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GENERAL STUDIES 1

1.1. INDIAN SOCIETY

1.1.1. 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 uncoded 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.

Q. "The fundamental rights of women cannot be held hostage to uncodified personal laws." In the context of the recent petition challenging polygamy, evaluate the need for codifying Muslim Personal Law to uphold constitutional morality. 15 Marks

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GENERAL STUDIES 2

2.1. POLITY & GOVERNANCE

2.1.1. A CRITICAL APPRAISAL OF THE FCRA AMENDMENT BILL, 2026

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.

Q. Examine the key provisions of the Foreign Contribution (Regulation) Amendment Bill, 2026. How does it seek to balance national security imperatives with civil society autonomy? 15 Marks

2.1.2. REGULATION OF SOPHISTICATED WEAPONS IN PROTEST MANAGEMENT

Context

The Siwan incident, in which a police constable allegedly fired four rounds from an AK-47 during a protest, raises concerns over the **deployment of sophisticated weapons, proportionality of police force, operational discretion and accountability**. It highlights the need to balance effective maintenance of public order with **Articles 19 and 21, human rights and democratic policing**.



Introduction

Police must maintain public order while using force **lawfully, necessarily and proportionately**. As Police and Public Order are State subjects, weapon use is governed by **State SOPs and police manuals**. Thus, modernisation must go hand in hand with **clear rules, de-escalation, human-rights safeguards and accountability**.

Why is the Use of Sophisticated Weapons During Protests Significant?

1. Protection of Fundamental Rights

- Articles **19 and 21** protect peaceful assembly, expression, life and personal liberty.
- Police action must maintain public order without disproportionately restricting **democratic dissent and civil liberties**.

2. Proportionality and Necessity

- State coercive power must follow **legality, necessity, proportionality and minimum-force principles**.
- Sophisticated weapons demand strict controls as their use can cause **disproportionate harm and escalation**.

3. Public Order and Police Safety

- Police may face **mob attacks, stone-pelting or imminent threats to life**, requiring effective protection.
- The challenge is to balance **citizen rights with the legitimate need to protect police personnel**.

4. State Subject and Need for Uniform Standards

- **Police and Public Order** are State subjects, making weapon deployment largely dependent on State SOPs and manuals.
- Variation across States highlights the need for **uniform minimum standards with operational flexibility**.

5. Professional and Accountable Policing

- Sophisticated weapons require **specialised training, clear rules of engagement, command protocols and weapon accountability**.
- Police modernisation must therefore focus on **professionalism and responsible use of force**, not merely better weapons.

6. Rule of Law and Public Trust

- Every instance of police firing should be assessed for **legality, authority, necessity, proportionality and accountability**.
- Independent investigation, due process and effective remedies can prevent **impunity and strengthen public trust in policing**.

Challenges in Regulating Police Use of Force During Protests

1. Lack of Uniform Standards

- Police being a State subject leads to variations in **SOPs, weapon deployment and crowd-control practices**.
- This creates inconsistencies in **rules of engagement and accountability** across States.

2. Difficulty in Assessing Crowd Threats

- A peaceful protest can quickly turn into **violence, rioting or a life-threatening attack**.
- Police must accurately distinguish between different threat levels to ensure a **proportionate response**.

3. Split-Second Decision-Making

- During an imminent attack, officers may have little time to **seek superior authorisation**.
- This creates a dilemma between **command control, operational discretion and emergency self-defence**.

4. Risk of Excessive Force

- Sophisticated firearms can cause **fatalities, collateral casualties and escalation of violence**.
- Their disproportionate use can also undermine **public confidence in law enforcement**.

5. Inadequate Training

- Limited training in **de-escalation, negotiation, crowd psychology and non-lethal methods** can increase risks.
- Effective policing requires **professional judgement and calibrated use of force**, not merely weapon capability.

6. Weak Post-Incident Accountability

- Delayed or non-independent investigations can create perceptions of **impunity and arbitrary use of power**.
- Strong post-incident scrutiny is essential to protect **citizens' rights and institutional credibility**.

Prakash Singh Recommendations Relevant to Police Use of Force

- **State Security Commission:** Insulate police from **arbitrary political interference** and ensure professional, impartial policing during protests.
- **Fixed Tenure:** Provide security of tenure to key police officers to enable **independent, professional and accountable decision-making** during law-and-order situations.
- **Police Complaints Authority:** Establish independent mechanisms to investigate **excessive force, custodial abuse and other police misconduct**, strengthening public accountability.
- **Police Establishment Board:** Ensure transparent decisions on **transfers, postings and promotions**, reducing external influence and promoting professional policing.

What Can Be Done to Strengthen Police Accountability?

1. Establish Uniform Minimum Standards

- Develop common national standards for **use of force, authorisation, warnings and post-firing review**.
- States can retain flexibility while ensuring **consistency and accountability** in policing.

2. Adopt a Graduated Response

- Follow **dialogue → warning → containment → non-lethal measures → firearms as the last resort**.
- Lethal force should be used only against an **imminent and serious threat to life**, as permitted by law.

3. Define Clear Rules of Engagement

- Clearly specify when sophisticated weapons may be **carried, drawn or fired**, including emergency exceptions.
- Differentiate **ordinary protests from armed or life-threatening situations** to guide police discretion.

4. Strengthen De-escalation Training

- Train personnel in **negotiation, communication, crowd psychology, threat assessment and non-lethal methods**.
- This promotes **calibrated responses** and reduces unnecessary escalation during protests.

5. Leverage Technology for Accountability

- **Body-worn cameras and digital records** can document warnings, crowd behaviour and use of force.
- Such evidence improves **transparency, accountability and protection against false allegations**.

6. Ensure Independent Post-Firing Investigation

- Fatal police firing should invite **independent investigation, magisterial scrutiny and preservation of evidence**.
- Violations must attract appropriate **departmental and legal action**, strengthening public trust.

7. Implement Police Reforms

- Strengthen **professionalisation, operational autonomy and accountability**, in line with Supreme Court-directed police reforms.

- Insulating policing from arbitrary external influence can improve **neutrality, effectiveness and public confidence**.

8. Ensure Weapon Accountability

- Maintain **weapon registers, ammunition records, periodic audits and training certification** for sophisticated firearms.
- This ensures that **police modernisation strengthens security without weakening accountability**.

Conclusion

Democratic policing requires a balance between authority and restraint. Sophisticated weapons must be used only when necessary, proportionate and accountable, ensuring public order without compromising constitutional freedoms.

Q. The use of force by police during protests must balance public order with constitutional rights, proportionality and accountability. Discuss in the context of the use of sophisticated weapons during civilian protests. 15 Marks

2.1.3. 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

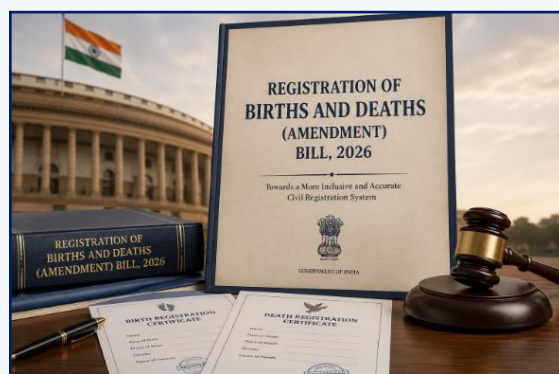
The Supreme Court's 2026 judgment marks a constitutional shift from a paternalistic to a rights-based approach by recognising the dignity, autonomy and equality of consenting adult sex workers. Its success, however, will depend on rights-based implementation, institutional accountability, and meaningful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

Q. Constitutional morality must prevail over social morality in protecting the rights of marginalised communities. Discuss this statement in the context of the Supreme Court's 2026 judgment on sex work. 15 Marks

2.1.4. 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.

Q. The Registration of Births and Deaths (Amendment) Bill, 2026 seeks to strengthen the integrity of birth registration, but may also create barriers to inclusion. Critically examine. 15 Marks

2.1.5. JAMMU & KASHMIR STATEHOOD

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

- 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**.
- 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)**.
- Restoration of Electoral Process:** Legislative Assembly elections have been conducted, restoring an elected government after several years of Central rule.
- 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.
- 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?

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

Challenges Delaying Statehood

- 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**

Q. The restoration of statehood to Jammu & Kashmir is not merely a political demand but a constitutional imperative rooted in the principles of federalism, democratic accountability, and representative governance. Discuss in the light of recent developments and the Supreme Court's judgment on Article 370. 15 Marks

2.1.6. 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.

Q. To what extent would the right to education under Article 21A mean that every child of the age of 6–14 years has a right to receive education in a neighborhood school? Discuss. 15 marks

2.1.7. REFORMING HEALTHCARE DATA THROUGH A UNIFIED NATIONAL NURSING REGISTRY

Context

The **Nurses Registration and Tracking System (NRTS)** has enrolled only **14.24 lakh out of 46.02 lakh** registered nurses in India. This **31-lakh data deficit** highlights severe implementation bottlenecks driven by **jurisdictional friction** between the Centre and State Nursing Councils, leaving a critical void in national healthcare planning.



Introduction

In a country with a suboptimal **patient-to-professional ratio**, precise healthcare workforce mapping is a critical policy imperative. The **Indian Nursing Council (INC)** launched the **NRTS** to build a unified '**live**' **register** of nurses. However, its sluggish adoption underscores systemic challenges in **cooperative digital federalism**, requiring a strategic shift to ensure optimal resource deployment and national health security.

What is Nurses Registration and Tracking System (NRTS)?

- It is a centralized, computerized system designed to bring individual **State Nursing Registration Councils** onto a single integrated platform.
- It aims to build a "**live**" **register**, issuing a **National Unique Identity card** and passbook to verified nurses.
- It shifts the focus from a historical "**stock**" of ever-registered personnel to tracking the **active workforce**, accounting for retirements, deaths, and career exits.

Federal and Administrative Basis

- **Healthcare** is primarily a **State subject**, while nursing education standards require **Union and INC coordination**.
- **Primary registration** and licensing remain the legal mandate of individual **State Nursing Registration Councils**.
- The massive data gap is not indicative of illegal practice; rather, it reflects a failure to digitally migrate legacy **State records** to the national database.

Significance of a Unified National Registry

1. Evidence-Based Policymaking

- A live registry eliminates **artificial surpluses or deficits** on paper.
- It enables accurate mapping and the **equitable nationwide deployment** of human resources.

2. Crisis Mobilization and Disaster Management

- During **public health emergencies**, it allows state and central agencies to mobilize resources rapidly.
- Specialized nursing personnel can be efficiently deployed to **high-alert zones**.

3. Ensuring Patient Safety

- A unified, **deduplicated database** prevents unverified individuals or impersonators from operating in the healthcare ecosystem.
- It stops personnel with **revoked licenses** from practicing using fraudulent credentials.

4. Empowering the Workforce

- A centralized digital system expedites **inter-State transfer requests**.
- It streamlines rigorous **credential verification** for nurses seeking overseas employment.

5. Strengthening Cooperative Federalism

- Successful integration of the NRTS serves as a scalable template for **national e-governance**.
- It demonstrates how to seamlessly merge diverse **State-level data** into a cohesive national framework.

Challenges Associated with NRTS

1. Jurisdictional Resistance and Autonomy

- **State Nursing Councils** are hesitant to cede data control to the Centre.
- They view the central portal as an infringement on their **statutory licensing authority** and prefer operating parallel systems.

2. Stark Regional Disparities

- States with robust healthcare infrastructure (e.g., **Tamil Nadu, Karnataka, Andhra Pradesh**) are surprisingly lagging in enrollment.
- Conversely, states like **Bihar, Jharkhand, and Odisha** show high enrollment rates, heavily skewing national data representation.

3. Limitations of Aadhaar Linkage

- While Aadhaar verification prevents **identity duplication**, it has functional limits.
- It fails to validate a nurse's active **license status**, updated qualifications, or current workplace availability.

4. Data Fragmentation and Obsolescence

- The absence of a **synchronized census** means state registries carry outdated reference dates.
- This severely weakens the reliability of any **national estimates** derived from fragmented state data.

5. Technological Inertia

- Legacy digital systems at the state level often lack the **technical capability** or **API infrastructure**.
- State councils face a shortage of **administrative bandwidth** to integrate smoothly with the central NRTS framework.

Way Forward

1. Promoting Consensus-Driven Federalism

- The **Union Ministry of Health** must institutionalize active dialogue with State Nursing Councils.
- Clear **data-sharing protocols** must be established to alleviate jurisdictional insecurities.

2. Transitioning to Dynamic Auditing

- The registry must shift from a static database to a **dynamic tracking model**.
- Mandating periodic digital **license renewals** will actively account for workforce attrition.

3. Incentivizing State Integration

- The Central government should provide targeted **financial grants** to lagging State councils.
- **Technical handholding** is required to help them modernize their IT infrastructure.

4. Mandatory Linkage for Professional Benefits

- Policymakers should make NRTS registration a **mandatory prerequisite** for availing government schemes.
- It should be linked to **public sector promotions** and international **No Objection Certificates (NOCs)**.

5. Establishing Interoperable APIs

- The government must develop seamless **digital bridges** between State and Central portals.
- **Primary registration** at the state level must automatically synchronize with the national register without duplicate efforts.

6. Integrating Continuous Professional Development (CPD)

- Upgrade the NRTS portal to track real-time **skill upgrades** and **CPD credits**.
- This moves the system beyond basic identity checks to measure the actual **competency** of the workforce.

Conclusion

A robust, real-time national nursing registry is a fundamental pillar of India's **health security**. Bridging the current **31-lakh enrollment deficit** requires moving past federal friction and embracing **cooperative digital integration**. Accurate, dynamic workforce data is essential to safeguard **patient well-being** and build a resilient healthcare system for future contingencies.

Q. The Nurses Registration and Tracking System (NRTS) seeks to resolve the healthcare workforce data deficit but is hindered by federal friction. Discuss its significance and the associated challenges in its implementation. 15 Marks

2.1.8. DECODING THE NATIONAL TRIBUNALS COMMISSION FRAMEWORK

Context

Parliament recently passed the **Tribunals Reforms Bill, 2026**, proposing an overarching **National Tribunals Commission (NTC)** to oversee tribunal recruitment and administration. This legislation responds to the Supreme Court's mandate in **Madras Bar Association (2025)**, which invalidated the executive-heavy **2021 framework** to protect **judicial independence**.



Introduction

The **Tribunals Reforms Bill, 2026** introduced the **National Tribunals Commission (NTC)** to streamline the administration of **quasi-judicial bodies** and reduce court pendency. By unifying tribunal oversight, it aims to enhance **specialized adjudication** while upholding the **doctrine of separation of powers**. However, leaving critical rulemaking powers and grievance screening with the executive raises concerns regarding **institutional autonomy**.

What is National Tribunals Commission (NTC)?

- The **NTC** is a proposed statutory body designed to supervise **recruitment, administration, and performance** across **16 major tribunals**.
- It consists of a **Chairperson, two judicial members, and two technical members** to balance legal and domain expertise.
- It is mandated to maintain a centralized **National Tribunals Data Grid** to track case information and institutional performance.

Legislative and Constitutional Basis

- **Part XIV-A (Articles 323A & 323B)** was inserted by the **42nd Amendment Act, 1976** to enable tribunal creation for administrative and specialized disputes.
- **Article 50** mandates the separation of the **judiciary from the executive**, while **Articles 226/227 and 136** preserve **judicial review** as part of the **Basic Structure** (*L. Chandra Kumar, 1997*).
- The **2026 Bill** repeals the **Tribunals Reforms Act, 2021**, fulfilling the Supreme Court mandate in *Rojer Mathew (2019)* and *Madras Bar Association (2025)*.

