial Development and Investment:** The **Industrial Development Scheme, 2021** provides incentives to attract private investment, promote industries, and create employment.
3. **Digital and Basic Infrastructure:** Expansion of **BharatNet** and implementation of the **Jal Jeevan Mission** aim to improve digital connectivity and ensure safe drinking water.
4. **Grassroots Governance:** The Government has strengthened **Panchayati Raj Institutions** to deepen decentralisation and improve local participation in governance.
5. **Tourism and Border Area Development:** Through the **Swadesh Darshan Scheme**, **Border Area Development Programme (BADP)**, and **Smart City Mission (Srinagar)**, the Centre seeks to boost tourism, modernise urban infrastructure, and promote balanced regional development.

Way Forward

1. **Time-bound Restoration of Statehood:** Implement the Supreme Court's direction by announcing a clear roadmap for restoring full statehood to Jammu & Kashmir.
2. **Balance Security with Democratic Governance:** Adopt a calibrated approach that safeguards national security while progressively transferring powers to the elected government.

3. **Strengthen Cooperative Federalism:** Foster regular consultation between the Union and the J&K government through institutional mechanisms and the Inter-State Council framework.
4. **Deepen Grassroots Democracy:** Empower Panchayati Raj Institutions and Urban Local Bodies with greater financial and functional autonomy.
5. **Promote Inclusive Development;** Focus on employment generation, tourism, horticulture, handicrafts, MSMEs, education, healthcare, and digital infrastructure to address socio-economic grievances.

Conclusion

Statehood restoration for Jammu & Kashmir is not merely an administrative decision but a constitutional commitment to **federalism, democracy, and accountable governance**. A balanced approach that combines **strong security, timely restoration of statehood, inclusive development, and cooperative federalism** will strengthen both **national unity and democratic values**

1.14. SUPREME COURT JUDGMENT ON SEX WORK (2026)

Context:

- On **29 May 2026**, the **Supreme Court of India**, exercising its powers under **Article 142**, delivered a landmark judgment on sex work. The judgment marks a shift from a welfare-oriented and paternalistic approach to a **constitutional rights-based approach**, recognising the dignity, agency and autonomy of consenting adult sex workers while addressing trafficking separately.

Introduction

The Supreme Court's judgment represents an important evolution in India's constitutional jurisprudence by affirming that **sex workers are entitled to the same constitutional protections as every other citizen**. It separates **consensual adult sex work from trafficking**, recognises that **agency and vulnerability can coexist**, and reinforces that **constitutional morality must prevail over social morality**.

Key Constitutional Principles Recognised by the Supreme Court

1. **Recognition of Agency and Consent**
   - Adult individuals can voluntarily choose sex work.
   - Vulnerability does not automatically negate individual agency.
   - Any state intervention must begin with determining **free and informed consent**.
2. **Distinction Between Trafficking and Sex Work**
   - Migration or engagement in sex work cannot automatically be equated with trafficking.
   - Trafficking involves coercion, deception or exploitation.

- Consensual adult sex work falls outside this category.

3. **Protection of Fundamental Rights**

   The Court reaffirmed that sex workers enjoy the same constitutional rights as other citizens:

   - **Article 14 –** Equality before law.
   - **Article 19(1)(g) –** Freedom to practise any occupation (subject to reasonable restrictions).
   - **Article 21 –** Right to life, dignity, privacy and personal liberty.

4. **Protection Against Forced Rescue**
   - Consenting adult sex workers cannot be forcibly rescued.
   - Rescue without consent amounts to violation of personal liberty.
5. **Article 142**
   - The Court invoked **Article 142** to issue binding directions ensuring complete justice until legislative reforms are undertaken.

Why is the Judgment Significant?

1. **Shift from Welfare to Rights-Based Approach**
   - Treats sex workers as rights-bearing citizens rather than passive victims.
   - Prioritises dignity and autonomy over paternalistic protection.
2. **Constitutional Morality over Social Morality**
   - Legal rights cannot be denied merely because society disapproves of sex work.
   - Reinforces constitutional values of liberty, equality and dignity.
3. **Recognition of Consent**
   - Consent becomes the central legal test before any intervention.
   - Protects adults from arbitrary detention and forced rehabilitation.
4. **Separation of Trafficking from Voluntary Sex Work**
   - Enables more focused anti-trafficking efforts against actual exploitation.
   - Prevents misuse of anti-trafficking laws against consenting adults.

Challenges in Effective Implementation of the Supreme Court Judgment

1. **Weak Institutional Capacity:** Police, judiciary and administrative authorities continue to suffer from bias, procedural delays and inconsistent implementation of rights.
2. **Persistent Social Stigma and Moral Policing:** Deep-rooted societal prejudice often overrides constitutional morality, resulting in discrimination and harassment of sex workers.
3. **Caste-Based Structural Discrimination:** Caste inequalities continue to shape access to justice, policing, welfare delivery and administrative decision-making.
4. **Lack of Accountability in the Anti-Trafficking Ecosystem:** Inadequate oversight of NGOs, shelter homes and rescue mechanisms allows coercive and rights-violating practices to persist.
5. **Poor Access to Justice and Welfare:** Weak legal aid, low legal awareness and barriers to social welfare schemes prevent sex workers from fully exercising their constitutional rights.

6. **Limited Community Participation:** Insufficient involvement of sex worker collectives in policymaking and implementation undermines a truly rights-based and participatory governance framework.

Way Forward

1. **Ensure Community-Led Governance:** Involve sex worker collectives in policymaking, implementation, police training and monitoring to ensure rights-based and inclusive governance.
2. **Reform the Anti-Trafficking Framework:** Make shelter homes and rescue operations transparent, accountable and focused on voluntary, human rights-based rehabilitation.
3. **Guarantee Access to Social Welfare:** Ensure sex workers receive healthcare, housing, education, social security, financial inclusion and other welfare benefits without discrimination.
4. **Strengthen Institutional Sensitisation:** Train police, judiciary, magistrates and administrative officials to uphold constitutional morality, dignity and informed consent.
5. **Improve Access to Justice:** Provide effective legal aid, fast-track cases and ensure accountability for illegal detention and rights violations.
6. **Protect Autonomy and Informed Consent:** Make consent the cornerstone of all interventions by prohibiting forced rescue and involuntary institutionalisation of consenting adults.
7. **Promote Dignity and Social Inclusion:** Reduce stigma through public awareness, anti-discrimination measures and recognition of sex workers as equal rights-bearing citizens.

Conclusion

The Supreme Court's 2026 judgment marks a constitutional shift from a paternalistic to a rights-based approach by recognising the dignity, autonomy and equality of consenting adult sex workers. Its success, however, will depend on rights-based implementation, institutional accountability, and meaningful inclusion of sex workers in policymaking to ensure that constitutional guarantees become a lived reality.

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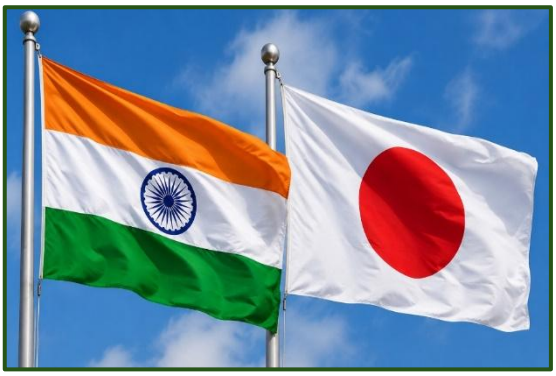
2.1. INDIA–JAPAN DEFENCE COOPERATION: STRATEGIC PARTNERSHIP IN THE INDO-PACIFIC

Context:



- Japanese Defence Minister **Shinjiro Koizumi** is visiting India and is holding talks with Defence Minister **Rajnath Singh** on strengthening bilateral defence and security cooperation, including **defence equipment and technology, maritime security and cooperation in the Indo-Pacific**. The visit comes soon after the **8th India–Japan Defence Policy Dialogue** held in Tokyo in July 2026.

1. **India–Japan Strategic Partnership**
   - India and Japan share a **Special Strategic and Global Partnership**, upgraded to this level in **2014**.
   - The partnership is based on convergence over a **free, open and rules-based Indo-Pacific**.
   - India's **Act East Policy** and **SAGAR vision** complement Japan's **Free and Open Indo-Pacific (FOIP)** approach.
   - Both countries are also partners in the **Quad** along with the **United States and Australia**.
2. **Key Areas of Defence Cooperation**

   A. Defence Equipment & Technology

   India and Japan have cooperation in:
   - Defence equipment and technology transfer
   - Joint research, development and potential co-production
   - Maritime technology
   - Defence industrial cooperation
   - Advanced and emerging technologies

   B. Logistics & Interoperability
   - The **Acquisition and Cross-Servicing Agreement (ACSA)** was signed in **2020**.
   - It facilitates reciprocal provision of: Supplies, Services, Logistical support between the **Indian Armed Forces and Japan's Self-Defense Forces**.

   C. Maritime Security

   Areas include:
   - Maritime domain awareness
   - Naval cooperation
   - Anti-piracy cooperation

- HADR
- Capacity building
- Freedom of navigation and rules-based maritime order

3. **Important Defence Exercises**

A. JIMEX

- Bilateral **naval exercise.**
- Focus: maritime cooperation and interoperability.

B. Dharma Guardian

- Bilateral **Army exercise**
- Enhances interoperability and joint operational capabilities.

C. Malabar

- Multilateral **naval exercise.**
- Participants: **India, Japan, USA and Australia**
- Japan's participation strengthens maritime cooperation among the **Quad countries**.

D. Veer Guardian

- Bilateral **Air Force exercise.**
- Conducted between the **Indian Air Force and Japan Air Self-Defense Force**.

4. **Institutional Mechanisms**

- **2+2 Dialogue**: Foreign Ministers + Defence Ministers
- **Defence Policy Dialogue**: Defence establishments of both countries

Military-to-Military Talks: Armed forces cooperation

- **Coast Guard-to-Coast Guard cooperation:** The **8th Defence Policy Dialogue** in July 2026 reviewed the entire spectrum of bilateral defence engagement.

5. **Why Japan Matters for India?**

A. Strategic

- Strengthens India's position in the **Indo-Pacific**.
- Supports a **rules-based maritime order**.
- Enhances strategic balance in the wider Indo-Pacific.

B. Defence

- Access to advanced Japanese defence technology.
- Greater interoperability through exercises and logistics cooperation.
- Scope for defence-industrial collaboration.

C. Economic & Technological

- Japan is an important source of investment and technology.
- Cooperation extends to **infrastructure, high technology, connectivity, clean energy and advanced transportation**.

2.2. NATO ENTERS A NEW STRATEGIC ERA OF TRANSFORMATION

Context:

- Amid the changing global security environment following the Russia–Ukraine conflict, **NATO** is undergoing a major strategic transformation.
- The alliance is shifting towards stronger European defence capabilities, higher defence spending, enhanced military preparedness and greater burden-sharing among member states.

What is NATO?

The **North Atlantic Treaty Organization (NATO)** is an **intergovernmental military alliance** established to ensure the collective defence and security of its members.

Formation

- **Established:** 4 April 1949
- **Founding Treaty:** North Atlantic Treaty (Washington Treaty)
- **Headquarters:** Brussels, Belgium
- **Current Members:** 32 countries (after the accession of Finland in 2023 and Sweden in 2024).

Objectives of NATO

- Ensure **collective defence** of member states.
- Preserve peace and security in the North Atlantic region.
- Promote political consultation and military cooperation.
- Strengthen interoperability among member armed forces.
- Respond to emerging security threats such as cyber attacks and terrorism.

Key Features

- **Article 5:** An armed attack against one member is considered an attack against all.
- Decisions are taken by **consensus**, not by majority voting.
- Has an integrated military command structure.
- Conducts joint military exercises and capability development.
- Partners with several non-member countries through cooperation programmes.

Why is NATO Transforming?

- Russia–Ukraine conflict has revived concerns over European security.
- European members are increasing defence spending and military capabilities.
- Greater emphasis on indigenous defence production and industrial capacity.
- Focus on cyber security, space, artificial intelligence and long-range precision weapons.
- Europe is expected to assume greater responsibility for its conventional defence while the United States focuses increasingly on the Indo-Pacific.

Defence Spending Target

- NATO members have agreed to spend **at least 5% of GDP** on defence and defence-related expenditure by **2035**, including investment in military capability and critical infrastructure.

NATO and India

- India is **not a member** of NATO.
- India maintains strategic partnerships with several NATO members through bilateral relations.
- NATO's evolving role has implications for India's security environment, defence cooperation and Indo-Pacific geopolitics.

2.3. OIL CARGO DISRUPTIONS FROM RUSSIAN BLACK SEA PORTS: IMPLICATIONS FOR INDIA

Context:

- The ongoing **Russia–Ukraine conflict** has caused a **66% decline in India-bound oil cargoes from Russia's Black Sea ports** over the last two weeks. The disruption is linked to intensified **Ukrainian drone attacks on Russian shipping, ports, and oil export infrastructure**, raising concerns over India's energy security.

Key Highlights

1. **Decline in Russian Oil Exports**
   - India-bound oil cargoes from Russian Black Sea ports have **fallen by about 66%**.
   - The decline mainly affects exports from the **Novorossiysk Port**, Russia's largest Black Sea oil terminal.
2. **India's Dependence on Russian Crude**
   - Russia remains one of India's largest crude oil suppliers.
   - **Over 50% of India's crude imports** came from Russia in June.
   - Black Sea ports contribute nearly **30% of Russian oil exports to India**.
3. **Cause of the Disruption**
   - Ukraine launched **Operation MoLoCh**, a large-scale maritime drone campaign.
   - The operation targets:
     - Oil tankers
     - Port infrastructure
     - Fuel storage facilities
     - Cargo logistics in the **Black Sea** and **Sea of Azov**.

4. **Impact on Global Oil Trade**
   - Reduced shipments may:
     - Increase freight costs.
     - Delay crude deliveries.
     - Raise global oil price volatility.
     - Force buyers to seek alternative suppliers.
5. **Implications for India**
   - Possible diversification towards:
     - Middle East
     - United States
     - West Africa
   - Higher import costs if disruptions continue.
   - Greater emphasis on **energy security** and diversified sourcing.

Black Sea

Feature	Details
Type	Inland Sea
Connected to Mediterranean	Via Bosporus → Sea of Marmara → Dardanelles
Connected to Sea of Azov	Kerch Strait
Major Littoral Countries	Russia, Ukraine, Turkey, Bulgaria, Romania, Georgia
Strategic Importance	Energy transport, grain exports, naval operations

Novorossiysk Port

- Located on the **northeastern coast of the Black Sea**.
- Russia's **largest commercial port**.
- Major export terminal for:
  - Crude oil
  - Petroleum products
  - Grain

- Key terminal of the **Caspian Pipeline Consortium (CPC)**.

Caspian Pipeline Consortium (CPC)

- International pipeline transporting crude oil from **Kazakhstan's Tengiz oil fields** to **Novorossiysk Port**.
- One of the world's major crude oil export routes.
- Critical for Eurasian energy trade.

2.4. MECCA DEFENCE AGREEMENT: NEW SECURITY ORDER IN WEST ASIA

Context:

- On **7 August 2026**, Pakistan, Saudi Arabia and Türkiye signed a **collective defence pact in Mecca**, pledging mutual security and deterrence. It reflects **West Asia's shifting security order**, as regional powers seek greater strategic autonomy amid conflicts and uncertainty over U.S. security commitments.

What is Driving the Agreement?

1. **Changing West Asian Security Architecture**
   - Traditional West Asian security has largely depended on the **U.S. security umbrella**.
   - Regional conflicts and questions over the future U.S. role have encouraged countries to seek **alternative security partnerships**.
   - The Iran-Israel conflict and attacks involving U.S. bases have increased Gulf states' perception of vulnerability.
2. **Saudi Arabia's Security Concerns**
   - Vulnerability to **Iranian missiles and drones**.
   - Desire to reduce excessive dependence on external security guarantees.
   - Saudi Arabia's economic power gives it the financial capacity to support regional defence initiatives.
3. **Türkiye's Strategic Ambition**
   - Türkiye seeks a larger role in **West Asian geopolitics**.
   - Its growing defence-industrial capacity, particularly in **drones and military technology**, strengthens its strategic relevance.
4. **Pakistan's Search for Strategic Space**
   - Pakistan seeks to expand its role beyond South Asia.
   - It can potentially position itself as a **security partner and mediator** in West Asia.
   - Defence ties with Saudi Arabia also have longstanding historical foundations.

Strategic Significance

1. **Emergence of Regional Security Partnerships**
   - Signals a shift from dependence on the **U.S. security umbrella** towards regional balancing and minilateral cooperation.
   - Reflects growing **strategic autonomy** among West Asian powers amid regional instability.
2. **Collective Defence**
   - The principle of **"attack on one = attack on all"** aims to create collective deterrence against external threats.
   - However, its credibility depends on actual military commitments and willingness to respond collectively.
3. **Defence Interoperability**
   - Can promote **joint exercises, intelligence sharing, defence technology and military coordination**.
   - Cooperation in **drones, counter-drone systems and surveillance** could strengthen regional capabilities.
4. **Türkiye–Saudi Rapprochement**
   - Shows former strategic competitors moving towards cooperation based on **common security interests**.
   - Indicates that shared regional threats can encourage **pragmatic geopolitical realignment**.
5. **Pakistan's Expanding West Asian Role**
   - Provides Pakistan an opportunity to project itself as a **regional security partner beyond South Asia**.
   - Could enhance its diplomatic influence and strategic relevance in the **Muslim world and Gulf region**.

Why the Agreement May Struggle to Become a Credible Deterrent

1. **Lack of Strategic Convergence**
   - The three countries face different threats: **Saudi Arabia—Iran/Gulf security; Türkiye—regional conflicts; Pakistan—India-centric security**.
   - Hence, a common defence pledge may not necessarily translate into **collective military action**.
2. **Different Strategic Priorities**
   - Their strategic theatres differ: **Saudi Arabia—Persian Gulf; Türkiye—West Asia / Mediterranean; Pakistan—South Asia**.
   - Different geographical interests may limit sustained **strategic and operational coordination**.
3. **Existing Conflicts Test Credibility**
   - The pact comes amid ongoing regional conflicts, raising doubts about whether partners would actually **fight together during a crisis**.
   - Lack of clarity on **command, force deployment, rules of engagement and decision-making** weakens its credibility.

4. **The Iran Factor**
   - If perceived as an **anti-Iran coalition**, the pact could intensify regional strategic competition.
   - It may provoke **Iranian counter-balancing and greater instability in the Persian Gulf**.
5. **Alliance ≠ Deterrence**
   - A formal alliance alone cannot guarantee deterrence; it requires **capability, credibility and clear communication**.
   - The agreement shows political commitment, but its **actual military credibility remains untested**.

Opportunities for India (INDIA'S PERSPECTIVE)

1. **Strategic Autonomy**
   - A more **multipolar West Asia** gives India greater diplomatic space and reduces dependence on any single external power.
   - It strengthens India's **multi-alignment and strategic autonomy**.
2. **Stronger India–Saudi Arabia Relations**
   - India can deepen cooperation with Saudi Arabia in **energy, investment, defence, infrastructure and counter-terrorism**.
   - The partnership can support India's broader **West Asia strategy**.
3. **India–Türkiye Engagement**
   - India should maintain **pragmatic diplomatic and economic engagement** with Türkiye despite differences.
   - This can prevent Pakistan from gaining disproportionate strategic influence in Ankara.
4. **Protection of Diaspora and Energy Interests**
   - Gulf stability is crucial for India's **energy supplies, trade, remittances and large diaspora**.
   - Regional conflict can therefore directly affect India's **economic and human security**.
5. **Connectivity**
   - A stable West Asia is essential for India's connectivity ambitions, particularly the **India–Middle East–Europe Economic Corridor (IMEC)**.
   - Regional instability could disrupt trade routes and connectivity investments.

Concerns for India (INDIA'S PERSPECTIVE)

1. **Pakistan's Strategic Expansion**
   - The pact could enhance Pakistan's image as a **regional and Islamic-world security actor**.
   - This may increase India's strategic and diplomatic challenges.
2. **Possibility of Anti-India Spillover**
   - Pakistan could potentially gain **military, technological or diplomatic advantages** from deeper regional defence cooperation.
   - These benefits may indirectly affect India's security environment.

3. **Regional Polarisation**
   - An explicitly **anti-Iran or anti-U.S. bloc** could complicate India's relations with Saudi Arabia, Iran, Israel, Türkiye and the U.S.
   - India would face greater difficulty in maintaining its **balanced multi-alignment**.
4. **Impact on Energy Security**
   - Escalation in the Gulf could disrupt **oil supplies, shipping and the Strait of Hormuz**, affecting India.
   - Higher energy prices could increase India's **import bill and inflationary pressures**.
5. **Maritime Security**
   - Instability in the Persian Gulf and Arabian Sea can threaten India's **Sea Lines of Communication (SLOCs)**.
   - This makes **maritime surveillance, naval preparedness and protection of commercial shipping** increasingly important.

