



IQRA IAS
AN INSTITUTE FOR CIVIL SERVICES

CURRENT AFFAIRS

MARCH 2025



Table of Contents

POLITY 3

1. Towards Uniformity in Civil Law	3
2. Judicial Corruption in India	4
3. Citizenship (Amendment) Rules, 2024	6
4. Debating the Three-Language Policy Under NEP 2020	8
5. One Nation, One Election	10
6. Delimitation and the Southern States: Balancing Population and Representation.....	12
7. S.R. Bommai Judgment (1994)	13
8. Immigration and Foreigners Bill, 2025	15
9. Sixth Schedule and Ladakh	17
10. Strengthening Tribunals in India	19
11. Ending the 'Pradhan Pati' Culture.....	20
12. EPIC and Voter Duplication	22
13. Preventive Detention in India.....	23
14. Temple Regulation in India	25
15. Policing Digital Giants: Challenges and the Indian Regulatory Response	27

GOVERNANCE 29

1. Cinematograph (Certification) Rules, 2024.....	29
2. Digital Criminal Case Management System (CCMS)	30
3. Regulating Digital Monopolies in India	32
4. Pradhan Mantri Anusuchit Jaati Abhyuday Yojana (PM-AJAY) ...	33

INTERNATIONAL RELATIONS 35

1. India-US Extradition Treaty and Recent Developments	35
2. Global AI Governance: International Regulatory Frameworks and India's Role	36
3. QUAD: Reinforcing Strategic Cooperation in the Indo-Pacific ..	38
4. Katchatheevu and the India-Sri Lanka Maritime Dispute	39
5. India-EFTA Trade and Economic Partnership Agreement (TEPA)	41
6. India-Taliban Engagement: Balancing Strategy and Principles	42
7. India-Bhutan Relations	44
8. Cross-Border Remittances and India's Push for Cost Reduction at WTO	46
9. Human Development Report 2023-24	47
10. India-EU Free Trade Agreement	49
11. India-New Zealand FTA Talks Resume After a Decade.....	51

INTERNAL SECURITY & DEFENCE 52

1. Tackling Left-Wing Extremism in India	52
2. India's First Private Ammunition and Missile Facilities	53
3. India's Maritime Vision 2.0: From SAGAR to MAHASAGAR	54
4. Indo-Pacific Oceans Initiative (IPOI)	56

ECONOMY 57

1. Household Consumption Expenditure Survey (HCES) 2022-23	57
2. Reserve Bank – Integrated Ombudsman Scheme (RB-IOS), 2025	59
3. India's Spice Market: Challenges, Potential & Way Forward	60
4. National Umbrella Organisation (NUCFDC)	62
5. Rethinking India–China Economic Relations	63
6. Primary Agricultural Credit Societies (PACS).....	65
7. UNNATI 2024: Catalysing Inclusive Industrial Growth in North-East India	66
8. Centre Grants 'Navratna Status' to IRCTC and IRFC	68
9. Agriculture and Food Security at WTO	70
10. WTO Fisheries Subsidies Agreement	71
11. India's Grain Storage System.....	73
12. Krishi Vigyan Kendras (KVKs).....	74
13. EMPS 2024: A Short-Term Push to Accelerate Electric Mobility in India	76
14. International Big Cat Alliance (IBCA).....	77
15. Recognising Farm Labourers in India's Agricultural Policy	78
16. Cotton Crisis and Bollgard-3: Battling Pest Resistance in India's Bt Cotton.....	80
17. Reciprocal Tariffs and Implications for India	81

ETHICS, SOCIETY AND SOCIAL ISSUES 83

1. Happiness and Development: Ethical Reflections Beyond GDP	83
2. Bare Necessities and Ethical Dilemma of Resource Scarcity ..	84
3. Reconciling Faith and Innovation.....	85
4. India's Declining Total Fertility Rate – Causes, Impacts and the Way Forward	86
5. Live-In Relationships and the Evolving Socio-Legal Landscape in India	88
6. India's Declining Total Fertility Rate – Causes, Impacts and the Way Forward	89
7. Global Food Waste Crisis: Bridging the Gap Between Plenty and Poverty.....	90

GEOGRAPHY AND DISASTER 93

1. Subduction Zones and the Future of the Atlantic Ocean 93
2. Vanishing Ice: 9 Trillion Tonnes of Glaciers Lost Since 1975..... 94
3. Mount Erebus: Volcanic Fire Amidst Antarctic Ice 95
4. Petrification: Nature's Way of Turning Life into Stone..... 97
5. Wular Lake: Kashmir's Natural Reservoir Under Threat..... 98
6. Geo-Environmental Watch 99
7. Ensuring Dam Safety in India: Challenges and the Way Forward 101
8. Avalanche Hazards in the Himalayas: Causes, Vulnerabilities & Mitigation 102

HISTORY, ART & CULTURE 105

1. PEPSU Muzhara Movement: A Forgotten Struggle for Land Justice 105
2. The Battle of Karnal (1739): Prelude to the Fall of the Mughal Empire 106
3. Lachit Barphukan: Legacy of the Ahom Warrior 107
4. Geo-Heritage Sites: India's Natural Geological Legacy 109
5. Six Madhya Pradesh Heritage Sites in UNESCO Tentative List 110
6. Echoes of Devotion: Preserving the Kamba Ramayana Legacy 111
7. Hmar and Zomi Tribes in India 112
8. Reawakening a Seat of Wisdom: The Revival of Vikramshila University 114
9. Preserving the Sacred: The Need for Restoration of Jalanatheswarar Temple 115
10. Nana Jagannath Shankarseth: Architect of Modern Mumbai . 117
11. 75 Years of the Commonwealth: Relevance, Reform, and India's Strategic Role 118

ENVIRONMENT & ECOLOGY 120

1. Plastic Waste Management (Amendment) Rules, 2024 120
2. Battery Waste Management (Amendment) Rules, 2024 121
3. Green Credit Program (GCP) 2023 123
4. UNEA-6: Advancing Multilateral Environmental Governance.. 124
5. International Big Cat Alliance (IBCA)..... 125
6. Urban Water Crisis in India: A Growing Challenge..... 126
7. UN World Water Development Report 2024 – Water for Prosperity and Peace 127

BIOTECHNOLOGY & HEALTH 129

1. Human Genome Sequencing and the GenomeIndia Project...129
2. Gene Therapy and Clinical Trial for Haemophilia A130
3. Cervical Cancer: Global Elimination Efforts and India's Roadmap132
4. Obesity in India: A Growing Public Health Emergency.....133
5. ASHA Workers in India: Strengthening Community-Based Public Health.....135

SCIENCE & TECHNOLOGY 137

1. Strengthening India's Patent Ecosystem137
2. Ghost Particles and Neutrino Detection.....139
3. Fast Breeder Reactor (FBR): India's Next Leap in Nuclear Energy140
4. Submarine Cable Systems: Lifeline of the Digital Age.....141
5. Satellite-Based Toll Collection System: A Leap Towards Seamless Transport.....143
6. Establishment of End-to-End Quantum Communication Link 144
7. Multiple Independently Targetable Re-entry Vehicle (MIRV) Technology.....145
8. APAAR ID: One Nation, One Student ID146
9. Space Debris and Satellite Internet148

POLITY

Towards Uniformity in Civil Law

📌 Syllabus Mapping:

✓ GS Paper 2 – Indian Constitution (Directive Principles of State Policy), Governance, Polity, and Social Justice

✓ GS Paper 1 – Indian Society (Secularism, Diversity, and Social Reforms)

1. Why in News?

- Uttarakhand became the **first state in independent India** to pass a dedicated law for the **Uniform Civil Code (UCC)** – the **UCC Uttarakhand Bill, 2024**.
- This sets a precedent for **other states** like **Assam** and **Gujarat**, which are also drafting UCC legislations.
- Goa** already follows a version of a **common civil code** under the **Portuguese Civil Code of 1867**, applicable since colonial times.

2. What is the Uniform Civil Code (UCC)?

a) Definition:

- The Uniform Civil Code proposes a **single legal framework** to govern **personal matters** such as **marriage, divorce, inheritance, adoption, and succession** for **all citizens**, irrespective of religion or gender.

b) Existing Personal Law Framework:

- India's current system is **religion-specific** in personal matters:
 - Hindu Succession Act, 1956** – Hindus, Sikhs, Jains, and Buddhists
 - Muslim Personal Law (Shariat) Application Act, 1937** – Muslims
 - Indian Succession Act, 1925** – Christians, Parsis, and Jews
 - Special Marriage Act, 1954** – Civil marriages across all faiths

3. Key Features of the Uttarakhand UCC, 2024

a) Applicability:

- The law applies to **all residents of Uttarakhand**
- Exemptions:** Members of **Scheduled Tribes** protected under **Part XXI of the Constitution**

b) Registration of Marriages and Live-in Relationships:

- Live-in relationships** must be registered within **30 days**
- Marriages** must be registered within **60 days**
- Provides **legal recognition** to **children** from **voidable marriages** and **live-in relationships**
- Excludes the LGBTQIA+ community**

c) Prohibited Practices:

- Criminalizes:
 - Triple Talaq**
 - Nikah-Halala**
 - Bigamy and Polygamy**

d) Inheritance and Succession:

- Equal property rights to sons and daughters**
- Eliminates **coparcenary system**
- Applies **uniform rules for intestate succession**

4. Judicial and Institutional Backing for UCC

a) Key Supreme Court Judgments:

- Shah Bano Case (1985):** Stressed on the **need for UCC** for **maintenance and equality**

- **Sarla Mudgal Case (1995):** Highlighted **conflict in personal laws** and the need for **gender equality**
- **Paulo Coutinho vs Maria Luiza (2019):** Emphasized the necessity for **uniformity in laws**

b) Law Commission Reports:

- **2018:** Recommended that a **comprehensive UCC is unnecessary**, suggested **reforms in existing laws**
- **2022:** Initiated **public and stakeholder consultations**, indicating a potential **reassessment of position**

5. Arguments in Favour of UCC

- **Constitutional Mandate:** Article 44 under **Directive Principles** calls for a **Uniform Civil Code**
- **Promotes Secularism:** Prevents **religious interference in civil laws**, ensuring **equal treatment under law**
- **National Integration:** Builds **common citizenship** and **social harmony** across religions
- **Ensures Gender Justice:** Eliminates **discriminatory practices** in personal laws and ensures **equality**
- **Simplifies Legal System:** Creates **uniform legal procedures** in civil matters, reducing ambiguity and multiplicity
- **Codification and Clarity:** Codifying personal laws promotes **legal certainty, fairness, and access to justice**

6. Arguments Against UCC

- **Threat to Cultural and Religious Diversity:** May **infringe upon religious freedoms** protected under **Article 25**
- **Lack of Community Consensus:** Absence of **inclusive dialogue** may lead to **social unrest and resistance**
- **Challenges to Federalism:** Could **overstep State powers** under **Schedule 7, List III (Concurrent List)**, affecting **cooperative federalism**

7. Way Forward

- a) **Consensus Building:** Engage in **dialogue with all communities**, especially **minority and tribal groups**
- b) **Inclusive Implementation:** Avoid **political polarization**, maintain **neutrality and constitutional integrity**
- c) **Public Awareness:** Educate people on **objectives and benefits** of UCC through **media and civil society efforts**
- d) **Phased and Adaptive Approach:**

- Review and reform existing personal laws gradually to align with UCC principles
- Ensure **gender equality, non-discrimination, and justice for all citizens**

8. Additional Insights

- a) **Global Comparisons:**
 - **France, USA, Germany, Turkey, and South Africa** follow **uniform civil codes**
 - **Tunisia**, a Muslim-majority country, **banned polygamy**, demonstrating **modern interpretations of Sharia**
- b) **National Commission for Women (NCW):** NCW has supported UCC as a tool to **empower women** and eliminate **gender-based discrimination**
- c) **Opposition from Minority Bodies:** Organizations like **All India Muslim Personal Law Board** argue UCC as **infringing on religious autonomy**

Conclusion: The Road to Harmonised Civil Law

While the Uttarakhand UCC Bill marks a **historic first**, its **replication nationwide** must balance **constitutional ideals** with **social realities**. A **gradual, consultative, and inclusive approach** is critical to ensuring that the **Uniform Civil Code** becomes a **progressive tool for justice, equality, and unity**, rather than a source of division.

Judicial Corruption in India

- ❖ **Syllabus Mapping:**
- ✓ **GS Paper 2 – Polity & Governance**

- **Judiciary:** Transparency, Accountability, and Judicial Reforms
- **Separation of Powers**
- **Tribunals and Quasi-Judicial Bodies**

- ✓ **GS Paper 4 – Ethics in Governance**

1. Context: Alarming Signs of Institutional Erosion

The **Supreme Court Collegium** recently approved the **transfer of Justice Yashwant Varma** from the Delhi High Court back to the **Allahabad High Court**, amid allegations of a large sum of **cash recovered from his residence**. This episode brings the spotlight back on the growing concerns of **judicial corruption and opacity in appointments**.

2. What Constitutes Judicial Corruption?

- Judicial corruption refers to any **unethical or illegal behavior** by judges or judicial officers that undermines **independence, impartiality, and integrity**.
- It includes:
 - **Bribery and favouritism**
 - **Political interference**
 - **Conflict of interest**
 - **Post-retirement inducements**
 - **Nepotism in judicial functioning**

3. Key Causes of Judicial Corruption

a. Opaque Collegium System

- Lack of transparency in **appointments and transfers** fosters **nepotism and favoritism**.
- The **closed-door nature** of the collegium process **evades public scrutiny**.

b. Political Influence and Executive Pressure

- **Transfer threats** and **promotion denials** are often linked to **judicial pronouncements** in politically sensitive cases.

c. Post-Retirement Appointments

- Judges accepting **plum posts in commissions and tribunals** post-retirement can **influence impartiality** during their tenure.

d. 'Uncle Judge Syndrome'

- Judges having **close relatives practicing** in the same court compromise **neutrality**.
- Recognized in the **Law Commission's 230th Report (2009)**.

e. Weak Internal Vigilance

- The **in-house disciplinary mechanism** is often **slow, secretive, and lacks independent oversight**.

4. Consequences of Judicial Corruption

ISSUE	IMPACT
EROSION OF PUBLIC TRUST	People lose faith in judiciary as the final arbiter of justice.
COMPROMISED RULE OF LAW	Selective justice, with laws applied unevenly or not at all.
POLITICAL AND EXECUTIVE CAPTURE	Undermines checks and balances, risking democratic backsliding.
DELAYED JUSTICE & BACKLOGS	Corruption exacerbates case pendency, favoring the powerful.
ACCOUNTABILITY DEFICIT	Lack of whistleblower protection and institutional discipline.
INVESTMENT & ECONOMIC LOSS	Reduces ease of doing business, deterring foreign investments.

5. Existing Gaps in Accountability

- Judges are not covered under **RTI or Lokpal**.
- **Contempt of Court Act (1971)** shields judges from criticism, limiting public accountability.
- No formal mechanism for **asset verification or lifestyle audits**.