Significance of National Tribunals Commission (NTC)

1. Institutional Decoupling

- It separates tribunal management from **parent ministries**, eliminating inherent **conflicts of interest**.
- This protects adjudicators from administrative leverage exercised by **executive departments**.

2. Standardized Service Conditions

- It restores **five-year tenure terms**, providing essential **security of tenure** to tribunal members.
- Harmonized service rules prevent arbitrary post-retirement benefits and varied appointment terms.

3. Data-Driven Governance

- The **National Tribunals Data Grid** enables real-time tracking of **pendency, disposal rates, and vacancies**.
- Transparent digital records enhance overall **institutional performance** and judicial accountability.

4. Reduced Burden on Constitutional Courts

- Specialized adjudication diverts technical tax, corporate, and environmental cases away from **High Courts**.
- Speedy dispute resolution improves **ease of doing business** and strengthens the **investment climate**.

5. Alignment with Judicial Directives

- It directly implements long-standing apex court mandates from *Rojer Mathew* and *Madras Bar Association*.
- The framework preserves **High Court superintendence** while streamlining **quasi-judicial administration**.

Challenges Associated with NTC

1. Excessive Executive Delegation

- **Section 14** leaves member qualifications, selection methods, and salaries to subordinate **executive rulemaking**.
- This delegates **essential legislative functions**, contradicting the judicial principles affirmed in *Rojer Mathew*.

2. Executive Control Over Disciplinary Screening

- Under **Section 16**, parent ministries screen complaints before forwarding them to the **NTC** for inquiry.

- Giving the executive gateway control over grievances severely compromises **disciplinary independence**.

3. Diluted Appointment Autonomy

- The Central Government retains primary authority over appointing **NTC members**, merely consulting the **CJI**.
- The absence of a **judicially dominated selection panel** leaves the commission vulnerable to political influence.

4. Financial and Administrative Dependence

- The **NTC** relies on executive sanction for its **budgetary allocations** and administrative staffing.
- Financial dependency on executive ministries undermines the core objective of **insulating tribunals**.

5. Lack of Legislative Deliberation

- The **2026 Bill** was passed rapidly through Parliament without substantive **committee scrutiny or debate**.
- Bypassing thorough legislative review risks leaving **procedural ambiguities** unaddressed.

Way Forward

1. Statutory Anchoring of Member Qualifications

- Inscribe eligibility criteria, selection procedures, and tenures directly into **primary legislation**.
- Eliminate subordinate rulemaking under **Section 14** to prevent executive modification of **qualifications**.

2. Independent Disciplinary Mechanism

- Remove executive pre-screening of complaints under **Section 16** to ensure direct intake by the **NTC**.
- Vest full disciplinary oversight within a **judicially-led commission** to safeguard adjudicator integrity.

3. Judicial Majority in Selection Panels

- Ensure the **Chief Justice of India (CJI)** or a judicial nominee leads the NTC selection panel with a **binding vote**.
- Restrict unilateral executive powers regarding the **appointment or removal** of commission members.

4. Financial Autonomy via Consolidated Fund

- Charge the operational expenses of the **NTC** directly on the **Consolidated Fund of India**.
- Independent financial sanctioning eliminates administrative leverage previously held by **parent ministries**.

5. Operationalizing the Data Grid

- Expedite deployment of the **National Tribunals Data Grid** for transparent **vacancy and pendency management**.
- Publicly publishing performance metrics fosters **institutional credibility** and public trust.

6. Decentralization and Geographic Accessibility

- Establish regional benches for major tribunals to democratize **access to justice** across states.

- Expanding physical and digital access lowers litigation costs for **small litigants and individual citizens**.

Conclusion

The establishment of the **National Tribunals Commission (NTC)** marks a vital step toward reforming India's **tribunal system**. However, leaving rulemaking, appointments, and discipline under executive influence undermines its purpose. Securing complete **institutional autonomy** and aligning with the **separation of powers** is essential to safeguard **judicial independence** and ensure effective administrative justice.

Q. Comment on the need of administrative tribunals as compared to the court system. Assess the impact of the recent tribunal reforms through rationalization of tribunals made in 2021.

2.1.9. THE CONSTITUTIONAL CRISIS OF RELIGIOUS OFFENCE LAWS

Context

The Governor of Punjab gave assent to the Jaagat Jot Sri Guru Granth Sahib Satkar (Amendment) Act in April 2026, concluding a decade of agitation following the 2015 desecration incidents and introducing life imprisonment for sacrilege.

Introduction

The enactment of Punjab's 2026 sacrilege law establishes India's most severe working statute on religious offenses. By criminalizing both physical desecration and disrespectful expressions concerning a sacred text, the legislation blurs the distinction between conduct and speech, reopening the constitutional debate between public order and free expression in a secular state.



The Punjab Amendment Act, 2026

- **Legislative Genesis:** Enacted following prolonged protests over the 2015 desecrations at Bargari and Burj Jawahar Singh Wala.
- **Punitive Severity:** Criminalizes sacrilege against the Guru Granth Sahib with sentences running up to life imprisonment.
- **Dual Scope:** Encompasses both physical desecration of the Saroop (burning, tearing, theft) and expressive acts (words, signs, electronic means).
- **Threshold of Offence:** Attaches criminal liability if an act is of a nature to hurt the religious feelings of the Sikh community.

Current Legal Framework in India

- **Absence of Blasphemy Offence:** Indian law does not formally define "blasphemy," but Section 299 of the Bharatiya Nyaya Sanhita (BNS) functions as the general prohibition on expressive insults.
- **Conduct Offence (Sacrilege):** Section 298 of the BNS penalizes injuring or defiling places of worship with intent to insult religion.
- **Expressive Offence:** Section 299 of the BNS penalizes deliberate and malicious insults to religious beliefs by words, signs, or electronic means.

- **Judicial Grounding:** Upheld by the Supreme Court in *Ramji Lal Modi (1957)* under the "public order" reasonable restriction of Article 19(2).

Constitutional Provisions Involved

- **Secular Republic (Preamble):** Directs the State to remain strictly neutral without conferring special statutory protections on specific faiths.
- **Articles 14 & 15(1):** Mandate equality before the law and prohibit state discrimination based solely on religion.
- **Articles 19(1)(a) & 19(2):** Guarantee freedom of speech, subject to reasonable restrictions including public order.
- **Articles 25 to 28:** Protect freedom of conscience and the fundamental right to freely profess, practice, and propagate religion.
- **Article 51A(h):** Establishes the fundamental duty to develop a scientific temper, humanism, and the spirit of inquiry and reform.

Sacrilege vs Blasphemy: Legal Distinction

- **Nature of Wrong:** Sacrilege is a conduct-based wrong (physical defilement or vandalism), whereas blasphemy is an expressive wrong (irreverent speech or imagery).
- **Statutory Alignment:** The BNS maintains this split by addressing physical desecration under Section 298 and expressive insult under Section 299.
- **Enforcement Overlap:** In practice, complaints against written or spoken words routinely trigger arrests under conduct provisions despite the absence of physical desecration.

Why the Act Conflates the Two Offences

- **Fusing Speech with Conduct:** The Act's definition of sacrilege penalizes both physical damage to the Saroop and disrespectful opinions expressed verbally or digitally.
- **Subjective Trigger:** Liability is determined by the subjective reception (hurt sentiments) of the complainant rather than demonstrable material damage.
- **Disproportionate Penalty:** Imposes identical maximum penalties of life imprisonment on both physical desecration and expressive dissent.

Significance of Regulating Religious Offences

1. **Deterrence Against Riots:** Provides a legal deterrent against deliberate provocations intended to cause communal violence.
2. **Redressing Communal Hurt:** Directly acknowledges and addresses public unrest stemming from historical desecration incidents.
3. **Protection of Faiths:** Protects sacred objects, religious beliefs, and minority sensitivities in a pluralistic society.
4. **Enforcing Legal Recourse:** Channels societal grievances through a formal statutory framework rather than uncontrolled public agitation.
5. **Balancing Constitutional Rights:** Requires courts to continuously reconcile religious freedoms (Article 25) with freedom of speech (Article 19).

Challenges in Enforcing Sacrilege Laws

1. **Process as Punishment:** The registration of FIRs leads to immediate arrest and custody regardless of the final legal outcome.

2. **Chilling Effect on Discourse:** The threat of life imprisonment deters historians, social reformers, and satirists from legitimate critique.
3. **Subjective Legal Thresholds:** The lack of objective criteria enables organized interest groups to selectively weaponize the law.
4. **Federal Disparities:** State laws prescribing life imprisonment create disproportionate penalties compared to the BNS framework.
5. **Inefficacy Against Vigilantism:** Severe penal codes have historically failed to deter extrajudicial violence and mob retribution.

Way Forward

1. **Codify Clear Boundaries:** Maintain an unambiguous statutory separation between physical vandalism (conduct) and critical speech (expression).
2. **Enforce Objective Standards:** Require clear evidentiary proof of "deliberate and malicious" intent before initiating criminal process.
3. **Mandatory Prior Sanctions:** Institute mandatory procedural safeguards requiring judicial review before registering FIRs on speech-related complaints.
4. **Rationalize State Penalties:** Harmonize state-level criminal amendments with central penal statutes to maintain proportionality in sentencing.
5. **Re-evaluate Judicial Precedent:** Re-examine the *Ramji Lal Modi* doctrine to decouple subjective emotional offense from automatic threats to public order.
6. **Promote Scientific Temper:** Strengthen the institutional enforcement of Article 51A(h) to encourage rational debate and democratic inquiry.

Conclusion

Expanding sacrilege laws to penalize expressive dissent with life imprisonment poses serious challenges to constitutional secularism and free speech. While protecting social harmony is essential, the State must ensure that criminal statutes do not replace reasoned democratic debate with penal coercion.

Q. "Equating subjective hurt to religious sentiments with threats to public order poses a grave challenge to free speech and secularism in India." Critically analyse in light of recent legislative trends. (15 Marks, 250 words)

2.1.10. BALANCING SECURITY, PRIVACY AND THE RIGHT TO PROTEST

Context

The article highlights the **use of facial recognition technology (FRT) by the Delhi Police at protest sites**, raising concerns about **privacy, freedom of speech and expression, right to protest, surveillance, and lack of a dedicated legal framework**. The issue is especially significant because biometric surveillance can identify individuals participating in political demonstrations and may create a **chilling effect on democratic dissent**.



Introduction

The increasing deployment of **AI-enabled facial recognition at public gatherings** represents a technological shift in policing. While surveillance may serve legitimate objectives such as crime prevention and public safety, **indiscriminate biometric monitoring of protesters without clear statutory safeguards** raises serious constitutional and civil-liberty concerns.

Current Relevance

- **Normalisation of biometric surveillance:** Facial recognition technology is increasingly being deployed in public spaces and protest sites, creating concerns that **mass surveillance** may become a routine policing practice.
- **Privacy without a dedicated legal framework:** India currently lacks a **specific statutory framework governing facial recognition**, raising questions about the legality of collecting, processing, storing and sharing citizens' biometric data.
- **Chilling effect on democratic protests:** The possibility of being identified and tracked can discourage citizens from participating in demonstrations, potentially weakening the **Article 19(1)(b) right to peaceful assembly**.
- **Indiscriminate data collection:** Facial recognition can capture the biometric information of **all individuals within the camera's range**, including innocent bystanders who are not suspected of any offence.
- **Weak accountability and oversight:** Unclear rules regarding **data access, retention, deletion, private contractors and authorisation** create risks of misuse and make it difficult to establish accountability.

Recent Concerns Associated with Facial Recognition

1. Absence of a dedicated legal framework

- India presently lacks a **specific statute comprehensively regulating facial recognition technology** by law-enforcement agencies.
- The **Digital Personal Data Protection Act, 2023** provides a data-protection framework, but its broad exemptions for certain State functions raise concerns regarding effective safeguards against governmental surveillance.
- Therefore, the central question is **not merely whether technology can be used, but under what law, for what purpose and with what safeguards**.

2. Right to Privacy under Article 21

- The Supreme Court in **Justice K.S. Puttaswamy v. Union of India (2017)** recognised privacy as a **fundamental right under Article 21**.
- Facial recognition involves the collection and processing of **biometric data**, which is highly sensitive because a person's face is a permanent identifier.
- Mass identification of protesters without adequate safeguards can therefore constitute a significant **privacy intrusion**.

3. Impact on freedom of speech and expression

- **Article 19(1)(a)** protects freedom of speech and expression, while **Article 19(1)(b)** guarantees the right to assemble peacefully and without arms.
- Fear that participation in a protest could result in **identification, profiling or future surveillance** may discourage citizens from exercising these rights.
- This is known as the **chilling effect**, whereby surveillance indirectly suppresses constitutionally protected expression.

4. Indiscriminate nature of facial recognition

- Conventional policing can be targeted towards individuals suspected of specific offences.
- Facial recognition at a protest, however, may initially scan **everyone within the camera's range**, including completely innocent participants.
- Thus, the technology creates a concern of **mass surveillance rather than targeted surveillance**.

5. Proportionality concerns

- Any restriction on fundamental rights must satisfy the constitutional **proportionality principle**.
- The State must demonstrate:
 1. **Legitimate aim** – whether there is a genuine public-interest objective.
 2. **Rational connection** – whether FRT is capable of achieving that objective.
 3. **Necessity** – whether a less restrictive alternative exists.
 4. **Balancing** – whether the benefits justify the infringement of fundamental rights.
- In the present case, **conventional policing, targeted investigation and ordinary video surveillance** could potentially achieve public-order objectives with comparatively lower privacy costs.

6. Risk of false positives

- Facial recognition systems are not infallible.
- **False positives** can result in innocent individuals being wrongly identified as suspects.
- In a protest context, such errors can have serious consequences, including **detention, investigation, intimidation or reputational harm**.

Way Forward

1. Enact a dedicated FRT law

India should establish a **comprehensive statutory framework** specifically governing facial recognition by law-enforcement agencies.

2. Purpose limitation

FRT should be permitted only for **clearly defined and legitimate purposes**, rather than allowing open-ended surveillance.

3. Targeted rather than mass surveillance

Deployment should focus on **specific suspects or clearly established threats**, rather than scanning every participant at a demonstration.

4. Judicial/independent authorisation

High-risk biometric surveillance should require **prior judicial or independent authorisation**, except in narrowly defined emergencies.

5. Data minimisation and deletion

Only necessary information should be collected, with **strict retention periods and mandatory deletion** where identification is unnecessary.

Conclusion

Facial recognition can strengthen **law enforcement and public security**, but technological capability cannot by itself constitute constitutional legitimacy. India needs a framework where **security is balanced with privacy, liberty and democratic dissent**. The principle should be “**targeted surveillance, not indiscriminate surveillance**”, backed by legality, necessity, proportionality, transparency and independent oversight.

Q. "The indiscriminate use of facial recognition technology at protest sites can create a chilling effect on fundamental freedoms." Discuss with reference to the Right to Privacy and the Right to Peaceful Protest in India. **10 Marks**

2.2. INTERNATIONAL RELATION

2.2.1. 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 organizations and 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.

Q. Maritime governance is emerging as a key pillar of regional security in the Indo-Pacific. Discuss the strategic significance of India's SHANTI initiative in addressing both traditional and non-traditional maritime security challenges. 15 Marks

2.2.2. 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?