India's Strategic Approach

1. **Deepen Bilateral Partnerships**
   - Strengthen independent partnerships with **Saudi Arabia, UAE, Iran, Israel and Türkiye** based on India's national interests.
   - Avoid exclusive blocs and preserve India's **strategic flexibility and diplomatic space**.
2. **Maintain Strategic Autonomy**
   - India should not become part of competing West Asian security blocs or take sides in regional rivalries.
   - Follow a **multi-alignment approach**, engaging all major regional powers.
3. **Strengthen Maritime Security**
   - Enhance **maritime domain awareness, naval cooperation and surveillance** across the Arabian Sea and Indian Ocean.
   - Secure India's **SLOCs and commercial shipping** against conflict-related disruptions.
4. **Energy Diversification**
   - Reduce vulnerability by diversifying **crude suppliers, expanding Strategic Petroleum Reserves and promoting renewables**.
   - This can shield India from supply disruptions and **volatile global energy prices**.
5. **Diplomatic Balancing**
   - Use India's relationships with competing regional actors to promote **dialogue, de-escalation and conflict resolution**.
   - India's role should be that of a **balancing and constructive partner**, rather than a bloc participant.
6. **Protect the Diaspora**
   - Strengthen **early-warning, evacuation and crisis-response mechanisms** for Indians living in conflict-prone regions.
   - Ensure continuity of **remittances, consular assistance and citizen protection** during regional crises.

Conclusion

The Mecca Agreement reflects the shift towards a **more multipolar West Asian security order**. For India, **strategic autonomy, multi-alignment and regional balancing** remain crucial. India should protect its **energy, diaspora, connectivity and maritime interests** while avoiding bloc politics.

2.5. THE BAY OF BENGAL AS INDIA'S SHANTI ANCHOR

Context:

- The article discusses the **Bay of Bengal as India's "SHANTI" anchor**, arguing that the Bay of Bengal should evolve from merely a maritime space into a **regional governance framework.** It highlights the Bay of Bengal's strategic importance amid intensifying **Indo-Pacific geopolitical competition**, maritime security challenges, and the need for institutional cooperation among littoral states.

Introduction

- The **Bay of Bengal** has emerged as the **geostrategic heart of the Indo-Pacific**, connecting the Indian Ocean with Southeast Asia and serving as the maritime lifeline for nearly **one-fourth of the world's population**.
- With increasing geopolitical rivalry, China's growing maritime footprint, climate-induced disasters, piracy, illegal fishing, and supply chain vulnerabilities, India is attempting to transform the Bay from a **zone of strategic competition into a zone of cooperative security** through its evolving maritime doctrine—**SHANTI (Security through Advanced Maritime Governance and Robust Integration and Trust).**

What is SHANTI?

- **SHANTI (Security through Advanced Maritime Governance and Robust Integration and Trust)** is India's emerging maritime governance philosophy aimed at transforming the Bay of Bengal into a **cooperative maritime security community**.
- It seeks to integrate Maritime security, Economic connectivity, Disaster resilience, Blue Economy, Environmental sustainability, Institutional governance.
- Thus, SHANTI is **not merely a security doctrine but a comprehensive maritime governance framework.**

Why is the Bay of Bengal Strategically Important?

1. **Gateway between the Indian and Pacific Oceans**
    - The Bay forms India's maritime bridge with ASEAN, Indo-Pacific, East Asia and Western Pacific

2. **Maritime Trade Hub**
   - Nearly **90–95% of India's trade by volume** and around **70% by value** moves through the sea.
   - The Bay facilitates Energy imports, LNG transportation, Global supply chains any disruption directly affects India's economy.
3. **Energy Security**
   - Critical sea routes transport Crude oil, LNG, Fertilizers, Coal, Strategic minerals. Hence maritime security equals energy security.
4. **Strategic Military Importance**
   - The Bay hosts India's Eastern Naval Command (Visakhapatnam), Andaman & Nicobar Command (India's only tri-service command), Access to Malacca Strait
   - It enables India to monitor Chinese naval movements across the eastern Indian Ocean.
5. **Centre of Indo-Pacific Competition**
   - Major powers are increasing their presence China, United States, Japan, Australia, France.
   - The Bay has become a theatre where geopolitical competition intersects with economic connectivity.
6. **Climate Vulnerability**
   - The Bay witnesses Cyclones, Storm surges, Coastal erosion, Sea-level rise, Flooding, Saltwater intrusion.
   - Regional cooperation is essential for disaster preparedness.

Evolving pattern of India's initiative on maritime security

Phase	Maritime Vision	Objective
2015	SAGAR	Security and Growth for All in the Region
2019 onwards	Indo-Pacific Oceans Initiative (IPOI)	Rules-based maritime cooperation
2025	MAHASAGAR	Mutual and Holistic Advancement for Security and Growth Across Regions
Emerging	SHANTI	Advanced Maritime Governance and Trust-based Regional Integration

Strategic Importance of SHANTI

- **Strengthens India's Indo-Pacific leadership**

India positions itself as a **net security provider** rather than merely a military power.

- **Counters China's Maritime Expansion**
  - China's increasing naval deployments and infrastructure development under the **Maritime Silk Road** have enhanced its presence in the Bay.
  - SHANTI offers a cooperative, rules-based alternative focused on partnerships instead of power projection.

- **Enhances Maritime Domain Awareness (MDA)**

Improved information sharing enables:

- monitoring of shipping,
- detection of illegal activities,
- enhanced coastal security.

- **Supports Act East Policy**

The Bay serves as the maritime bridge connecting India with ASEAN and the wider Indo-Pacific.

- **Secures Critical Sea Lanes**

Protecting SLOCs ensures uninterrupted trade and energy supplies.

Potential Opportunities of SHANTI

1. **Economic Integration**
   - SHANTI can promote regional value chains, port-led industrialization, logistics corridors, digital maritime trade.
2. **Expansion of Blue Economy**
   - Potential sectors include Offshore wind energy, Ocean thermal energy, Aquaculture, Marine biotechnology, Cruise tourism.
   - Deep-sea mining (subject to environmental safeguards)
3. **BIMSTEC Revitalisation**
   - The Bay provides an opportunity to transform BIMSTEC into a security platform, an economic corridor, a connectivity hub.
4. **Climate Leadership**
   - India can emerge as a leader in climate adaptation, coastal resilience, disaster management,
5. **Defence Diplomacy**
   - Greater cooperation through MILAN naval exercise, coordinated patrols, HADR missions, coast guard cooperation, and naval training.
6. **Strategic Supply Chains**
   - The Bay can become a resilient manufacturing and logistics hub under initiatives such as Indo-Pacific Economic Framework (IPEF), India-Middle East-Europe Economic Corridor (IMEC) linkages, Global supply chain diversification.

Challenges to SHANTI

- Strategic rivalry among major powers regarding China's expanding maritime presence and dual-use port infrastructure.
- Weak institutional capacity of regional organizationsand maritime boundary disputes.
- Climate change and extreme weather events.
- Limited interoperability among regional navies.

Way Forward

- Institutionalise SHANTI through **BIMSTEC** with a dedicated maritime governance framework.
- Accelerate regional connectivity via **Sagarmala**, **Kaladan Multimodal Transit Transport Project**, and the **India–Myanmar–Thailand Trilateral Highway**.
- Promote a sustainable Blue Economy with marine conservation, pollution control, and resilient fisheries.
- Strengthen regional disaster management with integrated early warning systems and joint response protocols.
- Uphold **UNCLOS**, freedom of navigation, and peaceful dispute resolution to reinforce a rules-based maritime order.
- Foster collaboration with **ASEAN, IORA, QUAD** partners, and other **Indo-Pacific** stakeholders while preserving strategic autonomy.

Conclusion

- The **Bay of Bengal** is no longer a peripheral maritime space but the **strategic centre of the Indo-Pacific**, where economic connectivity, geopolitical competition, climate resilience, and maritime security converge.
- India's proposed **SHANTI framework** represents an evolution from traditional naval security to **inclusive maritime governance**, integrating security, trust, sustainability, and institutional cooperation.

2.6. WHY HAS PoK ERUPTED IN PROTESTS?

Context:

- Mass protests have erupted across **Pakistan-occupied Kashmir (PoK)** against alleged electoral manipulation, lack of political representation and poor governance. The protests, led by the **Jammu Kashmir Joint Awami Action Committee (JKJAAC)**, have been met with a severe security crackdown by Pakistani authorities.

Introduction

Initially triggered by rising inflation and economic hardships, the movement in PoK has evolved into a broader demand for democratic representation, accountability and political autonomy. The unrest highlights longstanding governance deficits and carries significant implications for regional stability and India-Pakistan relations.

Why Are the Protests Taking Place?

1. **Reservation of Seats for Refugees:** Of the **45 elected seats** in the PoK Assembly, **12 are reserved for refugees from the erstwhile Jammu & Kashmir residing outside PoK**, who vote from outside the region.

Protesters argue that this reduces the political representation of local residents and enables Islamabad to exert greater influence over the region's democratic process.

2. **Allegations of Electoral Manipulation:** The ongoing **three-phase elections** have been criticised for lacking transparency, fairness and credibility. The **Jammu Kashmir Joint Awami Action Committee (JKJAAC)** alleges electoral irregularities and demands electoral reforms, claiming that the current process does not genuinely reflect the will of the local population.
3. **Governance Deficit:** Residents accuse Islamabad-backed governments of **poor governance, inadequate development, weak public services and limited political accountability**. Years of perceived neglect and centralised decision-making have deepened public dissatisfaction and strengthened demands for greater local autonomy and responsive governance.
4. **Economic Distress:** The protest movement initially emerged in response to **inflation, unemployment and the rising prices of essential commodities**, which severely affected people's livelihoods after the COVID-19 pandemic. Over time, these economic grievances evolved into a broader movement demanding political rights and structural governance reforms.
5. **Excessive Use of Force:** Pakistani security forces have reportedly responded to demonstrations with **live ammunition, sniper fire and large-scale crackdowns**, leading to numerous deaths and injuries. The use of disproportionate force has intensified public anger, transformed the protests into a wider civil rights movement and attracted international attention over alleged human rights violations.

Key Associated Issues

1. **Democratic Deficit:** Limited political representation and the perceived dominance of Islamabad in PoK's affairs have weakened the legitimacy of democratic institutions. The reservation of seats for non-resident refugees has further fuelled demands for greater local representation and political autonomy.
2. **Human Rights Concerns:** Allegations of excessive use of force, including live ammunition and communication restrictions, raise serious concerns over the protection of civil liberties and the right to peaceful protest. The crackdown has also drawn criticism from international human rights organisations.
3. **Governance Failure:** Persistent economic neglect, inadequate public services and weak institutional accountability have eroded public confidence in the administration. The protests reflect broader dissatisfaction with governance rather than merely opposition to the ongoing elections.
4. **Electoral Credibility:** Allegations of electoral irregularities and lack of transparency have undermined public faith in the electoral process. Credible and representative elections are essential for ensuring democratic legitimacy and political stability.
5. **Regional Stability:** The protests are taking place in a strategically sensitive region along the **Line of Control (LoC)**, increasing security concerns for both India and Pakistan. Prolonged instability could escalate cross-border tensions and adversely affect regional peace and security.

India's Diplomatic and Strategic Response

- **Condemned the Crackdown:** India strongly condemned the use of excessive force against civilians and expressed concern over the reported deaths and injuries during the protests.
- **Criticised Pakistan's Actions:** The Ministry of External Affairs (MEA) criticised Pakistan's handling of the unrest, accusing its establishment of suppressing democratic aspirations and violating the rights of PoK residents.
- **Reiterated India's Position:** India reaffirmed that **Pakistan-occupied Kashmir (PoK) is an integral part of India** and stated that Pakistan has no legal or moral authority over the territory.

International Human Rights Response

Amnesty International

- Amnesty International urged Pakistani authorities to exercise restraint, respect the right to peaceful assembly and avoid the excessive use of force against protesters.
- It also called for the **restoration of internet and communication services**, unhindered access for independent media and observers, and a transparent investigation into alleged human rights violations.

Overseas Kashmiri Diaspora

- Sections of the **Mirpuri Kashmiri diaspora**, particularly in the United Kingdom, launched campaigns highlighting the crackdown and urging Pakistan to respect democratic rights and civil liberties.
- The growing international attention has increased pressure on Pakistan to ensure accountability, transparency and adherence to international human rights standards.

Strategic Significance for India

1. **Security of the Line of Control (LoC)**
    - The protests are concentrated in **Rawalakot, Muzaffarabad and Kotli**, areas located close to the **Line of Control (LoC)**, making the unrest strategically significant for India's border security. Any prolonged instability in these regions could alter the security dynamics along the LoC and require heightened vigilance by Indian security forces.
2. **Implications for Cross-Border Security**
    - Pakistan-occupied Kashmir has historically served as a base for **cross-border infiltration, terrorist launch pads and militant training camps** targeting India. Political instability and administrative breakdown could either weaken Pakistan's control or prompt increased military deployment, both of which have implications for India's internal and border security.
3. **Counter-Terrorism Dimension**
    - Several protest-affected areas, including **Muzaffarabad, Kotli and Rawalakot**, were among the locations that India claimed to have targeted during **Operation Sindoor (2025)** against terror infrastructure. The current unrest highlights the strategic importance of these regions in India's counter-terrorism and national security calculus.

4. **India–Pakistan Relations**
   - The developments have added another point of contention in the already strained India–Pakistan relationship. India's criticism of Pakistan's handling of the protests reinforces its long-standing position on Pakistan's governance of PoK and may further complicate bilateral engagement.
5. **Diplomatic and Legal Significance**
   - India has consistently maintained that **Pakistan-occupied Kashmir is an integral part of India** and has used the unrest to highlight issues of governance, democratic deficit and human rights in the region. The protests provide India with an opportunity to strengthen its diplomatic narrative on Pakistan's administration of PoK in international forums.
6. **Regional Stability**
   - Continued unrest in PoK has the potential to increase tensions in a strategically sensitive region bordering **India, Pakistan and China**. Sustained instability could have wider implications for regional peace, border management and South Asian security

Way Forward

1. **Continue Principled Diplomatic Engagement**
   - India should consistently highlight issues of **human rights, democratic governance and civil liberties in Pakistan-occupied Kashmir (PoK)** through bilateral engagements and appropriate international forums, while adhering to international law and its long-standing diplomatic position.
2. **Strengthen Border and Internal Security**
   - Given the strategic location of the unrest near the **Line of Control (LoC)**, India should enhance border surveillance, intelligence sharing and counter-infiltration measures to prevent any spillover of instability or cross-border terrorism.
3. **Reinforce India's Legal and Diplomatic Position**
   - India should continue to reaffirm that **Pakistan-occupied Kashmir is an integral part of India** and expose governance deficits, democratic shortcomings and human rights violations in PoK through credible diplomatic channels.
4. **Promote Development in Jammu & Kashmir**
   - Sustained investment in infrastructure, connectivity, education, healthcare and employment in **Jammu & Kashmir** can strengthen public confidence and demonstrate the benefits of democratic governance and inclusive development.
5. **Counter Misinformation through Strategic Communication**
   - India should proactively disseminate factual information on developments in PoK through official channels and public diplomacy to counter misinformation and strengthen its international narrative.
6. **Build International Support**
   - India should engage with democratic partners, multilateral institutions and human rights organisations to encourage respect for fundamental freedoms and transparent governance in PoK without internationalising the bilateral dispute.

7. Pursue Peace with Vigilance

- While remaining committed to peace and regional stability, India should maintain a robust security posture along the LoC and continue to combat cross-border terrorism through a calibrated combination of diplomacy, deterrence and preparedness.

Conclusion

The PoK protests highlight the need for **democratic governance, political representation and respect for human rights**. For India, they reinforce the importance of **border security, regional stability and its consistent position that PoK is an integral part of India**.

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3.1. E20 PETROL: CHLORIDE CONTAMINATION CONTROVERSY

Context:

- Recently, India's state-owned Oil Marketing Companies (OMCs)—Indian Oil, BPCL and HPCL—rejected allegations of excessive **chloride contamination and moisture in E20 petrol**. Nationwide testing reportedly found chloride levels within permissible limits and no evidence of widespread water contamination.

What is E20 Petrol?

- **E20 = Petrol containing up to 20% ethanol blended with gasoline**, generally expressed by volume.
- It is part of India's **Ethanol Blended Petrol (EBP) Programme**.
- **Ethanol:** Biofuel alcohol produced mainly from agricultural feedstocks such as sugarcane and grains.
- BIS standard **IS 17021:2018** specifies E20 fuel as an admixture of **20% anhydrous ethanol + 80% ethanol-free motor gasoline**.

Why is Ethanol Blended with Petrol?

- **Reduce crude-oil imports** and improve energy security.
- **Promote domestic renewable fuel production.**
- Provide an additional market for **sugarcane, maize and other feedstocks**.
- Reduce dependence on fossil fuels and potentially lower **lifecycle greenhouse-gas emissions**.
- Support farmers and the **bioeconomy**.

What did the Latest Testing Find?

1. **According to the OMCs' nationwide assessment:**
    - **100+ petrol samples** were tested for chloride.
    - Samples from refineries reportedly showed chloride levels of **≤1 ppm**.
    - Ethanol samples from around **80 distilleries** were tested.
    - E20 samples from **80+ depots/terminals** were also examined.
    - OMCs reported chloride levels in these E20 samples at **below 3 ppm**.
    - They also stated that checks did **not find water ingress in underground storage tanks** across the fuel-station network.

2. **Current controversy**
    - The issue gained attention after the **Society of Indian Automobile Manufacturers (SIAM)** had raised concerns about chloride/moisture and possible damage to vehicle components, but subsequently **withdrew its earlier warning**, stating that the data required further verification.

Why moisture is an Issue?

- The issue is **not that ethanol itself is a contaminant**; the concern is about **excess** chloride/moisture beyond prescribed fuel-quality limits.
- **Ethanol is hygroscopic**, it has a strong tendency to absorb water.
- Excess water can potentially cause: Water ingress leading to ethanol-water interaction then phase separation & fuel-system/engine problems.

About Chloride

- Chloride/inorganic chloride can be an **undesirable contaminant in fuel**.
- At elevated concentrations, it can contribute to **corrosion and deterioration of fuel-system components**.
- Hence, fuel-quality standards prescribe limits for parameters such as **inorganic chloride, water content, acidity and electrical conductivity**.

3.2. INDIA'S FOREX RESERVES RISE BY $10.5 BILLION

Context:

- India's **foreign exchange reserves increased by $10.52 billion to $692.87 billion**, according to the latest weekly data released by the RBI.
- The rise was mainly driven by an increase in **Foreign Currency Assets (FCA)**.

What are Foreign Exchange Reserves?

- Forex reserves are **external assets held or controlled by the RBI** to meet international payment requirements and manage external-sector stability.
- They act as a financial cushion against **global economic shocks and exchange-rate volatility**.

Components of India's Forex Reserves

India's foreign exchange reserves consist of four major components:

1. **Foreign Currency Assets (FCA)**
    - The largest component of India's forex reserves.
    - Includes assets held in major foreign currencies such as the **US dollar, euro, pound sterling and yen**.
    - FCA increased by **$8.75 billion to $546.68 billion** during the reported week.
2. **Gold Reserves**

- Gold held by the RBI forms part of India's official reserves.
- Provides diversification and acts as a store of value during global financial uncertainty.

3. **Special Drawing Rights (SDRs)**
   - International reserve assets created by the **International Monetary Fund (IMF)**.
   - SDR is **not a currency**, but represents a potential claim on freely usable currencies of IMF member countries.
4. **Reserve Tranche Position (RTP)**
   - India's **reserve position with the IMF**.
   - It can be accessed by India when required, subject to applicable IMF arrangements.

Why are Forex Reserves Important?

- **External Stability:** Provide a buffer against external financial shocks.
- **Import Cover:** Help meet international payment and import requirements.
- **Currency Stability:** RBI can use forex reserves to manage excessive volatility in the rupee.
- **Investor Confidence:** Strong reserves improve confidence in India's external-sector position.
- **Crisis Management:** Provide protection against sudden capital outflows and global financial stress.

3.3. TEJAS EXPRESS: INDIA'S FIRST CORPORATE-RUN TRAIN

Context:

- Recently, the Lucknow–New Delhi Tejas Express has been renamed 'Sprite Tejas Express' after IRCTC awarded its advertising and branding rights to Sprite, a unit of Coca-Cola India Private Limited.

Key Important Facts

1. **The Tejas Express**
   - **Status:** It is India's first corporate train to operate on the Indian Railways network.
   - **Introduction:** Operations commenced on October 4, 2019.
   - **Operates Between:** Lucknow Junction (LJN), Uttar Pradesh to New Delhi (NDLS).
   - **Operator:** The train is fully operated and maintained by IRCTC, a Central Public Sector Enterprise under the Ministry of Railways, rather than directly by Indian Railways.
   - **Train Category:** It is a semi-high-speed train featuring modern onboard passenger amenities.
   - **Speed Capability:** The coaches are designed to run at speeds up to 200 kmph. However, current track-related infrastructure limits its maximum operational speed to 160 kmph.
2. **Manufacturing Hub**
   - The modern coaches of the Tejas Express are manufactured at the Rail Coach Factory (RCF) in Kapurthala, Punjab.