6. Way Forward: Building Judicial Integrity

a. Transparent Appointments and Transfers

- **Revive NJAC** with constitutional safeguards to balance **judicial independence with external oversight**.
- Adopt a **hybrid model** for collegium + public oversight.

b. Strengthen In-House Vigilance

- Establish an **independent Judicial Ethics Commission** to **investigate and recommend actions** against erring judges.

- Ensure **time-bound and transparent inquiries**.

c. Asset Disclosure and Verification

- Mandate **annual asset declarations** by all judges; publish on **judiciary's official websites**.
- Enable **third-party verification** of disclosures.

d. Curbing Post-Retirement Placements

- Impose a **2-year cooling-off period** before judges can accept posts in **government tribunals, commissions, or advisory roles**.

e. Bring Judiciary Under Lokpal

- Include **Supreme Court and High Court judges** within **Lokpal's jurisdiction**, with **judicial safeguards**.

f. Establish All India Judicial Services (AIJS)

- Standardize **subordinate judiciary recruitment** to curb nepotism and political patronage.

g. Reform Contempt of Court Provisions

- Amend the **Contempt of Courts Act, 1971** to:
 - Clearly define contempt.
 - Prevent its **misuse to stifle criticism**.

✓ Conclusion: Towards a Clean and Credible Judiciary

Tackling judicial corruption is **critical for upholding the Constitution, preserving public confidence, and ensuring access to justice**. A **multi-pronged reform approach**—rooted in transparency, institutional independence, accountability, and public participation—is essential. Drawing from **global best practices** (e.g., UK's Judicial Conduct Investigations Office, US Senate Judiciary Oversight) can help **restore the credibility** of India's judicial institutions.

Citizenship (Amendment) Rules, 2024

📌 Syllabus Mapping:

✓ GS Paper 2 – Indian Constitution (Citizenship, Fundamental Rights, Secularism), Governance, Rights Issues

✓ GS Paper 1 – Modern Indian History (Partition), Indian Society (Migration and Communalism)

1. Why in News?

- The Ministry of Home Affairs (MHA) has **notified the Citizenship (Amendment) Rules, 2024**, thereby operationalizing the **Citizenship Amendment Act (CAA), 2019**.
- The **Citizenship Rules, 2009** were amended to bring the **CAA provisions into effect** after a delay of over **four years** since the Act received **Presidential assent in December 2019**.

2. Background: Understanding CAA, 2019

a) Constitutional Provision:

- Article 11 of the Constitution empowers **Parliament** to regulate citizenship by law.
- CAA 2019 was passed under this power and **amended the Citizenship Act, 1955**.

b) Key Objectives of CAA 2019:

- To grant **Indian citizenship** to certain categories of **illegal migrants** who:
 - Belong to **six religious minorities: Hindus, Sikhs, Buddhists, Jains, Parsis, and Christians**
 - Are from **Afghanistan, Bangladesh, or Pakistan**
 - Entered **India on or before December 31, 2014**
 - Are **not residents of tribal areas** under the **Sixth Schedule** (e.g., parts of Assam, Meghalaya, Tripura, Mizoram) or areas under **Inner Line Permit (ILP)** like Arunachal Pradesh, Mizoram, Nagaland

c) Special Provisions:

- These migrants are exempted from prosecution under the **Passport (Entry into India) Act, 1920** and the **Foreigners Act, 1946**.
- **Period of naturalization is reduced from 11 to 5 years** for the specified groups.
- Provides **five grounds** for cancellation of **OCI (Overseas Citizen of India)** registration.

3. Key Highlights: Citizenship (Amendment) Rules, 2024

a) Eligibility for Citizenship:

An individual may apply for **citizenship by registration or naturalization** if they are:

- **A person of Indian origin**
- **Married** to an Indian citizen
- **A minor child** of an Indian citizen
- A person whose **parents are Indian citizens**
- A person whose **parents were citizens of Independent India**
- An **OCI cardholder** seeking full Indian citizenship

b) New Requirements and Procedures:

- **Affidavit Requirement:**
 - Applicant must file an **affidavit affirming the correctness** of their application.
 - An **Indian citizen must testify** to the **character** of the applicant.
- **Language Qualification:**
 - Applicant must possess **adequate knowledge** of **at least one language** listed in the **Eighth Schedule** of the Constitution.
- **Relaxed Documentation:**
 - Applicants can submit any of **20 types of documents** (e.g., visas, census slips, Aadhaar, driving licenses) as **proof of origin and entry into India**.
- **Renunciation Clause:**
 - Applicants must **declare the renunciation** of their existing citizenship if granted Indian citizenship.

c) Application Process: Applications must be filed **electronically** to an **Empowered Committee (EC)** through the **District Level Committee**, as defined under **Section 6B** of the Citizenship Act, 1955.

4. Justifications Behind the CAA and New Rules

- a) **Humanitarian Grounds:** The Act is framed to **safeguard persecuted minorities** from Islamic states where they face **systematic religious discrimination**.
- b) **National Security:** Differentiates between **illegal immigrants** and those who are **genuine victims of religious persecution**.
- c) **Historical Context:** Seeks to **rehabilitate partition victims**, especially from **East Pakistan (now Bangladesh)** and **West Pakistan (now Pakistan)** who were left stateless.

5. Criticisms and Concerns Raised

- a) **Exclusionary Framework:** **Muslims, Jews, Atheists, and other persecuted minorities** (like Rohingyas from Myanmar or Tamils from Sri Lanka) are **excluded**, raising concerns about **violations of Article 14 (Right to Equality)**.
- b) **Lack of Persecution Test:** No mechanism to **prove actual persecution**, making the law **vulnerable to misuse or political implementation**.
- c) **Date-Based Discrimination:** The cut-off of **31st December 2014** results in **unequal treatment** among migrants who may have entered India at different times but under similar circumstances.
- d) **Impact on Secularism:** The **religion-based classification** contradicts **India's secular ethos**, leading to debates on its **constitutional validity**.
- e) **External Relations:** The Act has the potential to **strain diplomatic relations** with **Pakistan, Bangladesh, and Afghanistan**, as it implicitly accuses them of **religious persecution**.

6. Supreme Court Oversight

- As of 2024, more than **200 petitions** challenging the **constitutionality of CAA** are pending before the **Supreme Court**.
- Petitioners argue that the **religion-based classification** fails the test of **reasonable classification** under **Article 14**.

e. Comparative and Global Context

- **Global Standards** under the **1951 UN Refugee Convention** stress on **non-discriminatory refugee treatment**, to which India is **not a signatory**.
- **India's Neighbourhood**: Several countries like **Sri Lanka** and **Myanmar**, which also have **state religions**, are **not covered** under CAA provisions, making the selection appear arbitrary.

f. Conclusion

While the **Citizenship (Amendment) Act, 2019** and its **2024 Rules** aim to provide a **structured route to citizenship** for persecuted minorities, their **implementation raises critical constitutional, legal, and humanitarian questions**. For the law to be **inclusive and just**, it must **address concerns related to equality, secularism, and fairness** through **transparent mechanisms, independent scrutiny, and broader engagement with all stakeholders**.

Debating the Three-Language Policy Under NEP 2020

 **Syllabus Mapping:**

 **GS Paper 2 – Polity & Governance**

- Issues relating to development and management of education
- Centre–State relations
- Federalism and cultural autonomy

g. Context: Tamil Nadu's Opposition to NEP's Language Mandate

The state of **Tamil Nadu** has strongly objected to the **three-language policy** proposed under the **National Education Policy (NEP) 2020**, abelling it a veiled attempt at **Hindi imposition**. The resistance has led to a stand-off between the Centre and the state, particularly over **funds under the PM SHRI and Samagra Shiksha schemes**.

2. Tamil Nadu's Two-Language Policy

- **Adopted in 1968**, Tamil Nadu's **two-language formula** mandates the teaching of:
 - **Tamil** (regional language)
 - **English** (link and global language)
- **Hindi** is not part of the curriculum in state board schools and is taught only in **CBSE-affiliated institutions**.
- The state draws legitimacy from its **Anti-Hindi agitation movements of 1937 and 1965**, rooted in the assertion of **linguistic and cultural autonomy**.

3. Three-Language Policy: Background and Evolution

a. Kothari Commission Recommendation (1964–66)

- Introduced the **Three-Language Formula** to:
 - Promote **national integration**
 - Bridge linguistic barriers
 - Ensure **multilingual proficiency**

b. NEP 2020 Provisions

- Retains the **three-language framework** but offers **greater flexibility**.
- Students can choose **any three languages**, with a requirement that **at least two should be Indian languages**.

4. Implementation Challenges and Political Resistance

a. Linguistic Federalism and State Autonomy

- **Language policy** falls under the **State List (Seventh Schedule)**.
- States like **Tamil Nadu, West Bengal, and Karnataka** view the Centre's push as infringing upon **federal autonomy**.

b. Perceived Hindi Dominance

- Although NEP allows **flexibility**, critics argue the **Centre's preference for Hindi** creates **asymmetrical pressure** on non-Hindi states.
- In **Northern states**, there's often **no compulsion** to learn Southern languages, reinforcing the **North-South divide**.

c. Infrastructural and Pedagogical Deficits

- ASER 2022 found that over **60% of Class V students** struggle to read Class II-level texts.
- The **2023 report** noted that **25% of youth (14–18)** lack fluency in even their **regional language**, and **40% struggle with English**.

d. Shortage of Language Teachers

- Government schools are often ill-equipped to implement even a **two-language system effectively**, let alone a third.
- Private schools also report **low proficiency in the third language**, despite mandatory inclusion up to **Class VIII**.

e. Financial Constraints

- **States fund nearly 85% of education expenditure**, while the **Centre contributes only 15%**.
- India spends only **~4.5% of GDP on education**, falling short of NEP's **6% target**.

h. Significance of the Three-Language Policy

OBJECTIVE	IMPACT
NATIONAL INTEGRATION	Encourages cross-cultural communication and reduces parochialism
COGNITIVE DEVELOPMENT	Multilingualism enhances memory, analytical thinking, and adaptability
CULTURAL PRESERVATION	Protects regional languages and literary heritage
ECONOMIC COMPETITIVENESS	Enhances employability across states and international job markets
LABOR MOBILITY	Facilitates intra-national migration and integration

i. Language Politics in India: A Federal Dilemma

- **Centre vs State Tensions**: The **Union Government's push** for a uniform language policy challenges the **spirit of cooperative federalism**.
- **Cultural Identity and Regional Pride**: States like Tamil Nadu view **language as an essential cultural marker**.
- **Asymmetry in Implementation**: Southern states are expected to adopt Hindi, while **Hindi-speaking states are not held to reciprocal standards**.

7. Way Forward: Harmonizing Multilingualism and Federal Principles

a. Respect for Regional Autonomy

- Allow **states to define their own language policies**, respecting **diversity and constitutional pluralism**.

b. Strengthen Language Pedagogy

- Focus on **foundational literacy** and **teacher training** before expanding linguistic mandates.

c. Revise Funding Mechanisms

- Ensure **equitable fiscal support** for states that implement **bilingual or multilingual education**, without coercive conditionalities.

d. Build Consensus via Dialogue

- Promote **consultative federalism** by engaging states in **language policy discussions**.
- **Avoid top-down imposition** of Hindi or any other language.

e. Leverage Natural Multilingualism

- As per the **2011 Census**:
 - **26% of Indians are bilingual**
 - **7% are trilingual**
- Multilingualism is **already evolving organically** due to **urbanization and labor migration**.

f. Safeguard English Proficiency

- English remains critical for **global competitiveness**, **higher education**, and **digital inclusion**.

✓ Conclusion: A Linguistically Inclusive Approach to Education

The **three-language formula**, when applied with **flexibility, equity, and respect for regional identities**, can foster **national integration, multilingual proficiency, and cognitive benefits**. However, its **rigid or asymmetrical enforcement**, especially in a **diverse federal polity like India**, risks eroding **state autonomy** and **cultural plurality**. The **spirit of cooperative federalism and constructive negotiation** must guide India's language policy in education.

One Nation, One Election

📌 Syllabus Mapping:

✓ GS Paper 2 – Indian Constitution (Amendments, Federalism, Electoral Reforms), Governance, Polity

✓ GS Paper 1 – Indian Society (Electoral Participation and Political Dynamics)

j. Why in News?

- A High-Level Committee (HLC) chaired by former President Ram Nath Kovind submitted its **report to the President** on the **feasibility of 'One Nation, One Election' (ONOE)** in India.
- This committee was constituted by the **Central Government in September 2023** to explore **legal, logistical, and constitutional dimensions** of holding simultaneous elections across the country.

2. Background and Expert Endorsements

- The idea of simultaneous elections has been endorsed by several **constitutional and policy bodies** over the decades:
 - **Law Commission of India** – 170th Report (1999), 255th Report (2015), Draft Report (2018)
 - **National Commission to Review the Working of the Constitution** (2002)
 - **Parliamentary Standing Committee Report** (2015)
 - **NITI Aayog Working Paper** (2017)

3. What is 'Simultaneous Election'?

- It refers to a **synchronised electoral process** for **Lok Sabha, State Legislative Assemblies, Municipal Corporations, and Panchayats** within a defined period.
- It **does not imply** that voting across the country must happen **on the same day** but aims at **alignment of election cycles** to reduce electoral frequency.

4. Rationale Behind Simultaneous Elections

a) Economic Efficiency

- Cuts **election-related expenditure** on logistics, security, and manpower.
- Reduces **duplication of costs** from frequent, staggered elections at different levels.

b) Governance Continuity

- Reduces **policy paralysis** caused by the **Model Code of Conduct** during elections.
- Enables **uninterrupted public service delivery** and development work.

k. Increased Voter Participation

- Reduces **voter fatigue** caused by frequent elections and boosts overall **turnout**.

l. Judicial Burden Reduction

- Fewer elections mean **fewer disputes**, reducing the **litigation burden** on courts.

m. Minimizing Identity Politics

- Prevents repeated **mobilisation on caste, religion, and regional lines**, which often disrupts **social harmony**.

5. Key Recommendations by High-Level Committee (2024)

a) Two-Step Implementation Approach

Step 1: Lok Sabha and State Assembly Elections

- Amend the **Constitution** to align terms via:
 - **Article 83** (Duration of Lok Sabha)
 - **Article 172** (Duration of State Legislatures)
 - Insertion of **Article 82A** to facilitate simultaneous elections
- **No need for State ratification** in this phase

Step 2: Local Bodies (Municipalities and Panchayats)

- Within **100 days of Step 1**, synchronise local elections by:
 - Inserting **Article 324A** for alignment of local body polls
 - Amending **Article 325** for a **Single Electoral Roll and Photo Identity Card**

n. Legal Amendments Proposed

- Amend the **Representation of the People Act, 1951**:
 - **Sections 14 & 15** (General election notifications)
 - **Sections 147-151A** (Bye-elections)
- A **notification by the President** should mark the **Appointed Date** from which synchronisation begins.
- A dedicated **Implementation Group** should oversee execution, timeline, and compliance.