- 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.
- 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.
- 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.
- 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.
- 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**.

Q. The protests in Pakistan-occupied Kashmir (PoK) underscore the link between governance, political representation and regional stability. Analyse in the context of India's neighbourhood policy. 15 Marks

2.2.3. MECCA DEFENCE AGREEMENT

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.

Q. The Mecca Defence Agreement reflects the emergence of a more multipolar and regionally driven security architecture in West Asia. Examine its implications for India and suggest an appropriate strategic response. 15 marks

2.3. HEALTH

2.3.1. 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.

Q. India is witnessing a dual burden of malnutrition, where undernutrition coexists with rising obesity and diet-related diseases. Discuss the need for regulating High Fat, Sugar and Salt (HFSS) foods through taxation, labelling and other policy measures. 15 Marks

Scan to attempt more questions...



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GENERAL STUDIES 3

3.1. ECONOMY

3.1.1. EVALUATING INDIA'S DRAFT CAFE III NORMS

Context

The **Ministry of Power** recently issued the **draft notification** for **Corporate Average Fuel Efficiency (CAFE) III norms**, setting progressive targets to lower passenger vehicle fleet emissions to **78.90 gCO₂/km** by **FY2031-32**.



Introduction

CAFE III norms aim to accelerate India's transition to **low-carbon mobility** and reduce reliance on **crude oil imports**. While the framework promotes **electric vehicles (EVs)** and **alternative fuels**, concerns persist that flexible **compliance mechanisms** may dilute actual **emission reductions**.

What are CAFE Norms?

- **CAFE norms** are mandates requiring automakers to meet predefined **average CO₂ emissions targets** across their entire vehicle fleet.
- These norms are pivotal for meeting India's **Glasgow COP26 commitments** and the **Net-Zero 2070** target.

Regulatory Mechanism

- The norms will take effect from **April 2027**, spanning a flexible five-year compliance period until **FY2032**.
- They introduce **Super Credits**, granting higher weightage to **Battery Electric Vehicles (BEVs)**, **hybrids**, and **flex-fuel vehicles**.
- A **Carbon Neutrality Factor** gives compliance advantages for vehicles compatible with **ethanol-blended fuels (E20)**.
- Automakers can bank, trade, or buy **compliance credits** directly from the **Bureau of Energy Efficiency (BEE)**.

Significance of CAFE III Norms

1. Enhancing Energy Security

- Stricter fuel efficiency reduces India's structural dependence on **imported crude oil**.
- It shields the economy from **geopolitical shocks** and **imported inflation**.

2. Accelerating Decarbonisation

- Lowering fleet emissions significantly cuts **greenhouse gas (GHG) emissions** in the transport sector.

3. Promoting Clean Innovation

- The policy incentivises OEMs to allocate capital toward **EVs** and **strong hybrids**.

4. Market-Based Flexibility

- The **credit trading framework** functions as a cap-and-trade system, rewarding early adopters of **green technology**.

5. Macroeconomic Stability

- Reducing oil consumption curtails foreign exchange outflows, stabilizing the **current account deficit**.

Challenges Associated with CAFE III Norms

1. Dilution Through Flexibility

- **Super-credits** and multi-year blocks weaken effective stringency, allowing compliance without real-world **emission reductions**.

2. Low Penalty Buyout Pricing

- Purchasing credits from the **BEE** (₹2,500 - ₹4,500/gCO₂) is substantially cheaper than statutory penalties, weakening the **financial deterrent**.

3. Uncertain Biofuel Trajectory

- Granting advantages for **ethanol (E20)** ignores its lower energy density and the lack of a definitive policy beyond E20.

4. Absence of EV Quotas

- The policy lacks mandatory **zero-emission vehicle (ZEV)** production targets.

5. Ambition Gap

- The regulatory goals are arguably lower than the industry's own voluntary commitments for **EV penetration** by 2030.

Global Best Practices

1. China – Dual Credit System

- Combines **Corporate Average Fuel Consumption (CAFC)** standards with mandatory **New Energy Vehicle (NEV)** credit targets.

2. United States – Clean Air Act

- Aligns fleet efficiency rules with strict **greenhouse gas regulations**, paired with federal subsidies for **EV development**.

Way Forward

1. Tighten Compliance

- Phase out **super-credits** for partial electrification (hybrids) to force a genuine shift to **zero-emission vehicles**.

2. Adopt Dual-Credit Framework

- Introduce mandatory **New Energy Vehicle (NEV)** production quotas alongside fleet targets.

3. Align Penalty Pricing

- Raise the **BEE credit buyout price** to match or exceed the **Energy Conservation Act penalties**.

4. Long-Term Biofuel Policy

- Establish a clear trajectory for **ethanol blends** beyond E20 while addressing consumer mileage trade-offs.

5. Global Testing Standards

- Fully transition to **real-world driving emission tests (WLTP)** to ensure verifiable reductions.

6. Integrate Industrial Policy

- Link CAFE targets with manufacturing incentives like the **PLI scheme** to position India as a global **low-carbon manufacturing hub**.

Conclusion

While **CAFE III norms** offer a flexible transition, addressing **low penalty structures** and **credit loopholes** is vital. Implementing strict mandates alongside these norms will convert India's oil vulnerabilities into a competitive advantage in **sustainable mobility**.

Q. Evaluate the significance and key challenges of the proposed Corporate Average Fuel Efficiency (CAFE) III norms. 15 Marks

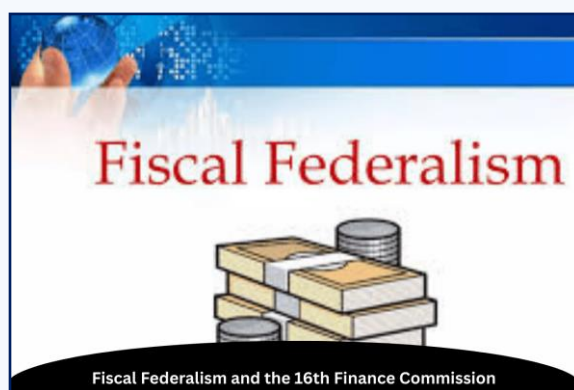
3.1.2. BALANCING EFFICIENCY AND EQUITY UNDER THE 16TH FINANCE COMMISSION

Context

The **16th Finance Commission (FC-16)**, chaired by Dr. Arvind Panagariya, submitted its award recommendations for **2026–31**. While keeping vertical tax devolution at **41%**, the Commission drastically restructured grants-in-aid by discontinuing Revenue Deficit Grants (RDGs) to prioritize fiscal discipline.

Introduction

The **16th Finance Commission** re-engineers India's fiscal federal transfers by prioritizing economic efficiency over horizontal equalisation. By eliminating Revenue Deficit Grants and reducing total grants-in-aid to **8.3%** of transfers, the report aims to incentivize fiscal prudence, but risks deepening regional economic disparities among States.



What is Fiscal Federalism?

- It defines the financial framework and resource distribution between the Union and sub-national State governments in a federal setup.
- The system aims to balance state financial autonomy with national economic coherence, ensuring equitable regional development.
- It addresses both vertical fiscal imbalances (between Union and States) and horizontal imbalances (among different States).

Legislative Basis & Key Provisions

- **Article 280:** Mandates the President to constitute a quasi-judicial **Finance Commission** every five years to recommend revenue distribution.
- **Article 270:** Governs the distribution of net proceeds of Union taxes between the Union and the States (vertical devolution).
- **Article 275:** Empowers Parliament to provide statutory **Grants-in-Aid** to States in need of financial assistance (horizontal equalisation).

- **Article 293:** Regulates State borrowing powers and enforces central consent requirements for States with outstanding Union loans.

Significance of the 16th Finance Commission Framework

1. Incentivising Economic Performance

- Introduces a **10% weight for contribution to GDP** in the horizontal distribution formula, directly rewarding high-performing States.
- Encourages States to boost industrial output and expand their regional economic footprint.

2. Eliminating Moral Hazard in State Finances

- Discontinues **Revenue Deficit Grants (RDGs)** to prevent States from underperforming in tax collection while relying on central gap-filling transfers.
- Promotes long-term fiscal discipline and self-reliance across sub-national governments.

3. Empowering Third-Tier Governance

- Allocates **₹7.2 lakh crore** specifically to urban and rural local bodies to strengthen grassroots democratic decentralized development.
- Ties funding releases to mandatory water, sanitation, revenue mobilization, and auditing targets to enhance administrative accountability.

4. Streamlining Financial Transfer Mechanisms

- Restricts grants-in-aid exclusively to local bodies and disaster management, eliminating overlapping sector-specific and State-specific grants.
- Reduces administrative complexity and creates a more predictable, transparent fiscal transfer architecture.

5. Preserving Union Fiscal Stability

- Retains vertical tax devolution at **41%**, providing the Union government with adequate fiscal room for national defense, security, and macro-infrastructure.
- Prevents excessive central revenue dilution in an era of global economic uncertainty.

Challenges Associated with the 16th Finance Commission Framework

1. Exacerbating Regional Economic Disparities

- Reducing the weight for **Income Distance (from 45% to 42.5%)** and abolishing RDGs severely reduces transfers to structurally disadvantaged States.
- Ignores historical, geographical, and demographic constraints that prevent low-income States from self-equalizing.

2. Asymmetric Stringency on Union vs. States

- Enforces strict fiscal discipline on States via RDG removal, but fails to mandate a binding rollback of non-shareable central **cesses and surcharges**.
- Preserves Union fiscal flexibility while shifting the primary burden of macroeconomic adjustment onto State budgets.

3. Erosion of State Fiscal Autonomy

- Replacing untied equalisation grants with strict, compliance-linked conditional transfers restricts the spending flexibility of elected State governments.
- Forces States to realign local developmental priorities with central compliance metrics.

4. Double Burden on Structurally Stressed States

- Disadvantaged States face a simultaneous decline in tax devolution shares and the complete absence of compensatory gap-filling grants.
- Limits the capacity of fiscally stressed States to fund essential social sector commitments like health and education.

5. Growing Centralization of Fiscal Resources

- Non-shareable cesses and surcharges have expanded to over **10% of Union tax revenues**, continuously shrinking the effective divisible tax pool.
- Compounds State revenue shortfalls already exacerbated by reduced tax rate-setting autonomy post-GST implementation.

Global Best Practices

1. Canada – Equalisation Grants System

- Utilizes unconditional equalisation transfers funded by the federal government to ensure all provinces can provide reasonably comparable public services at comparable taxation levels.

2. Australia – Commonwealth Grants Commission

- Implements Horizontal Fiscal Equalisation (HFE) based on comprehensive assessment of provincial revenue capacities and expenditure needs, ensuring high fiscal equity.

Way Forward

1. Reintroduce Need-Based Equalisation Instruments

- Restore targeted compensatory grants to support States facing severe structural, geographical, or demographic handicaps.

2. Statutory Cap on Cesses and Surcharges

- Enact a binding ceiling on non-shareable cesses and surcharges or progressively merge them into the divisible pool under Article 270.

3. Harmonize Efficiency with Fiscal Justice

- Balance GDP contribution incentives with adequate equalisation weights to prevent widening economic divides between advanced and lagging States.

4. Expand Untied Grants for Local Bodies

- Increase the proportion of unconditioned funds to third-tier governments, empowering local bodies to address context-specific developmental priorities.

5. Restructure Centrally Sponsored Schemes (CSS)

- Rationalize CSS funding ratios and grant greater operational flexibility to States to prevent forced diversion of state matching revenues.

6. Institutionalize Consensus via Inter-State Council

- Leverage constitutional bodies like the Inter-State Council to build consensus between the Union and States on long-term fiscal federal reforms.

7. Relax Borrowing Restrictions During Crises

- Provide calibrated relaxation of state borrowing caps under Article 293 during external economic shocks or natural disasters.

Conclusion

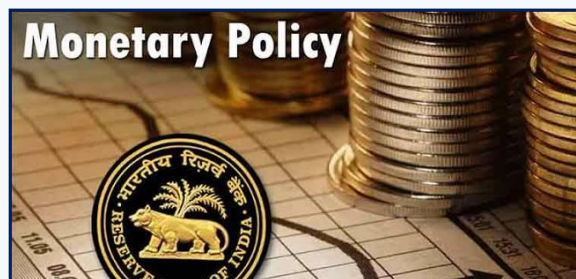
The **16th Finance Commission** represents a shift toward performance-driven fiscal federalism. However, long-term national stability requires balancing economic efficiency with fiscal justice to protect sub-national autonomy and support structurally constrained States.

Q. The 16th Finance Commission report marks a shift from need-based transfers to performance-linked fiscal federalism. Discuss its significance, associated challenges, and impact on Union-State fiscal relations. 15 Marks

3.1.3. AN ANALYTICAL REVIEW OF RBI'S MONETARY POLICY STANCE

Context

The Monetary Policy Committee (MPC) of the Reserve Bank of India (RBI) is convening for its bi-monthly review, where it is widely expected to maintain a status quo on policy rates while navigating significant domestic and global economic uncertainties.



Introduction

Monetary policy formulation in India operates under the statutory Flexible Inflation Targeting (FIT) framework, which mandates the Reserve Bank of India to anchor headline Consumer Price Index (CPI) inflation at 4% within a 2%–6% tolerance band. While headline inflation remains near the target, formulating policy requires evaluating forward-looking macroeconomic risks ranging from volatile global energy markets to uneven domestic growth dynamics.

Key Determinants & Macroeconomic Dynamics

1. The Dual Mandate Calculus: Anchoring Inflation vs. Nurturing Growth

- The repo rate acts as the primary signal rate; lowering it stimulates borrowing and investment during growth slowdowns, while raising it dampens excess aggregate demand when inflation surges.
- Maintaining inflation around 4% preserves consumer purchasing power without eroding producer profit margins, ensuring sustained long-term economic expansion.

2. Exogenous Energy Shocks and Geopolitical Vectors

- Volatility in global crude oil prices—exacerbated by US-Iran tensions and maritime security risks in the Red Sea and Strait of Hormuz—presents a direct threat to domestic stability.
- An 11% surge in crude oil prices since mid-June stresses India's Current Account Deficit (CAD), puts depreciative pressure on the Indian Rupee, and increases input costs across sectors.

3. Agrarian Vulnerabilities and Climate-Induced Risks

- Intensifying El Niño conditions, a 13% rainfall deficit, and depleted reservoir levels pose serious risks to agricultural output and Rabi sowing.
- With food inflation persisting above 5%, climate-driven supply disruptions threaten to spill over into generalized inflation, constraining the space for rate cuts.

4. Sectoral Divergence in High-Frequency Indicators

- Macroeconomic data presents a mixed picture of underlying growth momentum: airline passenger traffic, rail freight, and diesel consumption indicate slowdowns in specific service and industrial channels.

- Conversely, sustained growth in port cargo traffic, vehicle registrations, and GST collections highlights resilient consumption and external trade segments, requiring a cautious, non-disruptive rate environment.

5. Global Interest Rate Differentials and Capital Flow Dynamics

- Synchronized policy rate holds by major central banks—including the US Federal Reserve, European Central Bank, Bank of Japan, and Bank of England—reduce immediate pressure on the RBI to adjust rates to protect yield differentials.
- Maintaining stable rate differentials prevents sudden capital outflows from domestic debt markets without artificially inflating borrowing costs for the government.