3. **Significance of the Move**
    - **Non-Fare Revenue:** The co-branding and vinyl wrapping deal represents a significant push by IRCTC and Indian Railways to monetize railway assets and boost non-ticket revenue streams.
    - **Privatization in Railways:** The operation of Tejas by IRCTC was a pilot project for the Ministry of Railways' broader initiative to introduce private operators in passenger train services to improve efficiency and world-class services.

3.4. GOVT. EXPLORES MDR MODEL TO MAKE UPI SELF-SUSTAINING

Context:

- **A Parliamentary Standing Committee on Finance has suggested making UPI financially self-sustaining**, including options such as MDR on selected transactions or a tiered incentive model.

What is UPI?

- **UPI (Unified Payments Interface),** developed by **NPCI**, enables real-time bank-to-bank digital payments through UPI IDs, mobile numbers and QR codes.
- It supports both P2P (Person-to-Person) and P2M (Person-to-Merchant) transactions.

What is Merchant Discount Rate (MDR)?

- **MDR** is a fee charged to a merchant for accepting digital payments.
- It is generally shared among participants involved in processing the transaction, including the **payment service provider, acquiring bank, issuing bank and payment network**, depending on the payment instrument.

Zero-MDR Regime for UPI

- Since **January 2020**, MDR has not been permitted on notified **UPI and RuPay debit-card transactions**.
- The zero-MDR policy helped promote **low-cost digital payments and financial inclusion**, particularly among small merchants.
- However, payment infrastructure involves costs related to **technology, cybersecurity, fraud prevention, network capacity and customer support**.

Why is UPI Sustainability an Issue?

- **Rising Operational Costs:** Digital payment infrastructure requires continuous investment in technology and cybersecurity.
- **Zero-MDR Model:** Merchants do not pay MDR on eligible UPI transactions, limiting direct revenue for the ecosystem.
- **Fiscal Burden:** Government incentives are required to partly compensate ecosystem participants.
- **Scale of Transactions:** The rapid expansion of UPI increases the need for robust infrastructure and fraud-prevention mechanisms.

3.5. INDIA'S CRUDE OIL IMPORT BILL: IMPACT OF WEST ASIA CRISIS

Context:

- India's **crude oil import bill rose sharply in July 2026**, reflecting the impact of higher international crude prices amid the **West Asia crisis**. This brings into focus India's dependence on imported **crude oil, LPG and natural gas** and the vulnerability of its energy security to global price and supply disruptions.

Why is India's Crude Import Bill Important?

1. **High Import Dependence**
   - India is among the world's major **crude oil consumers and importers**.
   - A substantial share of crude processed by Indian refineries is imported.
   - This creates vulnerability to **international price fluctuations, geopolitical conflicts and supply disruptions**.
2. **Impact on Current Account**
   - Crude oil is a major component of India's merchandise imports.
   - A sharp rise in crude prices can increase the **import bill**, thereby widening the **trade deficit**.
   - If higher oil imports are not offset by exports and other inflows, it can put pressure on the **Current Account Balance**.
3. **Inflationary Impact**
   - Higher crude prices → Higher cost of petroleum products → Higher transportation and production costs → **Cost-push inflation**
   - The impact can spread across the economy because petroleum products are used in **transport, agriculture, manufacturing and logistics**.
4. **Pressure on the Rupee**
   - Higher oil imports increase India's demand for foreign currency, particularly the **US dollar**.

Higher oil prices → Higher dollar demand → Potential pressure on Rupee

Indian Crude Basket

- The **Indian Crude Basket (ICB)** is a representative basket of crude oil grades imported by India.
- It is used as an important indicator of the **international crude oil price relevant to India**.
- The basket broadly comprises **Oman & Dubai crude and Brent-related crude**.
- It is different from the price of a single crude benchmark such as Brent.

3.6. A REVIVAL ROADMAP FOR DARJEELING AND DOOARS TEA

Context:

- The **Indian Tea Association (ITA)** has sought urgent government intervention to revive the **Darjeeling, Dooars and Terai tea industries**, which face declining production, climate stress, rising costs and market challenges.

About Darjeeling Tea

Darjeeling Tea is a **GI-tagged premium orthodox tea** grown in the **Darjeeling hills of West Bengal**, renowned for its distinctive aroma and flavour and known as the **"Champagne of Teas."**

Key Facts on Darjeeling Tea

- **GI Tag:** First Indian product to receive a **GI tag (2004)**.
- **Tea type:** Predominantly **orthodox tea**; high-altitude cultivation, cool climate and well-drained soils contribute to its unique quality.
- **Challenges: Ageing bushes, climate stress, rising costs, labour issues and competition from Nepalese tea**.
- **Current issue:** Production declined from **14.49 million kg (1990) to 5.6 million kg (2025)**.
- **Revival: Indian Tea Association (ITA)** has sought government support for **plantation rejuvenation, modernisation and market protection**.

Why Revival Roadmap for Darjeeling and Dooars Tea is needed?

- Darjeeling tea production fell from **14.49 million kg (1990) to 5.6 million kg (2025)** due to **ageing bushes, climate pressures, rising costs, Nepalese imports and weak markets**. ITA proposed a **₹113-crore annual package** covering orthodox tea, working-capital interest, transport, mechanisation, social security, plantation rejuvenation and factory modernisation; a separate White Paper flags **structural, financial, climatic, labour and market challenges**.
- **Hence** ITA seeks **Minimum Sustainable Price for Made Tea**, **Minimum Import Price for orthodox tea**, **rationalised GST on ready-to-drink tea** and enhanced **RoDTEP** support for exports, alongside integration of revival measures with **government schemes**.

Decline in Darjeeling Tea Production

- **Production Slump:** The **Darjeeling White Paper** highlighted a sharp decline in production, from **14.49 million kg** in **1990** to **5.6 million kg** in **2025**.
- **GI Heritage at Risk:** The paper called for urgent, targeted intervention to safeguard the globally recognised **Geographical Indication (GI)** heritage of **Darjeeling tea**.
- **Financial Support Proposed:** The ITA proposed an indicative annual financial support package of approximately **Rs 113 crore**, covering orthodox production, working capital, transport, mechanisation, social security and factory modernisation.

About Indian Tea Association (ITA)

Indian Tea Association (ITA) is one of India's **oldest and leading tea-industry associations**, representing tea producers and plantation interests.

Key Facts

- **Established: 1881**
- **Headquarters: Kolkata, West Bengal**
- **Role:** Represents tea producers on issues related to **production, labour, trade, taxation, exports and government policy**.
- Primarily it is associated with tea plantations in **Assam, West Bengal and other major tea-growing regions**.

3.7. RAJYA SABHA PASSES MSME DEVELOPMENT (AMENDMENT) BILL 2026

Context:

- The **Rajya Sabha** has passed the **Micro, Small and Medium Enterprises Development (Amendment) Bill, 2026**, after it was earlier approved by the Lok Sabha.
- The Bill aims to improve the **liquidity of Micro, Small and Medium Enterprises (MSMEs)** by making it easier for them to receive timely payments through the **Trade Receivables Discounting System (TReDS)**.

What is the MSME Development (Amendment) Bill, 2026?

- It amends the **MSME Development Act, 2006**.
- It empowers the **Central Government** to notify a wider category of buyers who must procure goods and services from MSMEs through the **Trade Receivables Discounting System (TReDS)**.
- The objective is to **reduce payment delays** and improve **working capital availability** for MSMEs.

Why was the Amendment Needed?

MSMEs often face:

- Delayed payments from buyers.
- Cash flow shortages affecting production and employment.
- Dependence on costly short-term loans.

The amendment seeks to ensure **faster realization of invoices**, thereby strengthening the financial health of MSMEs.

Trade Receivables Discounting System (TReDS)

What is TReDS?

- **TReDS** is an **electronic invoice financing platform** regulated by the **Reserve Bank of India (RBI)**.
- It enables **MSMEs to convert their trade receivables (invoices) into immediate cash** by discounting them through financiers.

Participants

- MSME Sellers
- Buyers (Corporate entities, Government Departments, PSUs, CPSEs, etc.)
- Banks and NBFC Factors

Working Mechanism

1. MSME supplies goods/services.
2. Invoice is uploaded on TReDS.
3. Buyer accepts the invoice.
4. Banks/NBFCs bid to finance it.
5. MSME receives immediate payment after discounting.
6. Buyer pays the financier on the due date.

Objectives of the Bill

- Ensure timely payments to MSMEs.
- Improve liquidity and working capital.
- Reduce dependence on informal borrowing.
- Enhance ease of doing business.
- Promote digital financing.

Significance for MSMEs

- Faster access to funds.
- Lower financing costs.
- Improved cash flow.
- Increased production and exports.
- Greater financial inclusion.

About MSMEs in India

Classification

Enterprise	Investment	Annual Turnover
Micro	Up to ₹2.5 crore	Up to ₹10 crore
Small	Up to ₹25 crore	Up to ₹100 crore
Medium	Up to ₹125 crore	Up to ₹500 crore

Importance of MSMEs

- Contribute around **30% of India's GDP**.
- Account for nearly **45% of exports**.

- Generate employment for over **26 crore people** (direct and indirect).
- Promote balanced regional development.
- Support the **Make in India** initiative.

Key Constitutional & Institutional Linkages

- **Ministry:** Ministry of Micro, Small and Medium Enterprises.
- **Regulator of TReDS:** Reserve Bank of India (RBI).
- **Parent Law:** MSME Development Act, 2006.

3.8. RBI PLANS TO INTRODUCE POLYMER CURRENCY NOTES FROM FY 2026–27

Context:

- The RBI plans to introduce polymer currency notes from FY 2026–27 after completing the ongoing pilot project.

What are Polymer Currency Notes?

- Polymer currency notes are banknotes made from **biaxially oriented polypropylene (BOPP)** instead of traditional cotton-based paper. They are stronger, more durable and equipped with advanced anti-counterfeiting technologies.

Why is RBI Introducing Polymer Notes?

- Improve the lifespan of banknotes in circulation.
- Strengthen protection against counterfeit currency.
- Reduce replacement and printing costs over time.
- Improve resistance to moisture, dirt and wear.
- Enhance public confidence in the currency system.

Key Features of Polymer Notes

- Manufactured using **polymer substrate (BOPP)** instead of cotton paper.
- Longer lifespan than conventional paper notes.
- Waterproof, tear-resistant and dirt-resistant.
- Can incorporate **transparent windows, holographic images and micro-security features**.
- Difficult to duplicate using conventional printing techniques.
- Better print quality and colour retention.

Advantages of Polymer Currency

- **Higher Durability:** Lasts significantly longer than paper notes.
- **Lower Counterfeiting:** Advanced security features make forgery difficult.
- **Reduced Replacement Cost:** Fewer notes need to be reprinted.
- **Cleaner Currency:** Less prone to absorbing moisture and contaminants.
- **Environmental Benefits:** Lower consumption of raw materials due to longer circulation life.

Currency Note Issuance in India

- **Currency Notes:** Issued by the **Reserve Bank of India** under the **Reserve Bank of India Act, 1934**.
- **₹1 Note:** Issued by the **Government of India** under the **Coinage Act, 2011** and signed by the **Finance Secretary**.
- All other currency notes are signed by the **RBI Governor**.

3.9. PNGRB AUTHORISES 1,800 KM OF LPG PIPELINE INFRASTRUCTURE

Context:

- The **Petroleum and Natural Gas Regulatory Board (PNGRB)** has authorised the development of around 1,800 km of LPG pipeline infrastructure across **Telangana, Maharashtra, Uttar Pradesh, Uttarakhand, Karnataka and Goa**.

Key Pipeline Projects

Route	Length
Cherlapally (Telangana) – Nagpur (Maharashtra)	556 km
Jhansi (Uttar Pradesh) – Sitarganj (Uttarakhand)	611 km
Shikrapur (Maharashtra) – Goa and Hubli (Karnataka)	633 km

About PNGRB

- It is a **statutory body** established under the **Petroleum and Natural Gas Regulatory Board Act, 2006**.
- It regulates the **midstream and downstream petroleum and natural gas sectors**.
- Its mandate covers **refining, processing, storage, transportation, distribution, marketing and sale** of petroleum, petroleum products and natural gas.
- **Production of crude oil and natural gas is excluded** from its regulatory mandate.

3.10. RBI SURPLUS & UPI USER CHARGES: CAN RBI FUND UPI WITHOUT CHARGING USERS?

Context:

- The Reserve Bank of India (RBI) has stated that it has adequate financial resources to bear the cost of operating the **Unified Payments Interface (UPI)** without imposing charges on merchants or customers. The statement comes amid the introduction of the **Taxation Laws (Amendment) Bill, 2026**, which enables the government to notify certain digital transactions that may attract charges in the future.

Why is this in News?

- RBI Governor **Sanjay Malhotra** stated that the RBI's annual surplus is sufficient to finance UPI operational costs.
- The government has introduced the **Taxation Laws (Amendment) Bill, 2026**, allowing future notification of chargeable digital transactions.
- The issue has revived the debate over the long-term financial sustainability of India's digital payment ecosystem.

UPI (Unified Payments Interface)

- **Launched:** 2016
- **Developed by:** National Payments Corporation of India (NPCI)
- **Regulated by:** Reserve Bank of India (RBI)
- **Nature:** Real-time, interoperable digital payment system enabling instant bank-to-bank fund transfers using mobile devices.
- **Features:**
  - 24×7 instant fund transfer
  - QR code-based payments
  - Virtual Payment Address (VPA)
  - Supports P2P and P2M transactions

How is UPI Currently Funded?

- **Customers:** No transaction charges.
- **Merchants:** No Merchant Discount Rate (MDR) on most UPI transactions.
- Operational costs are currently supported through:
  - Government incentives
  - Banks and payment service providers
  - RBI's broader financial ecosystem

What is Merchant Discount Rate (MDR)?

- MDR is a fee paid by merchants to banks/payment service providers for processing digital transactions.
- It is generally charged on card-based transactions.
- Since **January 2020**, **zero MDR** has been applicable on RuPay debit cards and UPI transactions to promote digital payments.

Key Findings from RBI

- RBI earns significant annual surplus through:
  - Interest income
  - Foreign exchange operations
  - Investments

- The annual cost of operating the UPI platform is only a small fraction of RBI's surplus.
- Therefore, RBI believes public digital payment infrastructure can continue without imposing direct charges on users.

Taxation Laws (Amendment) Bill, 2026 – Key Provision

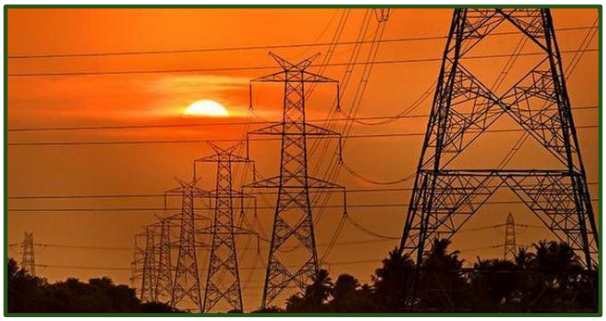
- Empowers the Central Government to **notify categories of digital transactions that may attract charges** in future.
- The Bill **does not immediately impose charges** on UPI transactions.
- It only creates an enabling legal framework for future policy decisions.

Why is UPI Important for India?

- Promotes a **cashless and less-cash economy**.
- Supports **Digital India** and financial inclusion.
- Reduces transaction costs and increases transparency.
- Facilitates seamless digital commerce for individuals, MSMEs and businesses.
- Strengthens India's digital public infrastructure (DPI).

3.11. INDUSTRIAL HEAT ELECTRIFICATION: DECARBONISING INDIAN INDUSTRY

Context:



- India's next energy-transition frontier is **industrial heat**, especially in MSMEs dependent on fossil-fuel-based boilers. India needs a **coordinated shift to renewable-powered industrial heat** through suitable technology, finance, skills and cluster-level planning.

Why Industrial Heat Electrification Matters?

1. **Decarbonising Industry**
   - Industrial heating is a major source of **fossil-fuel consumption and GHG emissions**.
   - Electrification using renewable power can significantly reduce the **carbon intensity of manufacturing**.
2. **Energy Security**
   - Reduces dependence on fossil fuels and exposure to **volatile fuel prices and imports**.
   - Greater use of domestic renewable electricity strengthens India's energy resilience.
3. **Manufacturing Competitiveness**
   - Efficient electric heating and waste-heat recovery can reduce **energy and operating costs**.
   - Cleaner production can improve India's competitiveness in **global green supply chains**.
4. **MSME Transformation**
   - MSMEs often have limited capital, technical expertise and energy monitoring systems.

- A structured transition can help them adopt **efficient technologies without excessive upfront costs**.

Technology Pathways

Technology	Suitable Application
Heat Pumps	Low/medium-temperature processes and waste-heat recovery
Electric Boilers	Steam generation, including higher-temperature applications
Mechanical Vapour Recompression	Evaporation-intensive processes
Thermal Energy Storage	Store surplus renewable/recovered heat and release when needed
Waste-Heat Recovery	Improve energy efficiency before additional electrification

Challenges of Industrial Heat Electrification

1. **Diverse Industrial Processes**
   - Industries have different **temperature, heat-load, steam and operating requirements**.
   - Hence, a **one-size-fits-all electrification technology** is impractical.
2. **Poor Energy Data**
   - Many units lack proper monitoring of **steam flow, process temperature, waste heat and boiler efficiency**.
   - This makes it difficult to identify the **most efficient and cost-effective transition pathway**.
3. **High Upfront Costs**
   - MSMEs often face **limited capital, technology risks and inadequate technical expertise**.
   - High initial investment discourages adoption despite potential long-term savings.
4. **Electricity Constraints**
   - **Grid charges, open-access rules, banking provisions and infrastructure gaps** can raise renewable electricity costs.
   - Unreliable or expensive power can weaken the economic case for industrial electrification.
5. **Skill Deficit**
   - Electrification requires expertise in **system design, installation, automation and maintenance**.
   - Shortage of skilled manpower can delay adoption and reduce system efficiency.

Government Policy

- **National Green Hydrogen Mission** – promotes clean-energy transition in hard-to-abate sectors.
- **Perform, Achieve and Trade (PAT) Scheme** – promotes energy efficiency in energy-intensive industries.

- **Bureau of Energy Efficiency (BEE) –** important institutional actor for energy-efficiency standards and programmes.
- **PM-KUSUM and renewable-energy expansion –** demonstrate India's broader shift towards renewable electrification.
- **Green Energy Open Access Rules –** can facilitate industrial access to renewable electricity.

Way Forward: Industrial Heat Electrification

"Efficiency first, electrification next." India should first optimise industrial processes and recover waste heat, and then electrify the **residual heat demand** using the most suitable technology.

1. **Audit & Optimise**
   - Conduct **facility-level thermal-energy audits** covering boilers, steam, process temperatures and waste heat.
   - Use **pinch analysis** to maximise heat recovery before electrification.
2. **Technology-Specific Electrification**
   - Choose technologies based on **temperature, heat load and process requirements** rather than a blanket approach.
   - Promote **heat pumps, electric boilers, mechanical vapour recompression and thermal energy storage** where appropriate.
3. **Cluster-Level Planning**
   - Develop **industrial heat profiles** for major MSME clusters and map thermal demand with local renewable potential.
   - Integrate industrial electrification with **grid capacity, renewable generation and infrastructure planning**.
4. **Affordable & Reliable Green Power**
   - Streamline **green open access**, rationalise network and banking charges, and strengthen transmission infrastructure.
   - Align industrial heat demand with periods of **abundant renewable generation**.
5. **Innovative Finance & Demand Aggregation**
   - Scale **technology leasing, Heat-as-a-Service, ESCO models and blended finance** to reduce upfront costs.
   - Aggregate MSME demand at the cluster level to achieve **economies of scale and cheaper financing**.
6. **Demonstration & Skill Development**
   - Establish **first-of-a-kind demonstration projects** across sectors and temperature ranges to reduce technology and investment risks.
   - Build a skilled workforce of **engineers, technicians and operators** in system design, automation and maintenance.

7. **Demonstrate, Standardise & Scale**
    - Use pilot experience to develop **national engineering standards, financing frameworks and institutional mechanisms**.
    - Gradually scale successful models through **cluster-based industrial transition plans**, rather than imposing blanket mandates.

Conclusion

Industrial heat electrification can simultaneously advance **decarbonisation, energy security and manufacturing competitiveness**. India should adopt a **technology-neutral, cluster-based and finance-enabled approach**, prioritising efficiency before electrification.

A coordinated transition can make Indian industry **cleaner, more resilient and globally competitive**.

3.12. PRESS NOTE 3 REFORM: BALANCING FDI AND NATIONAL SECURITY

Context:

- **Press Note 3 (2020)** mandated Government approval for FDI from countries sharing India's land borders to prevent **opportunistic takeovers** during COVID-19.
- In **March 2026**, the Government allowed the **automatic route** for qualifying investments with less than **10% stake** from such countries.
- By August 2026, **29 projects worth ₹4,895.65 crore** were reported, indicating initial FDI facilitation

Introduction

- **Foreign Direct Investment (FDI)** is a crucial source of capital, technology, managerial expertise and integration with global value chains.
- India's recent relaxation of **Press Note 3 (2020)** seeks to balance **investment facilitation with national security concerns**.