7. Addressing Constitutional Concerns

a) Hung House or Premature Dissolution

- In case of **no-confidence motion** or **hung assembly**, fresh elections should be held only for the **unexpired term** till the next Lok Sabha election.
- Requires **further amendments to Articles 83 and 172**.

b) Federalism and State Autonomy

- Critics argue ONOE may **undermine states' rights** to autonomous electoral cycles.
- Committee invokes **Article 327**, empowering Parliament to regulate elections for **both Centre and States**.

o. Logistical and Administrative Preparedness

- **Election Commission of India (ECI)** to:
 - Draft a **comprehensive logistical roadmap**
 - Plan for:
 - **Procurement of EVMs and VVPATs**
 - **Deployment of polling personnel and security forces**
 - **Polling booth infrastructure and IT systems**

9. Challenges and Criticisms

a) Constitutional and Legal Challenges

- Requires **extensive amendments** in both the Constitution and **electoral laws**.
- Risk of **judicial review** if federal spirit or basic structure is undermined.

b) Operational Feasibility

- Elections in India are **massive in scale** and **region-specific**—logistical complexities in synchronising polls are enormous.
 - **p. Impact on Regional Representation**
 - Local issues may be **overshadowed by national narratives**, diluting the **regional voice in democracy**.
 - **q. Election Fatigue vs Overload**
 - Though fatigue is reduced, **voters might feel overwhelmed** by choosing multiple representatives at once.

r. Conclusion

The **One Nation, One Election** initiative is a **bold electoral reform** aimed at improving **efficiency, governance, and democratic participation**. However, its **implementation demands wide consensus, legal precision, and constitutional sensitivity**.

A transparent, phased approach involving **consultation with stakeholders**—including political parties, state governments, election experts, and civil society—is critical to ensure that **electoral reform does not come at the cost of federalism and democratic diversity**.

Delimitation and the Southern States: Balancing Population and Representation

📌 Syllabus Mapping:

✓ GS Paper 2 – Polity & Governance

- Federalism, Centre-State Relations
- Electoral Reforms and Representation
- Constitutional Provisions Related to Delimitation

s. Context: Southern States Resist Population-Based Delimitation

Recent debates on **delimitation of Lok Sabha constituencies** have resurfaced, especially after **southern states opposed changes based solely on population**. The seat allocation in Parliament has remained unchanged since **1976**, despite new Census data, primarily to **protect the political influence of demographically progressive southern states**.

2. What is Delimitation?

- Delimitation refers to the **redrawing of boundaries of parliamentary and assembly constituencies** based on **latest population data**.
- It aims to ensure **equal representation** to equal segments of the population.

t. Constitutional Provisions

- **Article 82**: Empowers Parliament to enact a **Delimitation Act** after each Census.
- **Article 170**: Deals with delimitation of **State Legislative Assemblies**.
- The **Delimitation Commission** is appointed by the **President**, with assistance from the **Election Commission of India (ECI)**.

b. Historical Commissions

- Delimitation was conducted in: **1952, 1963, 1973**, and **2002**.
- The **84th Constitutional Amendment (2001)** froze the **number of seats in Lok Sabha and State Assemblies** until the **first Census after 2026** (i.e., 2031 Census).

3. Southern States' Apprehensions About Delimitation

a. Population Control Success

- Southern states like **Kerala, Tamil Nadu, Andhra Pradesh, and Karnataka** have achieved **replacement-level fertility rates**:
 - Kerala: 1988
 - Andhra Pradesh: 2004
- A population-based seat reallocation would **reduce their parliamentary strength**, despite better demographic governance.

b. Fear of Political Marginalization

- Southern states currently hold **129 seats (24%)** in Lok Sabha.
- A new delimitation based on population may significantly **increase seats for northern states like Uttar Pradesh and Bihar**, shifting **political power northward**.

c. Economic Contribution Overlooked

- Southern states contribute over **30% of India's GDP and tax revenues**, but fear they may have **reduced influence in resource allocation** if representation is curtailed.

d. Reallocation of Reserved Seats

- Changes in SC/ST population distribution may lead to **reshuffling of reserved constituencies**, impacting **local political dynamics**.

e. Impact on Regional Parties

- Southern regional parties may **lose national leverage**, while **Hindi-belt-based national parties** would benefit from increased seat shares.

4. Broader Concerns Raised

CONCERN	EXPLANATION
FEDERAL IMBALANCE	A purely population-based formula weakens cooperative federalism.
AGING POPULATIONS	Southern states face demographic aging, further impacting seat allocation in future rounds.
NEGLECT OF SOCIO-ECONOMIC INDICATORS	Criteria like education, income, health indicators are ignored under a population-only approach.
DISINCENTIVIZING FAMILY PLANNING	States that followed population control policies are effectively penalized.
NORTH-SOUTH POLITICAL DIVIDE	Reinforces the perception of Hindi imposition and centralization of power.

5. Drawbacks of a Population-Only Representation Model

- Ignores Regional Development Gaps
- Undermines Governance Efficiency
- Violates Equity in Representation
- Potentially Fuels Sub-Nationalism in more developed states

6. Way Forward: Towards Equitable Representation

- Balanced Criteria for Delimitation: Combine **population with economic contribution, human development index (HDI), literacy, and health outcomes**.
- Cap on Maximum Gains: Place an **upper limit on seats any state can gain**, to avoid massive disparities.
- Incentivise Family Planning: **Reward states** that have successfully implemented **population control measures**, either through **additional fiscal transfers or reserved representation quotas**.
- Protecting Federal Spirit: Maintain a **minimum guaranteed representation** for every state to **safeguard federal equity**.
- Dialogue-Based Reform: Build consensus through **Inter-State Council** and **NITI Aayog**, promoting a **cooperative solution**.

✓ Conclusion: Reconciling Numbers with Fairness

Delimitation must **balance numerical representation with principles of equity and federalism**. The fears of southern states are **not just political**, but **rooted in genuine demographic and economic realities**. As India prepares for the next delimitation post-2026, it must **embrace a holistic and inclusive framework** that rewards **governance efficiency**, ensures **regional equity**, and **preserves national unity**.

S.R. Bommai Judgment (1994)

📌 Syllabus Mapping:
✓ GS Paper 2 – Indian Constitution (Emergency Provisions, Judicial Review, Federalism), Polity, Governance
✓ GS Paper 1 – Indian Society (Secularism, Democratic Values)

1. Why in News?

- The year **2024 marks the 30th anniversary** of the **S.R. Bommai v. Union of India (1994)** judgment by the **Supreme Court**, a landmark verdict that reshaped the interpretation and application of **Article 356** of the Indian Constitution.

2. Background of the Case

a) Dismissal of S.R. Bommai's Government: In 1989, the **Central Government dismissed** the **S.R. Bommai-led state government in Karnataka**, invoking **Article 356**, and imposed **President's Rule**.

b) Judicial Intervention: The case was heard by a **nine-judge Constitutional Bench**, which gave a **historic verdict in 1994**, defining **constitutional limits** on the imposition of President's Rule.

3. Understanding Article 356

a) What it Provides:

- **Article 356** allows the **President** to impose **President's Rule** if a state government **fails to function** according to the provisions of the Constitution.
- Inspired by **Section 93 of the Government of India Act, 1935**.

b) Validity Period:

- Initial validity: **2 months**
- Can be extended every **6 months**, up to a **maximum of 3 years**
- Beyond **1 year**, extension is allowed only if:
 - There is a **national emergency**
 - Election Commission** certifies that elections cannot be conducted in the state

4. Key Constitutional Issues Examined

- Is the President's Proclamation Justiciable?**
 - Can courts **review and invalidate** the proclamation under Article 356?
- Extent of Presidential Power**
 - Does the President have **absolute discretion** or are there **constitutional checks**?
- Consequence of Judicial Invalidation**
 - If the proclamation is declared **invalid**, what happens to the **acts and laws** passed during President's Rule?

5. Key Principles Laid Down in S.R. Bommai Judgment

a) Judicial Review is Permissible:

- Presidential Proclamation** under Article 356 is **subject to judicial review**.
- Courts can examine if the **President's satisfaction** was based on **relevant and valid material**.
- If the proclamation is **mala fide, arbitrary**, or based on **irrelevant grounds**, it can be **struck down**.

b) Limitations on Presidential Power:

- President's power is **not absolute**; must be **ratified by both Houses of Parliament**.
- Until parliamentary approval is obtained, the President can **only suspend** the Assembly, **not dissolve** it.

c) Consequences of Invalidating President's Rule:

- The **dismissed Council of Ministers** and the **Legislative Assembly** shall be **restored**.
- All laws and acts passed during President's Rule shall **remain valid** to prevent legal vacuum.

6. Defining the Use and Misuse of Article 356

a) Floor Test Supremacy:

- The **majority of a government** should be tested on the **floor of the Assembly**, not through the Governor's report.

b) Proper vs. Improper Use (Sarkaria Commission Guidelines):

- Proper Use:** When a state **defies constitutional direction** under Article 365.
- Improper Use:** When the state is **not warned** or not given a chance to rectify the issue unless it's a case of **extreme urgency**.

7. Constitutional Values Reiterated

- The Court emphasized that **secularism, democracy, and federalism** are part of the **basic structure of the Constitution**.
- Secularism** was defined as a **positive concept**, promoting **equal respect and treatment** of all religions, not mere **religious tolerance**.

8. Impact of the Bommai Verdict

a) Curb on Misuse of Article 356:

- From **1950 to 1994**, President's Rule was imposed **100 times**.
- After Bommai judgment (1995–2021), it was used **only 29 times**, showing a **sharp decline** in its misuse.

b) Strengthening Federalism:

- The judgment ensured that **Article 356** cannot be used arbitrarily.
- It upheld the **balance between Union and State powers**, reinforcing **India's cooperative federalism**.

c) Guiding Precedent:

- Frequently cited in later cases, the Bommai verdict serves as a **benchmark for judicial restraint and executive accountability** in Centre-State relations.

9. Conclusion

The **S.R. Bommai case** is one of the **most cited constitutional judgments** in Indian legal and political discourse. It **institutionalized checks on executive power**, strengthened **democratic principles**, and reinforced **federal values**.

As India continues to face challenges of **political centralization, religious polarization, and state autonomy**, the **principles enshrined in this judgment** remain essential to the **functioning of a constitutional democracy**.

Immigration and Foreigners Bill, 2025

📌 Syllabus Mapping:

✓ GS Paper 2 – Polity & Governance

- Government policies and interventions
- Constitutional safeguards and rights
- International relations – migration, refugees, and humanitarian norms

1. Context: A Major Overhaul of India's Immigration Framework

The **Immigration and Foreigners Bill, 2025** was recently introduced in the **Lok Sabha**. The Bill aims to **strengthen border control, enhance immigration management, and replace multiple outdated laws**. However, it has raised concerns over **human rights, proportionality, and federal overreach**.

2. What is Immigration?

- **Immigration** is the movement of people into a country where they are **not native citizens**, often for **employment, education, permanent settlement, or refuge**.
- **Immigrant vs. Emigrant:**
 - *Immigrant* — from the receiving country's perspective
 - *Emigrant* — from the home country's perspective

3. Existing Legal Framework (Prior to the Bill)

Act	Purpose
Citizenship Act, 1955	Governs acquisition, renunciation, and termination of Indian citizenship
Foreigners Act, 1946	Controls entry, stay, and exit of foreigners
Registration of Foreigners Act, 1939	Mandates registration of foreigners
Passport (Entry into India) Act, 1920	Deals with entry of foreigners
Immigration (Carriers' Liability) Act, 2000	Obligates transport carriers to comply with immigration norms

4. Key Features of the Immigration and Foreigners Bill, 2025

a. Legislative Consolidation

- **Repeals** four existing laws and **establishes a unified legal framework**.

b. Centralized Bureau of Immigration (Section 5)

- Headed by a **Commissioner**, with officers under the **Ministry of Home Affairs**.
- Responsible for **entry regulation, enforcement, surveillance, and compliance monitoring**.

c. Regulatory Powers of the Centre (Section 7)

- Control over:
 - Entry/exit routes and timings
 - Area-wise residence for foreigners
 - Mandatory biometric, handwriting, and medical data
 - Prohibited associations, movements, or articles

d. Enforcement and Penalties

Violation	Punishment
Overstaying Visa	Up to 3 years + ₹3 lakh fine
Entry without documents	Up to 5 years + ₹5 lakh fine
Forged documents	2-7 years + ₹1-10 lakh fine

e. Reporting Obligations

- **Universities, hospitals, hotels, landlords** must report foreign nationals' data.
- Carriers (airlines/ships) to **submit pre-arrival passenger lists**, or face penalties up to ₹50,000.

f. Dual Citizenship Clause

- Individuals with **dual citizenship** are considered citizens of the country **whose passport they used to enter India**.

5. Role of International Organizations

Agency	Mandate
UNHCR	Protects refugees and asylum seekers globally
International Organization for Migration (IOM)	Promotes safe, humane migration , combats trafficking, aids resettlement

6. Positive Impacts of the Bill

- National Security: Strengthens tools to prevent **illegal entry, espionage, and human trafficking**.
- Modernization: Replaces **colonial-era laws** with a **centralized, tech-driven** approach.
- Better Compliance: Enhances **tracking of foreign students, professionals, and tourists**.

7. Key Concerns and Criticisms

Concern	Explanation
Violation of Fundamental Rights	No appeal mechanism , allowing potential arbitrary decisions
Impact on Talent Inflow	Restrictions may deter foreign researchers, doctors, and academics
Over-centralization	Gives sweeping, unchecked powers to the central executive
Diplomatic Sensitivities	May strain ties with neighboring countries with large diasporas in India
Selective Enforcement Risk	Discretionary powers may target specific communities , activists, or journalists
Lack of Refugee Differentiation	Treats asylum seekers and illegal immigrants alike, contrary to global norms
Compliance Burden	Hotels, airlines, and institutions face penalties for minor lapses
Tourism and FDI Impact	Visa delays, data obligations may discourage tourism and investment

8. Comparative Insight: Global Best Practices

Country	Feature
USA	Allows judicial appeal for visa denials and deportation
Germany	Maintains independent immigration tribunals
Canada	Differentiates between refugees, asylum seekers, and economic migrants
UK	Has a tier-based immigration system , offering structured pathways for skilled professionals

9. Way Forward

- Appeals Mechanism: Establish a **quasi-judicial tribunal** or allow **court redress** for immigration decisions.
- Proportional Punishment: Differentiate between **technical violations** and **intentional breaches**.
- Refugee Protection Framework
 - Introduce a **clear legal distinction** between:
 - **Refugees**
 - **Stateless individuals**
 - **Illegal migrants**
- Transparency and Safeguards: **Define restrictions clearly** and prevent **discretionary overreach** by authorities.
- Technology for Transparency: Use **digital platforms** for e-registration, e-verification, and grievance redressal.

✓ Conclusion: Balancing Security and Rights

The **Immigration and Foreigners Bill, 2025** marks a significant step in aligning India's immigration system with **modern global practices**. However, to avoid **human rights infringements**, it must incorporate **checks and balances, judicial oversight, and humane safeguards**. The ongoing

parliamentary debate will be crucial in **reconciling national security interests with constitutional morality and global humanitarian obligations**.