Significance of the Monetary Policy Stance

1. Keeps retail inflation anchored near the 4% target to safeguard real consumer purchasing power.
2. Provides stability to long-term borrowing costs, encouraging sustained private sector capital expenditure.
3. Insulates domestic financial markets from global interest rate volatility and foreign portfolio outflows.
4. Prevents systemic liquidity oversupply that could trigger demand-pull inflationary pressures.
5. Balances interest rate structures to maintain fiscal debt sustainability for the sovereign.

Key Structural Challenges

Monetary policy tools are ineffective against supply-side shocks such as global crude oil spikes and geopolitical trade disruptions.

1. Climate-induced agricultural volatility like El Niño can cause sudden food price surges independent of domestic demand conditions.
2. Transmission delays hinder the rapid passthrough of policy rate changes to commercial bank lending rates.
3. Sectoral divergence makes it difficult to adjust policy rates without inadvertently hurting lagging economic sectors.
4. Global central bank policy shifts create persistent uncertainty for domestic exchange rate management and foreign capital flows.

Way Forward

1. Maintain a data-dependent, forward-looking monetary stance to preemptively address emerging inflationary risks.
2. Enhance supply-chain resilience and strategic food reserves to buffer against climate-induced agricultural shocks.
3. Improve monetary policy transmission mechanisms across commercial banks to ensure efficient credit delivery.
4. Strengthen fiscal-monetary policy coordination to support vulnerable economic sectors without expanding public debt.
5. Utilize foreign exchange reserve buffers to absorb currency volatility caused by fluctuating crude oil prices.
6. Expand high-frequency tracking systems to monitor sectoral divergence and refine disaggregated growth forecasting models.

Conclusion

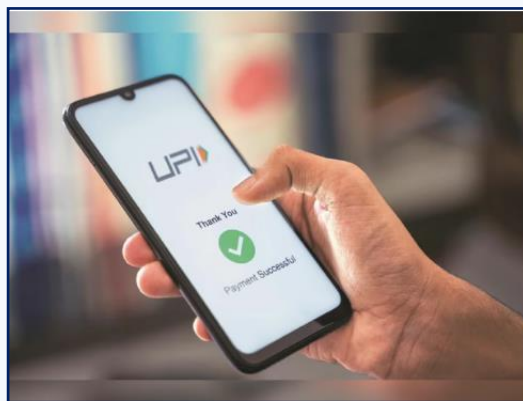
The Reserve Bank of India's monetary policy review reflects a complex balancing act between curbing inflation and supporting economic recovery. In an environment marked by geopolitical friction, volatile commodity markets, and climate risks, maintaining a cautious and adaptable monetary framework remains essential for long-term macroeconomic stability.

Q. The Flexible Inflation Targeting (FIT) framework requires balancing price stability with economic growth amidst severe external and climate-induced shocks. Discuss the factors influencing the Reserve Bank of India's monetary policy decisions and the associated challenges. 15 Marks

3.1.4. UPI CHARGES DEBATE: BALANCING DIGITAL INCLUSION WITH FINANCIAL SUSTAINABILITY

Context

UPI's rapid expansion as India's **Digital Public Infrastructure (DPI)** has raised concerns over its **zero-MDR model** and ecosystem sustainability. The debate regarding application of charges on financial transaction through UPI centres debate on recent legislative changes on balancing **financial sustainability, consumer affordability, MSME protection and financial inclusion** without weakening UPI's network effects.



Introduction

- The **Unified Payments Interface (UPI)** has transformed India's payment ecosystem by providing a fast, interoperable and low-cost digital payment infrastructure.
- With **55.49 crore users** onboarded by June 2026 and UPI transactions reaching **24,162 crore in volume and ₹314 lakh crore in value in FY 2025–26**, UPI has become a critical component of India's Digital Public Infrastructure (DPI).

What is the recent development?

- The **Lok Sabha has passed the Taxation and Other Laws (Amendment) Bill, 2026**, which amends the Payment and Settlement Systems Act, 2007 and creates a legal framework through which the government can permit charges on specified digital payment modes.
- **Important clarification:** this does **not automatically mean that consumers will start paying for UPI**. The actual fee structure would require subsequent government notification/regulation.
- Current proposals reportedly focus on **MDR on large merchant transactions**, particularly transactions above **₹2,000**, rather than imposing a universal charge.
- One reported model envisages an MDR of around **0.3–0.5%** for large merchants, with different turnover thresholds being considered. **No final fee structure has been announced.**
- The recent clarification from the Payments Council of India indicates that **consumers and small merchants are intended to remain protected from such charges.**

Significance of UPI for the Indian Economy

1. Financial Inclusion

- Enables low-cost digital payments even for small businesses and individuals.
- Reduces dependence on cash and expands formal financial participation.

2. Formalisation of Economy

- Creates digital transaction trails.
- Helps improve transparency in economic activity and can support tax compliance.

3. Digital Public Infrastructure

- UPI demonstrates India's ability to build **population-scale, interoperable digital infrastructure**.
- Its international expansion has also strengthened India's **digital diplomacy**; UPI-linked systems are now operational in several countries.

4. Ease of Doing Business

- Instant settlement and QR-based payments reduce transaction costs for businesses.

Why has the government reconsidered the Zero-MDR model?

1. Financial sustainability of UPI

- UPI transactions are free to users and merchants under the existing model, but **banks, payment service providers and technology platforms still incur infrastructure and operational costs**.
- Rapid growth in transaction volumes has increased the need for investment in
 - payment infrastructure,
 - cybersecurity,
 - fraud prevention,
 - server capacity and

2. Fiscal burden of maintaining zero-MDR

- The government has been supporting the ecosystem through incentive schemes for low-value UPI transactions.
- For FY 2024–25, the Cabinet approved an incentive scheme with an estimated outlay of **₹1,500 crore**, providing incentives for eligible small-merchant UPI transactions up to ₹2,000.

3. Large-value transactions can potentially bear some cost

- A major argument behind the proposal is that **large merchants and high-value transactions have greater capacity to absorb a small MDR**.
- Reuters reported that transactions above ₹2,000 represented only around **4% of UPI transaction volume but about 67% of transaction value**, making them a potential target for a calibrated levy.

Major Challenges of Introducing UPI Charges

- **Risk of burden shifting to consumers:** Merchants may **pass MDR costs to consumers** through higher prices or explicit payment charges, reducing UPI's affordability and potentially encouraging a shift back to cash.
- **Threat to UPI's network effect:** UPI's success rests on **simplicity, interoperability and low cost**. Higher charges may reduce merchant acceptance and weaken the **network effect**, wherein greater participation increases the system's overall value.
- **Impact on MSMEs and small merchants:** Small businesses operate on **thin profit margins**; indiscriminate charges could increase transaction costs, discourage digital adoption and incentivise cash-based transactions. Hence, **turnover-based exemptions** are essential.

- **Digital divide:** Unequal access to **smartphones, internet connectivity and digital literacy**, particularly among elderly and digitally vulnerable groups, may make additional payment costs regressive and deepen existing digital inequalities.
- **Cybersecurity and fraud risks:** Growing UPI dependence increases exposure to **phishing, social engineering, fake QR codes, identity theft and payment fraud**. Any revenue generated should partly support **cybersecurity, fraud detection and payment-system resilience**.

Way Forward

1. Adopt a calibrated MDR rather than universal charges

- **Selective pricing:** Apply MDR only to **large merchants, high-value transactions and commercially capable entities**.
- **Protect small-value payments:** Keep **P2P transactions and low-value merchant payments** free or minimally charged.

2. Protect MSMEs and small merchants

- **Turnover-based exemptions:** Establish clear thresholds below which merchants remain exempt from MDR.
- **Safeguard micro-enterprises:** Protect **kirana stores, street vendors and small businesses** from additional transaction costs.

3. Prevent cost pass-through to consumers

- **Clear liability framework:** Explicitly define **who bears the MDR** to prevent arbitrary cost shifting.
- **Transparency:** Require merchants to clearly disclose any additional payment-related charges.

4. Shift towards a sustainable financing model

- **Reduce subsidy dependence:** Gradually reduce excessive reliance on **government incentives** for sustaining UPI.
- **Revenue-sharing mechanism:** Develop a predictable framework for distributing revenues among **banks, PSPs and other ecosystem participants**.
- **Improve efficiency:** Promote technological and operational efficiency to reduce payment-processing costs.

5. Reinvest UPI revenues in the digital ecosystem

- **Cybersecurity:** Allocate resources towards stronger **fraud detection, cyber protection and payment-system resilience**.
- **Infrastructure:** Invest in scalable payment infrastructure to handle rising transaction volumes.
- **DPI sustainability:** Thus, MDR revenue can be transformed from merely a **transactional cost into an investment in Digital Public Infrastructure**.

6. Strengthen competition and ecosystem resilience

- **Maintain interoperability:** Preserve UPI's core principle of **interoperability across banks and payment applications**.
- **Strengthen NPCI:** Enhance the **technical, regulatory and risk-management capabilities** of the National Payments Corporation of India.

Conclusion

- UPI represents one of India's most successful examples of **Digital Public Infrastructure**, combining technological innovation with financial inclusion and formalisation. The present debate should therefore not be framed as **"free UPI versus paid UPI"**

- A calibrated, evidence-based MDR regime focused on large commercial users, coupled with protection for small merchants and consumers, can achieve the right balance between **innovation, affordability, competition and sustainability**.

Q. *The zero-MDR model has played a crucial role in making UPI an inclusive Digital Public Infrastructure, but its long-term financial sustainability remains a concern. Discuss the challenges associated with introducing charges on UPI transactions and suggest a balanced way forward. 15 Marks*

3.1.5. INDUSTRIAL HEAT ELECTRIFICATION IN INDIA

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**.

***Q.** Industrial heat electrification can be a critical pathway for achieving India's decarbonisation goals while enhancing manufacturing competitiveness. Examine the challenges and suggest a suitable roadmap for its large-scale adoption, particularly among MSMEs. 15 Marks*

3.1.6. THE MISSING 'REUSE' PRINCIPLE IN INDIA'S EV TRANSITION

Context

India's EV transition is accelerating, but policy remains focused on **new EVs and scrappage**. **Retrofitting structurally sound vehicles** can extend their life, reduce waste and resource use, and make EV adoption more **circular and sustainable**.



Introduction

A **circular economy** prioritises **reduce** → **reuse** → **recycle**. India has strengthened vehicle recycling through the **2021 Scrapping Rules** and **2025 End-of-Life Vehicle Rules**, but EV transition needs a **continue–retrofit–recycle** approach based on a vehicle’s **condition, not just age**.

Circular Economy and Vehicle Transition

1. **Reduce Resource Consumption:** Extending vehicle life reduces the need for new materials, energy and water required to manufacture replacement vehicles.
2. **Reuse Existing Assets:** EV retrofitment preserves usable components like the **chassis and body**, extending their economic and functional value.
3. **Recycle at End-of-Life:** Vehicles that are unsafe or structurally damaged should be **scrapped and recycled** to recover valuable materials.

Key Principle: Reduce → Reuse → Repair/Refurbish → Recycle → Dispose

What is Vehicle Retrofitment?

- **Meaning:** Replacing an existing vehicle’s **ICE, fuel system and related components** with a certified electric powertrain.
- **Core Principle:** Retains the vehicle’s **structurally sound components** such as the chassis and body.
- **Process:** Old ICE Vehicle → Safety Assessment → EV Retrofitment → Extended Vehicle Life
- **Benefit:** Reduces emissions, resource consumption and premature vehicle scrappage.
- **Significance:** Acts as the “missing middle” between continued ICE use and complete scrappage.

Significance of Vehicle Retrofitment

1. Promotes Circular Economy

- Extends the **functional life** of existing vehicles.
- Preserves embedded material and economic value.
- Prevents premature conversion of usable assets into waste.

2. Reduces Material Demand

- Reduces the need to manufacture entirely new vehicles.
- Saves **raw materials, critical minerals and energy**.
- Lowers pressure on industrial resources and supply chains.

3. Reduces Waste Generation

- Scrapping generates both recyclable and landfill waste.
- A two-wheeler may generate around **90 kg recyclable material + 18 kg landfill waste**.
- Retrofitment reduces waste by extending the life of suitable vehicles.

4. Supports Sustainable Consumption

- Advances **SDG 12: Responsible Consumption and Production**.
- Promotes **resource efficiency and longer product life**.
- Reduces waste through reuse rather than premature disposal.

5. Accelerates Electrification

- Electrifies existing vehicles without complete replacement.
- Can bring more vehicles into the **EV ecosystem**.
- Makes electrification faster and potentially more resource-efficient.

6. Reduces Fossil-Fuel Dependence

- Replaces ageing **ICE powertrains with electric systems**.
- Reduces petrol/diesel consumption and vehicular emissions.
- Supports India's **clean mobility and energy-transition goals**.

7. Can Improve Affordability

- Provides an alternative to purchasing a completely new EV.
- Can lower the upfront cost of electrification for suitable vehicles.
- Makes the EV transition potentially **more inclusive and accessible**.

Why Scrappage Alone is Not Enough?

Age ≠ End of Useful Life: An old vehicle may still have a **sound chassis, body and usable components**; scrapping such vehicles prematurely wastes embedded material and economic value.

Challenges in Scaling EV Retrofitment

1. Safety Risks

- Improper conversion can compromise **battery, electrical and vehicle safety**.
- Poor weight distribution may affect **stability and crashworthiness**.

2. Certification & Standards

- Need **uniform national standards** for retrofit kits, batteries, motors and controllers.
- Strict **testing and certification** are essential for road safety and consumer confidence.

3. Battery Lifecycle Management

- Batteries create new environmental challenges through **mining, production and disposal**.
- Strong systems are needed for **second-life use and recycling**.

4. Economic Viability

- Retrofitment may not be viable for **very old, damaged or low-value vehicles**.
- Cost-benefit assessment is essential before conversion.

5. Skilled Ecosystem

- Large-scale adoption requires **trained technicians and certified retrofit centres**.
- Reliable components and after-sales services are equally important.

6. Finance & Insurance

- Uncertainty over **vehicle valuation, insurance, warranty and resale** can deter users.
- Banks and insurers need suitable products for retrofitted vehicles.

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Way Forward

1. For Government

- **Adopt a condition-based vehicle hierarchy:** Classify vehicles into continue, retrofit and scrap categories based on safety and structural integrity.
- **Develop stringent retrofit standards:** Ensure certified conversion kits, battery safety and testing protocols.
- **Provide targeted incentives:** Encourage certified retrofitment, particularly for two-wheelers, three-wheelers and commercial fleets.
- **Integrate retrofitment with scrappage policy:** Treat both as complementary components of circular mobility.
- **Create digital vehicle-health assessment:** Use standardised testing to determine whether a vehicle should continue, be retrofitted or scrapped.

2. For Industry

- Develop standardised and safe retrofit kits.
- Build certified conversion and testing centres.
- Promote modular and repairable EV components.
- Develop battery second-life and recycling ecosystems.

3. For Sustainable Mobility

Retrofitment → Battery reuse → Second-life applications → Recycling

- This can create a broader **circular EV ecosystem** rather than merely replacing one propulsion technology with another.

Conclusion

India's EV transition must go beyond "replace and scrap" towards "Continue–Retrofit–Recycle." Integrating electrification with circularity can make mobility cleaner, resource-efficient, affordable and sustainable.