Importance of this news in contemporary scenario

1. **Early evidence of the impact of the 2026 relaxation**
    - The Government has released the figure of **₹4,895.65 crore across 29 projects**, providing the first indication of whether the relaxed PN3 framework is actually facilitating investment.
2. **Need to balance national security and investment facilitation**
    - PN3 was designed during an exceptional economic-security environment, but its broad application subsequently affected companies having even **small foreign shareholdings** from land-border countries.
    - The relaxation attempts to distinguish between **controlling investment** and **minority/non-controlling investment**.

3. **India's FDI and manufacturing ambitions**
    - India requires sustained FDI to support **Make in India, manufacturing expansion, technological upgrading, employment generation and global value-chain integration**.
    - Excessively restrictive investment rules can increase transaction costs and discourage multinational companies from establishing or expanding operations in India.
4. **Changing geopolitical and economic environment**
    - The original PN3 framework emerged amid concerns about economic vulnerabilities during COVID-19 and subsequently became closely associated with **India-China strategic tensions**.
    - The latest reform signals a move towards a more **calibrated rather than blanket approach** to investment screening.

Features of Press Note 3

- **Press Note 3 of 2020** amended India's FDI policy by requiring Government approval for FDI from entities of countries sharing a **land border with India**.
- The framework covered countries such as **China, Pakistan, Bangladesh, Nepal, Bhutan and Myanmar** under the relevant land-border criterion.
- The policy was intended to prevent **opportunistic acquisitions of Indian businesses during economic distress** and address possible national-security concerns.
- Importantly, PN3 was issued in **April 2020, before the Galwan clash of May 2020**; therefore, its original rationale should not be equated entirely with India-China border tensions.

Provisions of 2026 Relaxation

- The March 2026 reform allows certain investments to enter through the **automatic route** where entities from land-border countries have **less than 10% ownership**, subject to the prescribed conditions.
- The underlying principle is that a **small minority investment does not necessarily provide the same degree of control or strategic influence as a controlling stake**.
- This creates a distinction between:
    - **Controlling/strategically influential investment → greater scrutiny**
    - **Small minority/non-controlling investment → comparatively easier entry**

Impact of Press Note 3 Relaxation on FDI

1. **Reduction in regulatory barriers**
    - The automatic route eliminates the need for prior Government approval in qualifying cases, thereby reducing **procedural delays, uncertainty and compliance costs**.
    - This can improve India's **ease of doing business** and investment attractiveness.
2. **Facilitation of genuine foreign investment**
    - Multinational corporations often have complex global ownership structures involving several institutional investors.
    - A small shareholding from a land-border country could previously create regulatory complications even when the principal investor was from another country.

- The relaxation can therefore facilitate **genuine and commercially motivated investments**.

3. **Greater integration with global value chains**
   - FDI can help Indian firms access:
     - **advanced technology**
     - global markets
     - managerial expertise
     - international supply chains
     - capital and research capabilities.
   - This is particularly relevant for India's ambition to become a major **global manufacturing and services hub**.
4. **Sectoral diversification**
   - The reported projects span **AI, IT, ICT, pharmaceuticals, manufacturing, data centres and transport services**.
   - Thus, the relaxation could support investment in sectors that are important for India's **digital economy and emerging technology ecosystem**.
5. **Technology transfer and domestic value addition**
   - Greater FDI can facilitate **technology transfer, skill development, R&D collaboration and domestic value addition**.
   - It can strengthen Indian firms' ability to participate in **global production networks**.

Challenges Ahead

1. **National security concerns**
   - A blanket relaxation could create vulnerabilities if foreign entities use **minority shareholding, layered ownership or complex corporate structures** to acquire strategic influence indirectly.
2. **Beneficial ownership opacity**
   - The formal shareholding of an entity may not reveal its **ultimate beneficial owner**.
   - Therefore, effective screening requires examination of the entire ownership chain.
3. **Sensitive sectors**
   - Sectors such as **telecommunications, defence, digital infrastructure, critical minerals, financial infrastructure, AI and data centres** have strategic significance.
   - Investment facilitation must not compromise **economic and national security**.
4. **Regulatory uncertainty**
   - Frequent changes or ambiguous interpretation of investment rules can increase investor uncertainty.
   - Investors require **predictability, transparency and consistency** in policy implementation.
5. **Approval-related delays may persist**
   - Even where the automatic route is available, other regulatory requirements relating to **competition, taxation, sectoral regulation, land and environmental clearances** can continue to delay projects.

Way Forward

1. **Adopt a calibrated risk-based investment regime**
   - India should follow the principle of **"facilitate low-risk investment, scrutinise high-risk investment."**
   - Small, non-controlling investments should face minimal procedural barriers, while investments in strategic sectors should undergo enhanced scrutiny.
2. **Strengthen beneficial ownership verification**
   - Authorities should assess the **ultimate beneficial ownership and effective control**, rather than relying exclusively on nominal shareholding percentages.
   - This can prevent circumvention of the PN3 framework.
3. **Create a transparent national-security screening mechanism**
   - Investment screening should have **clear criteria, defined timelines and institutional accountability**.
   - This would reconcile national security with **ease of doing business**.
4. **Improve inter-agency coordination**
   - Greater coordination among the **DPIIT, Ministry of Commerce and Industry, RBI, sectoral regulators and security agencies** can make investment screening both faster and more effective.
5. **Provide regulatory certainty**
   - India should minimise ambiguity in FDI rules and issue **clear guidelines, FAQs and standard operating procedures** for investors.
   - Predictability is essential for attracting long-term capital.

Conclusion

- The relaxation of Press Note 3 is a **pragmatic balance between investment facilitation and national security**.
- India should move towards a **transparent, predictable and risk-based FDI regime** that welcomes productive capital while retaining stringent safeguards for strategically sensitive investments.

3.13. BEYOND BARRELS: INDIA'S BLUEPRINT FOR A $42 BILLION STRATEGIC ENERGY SHIELD

Context:

- West Asia-related disruptions have exposed critical vulnerabilities in India's energy-security system. While India imports vast quantities of fossil fuels, its capacity to store and release these fuels during prolonged geopolitical supply shocks remains severely constrained.

Introduction

To buffer the economy against volatile supply disruptions, the Indian government is evaluating a $42 billion, decade-long strategic fuel program. This initiative aims to transition India from managing short-term market fluctuations to building a robust, multimodal energy-defense architecture across crude oil, natural gas, and LPG.

About Strategic Petroleum Reserves (SPRs)

- **Definition:** SPRs are dedicated, large-scale emergency stockpiles of crude oil maintained by sovereign nations.
- **Purpose:** They serve exclusively as a strategic buffer against sudden supply chain disruptions and price shocks, operating entirely independently of routine commercial inventories.

Historical Background

- **Origin:** The concept of sovereign SPRs emerged globally following the 1973 Oil Crisis, triggered by an Arab oil embargo.
- **Global Standard:** Since then, major oil-importing economies like the US, China, and Japan have maintained massive reserves to stabilize domestic markets during crises.

India's Oil Stockpiles: Current Status

- **Market Position:** India is the world's third-largest consumer of crude oil, with an import dependency exceeding 88%.
- **Inherent Vulnerability:** This heavy reliance leaves the macroeconomic framework highly exposed to external supply chokepoints.
- **The Gas/LPG Deficit:** Beyond crude, India currently operates **zero** underground natural gas storage facilities and a minimal 0.14 MT of LPG capacity, relying almost entirely on real-time maritime logistics.

The IEA Benchmark Comparison

- **The Mandate:** The International Energy Agency (IEA) recommends member nations maintain oil stocks equivalent to **90 days** of net imports.
- **India's Reality:** As an Associate Member, India's total national storage—combining strategic reserves and commercial refinery stocks—currently stands at just **74 days**.

India's Existing SPR Infrastructure

- **Management:** Monitored by the Indian Strategic Petroleum Reserve Limited (ISPRL).
- **Phase I Footprint:** Comprises three underground rock caverns totalling 5.33 million tonnes (MT) at Visakhapatnam, Mangaluru, and Padur.
- **Utilization Gap:** Operating at only ~64% capacity (holding ~3.37 MT), Phase I provides a thin buffer covering roughly **9.5 days** of India's crude needs.

Planned Expansion: Future SPR Sites

- **Approved Expansion:** Phase II targets a 6.5 MT addition via reserves at Chandikhol (4 MT) and a Padur expansion (2.5 MT).

- **Proposed Additions:** Pending proposals for Bikaner and Rajkot aim to add another 6 MT.
- **Long-Term Vision:** The overarching masterplan targets an additional 28 MT of crude (two months cover), 9 MT of LNG (56 days cover), and 4 MT of LPG (six weeks cover).

Significance of the Fuel Plan

1. **Macroeconomic Stability:** Absorbs imported inflation shocks, protecting the national fiscal deficit and preventing sudden retail price hikes.
2. **Securing the Energy Transition:** Constructing 9 MT of LNG storage ensures a steady supply of natural gas, a critical "bridge fuel" for India's transition to renewable energy.
3. **Strategic Autonomy:** Empowers New Delhi to maintain an independent foreign policy without coercion from energy cartels during international conflicts.
4. **Upgraded Sectoral Resilience:** Expanding LPG and gas buffers shields domestic cooking gas supplies and priority industrial sectors (e.g., fertilizers) from supply chokepoints.
5. **Supply Chain Sovereignty:** Synergizes with domestic maritime capacity building, directly reducing India's historical reliance on foreign-owned shipping fleets.

Associated Challenges

1. **Astronomical Capital Drain:** Funding the estimated $42 billion for infrastructure (CAPEX) without levying a direct public cess poses a severe fiscal challenge.
2. **Implementation Paralysis:** Approved Phase II projects remain stalled by complex land acquisition hurdles and friction in Public-Private Partnership (PPP) finalizations.
3. **Inventory Price Traps:** Replenishing emergency stocks post-crisis may force the government to procure fuel at highly inflated global commodity and freight rates.
4. **Geological Complexity:** Constructing underground LNG/gas storage requires specialized engineering for identifying depleted reservoirs or constructing solution-mined salt caverns.
5. **Infrastructure Synchronization:** Storage is ineffective unless cavern extraction rates are perfectly synchronized with inland regasification units, bottling plants, and downstream pipeline grids.

Strategic Way Forward

1. **Scale Hybrid Funding Models:** Aggressively replicate the commercial-cum-strategic foreign leasing model to subsidize public infrastructure costs and offset capital expenditure.
2. **Fast-Track Statutory Approvals:** Expedite land clearances and administrative finalizations for the pending Bikaner and Rajkot sites to rapidly close the gap toward the 90-day IEA benchmark.
3. **Accelerate Subsurface Exploration:** Initiate immediate geological mapping of sedimentary basins (Krishna-Godavari, Cambay) to identify viable depleted reservoirs for natural gas injection.
4. **Establish Clear Governance Protocols:** Formulate a statutory policy clearly defining trigger mechanisms for emergency stock releases and the allocation of replenishment risks.

5. **Synchronize Inland Grid Expansion:** Ensure the recent authorization of 1,800 km of new LPG pipelines is completed concurrently with storage construction to guarantee inland deliverability.
6. **Diversify Import Origins:** Actively reduce Middle East dependence by finalizing supply contracts with North American and African suppliers while acquiring sovereign Very Large Gas Carriers (VLGCs).

Conclusion

True energy security transcends the mere excavation of physical storage space. India must seamlessly synchronize its expanded underground reserves with sovereign maritime shipping assets, robust inland pipeline grids, and a commercially viable governance framework. Securing strategic autonomy in the 21st century relies entirely on executing this integrated infrastructure ecosystem before the next global supply crisis materializes.

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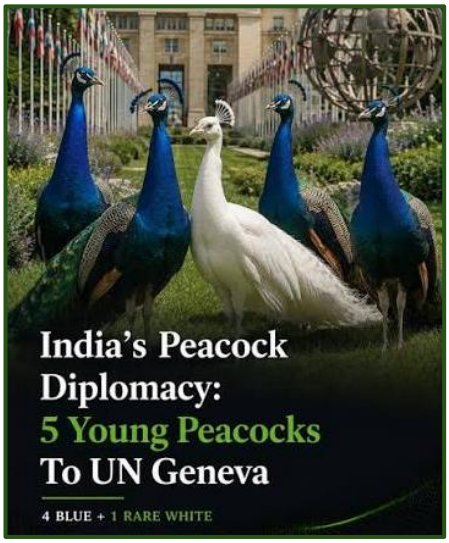
4.1. INDIA'S PEACOCK DIPLOMACY: FIVE PEACOCKS DONATED TO UN GENEVA

Context:



- India has donated **five peacocks, including a rare white-feathered male, to the United Nations Office at Geneva (UNOG)**. The donation revives a decades-old tradition and highlights the peacock's significance as both a **national symbol of India and a representation of the country's rich biodiversity**.

About Indian Peacock

- **Scientific name:** *Pavo cristatus*
- **Family:** Phasianidae
- **National status: National Bird of India**
- **Declared National Bird: 1963**
- **IUCN Red List: Least Concern**
- **Legal protection in India:** Protected under the **Wild Life (Protection) Act, 1972**
- **Diet:** Omnivorous, feeding on seeds, grains, fruits, insects and small animals.
- **Habitat:** Open forests, scrublands, agricultural landscapes and areas close to human habitation.

Why was the Peacock chosen as India's National Bird?

- The choice reflects its **wide distribution, distinctive appearance and deep association with Indian culture and traditions**. The peacock has long featured in Indian art, architecture, mythology and religious traditions.

The Peacock's Distinctive Features

- The male peacock is particularly known for its long ornamental train, which displays numerous **eye-like spots or ocelli**.
- The train is primarily associated with **courtship and sexual selection**. The striking plumage makes the peacock one of the most recognisable birds associated with India.

Conservation Significance

- Although the Indian Peacock is classified as **Least Concern by the IUCN**, it enjoys significant protection under India's domestic wildlife legislation.

International Significance of the Donation

- The donation to **UNOG in Geneva** gives the initiative a broader diplomatic and environmental dimension.

- It brings together three themes: **National Symbol → Biodiversity → International Environmental Diplomacy**
- The peacock therefore serves not merely as a cultural emblem but also as a symbol of India's commitment to **biodiversity conservation and environmental stewardship**.

4.2. SUPREME COURT: NO STATE CAN BLOCK TRADITIONAL ELEPHANT ROUTES

Context:

- The **Supreme Court** has directed the **Centre to conduct a fresh nationwide survey** of traditional elephant corridors and identify physical barriers obstructing the free movement of wild elephants.

What are Elephant Corridors?

- An **elephant corridor** is a strip of land that facilitates the movement of elephants between **two or more viable habitat patches**.
- Corridors are crucial because elephant populations often require **large, interconnected landscapes** rather than isolated protected areas.
- Maintaining these routes helps reduce **habitat fragmentation** and **human–elephant conflict**.

Major Threats to Elephant Corridors

- **Infrastructure development** such as roads, railways and other linear projects can fragment habitats and disrupt elephant movement. **Encroachment and construction**, including buildings, resorts and human settlements, can obstruct traditional routes.
- Other major threats include **agricultural expansion, fencing and walls, trenches, firebreaks, mining and quarrying, and other land-use changes**. The Supreme Court highlighted in particular **physical barriers** that prevent elephants from using their traditional movement routes.

Elephant Corridors in India:

Corridor Name	Connected Habitats / State	Key Ecological Significance
1. Kaniyanpura–Moyar	Bandipur NP to Mudumalai TR *(Karnataka & Tamil Nadu)*	Crucial link in the Nilgiri Biosphere Reserve connecting the Western and Eastern Ghats elephant populations.
2. Thirunelli–Kudrakote	Wayanad Sanctuary to Brahmagiri Sanctuary *(Kerala & Karnataka)*	Vital passage in the Malnad-Nilgiri landscape, allowing genetic exchange across state borders.
3. Kallhatti–Sigur	Mudumalai Tiger Reserve *(Tamil Nadu)*	Part of the critical Sigur Plateau corridor network, landmarked by Supreme Court rulings for right-of-passage.
4. Edayarahalli–Doddasampige	MM Hills to BR Hills *(Karnataka)*	Facilitates movement between Biligirirangan Swamy Temple (BRT) Tiger Reserve and Male Mahadeshwara Hills.

5. Chilla–Motichur	Rajaji Tiger Reserve *(Uttarakhand)*	Spans across the Ganges river; vital for structural connectivity in the Shivalik-Ganges landscape.
6. Rawasan–Sonanadi	Rajaji TR to Corbett Tiger Reserve *(Uttarakhand)*	Essential east-west seasonal migration path for elephants in the North-Western landscape.
7. Siju–Rewak	Balpakram NP to Nokrek NP *(Meghalaya)*	Crucial connectivity bottleneck in the Garo Hills landscape.
8. Kanchanjuri / Haldhibari	Kaziranga NP to Karbi Anglong Hills *(Assam)*	Enables seasonal refuge movement during annual Brahmaputra floods in Kaziranga.
9. Similipal–Hadagarh–Kuldiha	Similipal TR to Kuldiha Sanctuary *(Odisha)*	Connects key protected areas in the fragmented East-Central landscape.
10. Titi–Reti	Buxa Tiger Reserve area *(North Bengal)*	Critical movement path in the high-conflict North Bengal-Dooars region.

4.3. KAZIRANGA, MINING AND WILDLIFE CORRIDORS: UNDERSTANDING THE ISSUE

Context:

- Alleged mining activities near the **Kaziranga–Karbi Anglong** landscape have raised concerns over the protection of wildlife corridors, elephant movement routes and ecological connectivity. The issue has also highlighted the role of the **Central Empowered Committee (CEC)** and the regulation of activities within **Eco-Sensitive Zones (ESZs).**

Why Kaziranga–Karbi Anglong is An Important Ecological Landscape?

- Kaziranga is not an isolated protected area. Its ecological security is closely linked with the **forested Karbi Anglong Hills**.
- During floods in the Brahmaputra floodplains, animals move towards the relatively elevated Karbi Anglong landscape. Thus, wildlife corridors between these areas are crucial for maintaining **habitat connectivity and seasonal animal movement**.

About Kaziranga National Park

1. **Location:** Located in **Assam**, mainly in the floodplains of the **Brahmaputra River**.
2. **One-Horned Rhinoceros:** Kaziranga is globally famous for the **Greater One-Horned Rhinoceros (*Rhinoceros unicornis*)** and is one of its most important conservation areas.
3. **Brahmaputra River:** The **Brahmaputra forms the northern boundary** of Kaziranga and its annual floods play an important role in maintaining the park's grassland and wetland ecosystem.

4. **Tiger Reserve:** Kaziranga is part of the **Kaziranga Tiger Reserve** and supports a significant population of **Royal Bengal Tigers**.
5. **UNESCO World Heritage Site:** Kaziranga National Park was inscribed as a **UNESCO World Heritage Site in 1985** for its exceptional biodiversity and conservation importance.

4.4. BRICS OPPOSES EU'S CARBON BORDER ADJUSTMENT MECHANISM (CBAM)

Context:

- Recently, **BRICS countries criticised the European Union's Carbon Border Adjustment Mechanism (CBAM)** as unilateral and protectionist, arguing that it could increase the burden on developing countries' exports; they also called for greater and predictable **adaptation finance from developed countries**.

What is Carbon Border Adjustment Mechanism (CBAM)?

- **CBAM** is an **EU mechanism to impose a carbon-related cost on certain carbon-intensive goods imported into the European Union**.
- It aims to prevent **carbon leakage** and ensure that imported goods face a carbon cost comparable to goods produced within the EU.

How does CBAM Work?

- **Carbon-intensive goods imported into EU**
  ↓
- **Embedded emissions are calculated**
  ↓
- **Importer purchases CBAM certificates**
  ↓
- **Carbon-related cost is imposed**

If a carbon price has already been paid in the exporting country, the corresponding amount can be deducted under the mechanism.

Sectors Covered under CBAM

The current CBAM framework covers **six sectors**:

Sector	Examples/Significance
Iron & Steel	Major carbon-intensive industrial sector
Aluminium	Energy-intensive production
Cement	High process emissions
Fertilisers	Emissions-intensive production
Electricity	Carbon intensity varies by energy source
Hydrogen	Important for industrial decarbonisation

Why are Developing Countries Critical of CBAM?

1. **Trade Competitiveness:** Higher carbon-related costs may make exports from developing countries **less competitive** in the EU market.
2. **Development Concerns:** Developing countries argue that they require greater policy space to balance **economic development with climate action**.
3. **Climate Justice:** Developing countries emphasise their relatively lower historical contribution to cumulative greenhouse-gas emissions while facing significant climate impacts.
4. **Unilateral Climate Measures:** BRICS countries have raised concerns that unilateral trade-related climate measures could undermine **multilateral approaches to climate change**.