Sixth Schedule and Ladakh

- GS Paper 2 – Indian Constitution (Federalism, Special Provisions, Sixth Schedule), Governance, Tribal Affairs**
- GS Paper 1 – Indian Society (Tribal Communities, Regional Aspirations, Cultural Preservation)**

1. Why in News?

- The **people of Ladakh** are protesting to seek recognition under the **Sixth Schedule** of the Constitution.
- The **Ministry of Home Affairs** has stated that granting Sixth Schedule status to Ladakh would require a **constitutional amendment**, which is a **complex and sensitive process**.
- The **Union Home Minister** suggested **Article 371-like protections** instead, during negotiations with Ladakh's leaders.

2. Constitutional Background

a) Sixth Schedule:

- **Articles 244(2) and 275(1)** empower the **Sixth Schedule**, which deals with the **administration of tribal areas** in:
 - **Assam**
 - **Meghalaya**
 - **Tripura**
 - **Mizoram**



b) Article 371:

- **Articles 371 to 371-J** provide **special constitutional provisions** to various states to protect **religious, social, and cultural autonomy**.
- Suggested for Ladakh as an **alternative model** to the Sixth Schedule.

3. Key Features of the Sixth Schedule



a) Administrative Mechanism:

- **Governor** can establish:
 - **Autonomous District Councils (ADCs)**
 - **Autonomous Regional Councils (ARCs)**
- **Composition of ADCs:**
 - **Maximum 30 members** (26 elected, 4 nominated by Governor)
 - **Exception:** Bodoland Council with up to **46 members**

b) Legislative Powers:

- ADCs/ARCs can make laws on:
 - **Land management, forest use** (excluding Reserved Forests), **shifting cultivation**
 - **Inheritance, marriage and divorce**, and **social customs**
 - **Regulating moneylending/trade** by non-tribals

c) Executive Powers:

- Manage:
 - **Primary schools, dispensaries, markets, cattle ponds, roads, transport**
 - Prescribe **language and instruction methods** in schools

d) Judicial Powers:

- Establish **Village and District Council Courts**
- Jurisdiction limited to **minor civil and criminal cases**
- Cases involving **death penalty or imprisonment ≥5 years** are outside their authority

e) Financial Powers:

- Prepare **district budgets**
- Levy taxes on **trades, professions, markets**
- Grant **mineral extraction licenses**

4. Benefits of Including Ladakh under the Sixth Schedule

a) Addressing Local Aspirations:

- Enables **context-specific governance** addressing **tourism regulation, environmental concerns, and sustainable development**

b) Safeguarding Land and Forest Rights:

- Post-**Article 35A repeal (2019)**, Ladakh lost protections available under **Jammu & Kashmir's special status**
- The Sixth Schedule could **prevent land alienation** and protect **tribal ownership**

c) Preserving Cultural Heritage:

- Ensures **legal recognition** and **protection** of Ladakh's **distinct traditions, language, and customs**

d) Empowerment through Resource Management:

- Greater **local control** over **minerals, natural resources, and economic planning**

e) Enhancing Employment Opportunities:

- Could result in **reservations in education and jobs** for Ladakhis, supporting **local livelihood and empowerment**

5. Challenges in Granting Sixth Schedule Status to Ladakh

a) Financial Viability:

Establishing ADCs would need **sustained funding, administrative support, and trained personnel**

b) Inter-Community Tensions:

- Ethnic composition:**
 - Leh:** Predominantly **Buddhist**
 - Kargil:** Predominantly **Muslim**
- Ensuring **equitable representation** in ADCs is politically delicate

c) National Security:

- Ladakh is strategically sensitive, sharing borders with **China and Pakistan**
- Higher autonomy may complicate **central control over border security operations**

6. Alternatives Considered

- Article 371-like model:**
 - Offers **state-specific autonomy** without amending the Constitution extensively
 - Could protect **customary rights, cultural practices, and land ownership**
 - May serve as a **middle ground** between local demands and national concerns

Wisdom leads to success

7. Comparative Perspective

Region	Protection	Autonomy Provided
Assam, Meghalaya, Mizoram, Tripura	Sixth Schedule	ADCs with legislative, executive, financial powers
Nagaland, Mizoram, Manipur (Hill areas)	Article 371A, 371G, 371C	Cultural autonomy and legislative rights
Ladakh (Current)	UT with Lt. Governor	Limited local governance through Hill Councils

8. Conclusion

The **demand for Sixth Schedule status** by Ladakh's people reflects their aspiration for **self-governance, cultural protection, and constitutional recognition**. However, it must be approached with **legal clarity, institutional preparedness, and national unity** in mind.

A **constructive dialogue** between the **Centre, local representatives, and civil society** is essential to forge a **suitable governance model**—be it under the **Sixth Schedule** or **Article 371-like provisions**—that balances **autonomy, inclusiveness, and security considerations**.

Strengthening Tribunals in India

❖ Syllabus Mapping:

✓ GS Paper 2 – Polity & Governance

- Tribunals and quasi-judicial bodies
- Separation of powers and judicial independence
- Structure, organization, and functioning of regulatory bodies

1. Context: Supreme Court's Concerns over Tribunal Functioning

The **Supreme Court of India**, while hearing a petition challenging the **Tribunals Reforms Act, 2021**, highlighted **critical gaps in recruitment, autonomy, and operational efficiency** of tribunals. It reiterated the need for **structural reform** to uphold the independence of these quasi-judicial bodies.

2. The Tribunals Reforms Act, 2021: Key Provisions

a. Purpose: To **rationalize and streamline** tribunals by dissolving several appellate bodies and transferring their work to **High Courts and other authorities**.

b. Major Features

- **Abolition of Nine Tribunals**, including Intellectual Property Appellate Board, Airport Appellate Tribunal, etc.
- Creation of a **Search-cum-Selection Committee** for appointments
- **Fixed Tenure**:
 - Members: Max. 4 years or till age 67
 - Chairpersons: Max. 4 years or till age 70
- **Central Control**: Appointments, salaries, and removal are **executive-driven**, raising separation of power concerns.

3. Supreme Court Observations

Concern	Observation
Judicial Independence	Strong criticism of executive control over appointments and removal mechanisms
Treatment of Retired Judges	Called for dignified post-retirement roles and systematic placement
Staffing Crisis	Directed Centre to furnish vacancy data (Jan 2025); noted delays in recruitment
Tenure Rule	Questioned reinstatement of earlier rules struck down by SC in Madras Bar Association cases
Undermining Judicial Review	Criticized attempts to bypass judicial oversight and transfer appellate authority to the executive arm

4. Criticisms of the Tribunal Reforms Act, 2021

- Circumvention of Judicial Orders: Reintroduced provisions **previously struck down** in *Madras Bar Association v. Union of India* (2021), such as short tenure and executive dominance in selection.
- Threat to Judicial Independence: **Executive decides appointments, salaries, and service conditions**, undermining autonomy.
- Abolition of Key Tribunals: Burden shifted to already **overstretched High Courts**, affecting **specialized adjudication**.
- Lack of Incentives: Short tenures and bureaucratic constraints **deter qualified experts and judges** from serving.

5. Constitutional & Legal Foundations

- **Articles 323A and 323B** empower the **Parliament** to establish tribunals for **service matters** and **other disputes**.
- In *L. Chandra Kumar v. Union of India* (1997):
 - Held that **tribunal decisions are subject to HC review**.
 - Directed tribunals must **not bypass High Courts** or function as replacements.

6. Importance of Tribunals in India

Function	Impact
Reduce Case Backlog	Handles disputes in taxation, environment, administration, and military law
Speedy Justice	Offers streamlined procedures with faster dispute resolution
Expertise-Driven Adjudication	Comprises legal experts and subject-matter specialists
Judicial Decentralization	Enhances access to justice in remote and specialized domains

7. Challenges Faced by Tribunals

- Conflict of Interest: **Government is the biggest litigant**, yet controls tribunals' administrative structure.
- Bypassing Courts: Tribunals often **sidestep High Court jurisdiction**, raising concerns about **judicial supremacy**.
- Vacancies and Case Backlogs
 - Over **44,000 pending cases** in CAT alone (Law Commission 272nd Report).
 - Inadequate staffing and infrastructure disrupt functioning.
- Lack of Uniformity: No **standard norms** for qualifications, appointment, or retirement across tribunals.

8. Global Best Practices

Country	Tribunal Model
UK	Two-tier system: First-tier and Upper Tribunal with full judicial independence
USA	Tribunals (e.g., immigration courts) are subject to review by federal courts
Australia	Administrative Appeals Tribunal with appeal to High Court and merit-based appointments

9. Way Forward

- Ensure Tribunal Independence
 - Place tribunals under the **Ministry of Law & Justice**, not sectoral ministries.
 - Follow SC precedents: *R. Gandhi (2010)*, *Madras Bar Association (2014)*, *Swiss Ribbons (2019)*.
- Separate Administrative Authority
 - Create an **independent National Tribunals Commission** to manage appointments, tenure, funding, and evaluation.
- Regular Review Mechanism
 - Conduct **judicial and performance audits** of tribunal functioning every 3 years.
- Rationalize Appeals
 - Allow appeals from tribunals only in **exceptional cases** to the Supreme Court under **Article 136** (Special Leave Petition).
 - High Courts should remain the **final appellate authority** in most matters.
- Attract Qualified Talent
 - Offer **longer tenure**, adequate compensation, and clarity of promotion to attract **retired judges and domain experts**.

✓ Conclusion: Towards a Stronger Quasi-Judicial System

A robust and independent tribunal system is **crucial for justice delivery**, especially in specialized domains. The **Supreme Court's interventions** underscore the importance of **institutional independence, transparency, and reform**. If tribunals are to reduce burdens on courts and ensure timely justice, they must be **autonomous, adequately staffed, and constitutionally accountable**.

Ending the 'Pradhan Pati' Culture

📌 Syllabus Mapping:

✓ GS Paper 2 – Polity & Governance

- Local self-governance, Panchayati Raj Institutions
- Women's empowerment, Role of civil services
- Government policies and interventions

1. Context: Government Panel Recommends Action Against Proxy Panchayat Leadership

A committee set up by the **Ministry of Panchayati Raj (MoPR)** in 2023 has recommended **exemplary penalties** and **structural reforms** to curb the widespread and unconstitutional practice of '**Pradhan Pati**' or **proxy governance** by husbands or male relatives of elected women in **Gram Panchayats**.

2. Understanding the 'Pradhan Pati' Phenomenon

- **Definition:** 'Pradhan Pati' or 'Sarpanch Pati' refers to **male relatives (usually husbands)** of elected women representatives **exercising de facto power**, sidelining the woman's constitutional role.
- **Origin:** Arises due to entrenched **patriarchal norms, low literacy, and lack of institutional support**.
- **Impact:** Undermines the **spirit of democratic decentralization, violates gender justice**, and nullifies **reservation policies** for women in PRIs.

3. Key Recommendations of the Sushil Kumar Committee

a. Legal and Institutional Measures

- **Exemplary Penalties:**
 - Penal actions against individuals proven to act as **proxy leaders**.
 - Disqualification provisions for both **elected women and the proxies** under relevant State Panchayat Acts.
 - *Example: Rajasthan (2021)* issued orders warning of **disqualification** for Sarpanch Pati practices.

b. Gender-Exclusive Reforms

- **Special Quotas** for women in standing committees within Panchayats.
- **Mandatory Public Swearing-In Ceremonies** to enhance **visibility and legitimacy** of women pradhans.
- **Annual Recognition/Awards** for women leaders who challenge proxy rule.
 - *Example: Bihar* increased **women's reservation to 50%** in PRIs and introduced **public ceremonies**.

c. Women-Centric Support Systems

- Appointment of **Women's Ombudspersons** at the district level.
- Formation of **community watchdogs and whistleblower mechanisms**.
- Establishment of **Gender Resource Centres** for:
 - Legal aid
 - Leadership training
 - Documentation and research on women's issues in local governance
 - *Example: Maharashtra's Mahila Rajsatta Andolan* actively combats proxy governance.

d. Technological Interventions

- **VR-based training modules** to simulate Panchayat procedures.
- **AI-powered governance tools** in local languages.
- **WhatsApp groups** for instant support and networking.
- **Participation tracking via Panchayat Nirnay Portal** to assess real-time involvement of women leaders.

e. Capacity Building and Leadership Development

- Mandatory **training in vernacular languages** for all elected women.
- Collaboration with **IIMs, IITs, NIRDPR**, and civil society organizations.
- Involvement of **women MLAs, MPs, and retired officers** as mentors.

4. Need for Addressing Proxy Governance

Issue	Impact
Undermines Constitutional Mandate	Violates Articles 14 and 15 (gender equality) and 73rd Constitutional Amendment
Tokenism in Representation	Women's leadership remains symbolic, not substantive
Reduces Grassroots Accountability	Decisions are made without official accountability mechanisms
Erodes Institutional Legitimacy	Weakens public trust in PRIs as vehicles of inclusive democracy

5. Constitutional and Policy Framework

- **73rd Constitutional Amendment Act, 1992:**
 - Mandates **1/3rd reservation for women**, extended to **50%** in many states (e.g., Bihar, Maharashtra, Odisha).
- **National Policy for Empowerment of Women, 2001:**
 - Promotes **active and effective participation** of women in decision-making bodies.
- **SDG 5 (Gender Equality):** Ensures **women's full and effective participation** in all levels of political life.

6. Way Forward

a. Legal Clarity and Enforcement

- Amend State Panchayat Acts to **criminalize proxy governance**.

- Empower **State Election Commissions** and MoPR to monitor and take **suo motu cognizance**.

b. Institutional Autonomy for Women Leaders

- Mandatory attendance and **signature verification** at Gram Sabha and Panchayat meetings.
- Provide **administrative staff and ICT tools** for directly elected women.

c. Behavioural and Societal Change

- **Gender sensitization campaigns** targeting families and communities.
- Involve **school curricula and local media** to normalize women's independent leadership.

d. Monitoring and Evaluation

- Integrate proxy governance tracking in **MoPR's e-Gram Swaraj portal**.
- Conduct **annual social audits and performance assessments** of Panchayats on gender indicators.

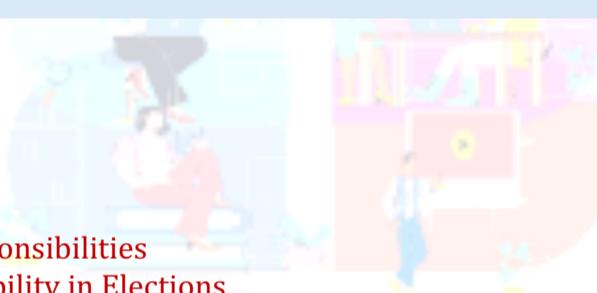
✓ Conclusion: From Reservation to Representation

The '**Pradhan Pati**' culture is a structural subversion of women's democratic rights and needs **multi-level corrective mechanisms**. While reservation has paved the way, **empowerment requires dignity, capacity, and autonomy**. The government's latest panel recommendations provide a much-needed blueprint to **end tokenism and institutionalize genuine women's leadership** in India's grassroots governance.