Q. India's transition towards electric mobility must go beyond replacing internal combustion engine vehicles with new EVs and incorporate circular economy principles. Discuss the significance of vehicle retrofitment in achieving a resource-efficient and sustainable EV transition.
15 Marks

3.1.7. RECONCILING ENERGY SECURITY, AGRICULTURE AND SUSTAINABILITY

Context

India's **E20 programme**, involving 20% ethanol-blended petrol, achieved the blending target in **2025**, rising from ~1.5% in 2014. It seeks to strengthen **energy security, reduce oil imports, boost farmer incomes and cut emissions**, with the government reporting over **₹1.90 lakh crore in forex savings**. However, concerns remain over **vehicle compatibility, mileage, food–fuel competition, water use and long-term sustainability**.



Introduction

- India's **Ethanol Blended Petrol (EBP) Programme** aims to reduce crude-oil dependence by blending domestically produced ethanol with petrol.
- India achieved the **20% ethanol-blending target (E20) in 2025, five years ahead of the original 2030 target**, making it an important component of India's energy-transition strategy.

Significance of E20 fuel

1. Energy Security

- Reduces dependence on **imported crude oil**.
- Provides a degree of insulation from **global oil-price volatility and geopolitical shocks**.

2. Economic Benefits

- Saves **foreign exchange**.
- Creates a domestic market for ethanol-producing agricultural commodities.
- Strengthens the **biofuel industry and rural economy**.

3. Agricultural Benefits

- Creates additional demand for **sugarcane, maize and other approved feedstocks**.
- Provides an alternative market for agricultural produce.

4. Environmental Benefits

- Ethanol is a **renewable fuel** and can reduce lifecycle greenhouse-gas emissions compared with fossil fuels.
- According to government data, the programme had resulted in substantial **net CO₂ reduction** and crude-oil substitution.

Key Issues / Concerns

1. Vehicle Compatibility

- Older vehicles designed for E10 may not perform optimally with E20.
- Concerns include lower mileage, accelerated wear of some components, higher maintenance costs.
- Government/industry evidence indicates that older E10-designed vehicles can experience some reduction in fuel efficiency.

2. Consumer Cost

- Even if E20 is cheaper per litre, **lower mileage** can increase the effective cost per kilometre for some vehicles.
- This creates a question of **distributional justice**, as consumers with older vehicles bear adjustment costs.

3. Food vs Fuel Debate

- Increased diversion of **sugarcane, maize and rice** towards ethanol can potentially compete with food availability, livestock feed, water resources.
- Hence, ethanol policy must not undermine **food security**.

4. Water Intensity

- Sugarcane is a highly **water-intensive crop**.
- Expansion of sugarcane-based ethanol in water-stressed regions can aggravate: **groundwater depletion + regional ecological stress**.

5. Sustainability of Feedstocks

- Ethanol is not automatically "green".
- Its sustainability depends on:
feedstock → cultivation → water use → processing → transportation → lifecycle emissions.

6. Policy Transition Problem

- India has a large existing fleet of vehicles designed around lower ethanol blends.
- A rapid transition without adequate testing, consumer awareness, retrofitting, servicing infrastructure can create public resistance.

Way Forward

1. Adopt a Lifecycle Sustainability Approach

- Evaluate ethanol not merely by blending percentage but through:
carbon intensity + water footprint + land use + food-security impact.

2. Feedstock Diversification

- India should **reduce excessive dependence on sugarcane-based ethanol** by promoting **2G ethanol produced from agricultural residues, crop waste, cellulosic biomass and municipal waste**.
- This will help **reduce pressure on food crops, conserve water resources and minimise the food-versus-fuel conflict**, while making the ethanol programme more sustainable.

3. Protect Consumers

- Provide clear information about **E10/E20 compatibility**.

- Ensure affordable replacement of vulnerable components.
- Strengthen warranty and servicing mechanisms for affected vehicles.

4. Technology-Neutral Mobility Strategy

- E20 should not become a substitute for broader decarbonisation.
- India should simultaneously promote:
EVs + hybrids + CNG + public transport + green hydrogen + sustainable biofuels.

5. Promote Flex-Fuel Vehicles

- Develop a gradual ecosystem for **flex-fuel vehicles**, allowing consumers to use different ethanol-petrol blends according to availability.

6. Regional Crop Planning

- Promote ethanol feedstocks according to **agro-climatic and water availability conditions**, rather than encouraging water-intensive crops uniformly across India.

Conclusion

- India's E20 programme represents a significant **energy-security and agricultural-policy intervention**, but its sustainability cannot be judged merely by the quantity of ethanol blended.
- Thus, India should pursue a **technology-neutral, feedstock-diversified and lifecycle-based biofuel transition** rather than treating E20 as an end in itself.

Q. India's E20 ethanol blending programme can strengthen energy security, but it also raises concerns related to food security, water use and vehicle compatibility. Critically examine the opportunities and challenges associated with the E20 transition. Suggest measures to ensure a sustainable and inclusive biofuel policy. 15 marks

3.1.8. AI AND THE FUTURE OF EDUCATION: FROM KNOWLEDGE TO CAPABILITY TRANSITION

Context

Artificial Intelligence (AI) is transforming the nature of work faster than traditional education systems are adapting. Earlier technological revolutions required people to acquire progressively more knowledge through schooling, higher education and professional degrees.



Introduction

Artificial Intelligence is shifting the economy from knowledge-intensive work towards judgement-intensive and adaptability-intensive work. As AI and automation increasingly perform routine cognitive and manufacturing tasks, India's education system must move from merely producing degree-holders to developing individuals capable of **critical thinking, domain expertise, creativity, problem-solving, judgement and lifelong learning.**

AI Evolution and the Changing Nature of Education and Work

1. **From automation to augmentation:** AI is no longer limited to automating repetitive physical tasks; it is increasingly assisting with coding, research, analysis, content creation and decision-support, making **human-AI collaboration** an essential workplace skill.

2. **Rise of AI agents:** The emergence of AI agents capable of planning and executing multi-step tasks may automate portions of knowledge work that were previously considered relatively specialised, particularly routine entry-level functions.
3. **Entry-level jobs under pressure:** As AI takes over routine tasks, traditional graduate-level entry positions may shrink, creating an “**experience paradox**” in which young workers find fewer opportunities to acquire the experience needed for employment.
4. **Premium on deep expertise:** AI makes easily retrievable information less valuable while increasing the importance of **domain expertise, contextual understanding and professional judgement**.
5. **Shift from knowledge accumulation to knowledge application:** Education must move beyond excessive memorisation towards the ability to **identify problems, locate relevant information, evaluate AI-generated outputs and apply knowledge appropriately**.
6. **Critical thinking becomes more important:** Since AI can generate convincing but inaccurate or biased outputs, students increasingly need **verification, reasoning, source evaluation and intellectual judgement**.

Recent Challenges for India — AI and Education

1. AI-Skill Mismatch

India faces a growing gap between **traditional educational qualifications and AI-era employability**, as graduates often lack the combination of domain expertise, digital literacy and AI-related skills demanded by emerging jobs.

2. Declining Employability of Conventional Degrees

As AI automates routine cognitive tasks, conventional degrees alone may no longer guarantee employment, making it necessary to shift from **degree-centric education to competency- and capability-based learning**.

3. Digital Divide

Unequal access to **internet connectivity, digital devices, AI tools and quality teachers** can widen existing socio-economic, rural-urban and gender inequalities in educational opportunities.

4. Faculty Preparedness

Many teachers require **continuous training and pedagogical upskilling** to integrate AI meaningfully into classrooms; otherwise, AI may simply be added to an outdated education system without improving learning outcomes.

5. AI-Enabled Academic Dishonesty

Generative AI can produce assignments, essays, code and examination responses, thereby challenging **academic integrity and conventional assessment systems** and making authentic evaluation of students increasingly difficult.

Way Forward

1. Curriculum to Capability

India should shift from **content-heavy curricula to competency-based education** that develops critical thinking, creativity, problem-solving and adaptability while preserving strong foundational knowledge.

2. Classroom to Real-World Learning

Universities should strengthen **internships, apprenticeships, research projects, laboratory exposure and industry-academia collaboration** so that students learn to apply knowledge to real-world problems.

3. Degree to Lifelong Learning

Education policy should establish a **continuum of learning** connecting formal degrees with vocational education, micro-credentials, reskilling and continuous professional development to keep workers relevant in a rapidly changing AI economy.

4. Teacher to Mentor

Teachers should increasingly function as **mentors and facilitators of inquiry**, helping students question, analyse and critically evaluate information rather than merely transmitting knowledge.

5. Examination to Application

Assessment systems should move beyond **rote memorisation and predictable questions** towards case studies, projects and open-ended problems that test reasoning, synthesis, judgement and problem-solving.

6. AI Adoption to Responsible AI

Educational institutions should promote **responsible AI use** by establishing guidelines for academic integrity, data privacy, algorithmic bias and verification of AI-generated content.

7. Digital Access to Inclusive AI Education

The government should bridge the **digital divide** through affordable connectivity, devices, digital infrastructure and teacher training so that AI-driven educational opportunities do not deepen existing inequalities.

Conclusion

The rise of AI does not make education less important; **it makes meaningful education more important**. India cannot prepare its youth for an uncertain future simply by continuously expanding the syllabus. It must cultivate individuals who can **understand deeply, learn continuously, question intelligently, adapt quickly and exercise responsible judgement**.

Q. How is Artificial Intelligence expected to transform the nature of employment in India? Discuss the need to reform the education and skill-development system to prepare India's workforce for an AI-driven economy. 15 marks

3.1.9. PRESS NOTE 3 REFORMS: EASING FDI WHILE SAFEGUARDING ECONOMIC 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.

Q. Justify the need for FDI in India. Why is there a gap between potential and actual FDI inflows? 10 marks

3.1.10. BALANCING INFRASTRUCTURE DEVELOPMENT & ENVIRONMENTAL SUSTAINABILITY

Context

Tamil Nadu’s decision on August 24, 2026 to scrap the proposed **Parandur greenfield airport** has reopened the debate on **infrastructure-led growth versus agricultural livelihoods, environmental sustainability, land acquisition, federal clearances and long-term urban planning**.



Introduction

The Parandur episode highlights the difficulty of developing large infrastructure in densely populated and environmentally sensitive regions. It raises a fundamental governance question on **how India pursuing rapid infrastructure expansion without compromising livelihoods, ecological security and its social legitimacy**.

What was the Parandur Airport project?

- **Parandur was proposed as a greenfield international airport** to serve Chennai's rapidly growing passenger, cargo and industrial requirements and to eventually function alongside the existing Chennai International Airport at Meenambakkam.
- The project emerged from **Tamil Nadu's long-standing search for a second airport**, with earlier proposals including Sriperumbudur and other locations before Parandur was selected in 2022.
- The proposed project was envisaged as a **large-scale, multi-phase aviation infrastructure project**, with substantial supporting road, Metro, logistics and commercial infrastructure.
- The project had received **site clearance and in-principle approval-related clearances**, and the Union Ministry of Civil Aviation formally granted in-principle approval subject to compliance with conditions and other statutory clearances.

Reasons behind the need for such an airport

1. Rising passenger and cargo traffic

- **Chennai is a major aviation and economic hub in South India**, and the existing airport at Meenambakkam is facing increasing pressure from rising passenger and cargo traffic.
- The projected growth in aviation demand necessitated **additional long-term airport capacity**, as continuous expansion of an existing airport within a densely urbanised region has inherent spatial and operational limitations.

2. Supporting Tamil Nadu's industrial and manufacturing ecosystem

- Chennai and its surrounding industrial corridors have a strong presence in **automobiles, electronics, engineering, IT and manufacturing**, generating substantial demand for efficient domestic and international connectivity.
- A modern international airport could facilitate the movement of **high-value cargo, business travellers, skilled professionals and time-sensitive goods**, thereby strengthening Tamil Nadu's position in global value chains.

3. Strengthening global connectivity

- Additional airport capacity could enable Chennai to expand its **international air connectivity** and strengthen its position as a global business and investment destination.
- Improved aviation connectivity is particularly important for attracting **FDI, multinational enterprises, tourism and high-value services**, thereby contributing to India's broader objective of becoming a globally competitive manufacturing and services economy.

4. Promoting regional and polycentric development

- A second airport could promote **polycentric urban development** by distributing economic activity beyond the existing metropolitan core.
- Airport-led development could generate supporting infrastructure such as **highways, Metro/rail connectivity, logistics parks, commercial centres and industrial clusters**, creating new regional growth centres.

Reasons and factors behind scrapping of the project

1. Large-scale land acquisition

- The proposed airport required approximately **5,846 acres of land**, including substantial private agricultural land, creating concerns regarding **displacement, loss of farmland and livelihood insecurity**.
- The State government indicated that around **3,774 acres constituted private patta land**, including approximately **2,681 acres of fertile agricultural land**, making the project particularly sensitive from a livelihood perspective.

2. Impact on farmers and rural livelihoods

- Farmers opposed the project because agricultural land was not viewed merely as a financial asset but as a source of **livelihood, social identity, inter-generational wealth and community security**.
- One-time monetary compensation cannot always adequately compensate for the loss of **land-based livelihoods and established rural socio-economic networks**.

3. Water bodies and ecological concerns

- The proposed site contained **water bodies, canals and natural drainage systems**, raising concerns regarding alteration of the area's natural hydrology.
- Large-scale construction could potentially interfere with **water storage, drainage and groundwater systems**, increasing the risk of waterlogging and flooding.

4. Environmental clearance concerns

- Despite considerable progress in land acquisition and project planning, the project had not secured all necessary statutory approvals, particularly **environmental clearance**, according to the State government's position.
- The episode demonstrates that **land acquisition and administrative approvals should not precede comprehensive environmental and social feasibility assessments**.
- It also highlights the importance of integrating **Environmental Impact Assessment (EIA), hydrological assessment and disaster-risk assessment** at the initial planning stage.

5. Persistent public resistance

- Villagers, particularly in and around **Ekanapuram**, had sustained opposition to the project over several years.
- Prolonged protests demonstrated that **social legitimacy is an important component of infrastructure feasibility**, alongside financial and technical feasibility.

6. Land acquisition had progressed substantially but the project remained contested

- The project had moved beyond the conceptual stage, with the State government stating that around **1,802 acres, or approximately 48% of the required land, had already been acquired**.
- However, the continuation of social and environmental concerns despite substantial land acquisition demonstrates the limitations of treating **land availability alone as an indicator of project readiness**.

7. Development versus environmental sustainability

- The Parandur controversy represents a classic **development–environment dilemma**, where infrastructure intended to generate economic growth can simultaneously impose ecological and social costs.

- It demonstrates the need to incorporate **ecological carrying capacity, climate risks, hydrological systems and livelihood concerns** into infrastructure planning rather than treating them as secondary considerations.

Implications due to the scrapping decision

A. Positive implications

1. Protection of agricultural livelihoods

- Scrapping the project prevents further acquisition of agricultural land and reduces the possibility of **large-scale displacement and disruption of rural livelihoods**.
- It provides greater security to farmers whose livelihoods and socio-economic networks were closely associated with their land.

2. Environmental and ecological protection

- Avoiding construction over a landscape containing **water bodies and natural drainage systems** can reduce potential ecological and hydrological disruption.
- It provides an opportunity to prioritise **climate-resilient and environmentally sensitive infrastructure planning** while selecting an alternative site.

3. Reduction in social conflict

- Cancellation can address prolonged opposition from affected villages and reduce the possibility of continuing **protests, litigation and administrative conflict**.
- It reinforces the importance of **public participation and social consent** in large infrastructure projects.

4. Greater emphasis on sustainable infrastructure

- The decision can encourage policymakers to adopt a broader definition of infrastructure feasibility that includes **environmental sustainability, social impact and disaster resilience** along with economic returns.