4.5. TRANS-BOUNDARY HIMALAYAN DISASTER IN NEPAL

Context:

- Recently, a **massive flash flood along Nepal's Bhotekoshi River** killed over a hundred people and left hundreds missing, following a **rock-and-ice landslide along the Nepal–China border** that triggered a debris-laden flood.
- The disaster caused extensive damage to **villages, bridges and infrastructure**, while a possible **minor earthquake and ice avalanche** are being investigated as triggers through satellite imagery.

Location of the Flash Flood

- Mainly **Rasuwa district**, around the **Bhotekoshi River** and **Rasuwagadhi** near the Nepal–China border.

About FLASH FLOODS

Flash floods are **sudden and highly localised floods** that develop within **a few hours**, generally when intense rainfall produces runoff faster than the **soil, rivers and drainage systems** can absorb or carry it.

Major Causes

- **Cloudbursts & extreme rainfall** - sudden, very high-volume runoff; **IMD defines a cloudburst as ≥100 mm rainfall in about 1 hour** over a small area.
- **Steep slopes & narrow valleys** - rapidly concentrate and accelerate water flow, especially in mountainous regions.
- **Rapid snow/glacier melt** - sudden increase in river discharge, particularly when combined with heavy rainfall.
- **Dam/embankment failure** - sudden release of a large volume of stored water.
- **Deforestation & urbanisation** - reduce infiltration and increase **surface runoff**.

- **Landslides & ice/rock avalanches** - can suddenly introduce huge volumes of **debris, ice and sediment into river channels**, triggering destructive **debris-laden flash floods**, as recently witnessed in the **Bhotekoshi River, Nepal**.

Why are they highly destructive?

Steep terrain + intense runoff + saturated/impermeable surfaces can cause water levels to rise extremely rapidly. **Siltation, landslides and blocked river channels** may temporarily obstruct flow and then trigger sudden downstream flooding.

Flash floods generally have **less than 6 hours between the causative rainfall/event and the peak flooding**, leaving very little time for warning and evacuation.

Geomorphological Trigger for Bhotekoshi River flash flood

- A **rock-and-ice landslide/ice avalanche** along the **Himalayan Nepal–China border** introduced large amounts of **ice, rock and sediment** into the **Bhotekoshi River system**.
- The sudden debris influx generated a **debris-laden flash flood**, significantly increasing its destructive potential downstream.

About the Bhotekoshi River

- **Origin:** Rises in **Tibet (China)** and enters **Nepal** through the Himalayas.
- **River System:** A major tributary of the **Sunkoshi River**, forming part of the **Koshi river system**.
- **Course:** Flows through the **steep, tectonically active Himalayan terrain** of central Nepal.
- **Significance:** Known for its **high hydropower potential** and susceptibility to **landslides and flash floods**.

4.6. ZSI PUBLISHES FIRST COMPREHENSIVE CATALOGUE

Context:

- The **Zoological Survey of India (ZSI)** has published the **"Catalogue of Lepidoptera (Butterflies & Moths) of India"** in the peer-reviewed journal **Zoosystema**. It is the **first comprehensive scientific catalogue** of India's butterflies and moths, prepared after **12 years of research**, providing an updated and authoritative baseline for biodiversity conservation.

About Lepidoptera

- **Lepidoptera** is one of the largest orders of insects comprising **butterflies and moths**.
- The name **Lepidoptera** means **"scale-winged insects"** (Greek: *lepido* = scale; *ptera* = wings).
- They undergo **complete metamorphosis**:
  - Egg → Larva (Caterpillar) → Pupa (Chrysalis/Cocoon) → Adult.
- Characterised by **scaled wings**, **coiled proboscis**, and high ecological importance.

Key Statistics & Biogeographical Significance

- **Global Share:** India is a certified Lepidoptera hotspot, housing **13,703 species**, which constitutes roughly **8.25% of the world's total Lepidoptera**.
- **Composition:**
  - **Moths outnumber butterflies significantly:** Out of the 13,703 species, **12,286 are moths** and **1,417 are butterflies**.
  - **Taxonomic Breakdown:** The diversity spans 3,705 genera, 240 subfamilies, 102 families, and 31 super families.
- **The "Night Shift" Pollinators:** The catalogue specifically highlights **2,205 species of Geometroidea** (nocturnal pollinators), accounting for 8.8% of the world's known species in this superfamily. They handle essential pollination services at night when daytime butterflies rest.

Ecological Importance of Butterflies and Moths

- Important **pollinators**, especially of wild flowering plants.
- Caterpillars act as **primary herbivores**, regulating vegetation.
- Serve as a major **food source** for birds, reptiles, bats and amphibians.
- Contribute to **nutrient recycling** as decomposers and detritivores.
- Sensitive to environmental changes, making them excellent **bio-indicators** of ecosystem health.

Why is the Catalogue Important?

- Establishes an **authoritative national database** on Lepidoptera.
- Supports **species identification, taxonomy and biodiversity research**.
- Helps in **ecological monitoring** and climate change studies.
- Assists in **wildlife conservation planning** and habitat management.
- Provides **legal and scientific reference** for future biodiversity documentation.

About Zoological Survey of India (ZSI)

- **Established: 1916**
- **Headquarters: Kolkata, West Bengal**
- **Ministry:** Ministry of Environment, Forest and Climate Change (MoEFCC)
- **Function:**
  - India's premier institution for **faunal exploration and taxonomic research**.
  - Surveys, documents and monitors the country's animal diversity.
  - Maintains the **National Zoological Collections (NZC)**.
  - Advises the Government on biodiversity conservation and wildlife taxonomy.

4.7. CBG ECOSYSTEM: STRENGTHENING FEEDSTOCK SUPPLY CHAINS

Context:

- Recently following the Union Cabinet's approval of the revamped **₹23,731-crore GOBARdhan (Galvanising Organic Bio-Agro Resources Dhan) scheme** (operational till 2036), establishing efficient feedstock supply chains has emerged as the critical operational lever to scale **India's Compressed Bio-Gas (CBG)** output.

Supply Chain & Logistical Constraints

- **Aggregator-Based Model:** Connects farmers with CBG plants without requiring rigid, legally binding industrial contracts.
- **Storage Hazards:** Requires specialized inventory handling to mitigate summer fire risks and monsoon moisture degradation.
- **Proximity Imperative:** Sourcing must remain strictly localized to prevent high transport emissions from offsetting CBG's net carbon benefits.

Policy Targets & Infrastructure Scale

- **Operational Capacity: 1,302 functional CBG plants** registered on **the GOBARdhan** portal, with **256 plants** currently under construction.
- **Mandatory Phased Blending Pipeline (CNG & Domestic PNG):**
  - **FY 2026–27:** 3% CBG blending
  - **FY 2027–28:** 4% CBG blending
  - **Subsequent FYs:** 5% CBG blending

About Compressed Biogas (CBG)

1. **What is CBG?** Compressed Biogas is a **purified form of biogas**, produced through the anaerobic digestion of organic waste such as **cattle dung, agricultural residues, food waste and sewage**.
2. **Production Process:** Organic waste → **Anaerobic digestion** → Biogas → **Purification / upgrading** → Removal of CO_2, H_2S and moisture → **Compression** → CBG.
3. **Composition:** CBG primarily contains **methane (CH_4)** and has properties similar to **Compressed Natural Gas (CNG)**, allowing it to be used as a transport fuel.
4. **Major Government Initiative:** The **SATAT (Sustainable Alternative Towards Affordable Transportation)** initiative promotes the production and use of CBG in India by encouraging entrepreneurs to establish CBG plants.
5. **Environmental Benefits:** CBG helps in **waste management, reducing methane emissions from untreated organic waste, lowering dependence on fossil fuels**, and producing **bio-manure** as a by-product.

Major Feedstocks

CBG can be produced from:

- Agricultural residue
- Animal waste and cattle dung
- Food and kitchen waste
- Municipal organic waste
- Another biodegradable biomass

4.8. HEAT STRESS AND BIRTH OUTCOMES: A GROWING PUBLIC HEALTH CONCERN

Context:

- A recent nationwide study based on **National Family Health Survey (NFHS-5)** data has established a significant association between **prolonged exposure to extreme heat during pregnancy** and adverse birth outcomes such as **low birth weight, preterm birth and stillbirth**.

Key Findings of the Study

- The study analysed data of **209,266 births** recorded between **2015 and 2020**.
- It linked **NFHS-5 (2019–21)** birth records with **high-resolution India Heat Index** estimates to measure maternal heat exposure.
- Researchers used **"consecutive sweltering days"** instead of average temperature to estimate heat stress.
- **First trimester** heat exposure showed the strongest association with **preterm births**.
- **Second trimester** exposure was more strongly associated with **low birth weight**.
- **Third trimester** exposure was linked to a higher risk of **stillbirth**.
- The risk was greater among:
  - Women with **low Body Mass Index (BMI <18.5)**.
  - Women from **lower educational and poorer socioeconomic backgrounds**.
- **Urban areas** recorded relatively higher rates of low birth weight.
- **Mountainous** and **humid subtropical** climatic regions showed stronger associations between heat stress and adverse pregnancy outcomes.

Why Does Extreme Heat Affect Pregnancy?

High ambient temperatures can:

- Increase **maternal core body temperature**.
- Cause **heat stress** and **dehydration**.
- Reduce **uterine blood flow**, limiting oxygen and nutrient supply to the fetus.
- Impair **fetal growth and development**.

- Increase the likelihood of **uterine contractions**, raising the risk of **preterm delivery**.

What is Heat Stress?

- Heat stress is the **physiological strain experienced by the human body when exposed to high temperatures, humidity and solar radiation**, reducing the body's ability to maintain a normal temperature.

Major Factors Influencing Heat Stress

- Air temperature
- Relative humidity
- Solar radiation
- Wind speed
- Duration of exposure
- Individual health and hydration status

What is the India Heat Index?

The **India Heat Index** is a high-resolution heat exposure dataset that combines:

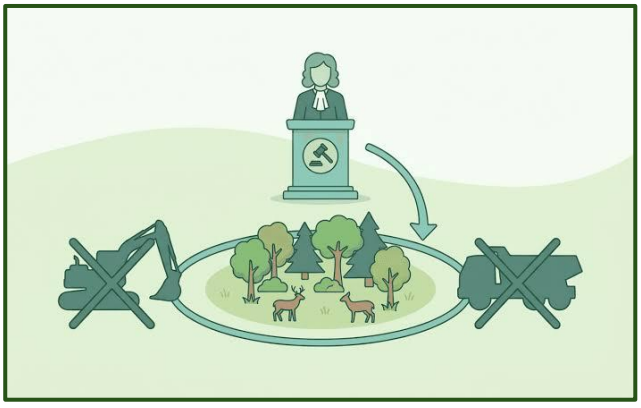
- Air temperature,
- Relative humidity,
- Solar radiation, and
- Wind conditions

To estimate the **actual heat stress experienced by people**, rather than temperature alone.

4.9. WETLAND CONSERVATION: SUPREME COURT'S 10-KM MINING BUFFER

Context:

- The Supreme Court of India has clarified that its earlier direction prohibiting mining activities within a 10-km radius of the Asan Conservation Reserve (Uttarakhand) will apply uniformly to all notified wetland conservation reserves across India, ensuring parity in wetland protection.



Supreme Court Ruling: Key Highlights

- The **10-km mining restriction** around the **Asan Conservation Reserve (Ramsar Site)** will now apply to **all wetland conservation reserves** in India.
- The Court held that **all wetland conservation reserves belong to the same legal category**, and therefore should receive **equal environmental protection**.
- The restriction is aimed at preventing **ecological degradation** caused by mining near ecologically sensitive wetlands.
- The Court observed that the distinction applicable to **National Parks and Wildlife Sanctuaries** does not apply to **Conservation Reserves** under this order.

- The clarification came while hearing a petition regarding proposed mining activities near the **Asan Wetland**.

Background of the Case

- In **February 2024**, the Supreme Court issued an **interim order** prohibiting mining within a **10-km radius** of the **Asan Wetland Conservation Reserve** until prior approval from the **Standing Committee of the National Board for Wildlife (NBWL)** and the **Ministry of Environment, Forest and Climate Change (MoEFCC)**.
- The **Himachal Pradesh Government** later argued that the Asan Wetland lies outside its territory and sought exemption.
- The Supreme Court clarified that the **principle applies nationwide** to all notified wetland conservation reserves.

What is a Conservation Reserve?

- A **Conservation Reserve** is a **protected area** declared under the **Wildlife (Protection) Act, 1972**.
- It is generally notified on **government-owned land** adjoining **National Parks or Wildlife Sanctuaries**, or in ecologically important landscapes.
- Its objective is to **protect habitats, wildlife corridors and biodiversity** through community participation.
- Managed with the help of a **Conservation Reserve Management Committee**.

About Asan Conservation Reserve

- **Location:** Dehradun district, Uttarakhand.
- Situated at the **confluence of the Asan River and Yamuna River**.
- Declared Uttarakhand's **first Conservation Reserve** in **2005**.
- Recognised as a **Ramsar Site** in **2020**.
- A major habitat for **resident and migratory waterbirds**, especially during winter.

What is a Ramsar Site?

- A **Wetland of International Importance** designated under the **Ramsar Convention (1971)**.
- Objective: **Conservation and wise use of wetlands** through national and international cooperation.
- India is a **Contracting Party** to the Convention since **1982**.
- India has one of the **largest networks of Ramsar Sites** globally.

National Board for Wildlife (NBWL)

- Statutory body constituted under the **Wildlife (Protection) Act, 1972**.
- **Chairperson:** Prime Minister of India.
- Advises the government on **wildlife conservation policies**.
- Its **Standing Committee** considers proposals involving diversion of land or activities in and around protected areas.

4.10. CLOUDED LEOPARD CONSERVATION: MEGHALAYA'S NEW MISSION

Context:

- The **Government of Meghalaya** has launched a **dedicated conservation mission** for the **Clouded Leopard**, the State Animal of Meghalaya.

Key Fact About Clouded Leopard

- **Scientific name:** *Neofelis nebulosa*
- **IUCN Status: Vulnerable**
- **Habitat:** Dense forests of the **Himalayas and Northeast India**, extending into Southeast Asia.
- **India:** Mainly found in **Northeast India**, including **Assam, Arunachal Pradesh, Meghalaya, Nagaland, Mizoram, Tripura and Manipur**.
- **Distinctive feature:** Named for its large, irregular **cloud-like markings** on the coat.
- **Arboreal adaptation:** An excellent **tree climber**; its long tail helps maintain balance.
- **Special feature:** It has **very long canine teeth relative to its skull**, giving it a distinctive appearance.
- **Diet:** Carnivorous; feeds on **primates, birds, rodents, deer and other small mammals**.
- **Conservation:** Threatened by **habitat loss, fragmentation and poaching**.

Distribution

In India, the **Clouded Leopard** is primarily distributed across the **Northeastern states**, including **Arunachal Pradesh, Assam, Meghalaya, Mizoram, Nagaland, Tripura and Sikkim**, with its range also extending to **parts of North Bengal (West Bengal)**.

About Meghalaya Clouded Leopard Mission

- The **Meghalaya Clouded Leopard Mission** is a dedicated conservation programme launched to protect the **Clouded Leopard**, the State Animal of Meghalaya.
- Guided by the **Meghalaya Clouded Leopard Action Plan**, the initiative focuses on habitat protection and restoration, scientific research, long-term population monitoring, capacity building of frontline forest staff, and community participation.
- It also aims to reduce habitat degradation, poaching and illegal hunting through a landscape-based conservation approach.

4.11. KERALA HEAVY RAINFALL: IMD ORANGE ALERT

Context:

- The **India Meteorological Department (IMD)** has issued an **Orange Alert** for **8 districts of Kerala** due to the combined impact of a **Low-Pressure Area (LPA)** over the Bay of Bengal and a **cyclonic circulation** over the northeast Bay of Bengal and adjoining West Bengal coast, leading to widespread heavy rainfall.

What is an Orange Alert?

- **Orange Alert** means **"Be Prepared"**.
- It indicates the likelihood of **heavy to very heavy rainfall** (or severe weather) that may disrupt normal life.
- People and authorities are advised to remain prepared for possible flooding, landslides, and transport disruptions.

IMD Colour-Coded Weather Warning System

Alert	Meaning	Significance
Green	No warning	Normal weather conditions
Yellow	Be Updated	Heavy rainfall/weather is possible; stay informed
Orange	Be Prepared	Heavy to very heavy rainfall likely; take precautionary measures
Red	Take Action	Extremely heavy rainfall or severe weather; immediate response required

Meteorological Systems Responsible

Low-Pressure Area (LPA)

- A region where **atmospheric pressure is lower than surrounding areas**.
- Causes **air convergence**, cloud formation, and rainfall.
- Can intensify into a **Depression**, **Deep Depression**, and eventually a **Cyclonic Storm** if conditions remain favourable.

Cyclonic Circulation

- A rotating air circulation around a low-pressure centre.
- In the **Northern Hemisphere**, winds rotate **anticlockwise**.
- Enhances moisture transport and intensifies rainfall over nearby regions.

Why Does Kerala Receive Heavy Rainfall?

- **Southwest Monsoon** brings moisture-laden winds from the Arabian Sea.
- The **Western Ghats** act as an orographic barrier, forcing moist air to rise and produce heavy rainfall.
- Presence of **Low-Pressure Areas**, **cyclonic circulations**, and offshore troughs further enhances rainfall intensity.

India Meteorological Department (IMD)

- **Established:** 1875
- **Ministry:** Ministry of Earth Sciences
- **Headquarters:** New Delhi
- **Functions:**
  - Weather forecasting
  - Cyclone monitoring and warnings
  - Monsoon forecasting
  - Seismological observations
  - Climate services and disaster early warnings

4.12. NEERI-ZAR WATER PURIFIERS DEPLOYED IN FLOOD-HIT ASSAM

Context:

- **CSIR-NEERI** has deployed **100 NEERI-ZAR water purification units** in flood-hit districts of Assam.
- The technology was developed in **2006** during the Barmer floods in Rajasthan and is designed for **emergency drinking-water supply**.

What is NEERI-ZAR?

- **NEERI-ZAR** is a **gravity-based, portable water purification system** developed by **CSIR–National Environmental Engineering Research Institute (NEERI)**.
- It requires **no electricity** and can be transported and installed easily.
- It is particularly suited for **disaster-hit and remote areas** where conventional water-treatment infrastructure may be unavailable.

Key Features of NEERI-ZAR

- **Gravity-operated:** Works without pumps or external power.
- **No electricity requirement:** Suitable for areas with disrupted power supply.
- **Removes:** Turbidity, organic matter and bacterial contamination.
- **Low maintenance:** Simple to operate and transport.
- **Emergency use:** Designed for rapid deployment during floods and other disasters.
- **Typical capacity:** About **20 litres/hour per unit**.

How Does It Help During Disasters?

- Floods can contaminate drinking-water sources with **suspended matter, pathogens and other contaminants**.
- **NEERI-ZAR → Treatment of contaminated water → Safer drinking water**
- It can therefore provide a **decentralised water-treatment solution** when pipelines, electricity and conventional treatment facilities are disrupted.

4.13. ASSAM FLOOD CRISIS: BUILDING CLIMATE RESILIENCE

Context:

- Within a short span, Assam experienced one of its **worst flood disasters in recent years**, affecting **over 16 lakh people**, inundating thousands of villages, damaging infrastructure, and triggering landslides across northeastern states. Experts attribute the severity to an interaction between **climate change-induced extreme rainfall events** and **local ecological degradation**.

Introduction

- Floods are a recurring natural phenomenon in Assam due to the Brahmaputra and Barak river systems. However, the floods witnessed in **2026** are unprecedented because of the **combined effects of extreme rainfall, climate change, geographical vulnerability, and increasing human-induced environmental degradation**.
- The disaster demonstrates how climate change is intensifying hydro-meteorological disasters, making traditional flood management strategies inadequate.

Reason behind Assam's frequent occurence of unprecedented flooding?

1. **Climate Change-Induced Extreme Rainfall (Primary Factor)**
   - Rising global temperatures have increased the atmosphere's moisture-holding capacity (approximately **7% more moisture per 1°C warming** according to the Clausius-Clapeyron relationship).
   - This results in:
     - Short-duration, high-intensity rainfall.
     - Cloudburst-like events.
     - More frequent extreme precipitation.
   - Instead of gradual rainfall, Assam is receiving **very heavy rain within a few hours**, overwhelming rivers and drainage systems.
2. **Climate Change Intensifying the Indian Monsoon**

   Climate change has made the **Southwest Monsoon** increasingly erratic.

   Features include:

   - Delayed onset, long dry spells
   - Sudden intense rainfall and localized extreme weather events

   Such rainfall rapidly increases river discharge, leading to flash floods.
3. **Geographic Vulnerability of Assam**

   Assam's physical geography naturally makes it flood-prone.

   a) Brahmaputra River System

   - One of the world's largest braided rivers.
   - Receives enormous discharge from Tibet, Arunachal Pradesh, Meghalaya,Bhutan
   - Heavy rainfall across the entire basin causes sudden rise in water level.

   b) Low-Lying Floodplains

   Much of Assam lies within the floodplains of the Brahmaputra, making settlements highly vulnerable.

   c) High Sediment Load

   - The Brahmaputra carries one of the world's highest sediment loads due to Young Himalayan geology,Soil erosion, Landslides
   - Sediment deposition raises riverbeds and reduces water-carrying capacity.