EPIC and Voter Duplication

📌 Syllabus Mapping:

✓ GS Paper 2 – Polity & Governance



- Electoral Reforms in India
- Election Commission of India: Powers & Responsibilities
- Issues related to Transparency and Accountability in Elections

1. Context: Allegations of Voter Duplication Using EPIC Numbers

Recently, the **Chief Minister of West Bengal** accused the **Election Commission of India (ECI)** of facilitating **voter duplication** by allowing **identical EPIC numbers** for multiple voters across **different states**. The controversy has reignited concerns about **electoral integrity and voter roll accuracy**.

2. What is the Electors Photo Identification Card (EPIC)?

a. Overview

- The EPIC is a **10-digit alphanumeric identification number** assigned to every **registered voter** in India.
- Issued by the **Election Commission of India** to serve as **official identification** during elections.

b. Features

- Contains **photograph, EPIC number, name, gender, age, and constituency information**.
- Issuance is done through **Form-6** under **Rule 13(1) of the Registration of Electors Rules, 1960**.

c. Limitations

- EPIC **does not confer voting rights** in any constituency other than the one the voter is officially registered in.
- A voter can only be enrolled in **one constituency** under the law.

3. Election Commission's Role in Voter List Management

FUNCTION	DETAILS
MAINTAINING ELECTORAL ROLL	ECI ensures an accurate, updated, and fraud-free voter list under Article 324 of the Constitution.
TECHNOLOGY USE	Utilizes ERONET (Electoral Roll Management System) to manage: <ul style="list-style-type: none">• New registrations• Deletion of names

- Voter migration between constituencies || **Prevention of Duplication** | Duplicate entries are flagged via **de-duplication software** using criteria like **EPIC number, Aadhaar, biometrics, and demographic matching**. || **Legal Framework** | Governed by the **Representation of the People Act, 1950 & 1951** and **Registration of Electors Rules, 1960**. |

4. Current Issue: Claims of Duplicate EPIC Numbers

a. Allegation: **Identical EPIC numbers** have allegedly been issued to **voters in multiple states**, possibly leading to **electoral fraud and double voting**.

b. Potential Causes

- **Data migration errors** during inter-state voter registration.
- **Faulty de-duplication algorithms** or delayed updates in ERONET.
- **Inadequate verification** during booth-level officer inspections.

5. Implications of Voter Duplication

Issue	Impact
Electoral Fraud	Enables multiple voting , violating universal adult franchise principles.
Loss of Public Trust	Undermines confidence in the electoral process and institutions .
Constitutional Violation	Violates Article 326 which mandates free and fair elections .
Legal Challenges	May lead to litigation and re-elections , burdening public resources.

6. Technological and Legal Safeguards

a. ERONET

- A **centralized platform** for voter registration and migration, used by **Chief Electoral Officers (CEOs)** across states.
- Supported by **National Voters' Service Portal (NVSP)** for citizen services.

b. Voter Helpline App and NVSP Portal

- Allow self-verification, updates, and tracking of application status.

c. Linking with Aadhaar (Optional)

- Proposed under **Election Laws (Amendment) Act, 2021** for de-duplication (voluntary and with privacy safeguards).

7. Way Forward

- Strengthen Inter-State Data Sharing: Improve synchronization between **state electoral databases** to **prevent duplication**.
- Periodic Third-Party Audits: Conduct **independent audits** of voter rolls to detect anomalies and duplication patterns.
- Booth Level Verification: Empower **Booth Level Officers (BLOs)** to physically verify voters at the household level.
- Public Grievance Redressal: Strengthen redressal mechanisms through **State Election Commissions** and citizen apps.
- Awareness Campaigns: Educate voters about the importance of **updating voter information** during migration.

✓ Conclusion: Safeguarding the Sanctity of the Electoral Roll

While the **EPIC system** is a landmark in India's electoral management, **technological lapses and inter-state coordination failures** can erode public trust. The ECI must ensure **robust de-duplication mechanisms, transparency in data handling**, and uphold the **constitutional mandate of free and fair elections**.

Preventive Detention in India

❖ Syllabus Mapping:

✓ GS Paper 2 – Polity & Governance

- Fundamental Rights (Article 22)
- Judicial Review and Constitutional Safeguards
- Issues related to Security and Human Rights

1. Context: SC's Reminder on Procedural Safeguards

In a recent case involving a couple detained under the **PITNDPS Act, 1988**, the **Supreme Court of India** quashed the preventive detention order due to **procedural lapses**, including **language barriers and lack of evidence**. The case reaffirmed the necessity of **strict constitutional compliance** in such detentions.

2. Understanding Preventive Detention

a. Definition: **Preventive detention** refers to **detaining a person without trial or conviction**, based on **anticipatory grounds** that the person **might commit acts threatening public order, national security, or public health**.

b. Constitutional Basis

- **Article 22 (3)-(7)** of the Constitution provides:
 - Exceptions to rights of arrested individuals in preventive detention cases.
 - Mandatory **detention review by an advisory board** within **3 months**.

c. Legislative Power

Authority	Jurisdiction
Parliament	National security, defense, foreign affairs
States	Maintenance of public order and state security (Concurrent list)

3. Landmark Case: SC on Detention in Nagaland

a. Case Summary

- A couple was detained under **PITNDPS Act** by Nagaland authorities.
- **Detention order was in English**, but the detainees were **not literate in it**; oral explanation in **Nagamese** was considered **insufficient**.

b. Supreme Court's Findings

- Referred to **Harikisan vs State of Maharashtra (1962)**: Oral communication of detention grounds is **not sufficient**.
- Noted **absence of bail plea**, and **lack of evidence** suggesting future criminality.
- Ruled detention as **mechanical and arbitrary**, thereby **quashing the order**.

4. Preventive vs. Punitive Detention – A Comparison

Aspect	Preventive Detention	Punitive Detention
Legal Basis	Suspicion of future offense	Arrest after proven offense
Right to Know	Grounds must be communicated, unless against public interest	Grounds must be communicated mandatorily
Legal Representation	Limited; right to make a representation	Full right to legal counsel
Applicability	Applicable to citizens and aliens	Not available to enemy aliens
Duration	Max 3 months without Advisory Board review	Subject to judicial trial timelines

5. SC Guidelines: *Jaseela Shaji vs. Union of India (2024)*

a. Essential Safeguards

- Detaining authority must **provide all documents** relied upon.
- Information must be in a language the detainee understands.

b. Article 22(5) Compliance

- Not furnishing necessary documents **violates personal liberty**.
- Denial of opportunity to challenge detention = **violation of natural justice**.

c. Preventing Arbitrary Detentions

- Authorities must avoid mechanical application of laws.
- **Timely communication** and use of **technology** are recommended to avoid delay.

6. Concerns Related to Preventive Detention

Concern	Details
Judicial Limitations	Courts can review procedures , not the necessity of detention
Human Rights Violations	Detentions without trial risk abuse, torture, and discrimination
Arbitrariness	Laws often lack accountability , are open to executive misuse
Democratic Concerns	Such detentions are rare in democracies and violate ICCPR commitments

Political Misuse	Frequently used to curb dissent, detain activists or journalists
Lack of Differentiation	No distinction made between illegal migrants, refugees, and asylum seekers

7. Way Forward

a. Enforce Procedural Safeguards

- Ensure **strict compliance** with SC rulings on document disclosure and fair communication.

b. Periodic Time-Bound Reviews

- Introduce **mandatory judicial or quasi-judicial review** every 3 months to avoid indefinite detention.

c. Independent Advisory Boards

- Boards should have **judicial oversight**, not be controlled by executive authority.
 - Example: Telangana's Advisory Boards under PD Act comprise **retired High Court judges**.*

d. Balancing Security and Rights

- Apply preventive detention only when **absolutely necessary**, ensuring it doesn't **erode civil liberties**.

e. Refugee-Specific Safeguards

- Align with **international refugee and human rights standards**, ensuring **protection for vulnerable groups**.

f. Transparent Redressal and Compensation

- Provide for **legal recourse and compensation** in cases of **wrongful preventive detention**.

✓ Conclusion: Preserving Liberty While Ensuring Security

While **preventive detention is constitutionally permitted** in India, it must be used **judiciously and sparingly**, with strong procedural safeguards. The **Supreme Court's consistent stance** affirms that **national security must not override individual liberty unjustly**. A **rights-based and judicially monitored framework** is essential for preventing abuse while maintaining law and order.

Temple Regulation in India

📌 Syllabus Mapping:

✓ GS Paper 2 – Indian Constitution (Secularism, Fundamental Rights, State-Religion Interface), Governance

✓ GS Paper 1 – Indian Society (Religion, Culture, Social Justice and Reform Movements)

1. Why in News?

- The **Karnataka Legislative Assembly** passed the **Karnataka Hindu Religious Institutions and Charitable Endowments (Amendment) Bill, 2024**, amending the 1997 Act to introduce **new provisions on temple revenue sharing and development**.
- The legislation has sparked a national debate on the **role of the state in managing temples**, with implications for **secularism, religious freedom, and cultural preservation**.



2. What Does the 2024 Karnataka Amendment Bill Propose?

- Income-based Contribution System:**
 - Temples with income:
 - Above ₹1 crore:** Contribute **10%** to the **Common Pool Fund**
 - Between ₹10 lakh and ₹1 crore:** Contribute **5%**
- Purpose of the Fund:**
 - To support temples earning less than ₹5 lakh annually
 - To fund the **welfare of priests (archakas)** and ensure **temple maintenance**

3. Constitutional and Legal Framework

a) Articles of the Constitution:

- Article 25(1)** – Ensures **freedom of religion**
- Article 25(2)** – Allows **state intervention** in religious institutions for **social welfare and reform**
- Article 26** – Grants communities the right to **manage religious affairs**, subject to **public order, morality, and health**

- Entry 28, List III (Concurrent List) – Empowers both **Union and State legislatures** to make laws on **religious and charitable endowments**

b) Key Laws and Institutions:

- Hindu Religious and Charitable Endowments (HR&CE) Acts** – Enacted by several states to regulate temples and charitable institutions
- Hindu Religious Endowments Commission, 1960** – Recommended **state oversight** to prevent **mismanagement**

4. Historical Background

a) Colonial Era Legislation:

- Religious Endowments Act, 1863** – Introduced **local committees** for temple oversight
- Madras Hindu Religious Endowments Act, 1925** – Established **commissioners with significant powers** to regulate temples

5. Arguments in Favour of State Regulation

Argument	Details
Social Reform	Challenges hereditary priesthood , fosters inclusive practices
Marginal Representation	Promotes SC/ST participation (e.g., Tamil Nadu HR&CE Act)
Efficient Management	Ensures endowments are used transparently for intended purposes
Community Welfare	Temple revenues can be directed to local development activities
Preservation	Protects temples from neglect, encroachment, and resource misappropriation

6. Arguments Against State Regulation

Critique	Explanation
Violation of Secularism	Contradicts the principle of non-interference in religious affairs
Disproportionate Focus	Hindu temples are regulated, while other religious institutions remain autonomous
Operational Autonomy Loss	Erodes temple rituals and traditions (e.g., Chidambaram Case, 2014 – SC upheld priestly autonomy)
Cultural Degradation	Poor state-managed conservation efforts , e.g., UNESCO report (2017) on demolition of ancient temples
Tourism Impact	Fund diversion reduces investment in infrastructure and promotion
Tribal Concerns	State control may disregard local customs in tribal regions and sacred spaces

7. Way Forward: Reconciling Autonomy with Good Governance

a) Separation of Religious and Administrative Domains: Religious practices must be **autonomously managed**, while **financial and development activities** can fall under a **regulated framework**.

b) Hub-and-Spoke Model: Temples can be **clustered by income/importance** where **larger temples** support **smaller ones** for effective resource allocation and governance.

c) Multi-tiered Governance Framework:

- Establish:
 - State Temple Administration Board** (government-led)
 - Temple Management Committees (TMCs)** (local residents, priests, stakeholders)
 - Temple Level Trusts** for religious rituals and cultural preservation

d) Special Purpose Vehicles (SPV):

- Set up **Temple Development and Promotion Corporation (TDPC)**:
 - Handle **tourism, heritage conservation, training, digital infrastructure, and capacity building**

e) Best Practices:

- Kerala Devaswom Model:**
 - Transparent property management (Devaswom = "property of the deity")
 - Combats corruption while retaining **devotional and cultural integrity**

8. Conclusion

The issue of **temple regulation in India** lies at the **crossroads of religion, governance, and constitutional values**. While the **state has a role in ensuring accountability and equity**, it must avoid **overreach into the spiritual domain**. A **participatory, inclusive, and decentralized model**, that draws from **best practices** and respects **community rights**, is the key to achieving a **balanced framework** that upholds **secularism, pluralism, and cultural integrity**.

Policing Digital Giants: Challenges and the Indian Regulatory Response

📌 Syllabus Mapping:

✓ GS Paper 2 – Polity & Governance

- Government policies and interventions
- Regulatory bodies and their effectiveness
- Impact of technology on governance and democracy

✓ GS Paper 3 – Economy & Security

- Issues related to monopolies, data governance, and cybersecurity

1. Context: Meta Fined by CCI – A Landmark in India's Digital Regulation

In a significant ruling, the **Competition Commission of India (CCI)** imposed a **₹213.14 crore penalty** on **Meta** and **banned WhatsApp** from sharing user data with Meta-owned platforms for **advertising purposes**. The judgment marked an important stance against **data-driven monopolistic practices**.

2. Background: Meta's Abuse of Dominance

- The case stemmed from **WhatsApp's 2021 privacy policy**, which **mandated user data sharing** across Meta's platforms (Facebook, Instagram).
- The CCI found this a "**take-it-or-leave-it**" **agreement**, pressuring users into sharing data without real consent.
- The policy strengthened Meta's **digital advertising supremacy**, harming **fair competition** in India's messaging and digital economy space.

3. Who Are the Digital Giants?

- **Digital giants** are large multinational tech corporations dominating critical digital services.

Examples:

- **Meta (Facebook, WhatsApp, Instagram)**
- **Google (Alphabet, YouTube, Android)**
- **Amazon, Apple, Microsoft, Tencent, Alibaba**

Key Features:

- **Massive data ownership**
- **Interlinked ecosystem of services**
- **Algorithm-driven targeting**
- **Market control across digital sectors**



4. Why Regulating Digital Giants is Necessary

Objective	Explanation
Prevent Monopolistic Practices	Acquisitions and self-preferencing stifle startups (e.g., Meta's acquisition of Instagram & WhatsApp)
Safeguard Consumer Privacy	Data misuse can manipulate user behavior (e.g., Cambridge Analytica scandal)
Ensure Fair Taxation	Profit shifting and tax havens deprive countries of revenue
Curb Digital Colonialism	Global tech giants dominate domestic markets, undermining local innovation
Promote Startup Innovation	Level playing field needed to support digital entrepreneurship
Enhance National Cybersecurity	Dependency on foreign platforms poses data sovereignty threats

5. Challenges in Regulating Digital Giants

a. Legal Gaps in Competition Law

- India's **Competition Act, 2002** does not adequately address **data-centric dominance**.
- Lacks parameters like:
 - *Data monopolization*
 - *Network effects*
 - *Interoperability mandates*

b. Jurisdictional Complexity

- These firms operate **globally**, storing data in foreign jurisdictions (e.g., Meta's data in Europe).
- Indian legal orders often have **limited enforceability** abroad.

c. Rapid Technological Evolution

- **AI, Big Data, and targeted advertising** evolve faster than the law.
- Regulatory lag makes **antitrust enforcement ineffective**.

d. Corporate Lobbying and Influence

- Tech giants **lobby against reforms**; Amazon spent **\$20 million** in 2023 alone lobbying U.S. antitrust laws.

e. Weak Penalties

- Existing fines are **too small** to deter trillion-dollar companies.
 - *Example:* Google's EU fine of \$2.7 billion had negligible impact.

f. Opaque Technologies

- AI-based decisions are **non-transparent** and resist audit.
- Companies often cite **trade secrets** to avoid scrutiny.