B. Negative implications and challenges

1. Chennai's long-term aviation capacity gap remains unresolved

- Scrapping Parandur does not eliminate Chennai's growing requirement for additional aviation capacity.
- The government must therefore identify an **alternative site** that can meet future passenger and cargo demand without reproducing the problems associated with Parandur.

2. Delay in infrastructure expansion

- The cancellation may postpone the creation of additional airport capacity and potentially constrain Chennai's ability to accommodate **future industrial, logistics, tourism and international business growth**.
- A prolonged search for an alternative site could result in **capacity bottlenecks and higher future infrastructure costs**.

3. Sunk costs and resource wastage

- Considerable resources had already been committed towards **land acquisition, planning, surveys, compensation and project preparation**.
- Scrapping the project creates the possibility that some of these expenditures may become **sunk costs**, raising questions about the efficiency of infrastructure planning.

4. Policy and investment uncertainty

- Repeated changes in major infrastructure projects can create perceptions of **policy uncertainty and project risk** among investors.
- Since airports require substantial capital and have long gestation periods, maintaining **credible and predictable infrastructure policies** is important for attracting private investment.

Way Forward

1. Adopt scientific multi-criteria site selection

- The alternative site should be selected through a transparent framework assessing **aviation feasibility, land availability, ecological sensitivity, hydrology, flood risk, population displacement, connectivity and financial viability**.

2. Follow “environmental assessment before acquisition”

- Comprehensive **EIA, Social Impact Assessment (SIA), hydrological studies and disaster-risk assessments** should precede large-scale land acquisition.
- This can prevent a situation where substantial resources are committed before fundamental environmental and social concerns are resolved.

3. Adopt participatory land acquisition

- Local communities should be involved through **Gram Sabhas, public consultations and transparent disclosure of project impacts**.
- Compensation should be supplemented with **livelihood restoration, rehabilitation, skill development and long-term income-support mechanisms**.

4. Protect agricultural and ecological assets

- Productive agricultural land, wetlands, lakes and natural drainage channels should receive greater weight during site selection.
- The principle of **“avoid, minimise and compensate”** should guide infrastructure development in environmentally sensitive areas.

5. Strengthen interim capacity

- Existing airport capacity should be optimised through **terminal expansion, improved passenger-processing technology, operational efficiency and better multimodal connectivity**.

Conclusion

The way forward is neither indiscriminate infrastructure expansion nor blanket opposition to development. **India needs participatory, environmentally sensitive and economically viable infrastructure planning that converts development from a source of displacement into an instrument of inclusive and sustainable growth.**

Q. The scrapping of the proposed Parandur Greenfield Airport highlights the complex trade-off between infrastructure-led growth, environmental sustainability and livelihood security. Discuss the major issues involved and suggest a sustainable way forward. 10 marks

3.1.11. 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 totaling 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.

Q. Examine the need for expanding India's strategic reserves into a multi-fuel architecture. What are the key infrastructural and fiscal bottlenecks in its implementation? 10 Marks

3.2. ENVIRONMENT

3.2.1. ASSAM'S FLOOD CRISIS

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 occurrence 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 and Loss 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 setting 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**.

Q. "Climate change has transformed floods in Assam from seasonal events into recurrent extreme disasters." Discuss the causes, impacts and suggest measures to enhance flood resilience. 10 marks

3.2.2. THE ROAD AHEAD FOR THE ASIATIC LION

Context

According to recent conservation assessments, the **Asiatic lion (*Panthera leo persica*)** population has increased from nearly **100–150 individuals in the 1960s to over 1,000 today**, reflecting one of the world's greatest wildlife conservation success stories. However, **almost the entire global population remains confined to the Greater Gir Landscape of Gujarat**, exposing the species to risks such as **habitat fragmentation, disease outbreaks, climate-induced disasters, human-lion conflict, and genetic bottlenecks**.



Introduction

The **Asiatic lion**, once distributed from **Greece and the Middle East to northern India**, today survives only in the **Greater Gir Landscape of Gujarat**, making it one of the world's most geographically restricted large carnivores.

Efforts under **Project Lion**, community participation, and strong political commitment have revived its population, the continued confinement of the species to a **single ecological landscape** violates a fundamental principle of conservation biology—**avoiding concentration of an entire species in one location**.

Why is the Asiatic Lion Globally Significant?

1. Last Wild Population of Asiatic Lions

- Represents the **only surviving wild population** of the Asiatic subspecies.
- Extinction would mean the **global disappearance** of the Asiatic lion.

2. Flagship Species

- Protects the **dry deciduous forest ecosystem** of western India.
- Conserves numerous associated species through the **umbrella effect**.

3. Keystone Predator

- Maintains ecological balance by regulating herbivore populations.
- Supports healthy trophic interactions.

4. Cultural Significance

- Symbol of courage and royalty in Indian civilization.
- Associated with:
 - Goddess Durga
 - Ashoka Pillar (National Emblem)
 - Ancient Indian kingdoms

India's journey to lion conservation initiatives

Period	Conservation Focus	Key Achievements
Late 19th Century	Preventing extinction	Hunting ban by Nawab of Junagadh
1947–1972	Basic protection	Administrative protection and monitoring
1972–1990	Legal & habitat conservation	Wildlife (Protection) Act, Gir National Park, anti-poaching
1990–2010	Scientific & community-based conservation	Population monitoring, habitat restoration, Maldhari participation
2010–2020	Landscape-level conservation	Expansion beyond Gir, conflict mitigation, disease surveillance
2020–Present	Ecological resilience & species security	Project Lion, technology-driven conservation, climate resilience, focus on second wild population

Reasons Behind India's Success in Asiatic Lion Conservation

1. Expansion of Lion Distribution Beyond Gir: From Protected Area to Landscape-Level Conservation

- Reduced population pressure and overcrowding within Gir National Park.
- Enabled natural dispersal into suitable habitats, lowering competition for food and territory
- Example: Gir National Park, Gir Wildlife Sanctuary.

2. Community Participation: Transforming Local Communities into Conservation Partners

- Built trust between local communities and the Forest Department.
- Ensured long-term sustainability of conservation through **community stewardship**.
- Example: The **Maldhari pastoral community** has actively contributed through traditional coexistence with lions.

3. Improvement in the Wild Prey Base: Ensuring Ecological Sustainability

- Ensured a stable and adequate food supply for lions.
- Reduced dependence on livestock, thereby lowering human–lion conflicts.
- Example: significant increase in wild herbivore populations, including Chital, Nilgai

4. Strong Protection Measures and Reduction in Poaching

- Significantly reduced illegal hunting and wildlife trafficking.
- Strengthened enforcement of the **Wildlife (Protection) Act, 1972**, creating a strong deterrent against wildlife crimes.

Why Does the Asiatic Lion Continue to Face Serious Threats?

1. Single Population Risk: The Greatest Threat to Long-Term Survival

- Although the lion population has increased significantly, **more than 95% of the world's wild Asiatic lions remain concentrated within the Greater Gir Landscape of Gujarat**. This makes the species highly vulnerable because **its entire global population is dependent on a single geographical region**.
- **Potential Catastrophic Threats** are Epidemic disease outbreaks, Large-scale forest fires.

2. Disease Outbreaks: An Emerging Biological Threat

- High population density and close proximity among lions significantly increase the risk of infectious diseases spreading rapidly through the population.
- In **2018**, approximately **23 Asiatic lions died** in Gir due to **Canine Distemper Virus (CDV)** and associated protozoan infections.

3. Habitat Fragmentation: Shrinking and Isolated Habitats

- Rapid developmental activities like expansion of road networks, railway lines, mining activities are fragmenting the Greater Gir Landscape, affecting the movement and survival of dispersing lions.

4. Rising Human–Lion Conflict

- As lion numbers have increased, their distribution has expanded beyond protected forests into **agricultural fields, grazing lands, villages, and coastal areas**.
- Today, **nearly half of the Asiatic lion population lives outside Protected Areas**, increasing interactions with humans

5. Climate Change: A Growing Threat to Habitat Stability

- Climate change has emerged as a major challenge by altering habitat conditions and increasing the frequency of extreme weather events across western India.
- Rising temperatures and prolonged heatwaves, increased frequency and severity of droughts are affecting survival of Asiatic lions in protected landscapes.

International Best Practices

African Lion Conservation

- Multiple protected populations
- Landscape connectivity
- Transboundary conservation areas

IUCN Guidelines

Recommend:

- Multiple viable populations
- Meta-population management
- Long-term genetic monitoring

Way Forward

1. Adopt a Meta-population Approach

- Establish multiple, geographically separated yet interconnected lion populations.
- Facilitate **scientific translocations** between habitats to maintain genetic exchange.

2. Establish a Second Free-Ranging Wild Population

- Implement the **Supreme Court's 2013 judgment** directing the translocation of Asiatic lions.
- Develop **Kuno National Park (Madhya Pradesh)** or other scientifically suitable habitats as a second wild population.

3. Strengthen Wildlife Disease Surveillance through a 'One Health' Approach

- Conduct routine health screening of all lion populations establish dedicated **Wildlife Epidemiology and Disease Surveillance Units**.
- Developing an integrated **One Health surveillance system**, linking wildlife, livestock, and human health agencies.

4. Promote Community-Centric Conservation

- Strengthen and expedite livestock compensation mechanisms.
- Promote eco-tourism with equitable benefit-sharing for local communities.

5. Strengthen Scientific Population Management

- Maintain demographic viability by balancing age and sex structures.
- Use **GIS, Artificial Intelligence (AI), drones, GPS collars, camera traps, and real-time telemetry** for monitoring.

6. Strengthen Institutional Coordination and Cooperative Governance

- Enhance collaboration among **National Tiger Conservation Authority (NTCA), Wildlife Institute of India (WII), Central Zoo Authority (CZA)** for improving policy coherence and implementation.

Conclusion

- The recovery of the **Asiatic lion** is a testament to India's successful model of **science-based conservation, strong legal protection, and community participation**.
- Going forward, the focus must shift from **population recovery to long-term species security** by ensuring habitat connectivity, establishing multiple viable populations, and building climate-resilient conservation systems.

Q. Conservation success cannot be measured merely by an increase in species population. In the context of the Asiatic lion, critically examine why habitat connectivity, genetic diversity, and the establishment of multiple wild populations are essential for long-term species conservation. 15 Marks

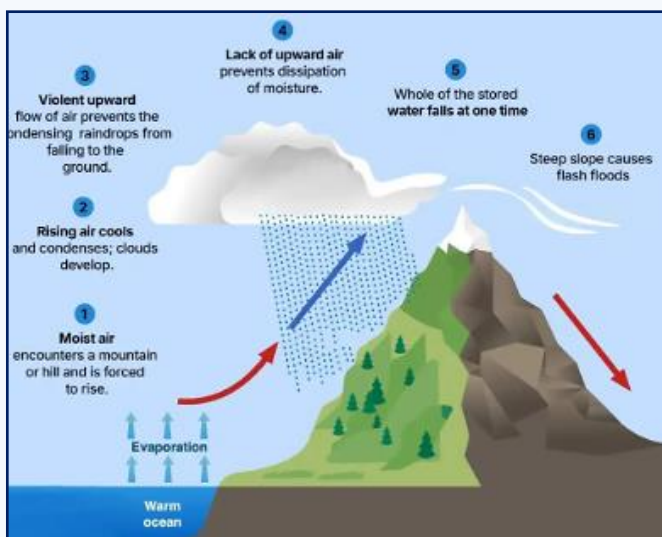
3.2.3. IMPROVING CLOUDBURST FORECASTING & DISASTER MANAGEMENT IN INDIA

Context

Recent cloudburst-like events in the Himalayas highlight the risks of **extreme rainfall, fragile ecology and weak infrastructure**. While cloudbursts are natural hazards, **unplanned construction, deforestation, poor drainage and weak early warnings** amplify their impacts, requiring better forecasting, risk-sensitive planning and resilient infrastructure.

Introduction

According to the **IMD**, a cloudburst is **10 cm (100 mm) or more rainfall in an hour over about 20–30 sq. km**. In mountainous regions, **orographic lifting and rugged terrain** can trigger flash floods, landslides and debris flows. Thus, the challenge is not only **forecasting cloudbursts but also reducing vulnerability and exposure**.



Why Are Cloudbursts a Growing Concern for India?

1. Highly Destructive Extreme Rainfall

- Cloudbursts involve an extraordinary concentration of rainfall within a short period and over a small area. The ground cannot absorb such large volumes of water quickly, resulting in **rapid runoff, flash floods and landslides**.

2. Greater Risk in Mountainous Regions

- Himalayan states such as **Uttarakhand, Himachal Pradesh and Jammu & Kashmir** are particularly vulnerable. Steep slopes, fragile geology and narrow valleys amplify the impact of intense rainfall.

3. Climate Change Dimension

- A warmer atmosphere can hold more moisture, potentially increasing the intensity of extreme precipitation events.
- Climate change therefore adds uncertainty and may increase the risk of **short-duration, high-intensity rainfall**.

4. Disaster Risk Beyond Rainfall

- A cloudburst itself is a **hazard**, but disaster losses depend on exposure and vulnerability.
- Construction on floodplains, deforestation, poor drainage and unplanned infrastructure can significantly magnify damage.

5. Challenge to Weather Forecasting

- Cloudbursts occur over a very small geographical area and develop rapidly.
- Conventional weather models may forecast heavy rainfall for a broad region but struggle to identify the exact location and timing of a cloudburst.

6. Governance and Accountability

- Describing every extreme rainfall disaster as a “cloudburst” can sometimes obscure the role of **poor planning, weak infrastructure and inadequate preparedness**.
- Scientific attribution is therefore important for ensuring accountability and improving disaster management.

How Does a Cloudburst Form?

1. **Moist Air Rises:** Moist monsoon winds are forced upward over steep mountains through **orographic lifting**.
2. **Cloud Formation:** Rising air cools and condenses, producing **towering cumulonimbus clouds** through intense convection.
3. **Droplet Accumulation:** Strong updrafts hold water droplets until they become too heavy or the updraft weakens.
4. **Sudden Downpour:** Large volumes of water fall rapidly over a small area, triggering **flash floods, landslides and debris flows**.

Challenges Associated with Cloudbursts & Their Management

1. **Hyperlocal & Rapid Events** – Cloudbursts are highly localised and develop quickly, making precise **location- and time-specific forecasting** difficult and leaving limited time for evacuation.
2. **Difficult Himalayan Terrain** – Rugged mountains obstruct radar signals, create **blind spots** and make installation of weather stations and communication networks challenging.
3. **Sparse Data & Technology Gaps** – Remote areas have fewer rain gauges and automatic weather stations, while accurate hyperlocal forecasting requires **high-resolution models, dense data and greater computing capacity**.
4. **Weak Last-Mile Early Warning** – Even when alerts are generated, poor connectivity and communication gaps may prevent warnings from reaching **remote communities, tourists and pilgrims** in time.
5. **Fragile Ecology & Unplanned Development** – **Deforestation, hill cutting, riverbed construction, poor drainage and unplanned tourism** increase runoff, landslides, flash floods and overall disaster vulnerability.
6. **Inadequate Disaster-Resilient Infrastructure** – Weak slope stabilisation, drainage, building standards and hazard-sensitive infrastructure can amplify the damage caused by extreme rainfall.
7. **Accountability & Risk Management Gap** – Treating every disaster as a “cloudburst” can obscure human negligence; hence, disaster management must move from **hazard identification to reducing exposure, vulnerability and poor planning**.