4. **Cloudburst and Orographic Rainfall**
   - Moisture-laden monsoon winds strike the hills of Meghalaya, Arunachal Pradesh, Nagaland.
   - This causes Orographic lifting, Cloudbursts, Extremely intense localized rainfall the runoff eventually enters Assam's river system.
5. **Simultaneous Rainfall Across Entire River Basin**
   - Experts note that rainfall occurred simultaneously in Assam, Arunachal Pradesh, Meghalaya and Bhutan
   - This synchronized rainfall caused all tributaries to swell together, dramatically increasing the Brahmaputra's discharge.
6. **Deforestation and Forest Degradation**
   - Loss of forests has reduced the land's capacity to absorb rainwater consequences include increased surface runoff, soil erosion, landslides and rapid river swelling
   - Forests act as natural sponges that delay runoff.
7. **Wetland and Floodplain Encroachment**
   - Important wetlands have been degraded due to Urban expansion, Illegal settlements, Infrastructure development
   - Loss of wetlands has reduced the natural storage capacity for excess floodwater.
8. **Unplanned Urbanisation**
   - Cities such as Guwahati face severe urban flooding because of Encroached drainage channels, Concretization, Blocked storm-water drains, Poor land-use planning.
9. **Riverbank Erosion**
   - The Brahmaputra experiences severe bank erosion every year. Effects include Widening of river channels, Loss of agricultural land, Displacement of communities, Increased sediment deposition

Challenges of Extreme Weather Events

1. **Increasing Frequency and Intensity**
   - Events like Heatwaves Floods, Cyclones, Cloudbursts, Landslides, Glacial Lake Outburst Floods (glofs) are becoming more frequent.
2. **Forecasting Challenges**
   - Highly localized rainfall is difficult to predict.
   - Existing forecasting models have limitations in mountainous terrain.
3. **Inadequate Urban Infrastructure**
   - Because of Poor drainage, Encroachment, Weak disaster-resilient infrastructure increase vulnerability.
4. **Ecological Degradation**
   - Deforestation, Wetland destruction, River pollution, Sand mining reduce ecosystem resilience.

5. **Disaster Preparedness Gap**
    - Many vulnerable regions still lack Early warning dissemination, Community awareness, Evacuation infrastructure, Disaster-resilient housing.
6. **Climate Adaptation Deficit**

    Development planning has not fully integrated climate risk assessments.

Impact of the Floods

A. Environmental Impact

- Massive soil erosion Riverbank collapse, Wetland degradation, Biodiversity loss, Habitat destruction in Kaziranga and other protected areas, Increased landslides, Water contamination.

B. Social Impact

- Large-scale displacement andLoss of human lives
- Food insecurity due to crop loss.
- Health emergencies and Spread of water-borne diseases.

C. Economic Impact

- Crop destruction and Livestock losses
- Damage to roads and bridges,Railway disruption cause infrastructural issues.

D. Governance Challenges

- Difficult rescue operations, Relief distribution in inaccessible areas, Rehabilitation of displaced populations and Coordination among multiple agencies

Government Initiatives

1. **National Disaster Management Authority (NDMA)**
    - National Guidelines on Flood Management
    - Capacity building programme
    - Community-based disaster management
2. **National Disaster Response Force (NDRF)**
    - Search and rescue and Medical assistance during disaster response operation.
    - Relief operations and Evacuation during floods and precautions for after effects
3. **India Meteorological Department (IMD)**
    - Impact-based weather forecasting
    - Doppler Weather Radars incorporation for heavy rainfall warnings
    - Lightning alerts awareness
4. **Central Water Commission (CWC)**
    - Flood forecasting stations, River-level monitoring in regular basis
    - Reservoir management support, Real-time flood alerts
5. **Flood Management and Border Areas Programme (FMBAP)**
    - Embankments, Anti-erosion measures
    - Drainage improvement, River training works

6. **National Hydrology Project**
   - Real-time hydrological data, Improved flood forecasting
   - Basin-level water management
7. **National Action Plan on Climate Change (NAPCC)**

   Relevant missions include:
   - National Water Mission, Green India Mission
   - Sustainable Agriculture Mission

   These enhance climate resilience and ecosystem restoration.
8. **Sendai Framework for Disaster Risk Reduction (2015–2030)**

   India aligns its disaster management strategy with the **Sendai Framework**, focusing on:
   - Risk reduction, Preparedness, Build Back Better and Resilience
9. **State-Level Measures in Assam**
   - SDRF deployment and settibn up Evacuation camps
   - Boat rescue operations
   - Relief distribution
   - Early warning dissemination
   - Embankment strengthening

Way Forward

1. **Shift from Flood Control to Flood Risk Management**
   - Adopt **Integrated River Basin Management (IRBM)** for the Brahmaputra basin involving India, Bhutan, and China for coordinated data sharing and basin planning.
2. **Nature-Based Solutions**
   - Restore wetlands and floodplains as natural water buffers.
   - Large-scale afforestation in upstream catchments.
   - Protect riparian vegetation to reduce erosion.
3. **Climate-Resilient Infrastructure**
   - Build elevated roads, bridges, schools, and health centres.
   - Develop flood-resilient housing in vulnerable districts.
4. **Strengthen Early Warning Systems**
   - Expand Doppler Weather Radar coverage.
   - Use AI, satellite imagery, GIS, and IoT-based river monitoring.
   - Improve last-mile dissemination through mobile alerts and community volunteers.
5. **Scientific Land-Use Planning**
   - Restrict construction in floodplains.
   - Enforce zoning regulations and prevent encroachment on wetlands and drainage channels.
6. **Improve Urban Flood Management**
   - Upgrade storm-water drainage.

- Promote permeable surfaces and rainwater harvesting.
- Restore urban water bodies.

7. **Ecosystem Restoration**
   - Conserve forests in the Eastern Himalayas.
   - Control illegal sand mining.
   - Implement catchment area treatment programmes.
8. **Community-Based Disaster Risk Reduction**
   - Train local communities in evacuation and first response.
   - Strengthen village disaster management committees.
   - Promote flood insurance and resilient livelihoods.

Conclusion

- The unprecedented floods in Assam underscore the growing reality of **climate-induced hydro-meteorological disasters**, where natural vulnerabilities are amplified by environmental degradation and unsustainable development.
- By integrating scientific forecasting, sustainable river basin management, nature-based solutions, resilient infrastructure, and community participation, India can significantly reduce disaster risk while advancing the goals of **disaster resilience, climate adaptation, and sustainable development**—a necessity for achieving the vision of **Viksit Bharat 2047**.

4.14. WHY INDIA MUST SHIFT FROM PLANTATION TO ECOLOGICAL RESTORATION

Context:

- The **CAG's performance audit of the Green India Mission (GIM)** highlights inadequate progress in restoring degraded forests. The findings expose a key policy gap: **tree plantation cannot substitute ecological restoration**, which requires improving **forest quality, biodiversity, carbon sequestration, water security and ecosystem resilience**.

Introduction

India's forest challenge is no longer merely about increasing the number of trees, but about restoring functional, biodiverse and resilient forest ecosystems. The recent CAG concerns over the Green India Mission highlight the gap between **quantitative plantation targets and qualitative ecological restoration**.

What is the Green India Mission (GIM)?

- The **National Mission for a Green India (GIM)** is one of the **eight missions under the National Action Plan on Climate Change (NAPCC)**. It was designed as a long-term policy framework to strengthen India's forest ecosystems while simultaneously addressing the challenges posed by **climate change**.

- The primary objective of GIM is to **protect, restore and enhance forest and tree cover** in the country, particularly by focusing on **degraded forest landscapes and vulnerable ecosystems**. Thus, the mission goes beyond merely increasing the numerical extent of forest cover.
- An important objective of GIM is to improve the **quality and ecological health of forests**. This involves promoting healthier and more resilient ecosystems capable of providing essential services such as **soil conservation, water regulation, carbon storage and habitat protection**.
- The mission also seeks to strengthen **biodiversity conservation** by improving forest ecosystems and protecting habitats. A healthy forest is not simply an area containing trees; it is a complex ecosystem supporting **flora, fauna, microorganisms and ecological interactions**.

Key Challenges Facing India's Forest Restoration

1. **Plantation-centric approach instead of ecological restoration:** Afforestation is often measured by the number of saplings planted, whereas true restoration requires recovery of **biodiversity, soil health, water systems, natural regeneration and ecosystem resilience**.
2. **Forest cover–tree cover mismatch:** Recent assessments show that an increase in overall tree cover does not necessarily represent an expansion of natural forests. This creates a risk of **overestimating actual forest restoration and ecological gains**.
3. **Monoculture and invasive species:** Uniform plantations and invasive species such as **Prosopis juliflora** can suppress native biodiversity, reduce habitat quality and weaken ecosystem resilience, particularly in degraded landscapes such as the **Aravallis**.
4. **Continued land degradation and habitat fragmentation: Mining, quarrying, encroachment, infrastructure expansion and urbanisation** continue to degrade and fragment forest landscapes, limiting the effectiveness of plantation programmes.
5. **Weak inter-scheme convergence:** Programmes such as **Green India Mission (GIM), CAMPA and MGNREGA** often suffer from inadequate institutional coordination, resulting in fragmented implementation, duplication and inefficient utilisation of resources.
6. **Poor outcome-based monitoring:** Success is frequently assessed through **saplings planted, area covered and expenditure**, rather than long-term indicators such as survival rate, native species diversity, natural regeneration, soil carbon, groundwater recharge and biodiversity recovery.

Way Forward

A. Shift from Tree Plantation to Ecosystem Restoration

- India should move beyond **plantation targets** and focus on restoring the ecological functions of degraded forests and landscapes.
- Restoration should aim to improve **biodiversity, soil health, water regulation, carbon sequestration and ecosystem resilience**, rather than merely increasing tree numbers.

B. Adopt a Landscape-Level Approach

- Forest restoration should be planned at the level of **entire landscapes, watersheds and ecological regions**, instead of treating plantation plots as isolated units.
- Such an approach can simultaneously restore **ecological corridors, river catchments, degraded hills, wetlands, grasslands and fragmented forest patches**.

C. Prioritise Native and Ecologically Appropriate Species

- Plantation programmes should prioritise **native species suited to local soil, climate and ecological conditions**.
- The objective should be **ecological compatibility and biodiversity restoration**, rather than rapid biomass accumulation through fast-growing species.

D. Promote Natural Regeneration

- Wherever ecological conditions permit, **natural regeneration and assisted natural regeneration** should be preferred over large-scale artificial plantations.
- Natural regeneration can preserve **native species composition, genetic diversity and ecological interactions** that may be difficult to recreate through plantations.

Strengthen Convergence among Government Schemes

- Programmes such as **Green India Mission (GIM), CAMPA, MGNREGA, watershed development programmes, biodiversity conservation initiatives and tribal livelihood schemes** should be integrated.
- A **common landscape-level planning mechanism** can reduce duplication, improve resource utilisation and ensure that different schemes contribute towards common ecological objectives.

Conclusion

- **India must move from a "plantation economy" of counting saplings to an "ecological economy" of restoring ecosystems.**
- The real measure of success should not be the number of trees planted but whether forests regain their **biodiversity, carbon-storage capacity, water-regulation functions, soil health and resilience**.

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SCIENCE AND TECHNOLOGY

5.1. ZHUQUE-3, CHINA'S FIRST LAND-BASED ROCKET RECOVERY

Context:

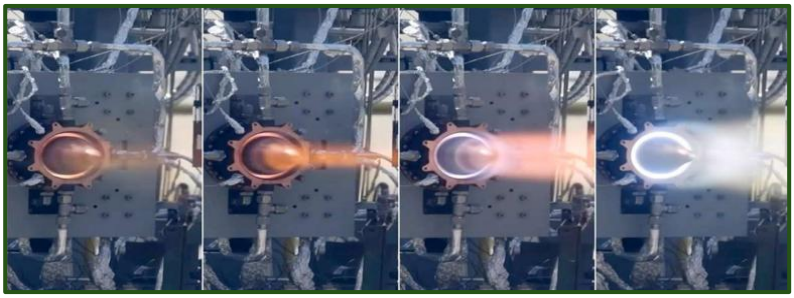
- Recently, **China successfully recovered the first stage of its reusable Zhuque-3 rocket on land for the first time**, using deployable landing legs. Developed by private firm **LandSpace**, this was China's second rocket-stage recovery after the **Long March-10B** was recovered at sea on July 10.
- Globally, **LandSpace became the third entity after SpaceX and Blue Origin** to land an orbital-class rocket booster on legs.

About Zhuque-3

- **Developer:** Built by **LandSpace**, a Beijing-based private commercial aerospace company; approved by the **China National Space Administration (CNSA)** as a new-generation reusable launch vehicle.
- **Propulsion:** Powered by **liquid oxygen-methane engines** (Tianque-series); the first stage uses nine such engines.
- **Configuration:** Single-core, two-stage, stainless-steel launch vehicle with an overall length of **66.1 metres** and a body diameter of **4.5 metres**.
- **Purpose:** Designed for **low-cost, high-capacity, high-frequency** satellite launches.

5.2. ROTATING DETONATION ENGINES (RDEs): NEXT-GENERATION PROPULSION

Context:



- Recently Hyderabad-based defence start-up **D-Propulse** has successfully demonstrated a **Rotating Detonation Engine (RDE)** at a **DRDO facility**, highlighting India's growing capabilities in advanced propulsion technology.

About Rotating Detonation Engine (RDE)

- **Definition:** An advanced propulsion system that uses **detonation waves** for more efficient fuel-energy conversion, with potential applications in **rockets, missiles and hypersonic systems**. **RDE** Uses **detonation**, driven by a **supersonic shock wave**, instead of conventional combustion.

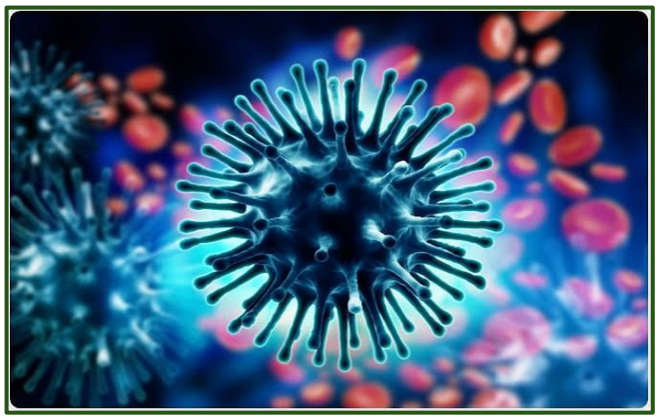
- **Working:** The detonation wave continuously rotates through a **ring-shaped (annular) chamber**, producing sustained thrust.

Key Difference: Rotary Detonation Engine (RDE) vs Conventional Internal Combustion Engine

Feature	Rotary Detonation Engine (RDE)	Conventional IC Engine
1. Combustion	Uses **detonation**—supersonic combustion driven by a shock wave	Uses **deflagration**—subsonic flame propagation
2. Pressure Generation	Generates pressure through a **rotating detonation wave**	Pressure builds from relatively gradual fuel combustion
3. Efficiency	Potentially **higher thermodynamic efficiency**	Comparatively lower efficiency
4. Fuel Consumption	Potential to achieve **better fuel efficiency**	Generally higher fuel consumption for equivalent output
5. Design & Size	Can potentially be **more compact and lightweight** due to pressure-gain combustion	Conventional combustion systems are generally more bulky for equivalent performance

5.3. H1N1 CASES RISE ACROSS INDIA

Context:



- Recently, H1N1 (swine flu) cases have increased in several parts of India, mainly during the monsoon season when flu infections usually rise, with Kerala reporting the highest number of cases and deaths.
- Experts say there is no major cause for concern as most patients recover with timely treatment, and health authorities have not declared it an outbreak, advising early testing and quick treatment for suspected cases.

State-wise Trends

- **Delhi and Mumbai** saw a rise in H1N1 cases and set up special isolation/wards, while **Bengaluru** reported heavy respiratory illness among children, with testing mainly for severe or long-lasting cases.
- **Telangana** has not seen a major rise in H1N1 despite more viral-fever cases, while **Kerala** has seen influenza cases and deaths steadily increase from **May to July** (526 to 2,899 cases; 6 to 31 deaths).

About the H1N1 Virus

- H1N1 is an **Influenza A subtype** causing **swine flu**.

- Its Symptoms include **Fever**, **chills**, **cough**, **sore throat, runny/blocked nose, headache, tiredness**, **muscle or body aches; sometimes vomiting and diarrhoea.**
- Children and older adults, especially those with asthma or other chronic conditions are most Vulnerable to this virus.
- **The Virus was** first reported in **North America (April 2009)**; WHO declared a pandemic in **June 2009** after spread to **74 countries/territories**. It originated from **animal influenza viruses** and differed from earlier human H1N1 strains.
- India reported its first case in **May 2009**; it spreads mainly through **cough/sneeze droplets**, but also through contaminated surfaces. Symptoms usually appear in **1–4 days (about 2 days)**, and spread can occur before clear symptoms.

H1N1: Prevention & Treatment Measures

- **Diagnosis:** Most cases are identified clinically; **RT-PCR of respiratory samples** confirms infection and is generally more sensitive than rapid tests.
- **Vaccination:** Take the flu vaccine every year for protection.
- **Hygiene:** Wash hands, cover coughs/sneezes and avoid close contact with infected people.
- **Isolation:** Keep infected people away from others to prevent spread.
- **Antivirals:** High-risk and severe patients should get antiviral medicines early, preferably within **48 hours**.
- **Public Health:** Ensure vaccination, testing, monitoring and awareness, especially for **pregnant women, children, elderly and people with chronic diseases**.

Additional Scientific & Conceptual Insights

- **Antigenic Drift vs. Antigenic Shift:**
  - **Antigenic Drift:** Small, continuous genetic mutations occurring over time, causing minor updates in seasonal flu vaccines.
  - **Antigenic Shift:** A sudden, major genetic change resulting in a new influenza A strain (e.g., 2009 H1N1 pandemic) that has not previously circulated in humans, creating potential for a pandemic.

Influenza Subtypes (H1N1 vs. H3N2 vs. H5N1)

All three strains belong to the **Orthomyxoviridae** family (Influenza A genus) and are classified by their surface glycoproteins: **Hemagglutinin (H)**, which enables host cell entry, and **Neuraminidase (N)**, which facilitates viral release.

Parameter	Influenza A (H1N1)	Influenza A (H3N2)	Influenza A (H5N1)
Common Name	Swine Flu / Seasonal Flu	Seasonal Flu	Highly Pathogenic Avian Influenza (HPAI / Bird Flu)
Primary Host Reservoir	Pigs (swine), Humans	Swine, Birds, Humans	Wild aquatic birds (ducks, geese), Domestic poultry

Transmission to Humans	Human-to-human transmission is **high** via droplets/fomites.	Human-to-human transmission is **high** via droplets/fomites.	**Zoonotic spillover** from direct contact with infected birds; human-to-human spread remains extremely rare/limited.
Clinical Severity	Moderate; causes upper/lower respiratory tract illness. High risk for vulnerable groups.	Moderate; often presents with higher fever, severe body aches, and prolonged cough compared to H1N1.	**Very High**; leads to rapid primary viral pneumonia, Acute Respiratory Distress Syndrome (ARDS), and multi-organ failure.
Vaccine Inclusion	Included in standard annual **Quadrivalent Seasonal Flu Vaccines**.	Included in standard annual **Quadrivalent Seasonal Flu Vaccines**.	Not part of seasonal flu shots; stockpiled as candidate pandemic vaccines by global agencies.

5.4. INDIGENOUS POPCORN MAIZE: BOOSTING AGRICULTURAL SELF-RELIANCE

Context:

- Recently, India has launched its **first indigenous, non-genetically modified (non-GM), high-expansion popcorn maize hybrid** in **Eluru district, Andhra Pradesh**.

About Indigenous Popcorn Maize Hybrid

- The newly launched variety is an **indigenously developed hybrid popcorn maize** with **high expansion capacity**, an important quality for commercial popcorn production.
- It is described as **non-GM**, meaning it has not been developed through genetic modification involving direct alteration of its genetic material using modern genetic engineering techniques.
- It seeks to reduce India's dependence on **imported hybrid technology** for high-quality popcorn maize.

Why is Popcorn Maize Different?

- Popcorn is a special type of **maize (Zea mays)** whose kernels contain a suitable proportion of **hard endosperm and moisture**.
- When heated, the moisture inside the kernel turns into steam, generating pressure that causes the kernel to **explode and form popcorn**.
- **Expansion volume** is an important quality parameter for commercial popcorn.

Agricultural Significance

- **Self-reliance:** Reducing dependence on imported hybrid technology.
- **Indigenous innovation:** Promoting Indian agricultural research and locally developed varieties.
- **Value addition:** Converting maize into higher-value processed food products.
- **Farmer income:** Creating opportunities for farmers linked to specialised maize markets.
- **Export potential:** Developing an Indian popcorn value chain with global market potential.