6. Global Precedents and Learnings

Country/Region	Key Regulatory Action
European Union	Digital Markets Act (DMA) and General Data Protection Regulation (GDPR)
Australia	News Media Bargaining Code – makes Google/Facebook pay for news
USA	Ongoing legislative push for antitrust laws (e.g., breaking Big Tech monopolies)
OECD Global Minimum Tax	15% global tax rate to curb base erosion and profit shifting

7. India's Regulatory Gaps and Opportunities

a. Outdated Competition Act

- Needs amendments to:
 - Include **data dominance** as a metric.
 - Address **interoperability** and **network effects**.

b. Lack of Unified Digital Authority

- Fragmented approach by **CCI, Data Protection Board, IT Ministry** creates overlaps.
- **Integrated digital regulation** is essential.

c. Absence of Digital Taxation: India must participate in **global tax negotiations** (like the OECD framework).

8. Way Forward

- Amend the Competition Act, 2002: Define **data monopolization** and mandate **data-sharing frameworks** to break closed ecosystems.
- Adopt Global-Local Hybrid Regulation: Take cues from **EU's DMA & GDPR**, adapting them to India's needs (language, connectivity, tech penetration).
- Establish Regulatory Synergy: Enable **joint functioning of CCI and Data Protection Board** for seamless enforcement.
- Enforce Revenue-Based Penalties: Instead of fixed fines, impose penalties based on **global revenue share** (e.g., 10% of turnover for repeat violations).
- Global Collaboration: Harmonize with **cross-border digital frameworks**, support a **global minimum digital tax**, and establish **multilateral enforcement alliances**.
- Build Public Awareness
 - Promote **digital literacy** to enable users to make **informed choices**.
 - Encourage **whistleblowers** (e.g., Frances Haugen) to expose unethical practices.

✓ Conclusion: Towards Ethical and Equitable Digital Governance

The **Meta ruling by CCI** is a watershed moment in India's attempt to **curb digital monopolies**, but **piecemeal regulations** won't suffice. A **comprehensive legal overhaul, collaborative enforcement**, and **global cooperation** are needed to ensure **data sovereignty, consumer protection**, and **fair digital markets**. In the absence of proactive measures, a handful of corporations may soon dictate not just our markets—but our democracies.

GOVERNANCE

Cinematograph (Certification) Rules, 2024

📌 Syllabus Mapping:

- ✓ GS Paper 2 – Governance (Government Policies & Interventions), Statutory Bodies, Media and Freedom of Expression
- ✓ GS Paper 1 – Society (Censorship, Ethics, and Cultural Dynamics)

1. Why in News?

- The **Ministry of Information and Broadcasting** notified the **Cinematograph (Certification) Rules, 2024**, replacing the outdated **1983 Rules**.
- This move comes under the ambit of the **Cinematograph (Amendment) Act, 2023**, aiming to **modernize, streamline, and digitize** India's film certification process.

2. Film Certification in India: A Constitutional and Institutional Overview

a) Purpose:

- Certification involves:
 - **Approving, modifying, or denying** public exhibition of films based on social and cultural standards.
 - Classifying films into **age-appropriate categories**.

b) Statutory Framework:

- Governed by the **Cinematograph Act, 1952**.
- Administered by the **Central Board of Film Certification (CBFC)**, a **statutory body** under the **Ministry of I&B**.

c) Jurisdiction and Infrastructure:

- CBFC is headquartered in **Mumbai**, with **9 regional offices** including **Chennai, Kolkata, Hyderabad, Bengaluru, Thiruvananthapuram, Guwahati, New Delhi, Cuttack**.

d) Judicial Endorsement:

- In **S. Rangarajan v. P. Jagjivan Ram (1989)**, the **Supreme Court upheld pre-screening certification**, recognizing the **powerful psychological impact** of films.

3. Key Features of the Cinematograph (Certification) Rules, 2024

a) Governance and Representation:

- **Tenure:** Board members serve **at the pleasure of the Central Government**.
- **Gender Balance:** At least **one-third of Board members must be women**, with preference for **50% representation**.

b) Institutional Framework:

- **Temporary Absence of Chairperson:** The government may **nominate another member** to act as chairperson temporarily.
- **Advisory Panels:** Mandatory advisory panels at **each regional office** for film preview and assessment.

c) Efficiency and Ease of Doing Business:

- **Digital Process:** End-to-end digitization to **reduce processing time** and increase transparency.
- **Priority Screening:** Urgent certification requests can be prioritized, aiding **timely film releases**.

- **Perpetual Validity:** Film certificates are now **valid indefinitely**, removing the **10-year limit**.

d) Enhanced Classification: Sub-categorization of UA (Unrestricted with Caution) into age-specific ratings (e.g., UA 7+, UA 13+, UA 16+), to ensure **age-appropriate viewing**.

e) Television Broadcast Regulation: Mandatory **recertification** for edited films intended for **television**, which only permits '**U'-certified films**.

4. Cinematograph (Amendment) Act, 2023 – Key Provisions

- **Anti-Piracy Measures:**
 - Prohibits **unauthorized recording and exhibition** of films.
 - Makes such actions **punishable under the Copyright Act, 1957**.
- **Judicial Compliance:**
 - **Section 6(1)** of the 1952 Act was **removed** following the **KM Shankarappa case (2000)**, ensuring that **the Centre cannot override CBFC decisions**.

5. Key Challenges in Film Certification

Issue	Explanation
Censorship vs Artistic Freedom	Certification often turns into censorship , stifling creative expression .
Over-the-top (OTT) Content	CBFC has no jurisdiction over digital streaming platforms , creating regulatory asymmetry.
Administrative Delays	High volume of submissions burdens the CBFC's processing capacity .
Piracy Loopholes	Mirroring servers , especially from foreign countries , make anti-piracy enforcement difficult.
Legal Disputes	Certification decisions are frequently challenged in courts (e.g., <i>Adipurush</i> petition over religious sentiments).

6. Inclusivity and Accessibility: A Step Ahead

- In parallel, the **Ministry of I&B** launched guidelines to **enhance accessibility for visually and hearing-impaired persons** in theatres.
- This aligns with the **Rights of Persons with Disabilities (RPwD) Act, 2016**, promoting **universal access** to media content.

7. Way Forward

- a) Balanced Regulation:** Establish a **clear distinction between certification and censorship** to uphold **freedom of speech** under Article 19(1)(a).
- b) Comprehensive OTT Policy:** Develop a unified framework that brings **OTT content** under **light-touch regulation**, ensuring consistency across platforms.
- c) Digital Safeguards:** Leverage **blockchain, AI-based watermarking**, and **international cooperation** to curb **online piracy**.
- d) Judicial Clarity and Grievance Redressal:** Establish an **independent appellate body** for faster resolution of disputes related to film certification.
- e) Global Best Practices:**
 - Draw from models like:
 - **BBFC (UK)** – Independent but transparent system
 - **MPAA (USA)** – Industry-regulated rating system

8. Conclusion

The **Cinematograph (Certification) Rules, 2024** mark a **progressive shift** towards **digitization, transparency, and inclusivity**. However, India's certification regime still needs to **balance creative freedom with social sensitivities** while tackling **emerging challenges like OTT regulation and digital piracy**.

A robust, independent, and tech-enabled framework—respecting both **freedom of expression and cultural diversity**—is the path forward.

Digital Criminal Case Management System (CCMS)

📌 Syllabus Mapping:

- ✓ **GS Paper 2 – Governance (E-Governance, Criminal Justice System, Role of State and Central Agencies)**
- ✓ **GS Paper 3 – Internal Security (Terrorism, Cyber Security, Technology in Policing)**

1. Why in News?

- The **Ministry of Home Affairs (MHA)** has launched a **Digital Criminal Case Management System (CCMS)**, a major step towards the **digitization of investigation and prosecution processes**.

- The platform has been **developed by the National Investigation Agency (NIA)** and is now available for **use by State Police forces** across India.

2. What is Digital CCMS?

a) Definition and Scope:

- A **browser-based, user-friendly, and customizable software** designed to assist **law enforcement agencies** in handling and managing criminal case data.
- Initially implemented by **NIA**, it is now being offered to **state-level police and Anti-Terror Squads**.

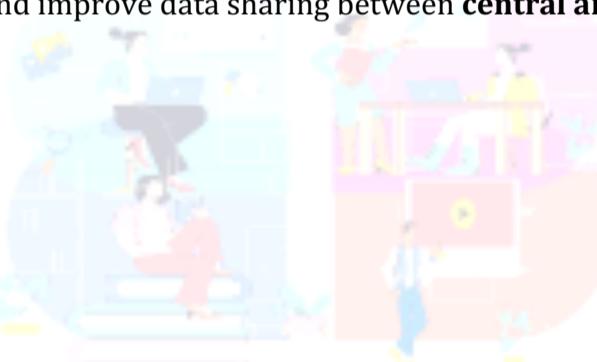
b) Key Functionalities:

- **Digital documentation** of criminal cases
- **Integration of investigation data** (evidence, reports, charge sheets)
- **Streamlined prosecution process**
- **Inter-agency coordination**, especially in cases of **terrorism and organized crime**

3. Significance of the Digital CCMS

a) Enhanced Coordination:

- Facilitates **real-time coordination** between the **NIA, state police, and anti-terror squads**
- Helps manage **cross-jurisdictional crimes** and improve data sharing between **central and state agencies**



b) Data Integration:

- Allows **centralized access** to:
 - Case documents
 - Extracted digital data
 - Court submissions like charge sheets
 - Evidence collected from the field

c) Standardization and Uniformity:

- Promotes **uniform practices** in investigation and documentation across states
- Helps in establishing **best practices** for handling **sensitive and complex cases**

d) Improved Conviction Rates:

- Enhanced tracking of investigation progress, evidence, and trial documents can improve the **quality of prosecution** and lead to **higher conviction rates**

IQRA
Wisdom leads to success

e) Support for New Criminal Laws:

- CCMS is **aligned with upcoming criminal codes**:
 - **Bharatiya Nyaya Sanhita (BNS)**
 - **Bharatiya Nagarik Suraksha Sanhita (BNSS)**
 - **Bharatiya Sakshya Sanhita (BSS)**
- Helps agencies **prepare for their implementation** by organizing legal content in digital formats

4. Sankalan App – Companion to the Digital Shift

a) Objective:

- Designed as a **digital compendium of new criminal laws**, launched alongside CCMS

b) Key Features:

- **Bridges the gap** between **old and new laws**
- Offers **offline functionality** to ensure accessibility in **remote and rural areas**
- Developed by the **National Crime Records Bureau (NCRB)**

5. Broader Implications

a) Modernization of Police Forces:

- Strengthens **investigative capabilities** through tech adoption
- Supports **smart policing goals** under India's broader **Digital India** initiative

b) Judicial Efficiency:

- Enables **faster documentation and prosecution**, thereby reducing **pendency of cases**

c) Internal Security Enhancement:

- Better management of **terrorism, cybercrime, and transnational crime**
- Equips agencies with tools to **track, analyse, and prosecute** with greater accuracy

d) Transparency and Accountability:

- Reduces scope for manual errors, loss of files, and **manipulation of evidence**
- Provides a **traceable audit trail** for case progression

6. Challenges and Way Forward

Challenges	Way Forward
Digital Divide in Rural Policing	Ensure capacity building, training, and offline access
Cybersecurity Risks	Strengthen data encryption and use blockchain-based evidence chains
Resistance to Change	Conduct regular workshops , promote user adoption
Inter-agency Coordination Gaps	Create shared protocols and standard operating procedures across agencies

7. Conclusion

The **Digital CCMS** is a **transformative leap** for India's criminal justice system, empowering investigative agencies with **real-time data access, seamless coordination, and evidence management**. As India transitions into a **new legal era with the 2023 criminal law reforms**, this platform will be critical in enabling **efficient, transparent, and technology-driven justice delivery**.

Regulating Digital Monopolies in India

❖ Syllabus Mapping:

✓ GS Paper 2 – Governance (Regulatory Bodies, Role of Government), Government Policies

✓ GS Paper 3 – Economy (Digital Economy, Startups, Monopoly & Competition), Science and Tech (Digital Regulation, Big Tech)

1. Why in News?

- The **Ministry of Electronics and Information Technology (MeitY)** opposed **Google's delisting of certain Indian apps** from the Play Store.
- This incident highlighted concerns over the **dominant market position of Big Tech firms** and triggered a broader debate on the **regulation of digital monopolies** in India.

2. What is a Digital Monopoly?

- A **digital monopoly** arises when **one or a few technology firms dominate the digital ecosystem**, controlling platforms, user data, services, and pricing.

◆ **Examples:** Google (Android & Search), Apple (App Store), Amazon (E-commerce), Meta (Social Media), Microsoft (Software Ecosystem)

3. Threats Posed by Digital Monopolies

Practice	Impact
Anti-steering	Prevents businesses from directing users to alternate platforms (e.g., mandating own payment systems)
Self-preferencing	Favors own products/services in search rankings or app listings
Bundling/Tying	Forces users to opt for additional products with core services
Data Exploitation	Profiting from user profiling and targeted ads —risks to privacy
Deep Discounting	Drives out competition through predatory pricing
Exclusive Tie-ups	Restricts other players through non-compete contracts or walled gardens

4. Key Events Leading to Policy Action

- Alphabet Inc. (Google) sent notices to Indian app developers over **non-payment of app marketplace fees**.
- Following this, **several apps were removed**, prompting **MeitY's intervention**, citing **abuse of dominant position and digital market monopolization**.