What Is India Doing to Improve Forecasting and Early Warning?

- **Strengthening Nowcasting** – IMD is developing short-term forecasting systems to detect **rapidly developing thunderstorms, intense rainfall and extreme weather**.
- **Mission Mausam** – Strengthens **weather observation, modelling, forecasting and radar networks**, with greater use of advanced technologies and AI.
- **Expanding Doppler Weather Radars** – Wider radar coverage will improve detection of **intense rainfall and convective systems**, including efforts to reduce Himalayan observation gaps.

- **AI & Data Integration** – Combining **satellite, radar, ground-sensor and numerical-model data** can improve hyperlocal forecasting and nowcasting.
- **Strengthening Last-Mile Warnings** – Alerts should reach vulnerable communities quickly through **SMS, mobile alerts, sirens, local administration, community networks and disaster-response agencies**.

What Can Be Done to Strengthen Cloudburst Forecasting and Disaster Management?

1. **Dense Observation & Hyperlocal Forecasting** – Expand weather stations and rain gauges; integrate **AI, satellite, radar, ground sensors and high-resolution models** for location-specific, impact-based warnings.
2. **Improve Radar & Technology Coverage** – Expand Doppler radar networks and adopt complementary technologies to overcome **mountainous radar blind spots**.
3. **Strengthen Last-Mile Early Warning** – Ensure **timely, simple and actionable alerts** through mobile messages, sirens, local authorities and trained community volunteers.
4. **Risk-Sensitive Land-Use Planning** – Restrict construction in **floodplains, riverbeds, landslide-prone slopes and high-risk valleys**, using hazard maps in planning.
5. **Climate-Resilient & Ecosystem-Based Infrastructure** – Improve drainage and slope protection while protecting **forests, wetlands and natural drainage channels**; avoid unscientific hill cutting and excessive concretisation.
6. **Scientific Attribution & Accountability** – Verify whether rainfall meets the cloudburst threshold and assess the role of **poor planning, infrastructure and preparedness**, ensuring natural hazards do not mask governance failures.
7. **Community Resilience & Build Back Better** – Train communities in **evacuation, first aid and emergency response**, while rebuilding damaged infrastructure through safer locations, resilient designs and ecosystem-sensitive planning.

Conclusion

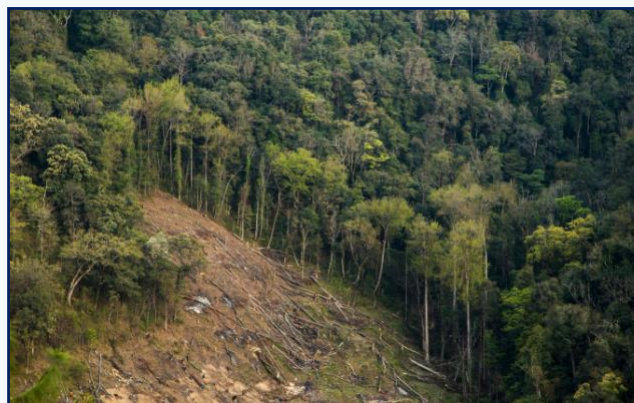
Cloudbursts reflect the rising risk of localised extreme rainfall in a warming climate. India must shift from a hazard-centric to risk-centric approach through better forecasting, early warnings, resilient infrastructure, scientific land-use planning and ecosystem protection.

Q. What is the phenomenon of cloudbursts? Explain. 10 marks

3.2.4. 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**.

Q. “Forest restoration is not synonymous with tree plantation.” Discuss in the context of India’s environmental governance. Examine the challenges in achieving the objectives of the Green India Mission and suggest measures for effective ecosystem restoration. 15 Marks

3.2.5. BALANCING ECOLOGY AND ECONOMY: THE SC VERDICT ON POST-FACTO CLEARANCES**Context**

The **Supreme Court** in *Vanashakti vs Union of India* firmly mandated that prior **Environmental Clearance (EC)** is a statutory prerequisite under the **EIA Notification, 2006**. The ruling invalidates administrative regularisation of legacy environmental violations while preserving the Centre’s authority to enact a one-time statutory remedy.



Introduction

The Supreme Court's ruling on ex-post facto environmental approvals reinforces the preventive principle of environmental jurisprudence. By invalidating arbitrary executive regularisations and demanding strict statutory compliance, the judgment curtails the detrimental "violate first, regularise later" culture while offering a legally sound framework to resolve genuine legacy industrial defaults.

Core Findings of the Vanashakti Judgment

1. **Prior Clearance is Mandatory:** EC under the **EIA Notification, 2006** is a non-negotiable statutory prerequisite, not an optional formality.
2. **Invalidation of Executive Exemptions:** Retrospective regularisation via administrative **Office Memoranda (OM)** or defunct past notifications is legally void.
3. **Supremacy of Statutory Authority:** Executive orders cannot dilute environmental statutes; however, formal legislation under **Section 3 of the Environment (Protection) Act (EPA), 1986** can be used to address legacy violations in the public interest.

Significance of the Judgment

1. **Restores Rule of Law:** Eliminates administrative loopholes, ensuring commercial projects adhere strictly to environmental statutes.
2. **Mitigates Moral Hazard:** Dismantles the pervasive corporate culture of bypassing approvals and relying on retrospective condonation.
3. **Enforces Polluter Pays Principle:** Mandates rigorous scientific damage assessments and proportional financial penalties for any future regularisation of legacy defaults.
4. **Prevents Economic Disruption:** Avoids the blanket demolition of viable public infrastructure by leaving a statutory window open for genuine legacy cases.

Challenges in Managing Legacy Violations

1. **Defining Public Interest:** The lack of objective criteria for defining "larger public interest" risks arbitrary regularisation and corporate lobbying.
2. **Ecological Accounting:** Accurately quantifying historical environmental damage and fixing fair remediation costs remains technically complex.
3. **Institutional Capacity Constraints:** Regulatory bodies like **SPCBs** and **SEIAAs** lack the technical workforce required for rigorous post-facto compliance audits.
4. **Risk of Future Defaults:** Formulating even a one-time statutory window may create dangerous expectations of future government condonation.

Way Forward

1. **One-Time Statutory Notification:** The Centre must formulate a strictly non-renewable, time-bound notification under the **EPA, 1986** exclusively for legacy cases.
2. **Mandatory Ecological Restoration:** Impose heavy deterrent fiscal penalties and mandate strict **in-situ environmental remediation** before granting any clearance.
3. **Advanced Surveillance:** Deploy **GIS, drone mapping, and satellite imagery** to detect and halt unauthorized constructions at their inception.
4. **Streamline Clearances:** Expedite the **PARIVESH portal** appraisal processes to eliminate bureaucratic delays and encourage pre-construction compliance.

Conclusion

The *Vanashakti* judgment establishes a firm equilibrium between ecological preservation and economic pragmatism. By anchoring environmental compliance to strict statutory authority, the Supreme Court ensures that sustainable development in India is governed by the rule of law, rather than executive discretion.

Q. *What are the major challenges in the EIA process in India? How can public participation be made more effective in this process? 15 Marks*

3.2.6. SHIFTING SANDS: DECODING THE DYNAMICS OF ODISHA'S COASTAL EROSION

Context

The Union Minister for Ports, Shipping and Waterways recently informed the Rajya Sabha that 28.3% of Odisha's 564-km coastline is facing severe erosion, citing a 1990-2022 National Centre for Coastal Research (NCCR) study. demanding urgent structural and policy interventions.



Introduction

Shoreline changes, driven by natural forces and human activities, pose severe threats to coastal ecology and communities. In Odisha, accelerating **coastal erosion** has displaced vulnerable populations, necessitating an immediate shift toward comprehensive, **ecosystem-based shoreline management**.

What are the Primary Drivers of Shoreline Changes?

- **Natural Hydrodynamic Forces:** The dynamic shift between land and water is continuously driven by **waves, tides, severe storms**, and rising global sea levels.
- **Anthropogenic Activities:** Unplanned infrastructure, **illegal sand mining**, and hard coastal structures like **sea walls and ports** severely modify natural beach morphology.

Extent of Coastal Vulnerability in Odisha

- **Severe District Impact:** Jagatsinghpur faces the highest erosion at **47.6%**, followed closely by **Ganjam (45.7%)** and **Kendrapara (45%)**.
- **Demographic Displacement:** Over **16 villages in Kendrapara** have submerged, creating climate refugees and prompting India's first **climate resettlement colony**.

Significance of Coastal Protection Measures

1. Provides an immediate physical barrier to prevent the direct inundation of vulnerable coastal human settlements.
2. Dual-purpose infrastructures like **sea wall-cum-service roads** enhance local connectivity while effectively defending against destructive tidal waves.
3. Innovative soft-engineering solutions like **geotextile tube embankments** absorb wave impact efficiently to minimize coastal scour.
4. Preserves critical economic and maritime assets from continuous saltwater intrusion and irreversible structural degradation.
5. Establishing dedicated climate resettlement colonies ensures safe and dignified rehabilitation for communities displaced by severe land loss.

Challenges in Managing Coastal Erosion

1. Rigid coastal structures like breakwaters disrupt the natural littoral drift and inadvertently accelerate downdrift erosion.
2. The increasing frequency of severe cyclonic storms causes recurring structural damage to existing coastal defenses faster than they can be repaired.
3. Unregulated and illegal sand mining destabilizes natural beach profiles and severely exacerbates shoreline vulnerability.
4. Fragmented, site-specific interventions fail to provide long-term coastal resilience compared to holistic, region-wide shoreline management.
5. Sustaining continuous financial investments for expanding and maintaining hard coastal armoring is highly demanding for state exchequers.

Way Forward

1. Implement integrated **Shoreline Management Plans** based on natural sediment transport cells rather than fragmented, localized defenses.
2. Prioritize nature-based solutions like extensive **mangrove restoration** and casuarina plantations to naturally dissipate destructive wave energy.
3. Enforce strict **Coastal Regulation Zone (CRZ)** norms to rigorously curb unscientific port expansion and illegal coastal sand mining.
4. Establish robust real-time coastal monitoring frameworks in continuous collaboration with the **National Centre for Coastal Research (NCCR)**.
5. Develop a comprehensive national policy framework dedicated to the permanent rehabilitation of **climate-displaced coastal populations**.
6. Mandate strict environmental and hydrodynamic impact audits for all upcoming maritime engineering structures to prevent induced coastal erosion.

Conclusion

Odisha's eroding coastline demands a swift transition from fragmented structural defenses to sustainable, long-term **shoreline management**. By effectively combining soft engineering with **nature-based solutions** and dignified climate rehabilitation, India can holistically mitigate coastal vulnerability and protect its maritime communities.

Q. Explain the causes and effects of coastal erosion in India. What are the available coastal management techniques for combating the hazard? 15 Marks

3.3. INTERNAL SECURITY

3.3.1. ADDRESSING THE "DIGITAL ARREST" MENACE

Context

The **Supreme Court** recently directed swift action against the **"digital arrest"** cybercrime menace. Despite a drop in complaints on the **National Cyber Crime Reporting Portal**, **transnational scam syndicates** remain a critical threat requiring robust intervention.



Introduction

"**Digital arrests**" represent a highly sophisticated form of **cyber extortion** orchestrated by **transnational syndicates**. Exploiting **psychological vulnerabilities** and **technological loopholes**, these scams require a comprehensive framework of legal, technological, and geopolitical countermeasures to dismantle.

What is 'Digital Arrest'?

- It is an **extortion tactic** where scammers impersonate law enforcement via audio/video calls to extort money.
- Fraudsters use **deepfakes** and **SIM boxes** to create a false sense of authority and panic.
- Stolen funds are rapidly routed through a complex web of **interstate mule accounts**.

Institutional and Legal Basis

- The **Supreme Court** mandated the **RBI** to circulate **Standard Operating Procedures (SOPs)** for **temporary debit holds** on mule accounts.
- States have been directed to operationalize **e-Zero FIRs** and **state-level cyber coordination centers**.
- The **Indian Cybercrime Coordination Centre (I4C)** monitors these trends through the **National Cyber Crime Reporting Portal**.

Significance of Interventions

1. Protection of Vulnerable Demographics

- Safeguards the financial integrity of **isolated senior citizens** and **unsuspecting professionals**.
- Mitigates the severe **psychological trauma** associated with sophisticated extortion tactics.

2. Enhanced Institutional Synergy

- Fosters real-time coordination between the **RBI**, **telecom operators**, and **state cyber centers**.
- Enables rapid tracking and freezing of **illicit financial flows** across borders.

3. Swift Wealth Restitution

- Prioritizes the **recovery of defrauded funds** to minimize economic damage.
- Recent judicial mechanisms facilitated the successful restoration of **₹18.05 crore** across **36,290 cases**.

4. Technological Integration

- Accelerates the deployment of advanced AI frameworks like **MuleHunter.AI** within the banking sector.
- Shifts the cybersecurity approach from reactive investigation to **proactive threat detection**.

5. Geopolitical Accountability

- Transforms a domestic policing issue into a pressing **foreign policy priority**.
- Demands robust **international cooperation** against organized crime and human trafficking.

Challenges Associated with Digital Arrests

1. Rapid Technological Evolution

- Fraudsters continuously adopt **deepfakes** and **advanced SIM boxes** to mask their origins.

- This rapid technological agility consistently outpaces traditional **investigative capabilities**.

2. Cross-Border Jurisdictional Complexities

- The **transnational nature** of these crimes severely limits successful prosecution and **extradition**.
- **Abysmal conviction rates** embolden overseas syndicates to expand their operations.

3. State Patronage in Host Nations

- **Scam compounds** often thrive due to official patronage in conflict-ridden **Southeast Asian states** (e.g., Myanmar, Cambodia).
- Superficial local raids allow these centers to easily relocate and resume operations.

4. Complex Human Trafficking Webs

- Indian citizens are increasingly **trafficked** and coerced into executing cybercrimes abroad.
- This **dual victimization** creates intricate legal and moral hurdles for enforcement agencies.

5. Information Asymmetry

- Institutional advisories often fail to achieve universal penetration across all demographics.
- **Digitally illiterate populations** remain highly susceptible to extortion.

Global Best Practices

1. China – Targeted Transnational Crackdowns

- Conducted aggressive **diplomatic and enforcement operations** to shut down scam centers targeting its citizens.
- Leveraged **bilateral pressure** to dismantle operations in neighboring Southeast Asian countries.

2. United States – AI-Driven Financial Monitoring

- Employs highly advanced **predictive AI algorithms** across federal and banking networks to flag anomalous transactions.
- Maintains strong **inter-agency task forces** to disrupt international cyber-extortion rings.

Way Forward

1. Enforce Standardized Banking Protocols

- Mandate the immediate implementation of the **RBI's SOP** for **temporary debit holds** on mule accounts.
- This will effectively sever the **illicit financial supply chain** utilized by scammers.

2. Operationalize e-Zero FIRs

- Require all States to fully activate **e-Zero FIR frameworks** to eliminate jurisdictional delays.
- Ensure seamless integration with **state-level cybercrime coordination centers**.

3. Scale AI-Driven Financial Defenses

- Expand the mandatory deployment of algorithmic systems like **MuleHunter.AI** across all banks.
- Ensure **real-time threat detection** and proactive blocking of suspicious transactions.

4. Formulate Compensation Mechanisms

- Establish an inter-departmental committee to design a robust **victim compensation framework**.

- Ensure transparent and **timely restitution** for defrauded citizens.