Hybrid Crop vs GM Crop

Hybrid Crop	GM Crop
Produced by **crossing two genetically different varieties** through conventional breeding.	Produced by **directly modifying DNA using genetic engineering**.
Combines desirable traits already present in the parent plants.	Can introduce, modify or silence specific genes.
No direct genetic engineering is involved.	**Genetic modification is central** to its development.
Example: **Hybrid maize, hybrid tomato**.	Example: **Bt cotton**.
Traits may not remain stable across generations.	Introduced traits can be maintained through propagation.

About Maize

- **Scientific name:** *Zea mays*.
- Maize is an important **cereal crop** and is used as food, animal feed and industrial raw material.
- It is used in products such as **starch, corn oil, ethanol and processed foods**.
- **Popcorn is a specialised type of maize** selected for its popping characteristics.

5.5. EBOLA OUTBREAK IN DEMOCRATIC REPUBLIC OF THE CONGO: BUNDIBUGYO VIRUS

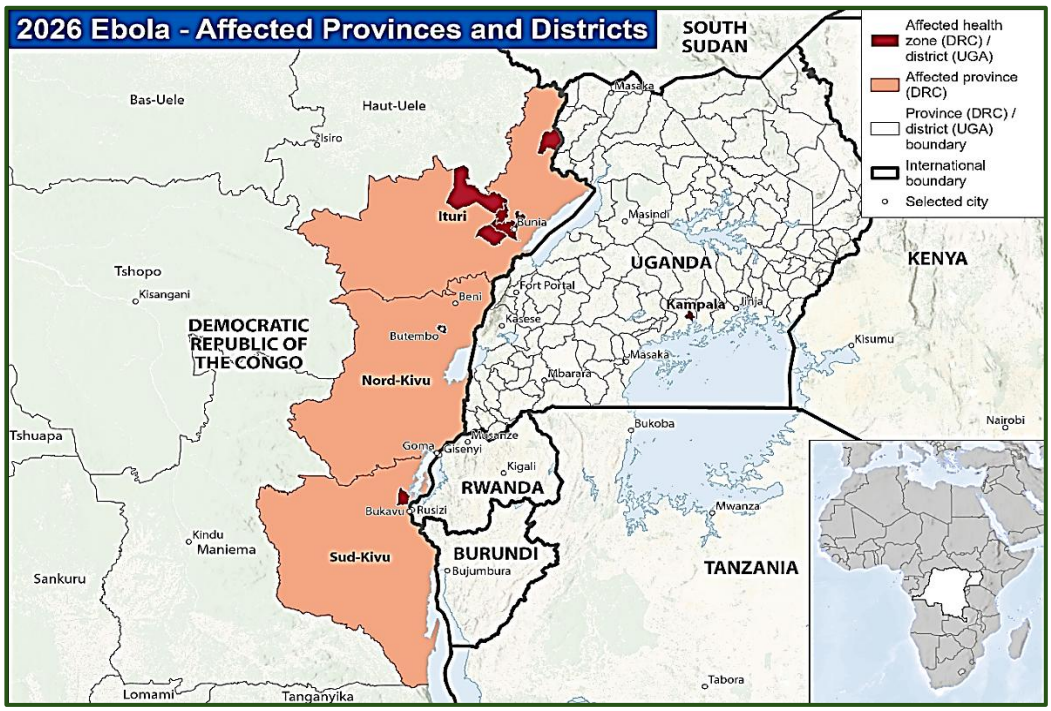
Context:

- The **Democratic Republic of the Congo (DRC)** is facing its **deadliest Ebola outbreak**, with **4,945 cases and 2,325 deaths** reported by August 2026.
- The outbreak is caused by the **Bundibugyo virus**, a species of Ebola for which there is currently **no licensed vaccine or specific approved therapeutic**.

About Ebola Disease?

- **Ebola disease** is a **severe and often fatal viral disease** caused by viruses belonging to the **Orthoebolavirus genus** of the **Filoviridae family**.
- It can cause **fever, severe weakness, muscle pain, vomiting, diarrhoea and, in severe cases, internal and external bleeding**.

- The average case fatality rate is around **50%**, although it has varied considerably between outbreaks.



Ebola Viruses and Human Disease

Three Orthoebolaviruses are particularly associated with major human outbreaks:

Virus	Disease
Ebola virus (EBOV)	Ebola virus disease (EVD)
Sudan virus (SUDV)	Sudan virus disease (SVD)
Bundibugyo virus (BDBV)	Bundibugyo virus disease (BVD)

Transmission

- Ebola viruses are primarily transmitted through **direct contact with the blood or other body fluids of infected people or deceased persons**.
- **Natural host:** Fruit bats of the **Pteropodidae family** are considered the likely natural hosts of Orthoebolaviruses.

About the Ebola Vaccine?

- **Ervebo®** is a licensed and WHO-prequalified vaccine against **Ebola virus disease caused by EBOV**.
- It is **not currently recommended for the Bundibugyo outbreak**, as there is insufficient evidence that it provides protection against BDBV.

About Bundibugyo Virus (BDBV):

- **Disease:** Bundibugyo virus disease (BVD)
- **Type:** Ebola virus species
- **First identified:** During an outbreak in **Bundibugyo District, Uganda, in 2007**

- **Licensed vaccine:** None specifically approved for BVD
- **Case fatality:** Previous BVD outbreaks have recorded approximately **30–50**% case fatality rates.

5.6. "EVEREST", INDIA'S FIRST PRIVATE 800 KN ROCKET ENGINE

Context:

- Bengaluru-based **Astrobase Space Technologies** unveiled **EVEREST**, India's first privately built **800 kilonewton** Full-Flow Staged Combustion (FFSC) LOX-Methane rocket engine.
- **Astrobase** is the **fourth commercial company globally** to successfully develop a high-thrust FFSC engine, joining a select group of nations and firms capable of this propulsion technology.

About the EVEREST Engine

- **Engine Class:** 800 kN (kilonewton)-class engine, equivalent to lifting approximately **80 tonnes** of thrust in vacuum conditions.
- **Cycle:** India's first fully integrated **Full-Flow Staged Combustion (FFSC)** engine -- among the most advanced rocket engine architectures, enabling chamber pressures exceeding **300 bar**.
- **Propellant:** Runs on **Liquid Oxygen and Liquid Methane (methalox)**, which burns cleaner than kerosene and suits reusable launch vehicles.
- **Global Rarity:** Only **SpaceX's Raptor** has flown an FFSC engine to date; globally, just seven FFSC engines have ever run on a test stand.

Significance for India's Private Space Sector

- **Indigenous Control:** Critical propulsion design authority, systems engineering, manufacturing knowledge, software and mission configuration remain under **Indian control**.
- **Complete Industrial Chain:** Astrobase is building the full chain from engine manufacturing and high-flow testing to stage integration, vehicle qualification and launch operations.
- **Complements ISRO:** Distinct from **ISRO's** ongoing semi-cryogenic engine programme, which uses a different propulsion cycle and fuel combination for the **LVM3** launch vehicle.

Roadmap and Test Milestones

- **Prior Milestones:** Sub-scale hot-fire test in **September 2025**; high-speed turbopump trials in **January 2026**.
- **Test Facility:** A **21.5-acre** propulsion test facility in **Anantapur, Andhra Pradesh**, capable of handling thrust levels up to **200 tonnes**.
- **Next Step:** A full-scale engine hot-fire test, followed by a planned cluster of seven **EVEREST** engines under a reusable medium-lift rocket targeting a maiden orbital launch by **2029**.

5.7. REASON FOR RISE IN ZOONOTIC DISEASE LEPTOSPIROSIS IN KERALA

Context:

- Kerala has recorded **50 leptospirosis deaths** this year, reaffirming its position as India's worst-affected State for the disease.
- First reported in **1989**, leptospirosis has remained endemic in Kerala for three decades and is now the **communicable disease with the highest mortality profile** in the State.

About the Leptospirosis Disease

- **Causative agent:** *Leptospira* bacteria.
- **Type: Zoonotic bacterial disease** — it can spread from animals to humans.
- **Reservoir: Rodents, especially rats**, are important reservoirs; several other mammals can also carry the bacteria.
- **Transmission:** Humans are usually infected when **urine from infected animals contaminates water or soil** and comes into contact with cuts, abrasions or mucous membranes.
- **Risk factors: Floods, heavy rainfall, stagnant/contaminated water, poor sanitation** and occupational exposure.
- **Symptoms:** Fever, headache, muscle pain, chills, vomiting and conjunctival redness. Severe cases can cause **kidney and liver damage**, bleeding and meningitis.
- **Severe form: Weil's disease** is a severe manifestation characterised particularly by **jaundice and kidney failure**.
- **Treatment: Antibiotics** are used; severe cases may require hospitalisation and supportive care.
- **Prevention:** Avoid contact with potentially contaminated water, use protective footwear/gloves, improve sanitation and control rodent populations.

5.8. RELEASE OF "SraVaani" AI SPEECH RECOGNITION MODEL FOR 65 INDIAN LANGUAGES

Context:

- Researchers at **IISc Bengaluru**, with ARTPARK and Google, have developed **'SraVaani'**, an AI speech-recognition model trained on **65 Indian languages and dialects**. It aims to improve access to AI and digital services for **under-represented Indian languages**, supporting India's linguistic diversity.

About SraVaani

- **Developers: Indian Institute of Science (IISc) SPIRE Lab**, in collaboration with **ARTPARK** and **Google**.

- **Objective:** Extends automatic speech recognition to several regional and non-scheduled Indian languages that remain underserved by existing speech technology.
- **Licensing:** Freely and publicly available on **Hugging Face** under a **Massachusetts Institute of Technology (MIT) licence**.
- **Total Coverage:** Trained on **65 Indian languages and dialects**.
- **Breakdown:** Covers **20 scheduled languages** and **45 regional languages and dialects**.
- **Sample Languages:** Supports languages such as **Garo, Angika, Chakma, Kokborok, Tulu, Bundeli** and **Bajjika**.
- **Population Reach:** Potentially opens speech AI access to around **25 crore people** as per the **2011 Census**, whose languages are not properly handled by current systems.

Performance Benchmark

- **Word Error Rate:** Recorded a **9.5% word error rate** on **Garo**.
- **Comparative Performance:** Compares with a **69.4% error rate** for the next-best system evaluated on the same language.

5.9. AI-POWERED SURVEILLANCE AT NON-INTERLOCKED LEVEL CROSSINGS

Context:

- Indian Railways is deploying **AI-powered, solar-powered CCTV surveillance systems** at **non-interlocked level crossing (LC) gates** to strengthen real-time monitoring and prevent accidents.

What is a Level Crossing?

A **level crossing** is a place where a railway track intersects a road or pathway **at the same level**, rather than through an overbridge or underpass.

Types

- **Manned Level Crossing:** Operated and monitored by railway staff/gateman.
- **Unmanned Level Crossing:** No railway staff is stationed at the crossing.
- **Interlocked Level Crossing:** The gate is integrated with the railway signalling system, creating a safety interlock.
- **Non-interlocked Level Crossing:** The gate is **not directly integrated with the signalling system**.

Why are Non-Interlocked Crossings a Safety Concern?

- At a non-interlocked crossing:
- **Train cleared to proceed → Gateman closes & locks gate → Gateman confirms closure → Station Master relies on confirmation**
- The major weakness is the absence of a **direct technological mechanism for the Station Master to verify the physical closure of the gate**.

About AI-Powered Surveillance System

The proposed system aims to bridge this monitoring gap through:

- **Advanced CCTV cameras** at non-interlocked level crossings.
- **Live video feed** to:
  - Station Master of the nearest railway station
  - Railway engineering control room
- **Solar-powered operation**, enabling deployment even where conventional power infrastructure is limited.
- **Automated alerts** when:
  - Gate remains open.
  - Gate is not closed within the prescribed time.
- **Real-time monitoring** to supplement the gateman's confirmation.

Interlocking

- **Interlocking** is a railway safety arrangement designed to ensure that **signals, points and other signalling equipment operate in a logically coordinated manner**, preventing conflicting movements.
- At an **interlocked level crossing**, the signalling system is linked with the gate operation.

Basic principle:

- Gate not safely closed → Train movement should not receive the corresponding safe signal.

5.10. EU AI ACT: STRATEGIC OPPORTUNITY FOR INDIA

Context:

- The **EU AI Act** is the world's first comprehensive, **risk-based AI regulatory framework**, imposing stricter norms on high-risk AI and GPAI. For India, these compliance requirements offer opportunities in **AI auditing, certification, cybersecurity, legal services and AI governance**.

Introduction

- Artificial Intelligence is transforming economies and governance, but its deployment also raises concerns regarding **privacy, discrimination, misinformation, cybersecurity, accountability and fundamental rights**.
- The EU AI Act seeks to address these concerns through a **risk-based regulatory model**. For India, it can be seen as an opportunity to develop an **AI assurance, testing, certification and regulatory-services industry.**

What is the EU AI Act?

1. **Risk-Based Regulation**
   - The Act categorises AI systems based on their **potential harm**, with stricter rules applying to systems carrying greater risks.

- **High-risk and unacceptable-risk AI** therefore face significantly stronger regulatory requirements than low-risk applications.

2. High-Risk AI Regulation

- AI used in **employment, education, healthcare, essential services, law enforcement, critical infrastructure and certain biometric applications** is subject to enhanced safeguards.
- These systems must ensure **risk management, data quality, transparency, traceability, human oversight, accuracy and cybersecurity**.

3. Conformity Assessment

- Before deploying certain high-risk AI systems, providers must demonstrate that they comply with the Act's prescribed standards.
- **Independent conformity-assessment bodies** may be involved, making AI compliance more systematic and verifiable.

4. General-Purpose AI (GPAI)

- Providers of GPAI models must fulfil obligations relating to **technical documentation, downstream information, copyright compliance and transparency regarding training content**.
- More stringent requirements apply to GPAI models presenting **systemic risks**.

Why is the EU AI Act Relevant to India? — Opportunities for India

A. Economic opportunities

1. Large EU Market → Demand for Indian AI Services

- The EU is a major global technology and business market, and Indian IT companies serving European clients will increasingly need to meet AI compliance requirements.
- This can generate demand for **AI auditors, legal experts, technical assessors and compliance professionals**.

2. Emergence of an AI-Compliance Industry

- Stringent regulation creates an entirely new service chain:
  AI development → risk assessment → testing → auditing → certification → monitoring → compliance.
- Indian firms can specialise in **algorithmic auditing, bias testing, model validation, risk assessment and regulatory documentation**.

3. Leverages India's Existing IT Advantage

- India already has a large pool of **software engineers, IT professionals, consultants, lawyers and AI specialists**.
- Its experience in servicing global clients and meeting international regulatory requirements provides an existing foundation.

4. Employment and Skill Creation

- AI regulation will create demand for emerging professions such as **AI auditors, AI ethicists, data-governance specialists, AI risk managers, cybersecurity experts and technology lawyers**.

5. Startup and MSME Opportunities

- Indian startups can develop solutions for **AI testing, explainability, bias detection, model monitoring, synthetic data and privacy-enhancing technologies**.
- This can democratise India's AI ecosystem beyond large IT companies.

B. Strategic & Geopolitical Opportunities

1. Strengthening India–EU Strategic Partnership

- AI can become a new pillar of India–EU cooperation alongside **trade, technology, digital connectivity, climate and security**.
- India's ability to provide trusted AI-compliance services can deepen technological interdependence.

2. Global South Leadership

- India's experience with digital public infrastructure and its position in the Global South can help it advocate for **inclusive AI governance**.
- Key concerns include **digital divide, affordable AI infrastructure, capacity building, technology access and technology transfer**.
- **Opportunity:** India can become a voice for developing countries in emerging global AI-governance debates.

C. Legal & Governance Opportunities

1. Building a Comprehensive AI Governance Framework

- The EU framework demonstrates that AI governance requires more than generic technology regulation.
- India can develop an integrated framework covering:
  Data → Algorithm → Deployment → Human Oversight → Liability → Redressal.
- This is particularly important for AI used in **healthcare, recruitment, credit, education, welfare delivery, policing and public administration**.

2. Protection of Fundamental Rights

- AI can affect **Article 14 through algorithmic discrimination**, **Article 19 through manipulation and surveillance**, and **Article 21 through threats to privacy, dignity and autonomy**.
- The **Puttaswamy judgment** recognising privacy as a fundamental right strengthens the case for responsible AI and data governance.

D. Ethical Opportunities

1. Promoting Accountable AI

- AI systems affecting people's lives must have identifiable responsibility for harmful outcomes.

2. Ensuring Transparency and Explainability

- Citizens should not be subjected to consequential decisions based entirely on opaque **"black-box" algorithms**.

E. Cybersecurity Opportunities

1. AI-Based Cybersecurity

- AI can simultaneously become a tool for cyberattacks and a tool for detecting them.
- India can develop solutions for **AI-generated attack detection, automated threat monitoring and incident response**.

Challenges for India in Leveraging the EU AI Act

1. Lack of a Mature AI Regulatory Ecosystem

- Although India has rapidly expanding **AI capabilities**, its institutional ecosystem for **independent AI audits, algorithmic testing, certification, liability determination and regulatory compliance** is still evolving.
- The absence of well-established **AI assurance institutions and standardised assessment mechanisms** may limit India's ability to immediately capture the opportunities created by the EU AI Act.

2. High Compliance Costs for MSMEs and Startups

- Compliance with stringent AI regulations may require significant expenditure on **documentation, testing, certification, cybersecurity, legal consultation and continuous monitoring**.
- Large technology companies may have the financial and technical capacity to absorb these costs, but **MSMEs and startups may find them disproportionately burdensome**.

3. Shortage of Interdisciplinary AI-Governance Talent

- Effective AI governance requires expertise across **technology, law, ethics, economics, cybersecurity and public policy**.
- India's conventional education and training systems often produce specialists in individual disciplines rather than professionals capable of integrating these domains.

4. Risk of Regulatory Fragmentation

- Different countries may adopt divergent standards regarding **AI safety, data protection, algorithmic accountability and certification**.
- Indian companies operating globally could consequently face multiple compliance requirements, increasing costs and administrative complexity.

5. Rapid Technological Change and Regulatory Uncertainty

- AI technologies are evolving much faster than traditional regulatory cycles, making it difficult for governments to formulate rules that remain relevant for long periods.
- A highly rigid regulatory framework could become **technologically outdated**, while excessive uncertainty could discourage private investment.

Way Forward — India's AI Regulatory Framework

1. Adopt a Risk-Based Regulatory Architecture

- India should classify AI systems according to their **potential impact and degree of harm**, with regulatory requirements increasing proportionately with the associated risk.

- This would prevent both **over-regulation of low-risk innovation and under-regulation of high-risk applications**.

2. **Ensure Transparency for Moderate-Risk AI**
   - AI systems that may influence users but do not pose severe risks should be subject to **transparency, disclosure and appropriate user-information requirements**.
   - Users should know when they are interacting with AI or when AI significantly contributes to a decision affecting them.
3. **Strict Oversight of High-Risk AI**
   - AI used in sensitive sectors such as **healthcare, employment, education, credit, essential services and law enforcement** should undergo mandatory **risk assessment, testing, auditing and documentation**.
   - Such systems should also incorporate **human oversight, data-quality safeguards, cybersecurity and mechanisms for grievance redressal**.
4. **Establish an AI Assurance Ecosystem**
   - India should develop accredited institutions for **AI testing, algorithmic auditing, certification, conformity assessment and model evaluation**.
   - This would help Indian companies comply with international standards and enable India to emerge as a **global AI assurance hub**.
5. **Build Interdisciplinary AI-Governance Capacity**
   - India should develop specialised professionals combining **technology, law, ethics, cybersecurity, economics and public policy**.
   - Universities, IITs, law schools and public-policy institutions can introduce interdisciplinary programmes focused on **AI governance and responsible innovation**.
6. **Support MSMEs and Startups**
   - Compliance requirements should be designed proportionately so that smaller firms are not burdened with the same costs as large technology companies.
   - The government can provide **regulatory sandboxes, shared testing infrastructure, certification support and technical guidance** to encourage responsible innovation.
7. **Promote Global Regulatory Interoperability**
   - India should work with the **EU, G20, GPAI and international standard-setting bodies** to develop common and interoperable AI standards.
   - Harmonised standards can reduce **multiple compliance regimes**, lower costs for Indian exporters and strengthen India's role in global AI governance.

Conclusion

- The EU AI Act should be viewed not merely as a **regulatory challenge but as a strategic economic opportunity** for India.
- By developing strong **AI governance, testing, auditing and conformity-assessment capabilities**, India can convert compliance burdens into a new exportable service industry.

5.11. THE MAKING OF MODERN INDIAN SCIENCE AND IACS

Context:

- The **Indian Association for the Cultivation of Science (IACS)** completes **150 years**, highlighting its historic role in the development of scientific research in India and Mahendralal Sircar's vision of **scientific self-reliance**.

Background: Bengal Renaissance and Scientific Awakening

The **Bengal Renaissance** was a major intellectual, social and cultural awakening during the 18th and 19th centuries.