5. Current Regulatory Framework in India

Law/Regulator	Role
Competition Act, 2002	Investigates abuse of dominance , prohibits anti-competitive mergers
Information Technology Act, 2000	Primary legislation governing cyberspace and digital platforms
IT (Intermediary Guidelines) Rules, 2021	Framework for regulating OTT, social media, and digital publishers
Consumer Protection (E-Commerce) Rules, 2020	Ensures transparency and fair trade practices in digital marketplaces

6. Need for Regulatory Reform

- Regulatory Fragmentation:** Multiple authorities (MeitY, CCI, TRAI, RBI) leading to **overlap and inefficiency**
- Lack of Technical Expertise:** Regulators need **specialized digital capabilities** to tackle dynamic tech market practices
- Jurisdictional Challenges:** Tech giants operate **across borders**, making enforcement and taxation complex
- Balancing Innovation vs Oversight:** Over-regulation may **stifle innovation**, while under-regulation may **foster monopolies**

7. Key Government Initiatives

Initiative	Purpose
Competition (Amendment) Act, 2023	Introduced deal value thresholds to capture mergers involving data-rich firms
Digital Personal Data Protection Act, 2023	Regulates data usage to prevent concentration of data power
Draft Digital India Act (DIA)	Aims to regulate AI platforms, social media, e-commerce
National Data Governance Framework Policy	Standardizes anonymised non-personal data governance
Consumer Protection (E-Commerce) Rules, 2020	Enhances platform accountability and consumer protection

8. Recommendations of the Committee on Digital Competition Law (2024)

- New Digital Competition Act:** Introduce **ex-ante (preventive)** regulation rather than waiting for harm (ex-post)
- Systemically Important Digital Intermediaries (SIDIs):** Classify dominant platforms as **SIDIs**; impose **strict obligations** for fair practices
- Merger Control Reform:** Consider **data, innovation, and user base** in assessing mergers—not just revenue
- Strengthen CCI:** Equip with **digital economy experts, AI tools, and real-time monitoring systems**
- Institutional Coordination:** Enhance synergy among CCI, MeitY, TRAI, RBI, and sector-specific regulators
- Global Alignment:** Align laws with **OECD, EU Digital Markets Act, and G20 digital policy norms**

9. Way Forward

Challenge	Policy Direction
Digital Market Abuse	Enforce fair competition rules for app stores, ad tech, search engines
Data Concentration	Promote data portability, interoperability, and open ecosystems
Innovation-Protection Balance	Encourage startups , provide market access and anti-discrimination safeguards
User Rights & Privacy	Ensure transparency in algorithms, limit surveillance capitalism
International Cooperation	Collaborate on cross-border digital taxation, antitrust laws, and cyber standards

10. Conclusion

India's **digital economy** is one of the fastest growing in the world. However, **unchecked digital monopolies** can endanger **innovation, competition, and consumer rights**.

A **comprehensive, forward-looking regulatory framework**—centered on **fair competition, privacy, and market access**—is essential to **balance the power of Big Tech** and safeguard India's digital sovereignty.

Pradhan Mantri Anusuchit Jaati Abhyuday Yojana (PM-AJAY)

❖ Syllabus Mapping:

✓ GS Paper II – Governance, Welfare schemes for vulnerable sections of the population by the Centre and States; Social Justice

Why in News?

The **Ministry of Social Justice and Empowerment** inaugurated and laid the foundation stone for **residential hostels** under **PM-AJAY**, a merged central scheme aimed at **uplifting Scheduled Caste (SC) communities**.

About the Scheme

Particulars	Details
Ministry	Ministry of Social Justice and Empowerment
Launch Year	2021-22
Beneficiaries	Scheduled Caste (SC) community
Type	Centrally Sponsored Scheme (CSS)
Funding	100% Central government funding
Implementation	Districts/State Govts/UTs & central/state universities/institutions

Objective

- **Poverty reduction** among SC communities.
- **Educational empowerment** through hostels and enrolment drives.
- **Socioeconomic upliftment** through Adarsh Gram and economic activities.

Merged Components of PM-AJAY

Old Scheme	Merged into PM-AJAY as
PMAGY (Pradhan Mantri Adarsh Gram Yojana)	Development of SC-dominated villages as Adarsh Gram
SCA to SCSP (Special Central Assistance to SC Sub Plan)	Grants-in-aid for socio-economic projects
BJRCY (Babu Jagjivan Ram Chhatrawas Yojana)	Hostel construction/repair for SC students

Key Components and Features

1 Adarsh Gram Development

- Villages with **>40% SC population** and population ≥ 500 prioritized.
- **50 monitorable indicators** under 10 domains like education, health, connectivity, etc.



2 Grants for Socio-Economic Development

- **Asset creation, skill training, and infrastructure development.**
- **SHGs** with SC majority eligible.
- **Priority** to SC families with income $\leq \text{₹}2.5$ lakh/year.



Special Focus:

- **15% funds** for SC **women-specific schemes**.
- **30% participation** of women in skill training.
- **10% of funds** for skill development (target: 70% employment/self-employment).

3 Hostel Construction/Repair

- Aimed at **retaining SC students**, especially **girls**.
- Institutions must be **top-ranked or government funded**.
- Encourages education access and reduces dropout rates.

Special Provisions

- **Northeast States**: 2% of total budget allocation.
- **Special tutoring** for SC students (Class 9-12).
- **Promotion** of SC women cooperatives.

Technology and Governance

- All proposals are to be **submitted online** through **PMAJAY Portal** for transparency and monitoring.

Significance

- Promotes **convergence** of welfare efforts and optimal resource utilization.
- Aligns with **Constitutional mandate** (Art 46 – special care for educational and economic interests of SCs).
- Bridges **educational and economic divide** in a targeted, inclusive manner.

Way Forward

- **Regular monitoring** and use of **real-time dashboards** for implementation.

- Awareness campaigns to promote participation in skill programs and hostel schemes.
- Convergence with state-level efforts to amplify impact and ensure last-mile delivery.

INTERNATIONAL RELATIONS

India–US Extradition Treaty and Recent Developments

❖ Syllabus Mapping:

✓ GS Paper 2 – International Relations (Bilateral Treaties, India–US Relations)

✓ GS Paper 3 – Internal Security (Terrorism and Legal Frameworks)

1. Context

The United States has approved the extradition of Tahawwur Rana, an accused in the 2008 Mumbai terror attacks, to India. Rana is facing charges under the IPC and UAPA for providing material support to Lashkar-e-Taiba (LeT) and involvement in orchestrating the 26/11 attacks.

2. What is Extradition?

• Definition:

Extradition is a formal process whereby one country surrenders an individual to another country where they are accused or convicted of a criminal offence.

• Basis:

Typically governed by bilateral/multilateral treaties, and subject to legal procedures in both countries involved.

3. India–US Extradition Treaty

Aspect	Details
Signed	1997
Came into Force	July 2001
Purpose	To establish a legal framework for extraditing individuals for crimes punishable in both nations
Key Clause	Dual criminality: The act must be a crime in both countries
Extradition Permitted For	Offences carrying minimum 1 year punishment, including financial crimes
Territorial Clause	Location of the crime does not affect extradition eligibility

4. Implementation Challenges

• Slow Execution:

Between 2002 and 2018, only 11 individuals were extradited from the US to India.

• Pending Cases:

As of 2018, over 60 extradition requests remained pending with the US.

• High-profile Pending Cases:

Includes names like David Headley (co-accused in 26/11), and economic fugitives like Rana Kapoor.

5. India's Extradition Framework

Feature	Details
Governing Law	Extradition Act, 1962 (amended in 1993)
Nodal Ministry	Ministry of External Affairs (MEA)
Treaty Countries	India has extradition treaties with 48 countries (e.g., US, UK, Bangladesh)
Extradition Agreements	Signed with 12 other countries (not full treaties)
Procedure	Request via diplomatic channel → Judicial hearing → Executive approval

6. Strategic Significance of Rana's Extradition

• Justice for 26/11 Victims:

Reinforces India's long-standing demand for accountability in cross-border terrorism cases.

• Counter-Terrorism Cooperation:

Signals deepening Indo-US security cooperation, especially against designated terrorist organizations like Lashkar-e-Taiba (LeT).

• Global Support Against Terrorism:

Reinforces India's case at global forums to pressure state sponsors of terrorism, particularly Pakistan.

7. Challenges in India-US Extradition

- Judicial Delays in Host Country:**
US courts often require high evidence standards and human rights assurances.
- Political and Legal Complications:**
US Constitution and laws allow for **judicial appeals**, prolonging extradition.
- Diplomatic Sensitivities:**
Cases with geopolitical implications often face diplomatic bottlenecks.

8. Way Forward

- Expedited Judicial Process:**
Fast-track mechanisms between trusted partners like India and the US.
- Strengthening Mutual Legal Assistance Treaties (MLATs):**
Better cooperation on evidence sharing and investigation procedures.
- Regular Diplomatic Engagements:**
Institutional dialogue under **Homeland Security Dialogue** and **Counter-Terrorism Cooperation Initiative**.
- Public Awareness and Political Will:**
Generate domestic and international consensus to ensure **timely justice in terrorism-related cases**.

9. Conclusion

The approval of **Tahawwur Rana's extradition** is a significant step in the pursuit of justice for the 26/11 attacks. While the **India-US Extradition Treaty** offers a strong legal foundation, procedural and diplomatic hurdles persist. Strengthening legal cooperation and addressing implementation gaps are essential to ensure that **fugitives and terrorists cannot find safe havens**.

Global AI Governance: International Regulatory Frameworks and India's Role

📌 Syllabus Mapping:

- ✓ GS Paper 2 – International Relations, Global Institutions, Regulatory Frameworks
- ✓ GS Paper 3 – Science and Technology (AI and Emerging Technologies), Cybersecurity

1. Why in the News?

The **United Nations General Assembly (UNGA)** has unanimously adopted a **landmark resolution** promoting **safe, secure, and trustworthy AI**, marking the **first globally endorsed UN agreement on AI governance**.

2. Key Highlights of UNGA AI Resolution (2024)

- Protection of Human Rights:** Upholds **offline rights in online spaces**, reinforcing that AI should respect **dignity, privacy, and non-discrimination** throughout its lifecycle.
- Bridging Digital Divides:** Addresses **AI inequality** between and within nations, especially in the **Global South**.
- Sovereign Regulatory Autonomy:** Encourages **Member States** to frame their own laws while aligning with international human rights standards.
- Private Sector Accountability:** Urges compliance with the **UN Guiding Principles on Business and Human Rights**.
- Ongoing Dialogues:** Stresses the **evolving nature** of AI and the need for **continuous international cooperation and research**.

3. Key International Regulatory Frameworks for AI

◆ European Union – AI Act (2024)

Aspect	Details
Risk Classification	Unacceptable, High-Risk, Transparency-Risk, Minimal-Risk AI
High-Risk Sectors	Employment, Health, Transportation, Law Enforcement
Focus	Rule of law, rights-based approach, bias mitigation
Penalties	Fines up to €30 million or 6% of global turnover for violations

◆ China's Model

Focus Areas	Key Measures
Algorithmic Governance	Regulation of recommender systems and AI-generated content
Data Protection	Stringent data localization and consent laws
National Security	Censorship and oversight to align AI with state ideology

◆ United Kingdom's Approach

- **Cross-sectoral, non-statutory framework** with principles on **transparency, fairness, accountability**
- **AI & Digital Hub** to support developers and innovators with regulatory navigation
- Future **sector-specific legislation** planned for targeted regulation

4. Global Cooperation Platforms on AI Governance

🌐 Bletchley Declaration (2023)

- Signed by 29 countries, including **India, USA, China, UK, EU**
- Focus on "**Frontier AI**" — generative AI models with high risk potential
- Collaborative mechanism to **share AI safety research** and **establish response mechanisms**

🌐 Hiroshima AI Process (G7 Initiative)

- Released **International Guiding Principles** and a **Code of Conduct** for AI developers
- Emphasizes **global consensus**, transparency, and **responsible AI deployment**

5. India's Global Position and Alignment

✓ India's Alignment

- India co-signed the **Bletchley Declaration**
- Member of the **Global Partnership on Artificial Intelligence (GPAI)**
- Advocates "**AI for All**" aligned with **SDG principles** and ethical AI use

✓ Domestic Progress

- **IndiaAI Mission** (2024) with ₹10,372 crore outlay to build compute infrastructure, datasets, and skilling programs
- **RAISE Summit, BHASHINI, and Digital India** initiatives reflect **inclusive AI**
- Proposal for **National AI Policy** and regulatory body under **MeitY**

6. Challenges in International AI Regulation

Challenge	Explanation
Regulatory Fragmentation	Differing national policies (e.g., China vs EU) may hinder consensus
Technological Complexity	Rapidly evolving AI systems outpace legal adaptation
Ethics vs Innovation	Tension between safeguarding rights and enabling AI-driven growth
Enforcement Mechanisms	No binding global treaty currently exists for AI regulation
Bias and Discrimination	AI systems trained on non-representative datasets can perpetuate inequality

7. Way Forward for India & the World

🌐 Global Level

- Push for **UN-backed Global AI Governance Treaty**
- Encourage **interoperability between national AI regulations**
- Establish **Global AI Safety Standards** through **multilateral forums**

🇮🇳 India's Domestic Strategy

- Frame **AI-specific legislation** harmonized with **international best practices**
- Promote **open datasets and AI transparency**
- Establish an **AI Ombudsman** or **AI Ethics Commission**
- Strengthen **AI startups** and indigenous innovation under **Digital India**

8. Conclusion

The **UNGA resolution** and other international initiatives mark a pivotal step toward a **globally coordinated, human-centric AI governance framework**.

India, as a key stakeholder in the **Global South**, must lead the conversation by balancing **innovation with ethical safeguards**, thereby ensuring **inclusive AI growth** that aligns with **constitutional values and international norms**.

QUAD: Reinforcing Strategic Cooperation in the Indo-Pacific

❖ Syllabus Mapping:

- ✓ GS Paper 2 – International Relations (Bilateral, Regional and Global Groupings), India and its Neighborhood, Regional and Global Security Architecture
- ✓ GS Paper 3 – Internal Security (Security Challenges and Their Management in Border Areas), Maritime Security, Technological Developments

1. Why in News?

- The US House of Representatives has passed the 'Strengthening the Quad Act', a legislative initiative titled "Strengthen US-Australia-India-Japan Cooperation".
- This move formalizes US commitment to the Quad (Quadrilateral Security Dialogue) and aims to promote a free, open, inclusive, resilient, and healthy Indo-Pacific.

2. Key Highlights of the Strengthening the Quad Act

- **Quad Intra-Parliamentary Working Group:** Established to enhance legislative cooperation among the four member states.
- **Mandated Annual Meetings:** Set clear procedural norms for regular engagements and leadership transitions.
- **Strategic Priorities for Cooperation:**
 - Pandemic preparedness
 - Co-development of emerging technologies
 - Enhanced economic engagement and supply chain integration
- **Role of US Secretary of State:** Required to submit annual updates and strategies on Quad's progress and coordination.

3. Understanding the Quad

- **About:** The Quadrilateral Security Dialogue (Quad) is an informal strategic forum comprising India, the USA, Japan, and Australia.
- **Purpose:** To promote a rules-based international order in the Indo-Pacific, ensuring freedom of navigation, transparency, and democratic values.
- **Working Mechanism:** Quad functions through Leader-Level Working Groups focused on sectoral cooperation.