5. Apply Strategic Diplomatic Leverage

- Exercise intense diplomatic pressure in coordination with **ASEAN**, the **U.S.**, and **China**.
- Compel host nations to dismantle illicit networks and **rescue trafficked citizens**.

6. Accelerate Judicial Disposal

- Enhance the capacity of domestic law enforcement to move faster on **digital trails**.
- Ensure the rapid judicial resolution of **account-freeze litigation** to restore funds quickly.

Conclusion

Neutralizing the "**digital arrest**" menace requires transcending conventional policing. By converging **proactive AI defenses**, **inter-agency coordination**, and **assertive diplomacy**, India can successfully dismantle these transnational syndicates.

Q. The "digital arrest" menace highlights the complexities of transnational cybercrime. Discuss the modus operandi of these syndicates and suggest measures to strengthen India's cybersecurity architecture. 15 Marks

3.4. SCIENCE & TECHNOLOGY

3.4.1. 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**.

Q. *The legacy of the Indian Association for the Cultivation of Science (IACS) reflects India's transition from a knowledge recipient to a knowledge creator. Discuss the role of IACS in promoting scientific self-reliance and shaping modern Indian science. 15 Marks*

3.4.2. EU AI ACT: A STRATEGIC OPPORTUNITY FOR INDIA'S AI AND DIGITAL ECONOMY

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.

3.5. DISASTER MANAGEMENT

3.5.1. DANGER FROM ABOVE: RISING HIMALAYAN DISASTER RISK

Context

- **Nepal flash flood:** Possible **glacier/ice-rock collapse in Tibet** → **river blockage** → **sudden release**, causing severe flooding. Highlights rising **compound & cascading Himalayan disasters** amid climate change.



INTRODUCTION

The **Himalayas**, a young and fragile mountain system, are increasingly vulnerable to **climate change and extreme events**. Natural hazards like **GLOFs, flash floods and landslides** are being amplified by warming and unplanned development, making **risk reduction and vulnerability management** the key priority.

BACKGROUND & MAGNITUDE OF THE CHALLENGE

A. Increasing Cryospheric Vulnerability

1. **Glacier Melting and Retreat:** Rising temperatures accelerate glacier melting, causing glaciers to lose mass and retreat. This alters river flows and increases the formation of unstable water bodies in high-altitude regions.
2. **Formation and Expansion of Glacial Lakes:** Meltwater accumulates behind natural barriers such as moraines, forming glacial lakes. Continued melting enlarges these lakes and increases the risk of sudden dam failure and **GLOFs**.
3. **Ice-Rock Avalanches:** Warming destabilises glaciers, ice and surrounding mountain slopes. Their sudden collapse can displace huge volumes of water, triggering avalanches, floods and debris flows.

B. Growing Glacial Lake Risk

1. **Sudden GLOF Events:** A **GLOF** occurs when the natural barrier of a glacial lake fails, releasing enormous volumes of water within a short period. Its sudden nature leaves downstream communities and infrastructure with very limited response time.
2. **Large Number of Vulnerable Lakes:** The Indian Himalayas contain thousands of glaciers and glacial lakes, many located in remote and unstable terrain. This creates a vast and difficult-to-monitor disaster-risk landscape.

3. **Monitoring Challenges:** Remote sensing helps track changes in glacier and lake size, but cannot always predict sudden collapse. Ground verification remains difficult due to high altitude, harsh weather and inaccessible terrain.

C. Increasing Extreme Weather

1. **Cloudbursts:** Cloudbursts involve extremely intense rainfall over a small area within a short duration. In steep Himalayan terrain, they can rapidly trigger flash floods, landslides and debris flows.
2. **Intense Monsoon Rainfall:** Climate change is increasing the variability and intensity of monsoon rainfall. Short-duration, high-intensity precipitation overwhelms fragile slopes and river systems.
3. **Western Disturbances:** These extratropical weather systems can bring heavy rain or snowfall to the Himalayas. Their interaction with monsoon conditions can produce intense and unpredictable weather events.
4. **Flash Floods:** Sudden heavy rainfall, glacier collapse or dam failure can rapidly raise river levels. The narrow Himalayan valleys intensify the destructive force of such floods.
5. **Landslides:** Heavy rainfall saturates fragile slopes and reduces their stability, causing slope failure. Road construction, deforestation and unplanned development further aggravate this vulnerability.
6. **Avalanches:** Accumulated snow, ice or rocks can suddenly slide down steep slopes due to warming or external triggers. Such events can block rivers and trigger secondary floods downstream.

CHALLENGES / STRUCTURAL BOTTLENECKS

1. **Fragile Himalayan Geology:** Young mountains, steep slopes, weak rocks, seismic activity and high erosion make the Himalayas inherently prone to **landslides, avalanches and slope failures**.
2. **Climate Change as a Risk Multiplier:** Changing glaciers, snowfall, permafrost, temperature and rainfall patterns are **amplifying hazards and making their timing increasingly unpredictable**.
3. **Infrastructure in Hazard-Prone Areas:** Roads, tunnels, bridges and hydropower projects concentrated in narrow valleys face **high exposure to floods, landslides, avalanches and debris flows**.
4. **Settlement Pressure:** Economic dependence on valleys and river corridors makes relocation difficult, requiring **alternative livelihoods and social infrastructure** alongside risk-based land-use planning.
5. **Difficulty of Glacier Monitoring:** Satellites can track glacier and lake changes, but **accurately predicting sudden glacier collapse or GLOFs remains highly challenging**.
6. **Inadequate Ground Verification:** Remote sensing requires field validation, but **high altitude, harsh weather and inaccessible terrain** constrain regular ground-based monitoring.
7. **Last-Mile Early Warning Gap:** Poor connectivity, inadequate evacuation routes, shelters and awareness can prevent **timely warnings from translating into effective evacuation and action**.
8. **Transboundary Nature of Risk:** Himalayan rivers and glaciers cross borders, making **regional data-sharing, early warnings and coordinated disaster management** essential.

WHY EXISTING APPROACHES ARE INSUFFICIENT

- **Reactive Disaster Management:** Focus remains on **rescue, relief and reconstruction** after disasters rather than proactive risk assessment, prevention, mitigation and preparedness.
- **Monitoring–Prediction Gap:** Satellite technology can **detect glacier and lake changes**, but accurately predicting the timing of sudden glacier collapse or GLOFs remains difficult.
- **Fragmented Project Assessment:** Environmental assessments often focus on individual projects, overlooking the **cumulative impact of dams, roads, tunnels, tourism and settlements** on fragile Himalayan ecosystems.
- **Warning–Action Gap:** Early warnings are ineffective without **evacuation routes, shelters, communication, transport and community preparedness**; hence, early warning must translate into early action.

COMMITTEE / INSTITUTIONAL RECOMMENDATIONS

1. NDMA

- **Risk Mapping & Early Warning:** Strengthen hazard zonation, glacier/GLOF monitoring and early-warning systems to identify risks and enable timely evacuation.
- **Resilient Communities & Infrastructure:** Promote capacity building, community preparedness and **disaster-resilient infrastructure** to reduce vulnerability and improve response.

2. Sendai Framework (2015–2030)

- **Risk Governance & Prevention:** Prioritise understanding disaster risks, strengthening institutions and integrating **disaster-risk reduction into development planning**.
- **Resilience & Preparedness:** Increase investment in resilience, preparedness and effective response, with a focus on **“Build Back Better”** after disasters.

WAY FORWARD

1. **Integrated Himalayan Risk Observatory:** Integrate **glacier, rainfall, river-flow, seismic, landslide and infrastructure data** for real-time assessment of cascading risks.
2. **Risk-Based Glacial Lake Zonation:** Classify glacial lakes based on **size, expansion rate, dam stability and downstream exposure** to prioritise high-risk sites.
3. **Satellite + Ground Monitoring:** Combine **remote sensing with drones, sensors, weather stations and field surveys** for accurate and continuous glacier-risk assessment.
4. **Risk-Sensitive Infrastructure:** Incorporate **GLOF modelling, flood and landslide assessments and climate projections** into the design and location of Himalayan infrastructure.
5. **Regulate Hazard-Zone Development:** Enforce **no-build, restricted-development and safe zones** based on scientific hazard mapping and ecological carrying capacity.
6. **Community-Based Disaster Management:** Equip local communities with **early warnings, evacuation training, shelters and emergency resources** as first responders.
7. **Transboundary Early-Warning Mechanisms:** Strengthen regional cooperation for **real-time river, glacier and weather data-sharing**, joint risk assessment and coordinated response.
8. **Mainstream Disaster Risk in Development:** Make **disaster and climate-risk assessment mandatory** in project planning, budgeting and approvals rather than treating it as an afterthought.

CONCLUSION

The Himalayan crisis represents the intersection of **climate change, ecological fragility and development pressure**. Natural hazards cannot be eliminated, but their conversion into disasters can be prevented.

Q. "Climate change is transforming the Himalayan region's natural hazards into compound and cascading disasters." Discuss the major vulnerabilities of the Himalayas and suggest measures for building disaster-resilient development. 15 Marks

3.5.2. RETHINKING URBAN RESILIENCE IN THE ERA OF CLIMATE CHANGE

Context

Recent extreme weather events in **Gurugram** severe heatwaves followed by paralyzing floods highlight a profound governance deficit. These dual crises expose how **meteorological hazards** swiftly transform into **anthropogenic urban disasters** when compounded by unregulated concretisation, compromised drainage networks, and a lack of climate-responsive spatial planning.



Introduction

Rapid urbanization and climate change have transformed Indian cities into epicenters of compounding crises. As defined by the UNDRR, a **hazard becomes a disaster** only when it intersects with **systemic societal vulnerabilities**. With India's urban population projected to reach **951 million by 2050**, shifting urban governance from **reactive relief to proactive climate resilience** is imperative to protect vulnerable demographics and sustain economic growth.

What is Urban Disaster Risk?

- It is the outcome of a **natural hazard** (like a heatwave, cloudburst, or cyclone) striking a location where people, buildings, and public services are **highly exposed** and lack the capacity to withstand it.
- In cities, risks are exacerbated by **hydrological choke points** (narrowed natural drains, encroached wetlands) and the **Urban Heat Island (UHI) effect** (dense construction trapping heat).

Legislative Basis

- The **Disaster Management (Amendment) Act, 2025** inserted **Section 41A**, mandating the creation of **Urban Disaster Management Authorities (UDMAs)** in state capitals and major municipal corporations.
- The **2026-31 Finance Commission** included **heatwaves and lightning** as notified natural calamities, allowing states to unlock specific **disaster response and mitigation funds**.

Significance of Building Urban Resilience

1. Future-Proofing Urban Infrastructure

- Over **half of the infrastructure** Indian cities will need by 2050 is yet to be built.

- Integrating climate risk assessments now prevents the locking-in of structural vulnerabilities and averts future catastrophic losses.

2. Financial Prudence and Loss Prevention

- Proactive adaptation is highly lucrative; timely interventions could prevent **\$5 billion in annual flood losses by 2030** and save over **130,000 lives from extreme heat by 2050**.
- It protects against the invisible economic toll, such as **lost wages for informal workers** and the disruption of MSMEs.

3. Empowering Decentralised Governance

- The establishment of UDMA marks a paradigm shift from ad-hoc, district-level responses to **institutionalized, city-specific disaster management**.
- It empowers local municipal commissioners to lead tailored, localized mitigation strategies.

4. Mitigating the Urban Heat Island (UHI) Effect

- Proper planning ensures neighbourhoods do not absorb and retain dangerous levels of heat, which currently makes city centres **3-4°C hotter** than surrounding areas.
- It directly shields **outdoor workers** and residents of poorly ventilated slums from fatal heat exposure.

5. Data-Driven Policy Formulation

- The legislative mandate for a **national database** containing real-time risk assessments ensures that urban master planning is backed by scientific, localized data.
- This facilitates the creation of actionable **flood and heat hazard maps** to guide urban expansion.

Challenges Associated with Urban Climate Resilience

1. Implementation Lethargy and Ambiguity

- The 2025 amendment lacks strict deadlines for UDMA formation. By early 2026, **Karnataka was the only state** to have notified an authority for Bengaluru.
- This leaves major metropolitan centers structurally blind and unprepared for impending crises.

2. Severe Capacity and Planning Deficit

- A NITI Aayog report highlighted that **65% of India's urban settlements lack a master plan**.
- State planning departments suffer from massive vacancies, having fewer than **4,000 town planners** against an estimated requirement of 12,000.

3. Institutional Fragmentation

- Urban governance remains siloed, with responsibilities haphazardly split between **municipal corporations, district administrations, and state departments**.
- This overlapping jurisdiction leads to a lack of accountability and poor coordination during emergencies.

4. Poor Enforcement of Master Plans

- Climate action plans and zoning regulations exist largely as **advisory documents**.
- They routinely fail to halt lucrative real estate and road projects that **encroach upon critical floodplains, lakes, and open spaces**.

5. Reactive Financing Models

- Despite recent amendments, financial mechanisms heavily favor **post-disaster relief** rather than mitigation.
- There is a lack of structural frameworks linking **municipal infrastructure grants** directly to climate-resilient land-use compliance.

Global Best Practices

1. China – Sponge City Initiative

- Focuses on managing urban flood risks by using **permeable surfaces, green roofs, and constructed wetlands** to absorb and reuse 70% of rainwater.
- Shifts urban infrastructure from "grey" (concrete) to **"blue-green"** (natural), heavily reducing the burden on artificial drainage.

2. Netherlands – Room for the River Programme

- Instead of building higher dams, the framework restores **natural floodplains** to give rivers more space to manage high water levels.
- Integrates spatial planning with water management to ensure **long-term ecological and infrastructural safety**.

Way Forward

1. Statutory Integration of Risk Mapping

- **Micro-level flood and heat hazard maps** must be legally embedded into city master plans.
- These maps should dictate strict **"no-build" zones**, building plinth levels, and mandatory ventilation standards.

2. Deadline-Driven Institutionalization of UDMA

- The Union Government must enforce **strict timelines** for States to operationalize UDMA.
- These authorities must be equipped with dedicated budgets and the power to **coordinate diverse municipal and emergency services**.

3. Aggressive Capacity Building

- Urgently bridge the human resource deficit by recruiting **qualified urban planners, hydrologists, and climate scientists** into local governance.
- Technical experts are needed to ensure development decisions account for hazard exposure and resilience measures.

4. Conditional Financial Devolution

- Link **infrastructure grants and municipal funding** directly to a city's compliance with land-use rules, drainage maintenance, and green-cover preservation.
- Financing must structurally extend beyond post-disaster relief.

5. Invest in Blue-Green Infrastructure (BGI)

- Mandate nature-based engineering solutions, such as **permeable pavements, wetland restoration, and expansive urban tree canopies**.
- This naturally mitigates both the Urban Heat Island effect and localized flooding.

6. Actionable Early Warning Systems (EWS)

- Move beyond passive weather alerts by instituting **standardized, pre-agreed action protocols**.

- Warnings should automatically trigger **mandatory outdoor work halts, hospital readiness, and school closures** based on specific weather thresholds.

Conclusion

While extreme weather events are inevitable by products of climate change, **urban disasters are the result of human planning failures**. As India stands on the cusp of an unprecedented urban transition, integrating statutory climate resilience into daily governance is non-negotiable to ensure our cities remain safe, sustainable engines of economic growth.

Q. Flooding in urban areas is an emerging climate-induced disaster. Discuss the causes of this disaster. Mention the features of two such major floods in the last two decades in India. Describe the policies and frameworks in India that aim at tackling such floods. 15 marks

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