- **Scientific Temper & Rational Thinking:** Encouraged questioning, observation, and evidence-based reasoning over superstition and blind beliefs.
- **Modern Education:** Promoted Western scientific knowledge, modern schools, colleges, and new approaches to learning.
- **Social & Religious Reform:** Challenged practices such as caste discrimination, sati, child marriage, and religious orthodoxy.
- **Literature, Arts & Philosophy:** Stimulated new forms of literature, journalism, painting, philosophy, and intellectual debate.
- **Institutional Development:** Led to the creation of modern educational, cultural, and scientific institutions that strengthened India's intellectual foundations.

This growing spirit of rational inquiry and scientific awakening created the intellectual foundation for **Mahendralal Sircar's vision of scientific self-reliance**.

Mahendralal Sircar: Vision of Scientific Self-Reliance

- **Scientific Self-Reliance:** Advocated that Indians should not merely learn science but undertake original scientific research.
- **Institutional Support:** Highlighted the lack of research opportunities and called for indigenous scientific institutions.
- **IACS Initiative:** Proposed IACS in **1869**, and it was established in **1876** in Calcutta.
- **National Development:** Linked scientific education and research with **intellectual progress, social development and national self-confidence**.

IACS: A Landmark in Indian Scientific History

- **Colonial Constraint:** Limited opportunities and institutional support for Indians to pursue scientific research under colonial rule.
- **Scientific Aspiration:** Created a growing desire among Indians to develop scientific knowledge through independent inquiry and experimentation.
- **Indian Institution:** Provided an indigenous platform where Indians could conduct scientific research using their own initiative and resources.

- **Original Research:** Encouraged Indians to move beyond learning existing scientific knowledge towards experimentation and new discoveries.
- **Global Recognition:** Demonstrated India's scientific capabilities through landmark achievements such as C.V. Raman's discovery of the Raman Effect.

Thus, IACS was not merely a laboratory but an **institutional expression of scientific nationalism**.

C.V. Raman and the Raman Effect

- **Association with IACS:** C.V. Raman used the IACS laboratory for research alongside his government job and continued his association after joining the University of Calcutta in 1917.
- **Raman Effect:** Through experiments on light scattering, he discovered that a small fraction of scattered light changes its **wavelength and frequency** when passing through a transparent material.
- **Global Recognition:** Announced on **28 February 1928**, the discovery earned Raman the **Nobel Prize in Physics in 1930**, making him the first Asian scientist to win a Nobel Prize in the sciences.
- **Symbol of Scientific Self-Reliance:** Raman's achievement demonstrated that **Indian institutions and scientists could produce globally significant original research**, fulfilling Mahendralal Sircar's vision.

Significance of IACS in Modern India

- **Institutionalising Scientific Research:** Created an indigenous platform for systematic research and strengthened India's culture of scientific inquiry.
- **Promoting Scientific Temper:** Encouraged **observation, experimentation, rational inquiry and evidence-based thinking**.
- **Building Scientific Human Capital:** Nurtured scientists and demonstrated India's capacity to produce **globally significant scientific discoveries**.
- **Scientific Nationalism:** Linked scientific and technological advancement with **national development, intellectual independence and self-confidence**.
- **Foundation for Scientific Self-Reliance:** Strengthened the pursuit of **indigenous research, technological capabilities and innovation**, while promoting global collaboration.
- **Relevance to Modern India:** Its legacy supports India's ambitions in **AI, semiconductors, space, biotechnology, quantum technology, clean energy and advanced materials**, enabling the shift from **knowledge consumption to knowledge creation**.

Challenges to Scientific Self-Reliance

- **Low R&D Investment:** Limited and uneven investment in research constrains India's ability to undertake cutting-edge scientific work.
- **Weak Industry-Academia Linkages:** Limited collaboration between universities, research institutions and industries reduces the translation of research into practical applications.
- **Brain Drain:** Migration of highly skilled researchers and challenges in retaining scientific talent weaken India's research capacity.

- **Unequal Infrastructure:** Research facilities and advanced laboratories remain concentrated in select institutions and regions, creating disparities in scientific opportunities.
- **Weak Commercialisation:** Limited conversion of research outcomes into **patents, products and market-ready technologies** reduces the economic impact of innovation.
- **Basic Research Constraints:** Inadequate funding for **high-risk, long-term and interdisciplinary research** can limit breakthrough discoveries.

Way Forward

- **Strengthen Basic Research:** Increase sustained funding for **fundamental, curiosity-driven and long-term scientific research**.
- **Empower Young Scientists:** Provide better **fellowships, research opportunities and institutional autonomy** while reducing administrative hurdles.
- **Strengthen Industry-Academia Linkages:** Promote collaboration between academia and industry to improve **technology transfer, innovation and commercialisation**.
- **Expand Research Infrastructure:** Develop **world-class laboratories and research facilities** across regions, beyond major metropolitan centres.
- **Promote Scientific Temper:** Embed **rational, evidence-based and scientific thinking** in education from the school level onwards.
- **Build a Global Innovation Ecosystem:** Combine **indigenous capabilities with international collaboration** and connect universities, laboratories, startups, industry and government.

Conclusion

The legacy of **IACS reflects India's journey from a knowledge recipient to a knowledge creator**. Mahendralal Sircar and C.V. Raman demonstrated the power of indigenous scientific capability. Its enduring message is: **scientific self-reliance means creating, adapting and applying knowledge while remaining globally connected.**

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6.1. VANDE MATARAM: LEGAL PROTECTION AND FUNDAMENTAL RIGHTS

Context:

- Recently, Parliament passed the **Prevention of Insults to National Honour (Amendment) Act, 2026**, giving **Vande Mataram the same legal protection as the National Anthem**. The law punishes anyone who **intentionally disrupts or prevents the singing** of the National Anthem or Vande Mataram, but **does not force anyone to sing or participate**.

About the National Honour (Amendment) Act, 2026

- **Purpose:** Gives **Vande Mataram** the same legal protection against insult and disruption as the **National Anthem**.
- **What it prohibits:** Intentionally **preventing or disrupting** the singing of the National Anthem or Vande Mataram is punishable.
- **No compulsion:** The Act **does not force citizens to sing or participate** in either song.
- **Freedom of choice:** It does not prescribe **which stanzas must be sung** or how a person must participate.

The Bijoe Emmanuel Precedent (1986)

- **Bijoe Emmanuel case (1986):** The Supreme Court held that students who **stood respectfully but did not sing the National Anthem** could not be punished for their genuine religious belief.
- **Fundamental Rights:** Forcing someone to sing can violate **Article 19(1)(a) (freedom of expression)** and **Article 25(1) (freedom of conscience)**.
- **Key principle: Fundamental Duties cannot override Fundamental Rights**, and respectful silence without disruption is not an offence.

Status of Vande Mataram Since 1950

- On **January 24, 1950**, at the Constituent Assembly's last sitting, **Dr. Rajendra Prasad** declared **Jana Gana Mana** the National Anthem, giving **Vande Mataram** equal status as the national song
- The Constitution contains **no reference** to a national song; its status rests entirely on this 1950 statement and subsequent convention
- In **October 1937**, the **Congress Working Committee** resolved that only the first two, secular stanzas be sung at official gatherings, excluding the later devotional verses invoking Hindu goddesses

Relevant Constitutional Provisions

- **Article 25** & **Article 26**: freedom of conscience, free profession/practice/propagation of religion, and freedom to manage religious affairs without State interference

- **Article 19(1)(a)**: freedom of speech and expression, extended by courts to include the freedom to remain silent
- **Article 51A**: Fundamental Duties, including respect for the national anthem -- held subordinate to Part III rights

6.2. MYSURU DASARA: TRADITION, CULTURE AND ELEPHANT HERITAGE

Context:

- Recently, the **Karnataka Forest Department** conducted **Gajapayana** at **Veeranahosahalli**, on the outskirts of **Nagarahole Tiger Reserve**, marking the beginning of preparations for **Mysuru Dasara**; veteran tusker **Abhimanyu** was given a ceremonial farewell.

What is Mysuru Dasara?

- **Historical Origins:** The tradition of elephants participating in the royal procession dates to **1610 AD** at **Srirangapatna**, with celebrations traced further to the **Vijayanagara Empire** and later continued by the **Wadiyar dynasty** of Mysuru.
- **State Festival Status: Mysuru Dasara** is designated Karnataka's **Nadahabba** (state festival) and is celebrated over ten to eleven days, culminating in the **Jamboo Savari** on **Vijayadashami**.

Gajapayana: The March to Mysuru

- **Ritual Purpose: Gajapayana**, literally the "elephant march," is the ceremonial journey of selected elephants from forest camps to **Mysuru**, marking the formal start of **Mysuru Dasara** preparations.
- **Rituals Performed:** Before departure, the elephants undergo purification rites and are offered a traditional naivedya, with prayers directed to the forest deity and **Goddess Chamundeshwari**.
- The **2026** Gajapayana included a ceremonial farewell to tusker **Abhimanyu**, recognising his service as a member of the **Dasara jumbo squad** and the **Forest Department**.

Jamboo Savari and the Golden Howdah

- Golden Howdah: The **Jamboo Savari** procession on Vijayadashami carries the idol of **Goddess Chamundeshwari** in a **750-kg golden howdah** borne by a specially trained lead elephant.
- Mahout & Kavadi: Each Dasara elephant is cared for by a dedicated **mahout** (handler) and **kavadi** (assistant), who train and accompany the animal throughout the festivities.

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MISCELLANEOUS

7.1. SHOULD INDIA IMPOSE A HEALTH TAX ON FOODS HIGH IN FAT, SUGAR AND SALT (HFSS)?

Context:

- The **Parliamentary Standing Committee on Consumer Affairs** has recommended **mandatory front-of-pack nutrition labelling** for packaged foods, while an expert consortium led by the **ICMR-National Institute of Nutrition (ICMR-NIN)** has proposed a **health tax on High Fat, Sugar and Salt (HFSS) foods** to curb rising obesity and non-communicable diseases (NCDs).

Introduction

India is facing a **double burden of malnutrition**, where persistent undernutrition coexists with rapidly increasing obesity and diet-related diseases. Addressing unhealthy diets through taxation, nutrition labelling and stronger food regulations is essential to promote preventive healthcare and improve public health outcomes.

What are High Fat, Sugar and Salt (HFSS) Foods?

- **HFSS foods** are processed or packaged foods containing excessive amounts of **fat, sugar and salt**, while offering low nutritional value.
- Regular consumption increases the risk of **obesity, diabetes, hypertension, cardiovascular diseases and other non-communicable diseases (NCDs).**

Examples

- **Soft Drinks:** Sugar-sweetened beverages with little or no nutritional value.
- **Packaged Snacks:** Processed ready-to-eat foods that are typically high in salt and unhealthy fats.
- **Chips:** Deep-fried or processed potato snacks rich in fat, salt and calories.
- **Chocolates:** Confectionery products often containing high amounts of added sugar and saturated fats.
- **Sugary Breakfast Cereals:** Processed cereals with excessive added sugars despite being marketed as healthy.
- **Instant Noodles:** Highly processed foods containing refined flour, sodium and unhealthy fats.
- **Fast Food:** Commercially prepared meals that are generally high in calories, fat, sugar and salt.
- **Sweetened Beverages:** Drinks with added sugars, such as fruit drinks and energy drinks, contributing to excessive calorie intake.

Why is Regulating HFSS Foods Significant?

1. **Rising Burden of Obesity**
    - India is witnessing a rapid increase in overweight and obesity among both adults and children.

- According to **ICMR-NIN**, over **17 million children and adolescents** are affected by obesity, which may exceed **27 million by 2030**.

2. **Preventing Non-Communicable Diseases (NCDs)**
   - Excessive consumption of HFSS foods is a major risk factor for diabetes, hypertension, cardiovascular diseases and certain cancers.
   - Preventive regulation can reduce the long-term healthcare burden and improve population health.
3. **Promoting Healthy Consumer Choices**
   - Mandatory **Front-of-Pack Nutrition Labelling (FOPNL)** helps consumers identify unhealthy products at the time of purchase.
   - Better information encourages healthier dietary behaviour and informed decision-making.
4. **Protecting Children and Adolescents**
   - Children are highly vulnerable to aggressive marketing of junk food through television and digital platforms.
   - Restricting advertisements and improving school food environments can promote healthier eating habits from an early age.
5. **Reducing Economic Burden**
   - Rising obesity and NCDs increase healthcare expenditure, productivity losses and economic costs.
   - Preventive measures such as health taxes can reduce long-term fiscal pressure on the health system.
6. **Aligning with Global Best Practices**
   - Many countries have introduced **health taxes** and stricter food regulations to discourage unhealthy consumption.
   - International experiences show that taxation, combined with awareness and labelling, can improve dietary patterns.

Challenges in Regulating HFSS Foods

1. **Industry Resistance**
   - Food manufacturers may oppose higher taxes and stricter labelling due to increased compliance costs.
   - Strong lobbying can delay or dilute public health reforms.
2. **Consumer Affordability Concerns**
   - Higher prices may disproportionately affect lower-income households if healthier alternatives remain expensive.
   - Policy should therefore improve access to affordable nutritious foods.
3. **Weak Consumer Awareness**
   - Nutrition labels may have limited impact unless supported by sustained public awareness campaigns.
   - Low nutritional literacy can reduce the effectiveness of regulatory measures.

4. **Implementation and Monitoring**
    - Effective regulation requires clear standards, regular inspections and strong enforcement mechanisms.
    - Inadequate monitoring may lead to non-compliance by food manufacturers.
5. **Balancing Public Health and Business Interests**
    - Policymakers must balance public health objectives with the interests of the food processing industry and employment.
    - Regulations should encourage product reformulation rather than merely increasing compliance costs.

Recommendations by the Parliamentary Committee & ICMR-NIN Consortium

- **Mandatory Front-of-Pack Nutrition Labelling (FOPNL):** Introduce easy-to-understand nutrition labels to help consumers make informed food choices.
- **Display High Sugar, Fat and Salt Content:** Clearly indicate excessive levels of sugar, fat and salt on packaged foods through warning labels.
- **Display Sugar Content in Baby Foods:** Mandate disclosure of sugar content in infant and baby food products to protect child health.
- **Levy a Health Tax on HFSS Foods:** Impose higher taxes on unhealthy foods to discourage consumption and promote healthier diets.
- **Regulate Advertisements Targeting Children:** Restrict the marketing of HFSS foods to children across television, digital media and other platforms.
- **Promote Healthy School Food Environments:** Encourage nutritious food options and limit the availability of HFSS foods in and around schools.

What Can Be Done to Promote Healthy Diets?

1. **Introduce a Health Tax on HFSS Foods**
    - Levy differential taxes on foods high in fat, sugar and salt to discourage excessive consumption.
    - Revenue generated can support nutrition and preventive healthcare programmes.
2. **Mandate Front-of-Pack Nutrition Labelling**
    - Introduce simple, easy-to-understand warning labels indicating high sugar, fat or salt content.
    - This empowers consumers to make healthier food choices.
3. **Regulate Advertising of Junk Food**
    - Restrict advertisements targeting children across television, digital platforms and schools.
    - Promote responsible marketing practices by food companies.
4. **Create Healthy School Food Environments**
    - Ban the sale of HFSS foods in and around schools.
    - Encourage nutritious mid-day meals and healthy food options.

5. **Promote Nutrition Awareness**
    - Conduct nationwide campaigns on balanced diets, food labels and healthy lifestyles.
    - Integrate nutrition education into school curricula.
6. **Encourage Food Reformulation**
    - Incentivise food manufacturers to reduce sugar, salt and trans-fat content in processed foods.
    - Promote healthier product innovation through regulatory support.

Conclusion

India's growing burden of obesity and diet-related diseases demands a shift from curative to preventive healthcare. A combination of **health taxes, mandatory nutrition labelling, responsible food marketing and public awareness** can promote healthier dietary choices while reducing the long-term burden of non-communicable diseases.

7.2. CONSTITUTIONAL MORALITY VS. PERSONAL LAWS

Context:

- The **Supreme Court** is examining a petition to declare **polygamy** under **Muslim Personal Law** unconstitutional. The plea seeks its criminalization under **Section 82** of the **Bharatiya Nyaya Sanhita (BNS)** and the formal **codification of personal laws** to ensure gender justice.

Introduction

The intersection of **religious personal laws** and **fundamental rights** remains a defining friction point in Indian constitutional jurisprudence. Following the invalidation of **instant triple talaq** in 2017, the apex court's scrutiny of polygamy brings the debate on **constitutional morality** and **gender equality** to the forefront, underscoring the pressing necessity of a uniform legal framework in a secular democracy.

Overview of Polygamy in India

1. **Historical Context:** Historically practiced across various communities, polygamy was gradually abolished for the majority through post-independence legal reforms like the **Hindu Marriage Act, 1955**.
2. **Current Applicability:** Today, it remains legally permissible primarily under **Muslim Personal Law** and for certain **Scheduled Tribes** exempt from codified secular laws.

Classification: Types of Polygamy

1. **Polygyny:** A matrimonial arrangement where a man marries **multiple women simultaneously** (the primary form contested in current litigation).

2. **Polyandry:** A system where a woman marries **multiple men** (historically observed in specific regional communities but exceedingly rare today).

Statutory Framework: Legal Provisions on Polygamy

1. **General Penal Code: Section 82 of the BNS** criminalizes bigamy/polygamy, prescribing up to **seven years in prison** for citizens governed by secular or codified family laws.
2. **Personal Law Exemption: Section 2** of the **Muslim Personal Law (Shariat) Application Act, 1937**, legally exempts Muslim men, permitting polygamous unions.
3. **Constitutional Conflict:** This statutory exemption is legally challenged for directly violating **Articles 14 (Equality), 15 (Non-discrimination), and 16** of the Constitution.

Current Societal Status of Polygamy

1. **Declining Prevalence:** Demographic data, including the **National Family Health Survey (NFHS)**, indicates a steady decline in polygynous marriages across all religious groups due to rising education and modernization.
2. **Theological Reality vs. Practice:** While orthodox factions claim religious sanction, scriptures actively push for monogamy; for instance, **Surah Nisa** permits multiple wives only under exceptional humanitarian circumstances, strictly demanding **absolute equality**, which the text itself acknowledges as a "practical impossibility."

Socio-Economic Impact of Polygamy on Indian Society

1. **Gender Subjugation:** It perpetuates systemic **patriarchy**, severely compromising a woman's fundamental right to dignity, equality, and matrimonial agency.
2. **Economic Destitution:** It frequently leads to the division of household resources, exposing the first wife and her children to **sudden financial instability** and psychological trauma.
3. **Legal Vulnerability:** Uncodified frameworks leave women deeply insecure, lacking guaranteed, standardized rights to **maintenance, property, or residential security**.

Judicial Precedents: Landmark Judgments

1. **Sarla Mudgal (1995) & Lily Thomas (2000):** The Supreme Court explicitly prohibited men from **feigning conversion to Islam** solely to bypass monogamy laws, ruling such second marriages void and punishable under penal statutes.
2. **Shayara Bano (2017):** The landmark judgment struck down **instant triple talaq** as manifestly arbitrary but deliberately left the constitutional validity of **polygamy** and **nikah halala** open for future judicial scrutiny.

Challenges in Regulating Polygamy

1. **Freedom of Religion Arguments:** Interventions are routinely contested as infringements upon the fundamental **Right to Freedom of Religion (Article 25)** and minority rights.
2. **Execution Without Codification:** The complete absence of a **codified statutory framework** makes blanket judicial bans complex to execute and monitor at the grassroots level.

3. **Protecting Existing Unions:** Banning the practice prospectively raises intricate legal complications regarding the legitimacy, maintenance, and **inheritance rights** of women currently in such marriages.
4. **Political Polarization:** Sensitive reforms concerning minority personal laws are highly susceptible to **political weaponization**, often stalling objective legislative action.

Way Forward

1. **Draft a Comprehensive Code:** The **Law Commission of India** must draft a formally codified, gender-just Muslim Personal Law that harmonizes religious practices with **constitutional morality**.
2. **Institute Mandatory Registration:** State governments must operationalize strict **mandatory registration mechanisms** for all marriages and divorces to legally track and prevent bigamy.
3. **Proactive Legislative Action:** The Union legislature should proactively amend the **Shariat Act, 1937**, rather than relying solely on incremental judicial interventions.
4. **Secure Statutory Protections:** Dedicated frameworks must be established to secure the property, maintenance, and **residential rights** of women currently trapped in polygamous unions.
5. **Engage Progressive Scholarship:** The State must collaborate with progressive religious scholars to disseminate the restrictive, **monogamy-centric interpretations** of religious texts.
6. **Reiterate Constitutional Primacy:** The judiciary must firmly establish that uncodified personal laws cannot override the **fundamental rights** guaranteed under Part III of the Constitution.

Conclusion

The judicial scrutiny of polygamy offers a historic opportunity to correct systemic gender imbalances perpetuated under the garb of religious freedom. By **criminalizing bigamy** across all communities and systematically **codifying personal laws**, the State can ensure that **constitutional morality** prevails, fulfilling its democratic obligation to secure justice and equality for all Indian women.

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