4. Six Major Areas of Quad Cooperation

Sector	Key Initiatives
Climate	Q-CHAMP for early warning systems; Clean Energy Supply Chains Initiative
Critical & Emerging Technologies	Open RAN deployment in Palau; Quad Investors' Network (QUIN)
Cybersecurity	Principles for Secure Software and Protection of Critical Infrastructure
Health Security	Expanded Quad Vaccine Partnership into a broader Health Security Partnership
Infrastructure	Quad Infrastructure Fellowships; Partnership for Cable Connectivity and Resilience
Space	Sharing Earth observation data for climate resilience and disaster preparedness

5. Significance of Quad for India

Wisdom leads to success

a) Geostrategic Leverage in the Indo-Pacific

- The Indo-Pacific handles ~50% of global maritime trade and contributes over 60% of global GDP.
- Through Quad, India projects greater influence in a region critical to its economic and security interests.

b) Boost to Act East Policy

- Enhances India's relations with East and Southeast Asian countries, while ensuring freedom of navigation and stability in maritime domains.

c) Security and Defence Cooperation

- Quad deepens India's bilateral defence ties with the USA, Japan, and Australia, including military exercises, maritime domain awareness, and interoperability.

d) Economic Benefits

- Initiatives like the Supply Chain Resilience Initiative (SCRI) reduce dependency on China and promote India as an investment destination.

e) Multilateral Synergy

- Strengthens India's bilateral and trilateral frameworks (e.g., India-Australia-Japan, India-USA-Japan) on issues like cybersecurity, defence production, and tech development.

6. Other Quad-Led Initiatives

- **Indo-Pacific Partnership for Maritime Domain Awareness (IPMDA):** Real-time, cost-effective satellite data for maritime security.
- **STEM Fellowships:** Building a cross-national pool of future scientists and technocrats.
- **Quad HADR Partnership:** An India-led initiative to respond to humanitarian and disaster situations in the region.
- **Quad Debt Management Resource Portal:** To promote sustainable debt practices and fiscal transparency.

7. Key Challenges Facing Quad

Challenge	Explanation
Low Institutionalization	Lacks formal charter, treaty, or secretariat, making implementation inconsistent.
Cold War Allegations	China sees Quad as an “Asian NATO,” accusing it of fostering geopolitical rivalry.
Defining Unique Identity	Difficulties in distinguishing Quad’s role from existing forums like ASEAN, IORA, Pacific Islands Forum.
Delivery Deficit	For instance, Quad’s inability to deliver on its COVID-19 vaccine pledge of 800 million doses undermined its credibility.

8. India’s Strategic Concerns within Quad

- China Factor:** India shares a **long, disputed border with China**, making it cautious about **Quad becoming a military alliance** explicitly aimed at containing China.
- Balancing Strategic Autonomy:** India retains membership in **non-Western groupings** like **BRICS** and **SCO**, showcasing its **multi-alignment approach**.
- Diversified Foreign Relations:** Engagement with **Russia, Iran, and Central Asia** requires India to **avoid being perceived as entirely West-aligned**.

9. Way Forward

- Promote Regional Prosperity:** Quad must emphasize **economic development, digital infrastructure, capacity-building, and inclusive regional cooperation**.
- Complement Existing Platforms:** Rather than replace ASEAN, IORA, or PIF, Quad should **augment their efforts** and offer **technical and financial assistance**.
- Expand Engagement:** Quad should include **dialogues with South Korea, Vietnam, Indonesia, and the Pacific Island Nations**, addressing their development priorities.
- Strategic Ambiguity:** Continue **non-military positioning to avoid direct confrontation with China**, while strengthening **regional deterrence capacity**.

10. Conclusion

The **Quad** has evolved from a consultative forum into a **multi-sectoral strategic partnership** addressing key regional challenges. For India, it provides a **platform for influence, development, and defence cooperation**. However, **careful navigation** is needed to maintain **strategic autonomy, regional balance, and long-term stability** in the Indo-Pacific.

Katchatheevu and the India–Sri Lanka Maritime Dispute

❖ Syllabus Mapping:

- GS Paper 2 – India and its Neighbourhood, Bilateral Relations, International Agreements**
- GS Paper 3 – Environment and Ecology (Marine Ecosystems), Internal Security (Border Management)**

1. Why in News?

- Sri Lankan fishermen recently staged a protest near the **International Maritime Boundary Line (IMBL)**, accusing Indian fishermen of **poaching and encroachment** into Sri Lankan territorial waters.
- The dispute reflects **tensions over Katchatheevu Island, maritime boundary enforcement, and the use of ecologically harmful trawlers**.

2. The Triangular Problem

a) Territorial Dispute – Katchatheevu Island

- Indian fishermen argue that the waters around **Katchatheevu** are **traditional fishing grounds**, while Sri Lanka considers entry into these waters a **violation of its maritime sovereignty**.

b) Livelihood vs Sovereignty

- Indian fishermen attribute their extended ventures into Sri Lankan waters to:
 - **Declining fish stocks**

- Climate change
- Overexploitation of the Indian side of the Palk Strait

c) Use of Bottom Trawlers

- The Indian use of **bottom trawlers** has led to:
 - Environmental degradation
 - Loss of livelihood for Sri Lankan fishermen
 - Strained diplomatic ties

3. International Maritime Boundary Line (IMBL)

a) Delineation:

- Defined by the **1974 India-Sri Lanka Maritime Agreement**
- Drawn through the **Palk Strait**, demarcating **territorial waters** and **exclusive economic zones**

b) Legal Basis:

- Based on **United Nations Convention on the Law of the Sea (UNCLOS)** principles:
 - Primarily the **equidistance (median line)** principle
 - Article 15 of UNCLOS allows **adjustments** to the median line by mutual consent

c) Purpose:

- Prevents **jurisdictional conflicts** over maritime resources
- Clarifies zones for **fishing, exploration, and national security**

4. The Katchatheevu Island Issue

a) About Katchatheevu:

- 285-acre uninhabited island northeast of **Rameswaram** and southwest of **Delft Island** in Sri Lanka
- Formed from a volcanic eruption in the 14th century
- Location falls within Sri Lanka's maritime boundary as per **1974 Agreement**

b) 1974 Maritime Agreement:

- Adjusted the median line to include **Katchatheevu** under Sri Lanka's sovereignty
- Allowed **Indian fishermen** access for:
 - Resting
 - Drying nets
 - Attending the annual St. Anthony's Church festival

c) 1976 Maritime Boundary Agreement:

- Gave **India** exclusive rights over the **Wadge Bank** (rich fishing zone near Kanyakumari)
- **Sri Lankan vessels** prohibited from fishing in Wadge Bank, except under **limited and conditional access**

5. Wadge Bank – Strategic Fishing Ground

- A **biologically rich** maritime area located off Tamil Nadu's southern coast
- Supports a significant part of **India's marine fish production**
- Reserved for Indian fishermen under the **1976 Agreement**

6. Implications of the Dispute

Dimension	Impact
Diplomatic	Strains India-Sri Lanka relations, complicates bilateral engagement
Economic	Indian fishermen face confiscation of trawlers and arrest
Environmental	Unsustainable trawling affects marine biodiversity
Humanitarian	Incarceration of fishermen on both sides worsens cross-border tensions
Security	Frequent incursions risk escalation and misidentification by maritime patrol forces

7. Way Forward

a) Bilateral Diplomatic Mechanism:

- Strengthen existing **Joint Working Groups** and **Fishermen Associations** on both sides

b) Ecological Transition:

- Support Indian fishermen in **phasing out bottom trawlers**
- Promote **deep-sea fishing techniques** through **capacity-building and subsidies**

c) Livelihood Alternatives:

- Diversify income sources in coastal Tamil Nadu to **reduce overdependence** on fishing

d) Review Access Agreements:

- Explore **seasonal fishing pacts** allowing regulated access to traditional fishing areas like **Katchatheevu**

e) Track-II Diplomacy and Community Engagement:

- Promote **dialogues between fishing communities**, religious bodies (e.g., **St. Anthony's Church authorities**), and NGOs

8. Conclusion

The Katchatheevu dispute and maritime boundary conflicts reflect broader challenges at the intersection of **sovereignty, sustainability, and livelihood security**.

A balanced and humane approach, emphasizing **diplomacy, ecological protection, and community welfare**, is key to resolving this long-standing Indo-Sri Lankan issue.

India–EFTA Trade and Economic Partnership Agreement (TEPA)

❖ Syllabus Mapping:

- ✓ GS Paper 2 – International Relations (Bilateral Agreements, Regional Groupings), India and its Neighbourhood
- ✓ GS Paper 3 – Economy (Growth, Trade Agreements, FDI, WTO, IPRs)

1. Why in News?

- In March 2024, India and the European Free Trade Association (EFTA) signed a comprehensive **Trade and Economic Partnership Agreement (TEPA)**.
- This is **India's first Free Trade Agreement (FTA)** with EFTA countries, aiming to boost **FDI, employment, and export potential**.

2. What is EFTA?

Aspect	Details
Established	1960 via the Stockholm Convention
Founding Members	UK, Austria, Denmark, Portugal, Norway, Sweden, Switzerland
Current Members	Switzerland, Norway, Iceland, Liechtenstein
Nature	EFTA is not part of the EU , but closely associated with it via trade pacts

3. India–EFTA Trade Relations

- **Merchandise Trade (2023):** US\$ 22.33 billion
- **Major Indian Imports from EFTA:** Natural pearls, precious stones, metals (81.7%)
- **Major Indian Exports:** Organic chemicals, precious metals and stones
- **Largest EFTA Trading Partner:** **Switzerland**, followed by **Norway**
- **Trade Balance:** India faces a **deficit**, largely due to **gold imports** from Switzerland

4. Key Features of TEPA

Focus Area	Details
Investment Commitment	USD 100 billion FDI target in 15 years from EFTA to India
Employment Generation	Target to create 1 million direct jobs in India
Legal Precedent	First time an FTA includes a legal commitment on investment and employment
Market Access	EFTA to eliminate tariffs on 92.2% tariff lines , covering 99.6% of India's exports
Mutual Recognition	For professional services (e.g., architects, chartered accountants, nurses)
Tariff Scope	Full access for non-agriculture goods and processed agri-products

IPR Provisions

Aligned with TRIPS standards, ensuring **strong IP protection**

5. Concerns and Criticisms

a) Data Exclusivity

- EFTA demanded data exclusivity in pharmaceuticals
- India rejected this to protect domestic generic drug manufacturers

b) Sensitive Sector Exclusions

- India has excluded dairy, soya, coal, and key agricultural products from tariff concessions
- This has caused friction with EFTA members expecting broader access

c) Asymmetric Gains

- EFTA members already impose **very low tariffs**
- India has committed to phased **tariff reductions**, risking a **widened trade gap**

d) Conditional Tariff Rollback Clause

- India can revoke tariff concessions only after 18 years if **FDI targets are unmet**, limiting flexibility

6. Potential Areas for Future Cooperation

Domain	Opportunities
MSME Integration	Joint platforms to integrate Indian MSMEs into global supply chains
Business Literacy	Outreach programs to educate exporters/importers about TEPA
Green & Digital Economy	Partnerships in clean energy, digital innovation, AI, sustainability
Skill Development	Joint certification and mobility of skilled professionals across sectors

7. Types of Trade Agreements: A Quick Overview

Type	Definition	Example
Early Harvest Scheme	Precursor to FTA to build confidence	India-Thailand EHS
Preferential Trade Agreement (PTA)	Tariff reduction on specific goods	India-MERCOSUR PTA
Free Trade Agreement (FTA)	Removal of tariffs/non-tariff barriers	India-Sri Lanka FTA
Comprehensive Economic Partnership Agreement (CEPA)	FTA + Regulatory convergence	India-Japan CEPA
Customs Union	Zero internal tariffs + common external tariffs	EU
Common Market	Customs Union + free movement of labor/capital	EU (European Common Market)

8. Strategic Significance of TEPA for India

- a) **Diversifying FTA Partners:** Shifts India's focus beyond traditional partners like ASEAN and SAARC
- b) **Boosting Make in India and Atmanirbhar Bharat:** FDI inflows and export expansion support India's **manufacturing ambitions**
- c) **Positioning India as a Global Hub:** Enhanced access to **European markets** for goods and services
- d) **Diplomatic Leverage:** Helps counterbalance growing **China-EU trade** through an alternative regional partnership

9. Conclusion

The India-EFTA TEPA is a **first-of-its-kind agreement** with **investment guarantees, employment targets, and market access commitments**, setting a **benchmark for future FTAs**.

While challenges like **data exclusivity, tariff asymmetry, and sectoral exclusions** remain, TEPA offers a **forward-looking template** for India's economic diplomacy.

Effective implementation, constant review, and engagement with domestic stakeholders will determine the real gains from this landmark pact.

India-Taliban Engagement: Balancing Strategy and Principles

❖ Syllabus Mapping:

✓ GS Paper 2 - International Relations

- India and its neighbourhood
- Regional and global groupings
- Bilateral relations
- ✓ **GS Paper 3 - Internal Security**
- Terrorism and national security
- Cross-border threats

1. Context

India is cautiously **expanding diplomatic engagement with the Taliban** without extending formal recognition. This reflects a **realpolitik approach** driven by national interests, security concerns, and regional dynamics, especially after the Taliban took over Afghanistan in August 2021.

2. Recent Shifts in Engagement

- **Pragmatic Diplomacy:** India's engagement is **non-recognition based**, focusing on **security, humanitarian aid**, and safeguarding infrastructure investments.
- **Development Dialogue:** Taliban has requested **resumption of Indian-funded projects**, particularly in **health and refugee rehabilitation**.
- **Humanitarian Aid:** India provided:
 - **50,000 MT wheat**
 - **Medicines and COVID-19 vaccines**
- **Strategic Infrastructure:** Reaffirmation of:
 - **Chabahar Port** as key for trade
 - **Zaranj-Delaram Highway** for regional connectivity
- **Security Assurances:** Taliban offered **verbal guarantees** against the use of Afghan soil by groups like **LeT, JeM, and ISKP**.

3. Why India is Engaging with the Taliban

a. Strategic Imperatives

- **Afghanistan's Location:** Gateway to **Central Asia's energy resources**
- **Regional Security:** Preventing Afghanistan's use as a base for **anti-India terrorism**

b. Economic Interests

- **\$3 Billion Indian Investments:** Includes **Salma Dam, Parliament Complex**, etc.
- **Mineral Resources:** Rare earths, lithium, and iron ore reserves offer long-term benefits

c. Geopolitical Factors

- **Pakistan-Taliban tensions** create room for Indian outreach
- **Reduced Iranian influence** due to domestic unrest
- **Russia's engagement** with Taliban post-Ukraine war
- **China's deepening economic footprint** via BRI

4. Strategic Implications for India

✓ Positive Outcomes

- **Regional Stability:** Counterbalancing China and Pakistan in the **Indo-Afghan corridor**
- **Enhanced Connectivity:** Through **Chabahar and INSTC** (International North-South Transport Corridor)
- **Counterterrorism Cooperation:** Taliban assurances (though informal) on restraining **LeT, JeM, ISKP**
- **Global Soft Power:** India's humanitarian outreach enhances its **image in the Global South**

✗ Risks and Concerns

- **Legitimacy Concerns:** Risks **indirectly legitimizing** an undemocratic regime
- **Security Threats Persist:** Taliban's inability or unwillingness to control **anti-India terror outfits**
- **Western Backlash:** India's engagement may **diverge from Western allies' stance**
- **Unpredictability of Taliban:** Factions within Taliban may cause **instability and unreliability**
- **ISKP Threat:** Attacks on Indian missions (e.g., Jalalabad 2023) underscore risks

5. Challenges in Bilateral Dynamics

Challenge	Details
Terror Threats	LeT, JeM, ISKP remain active; Taliban control is fragmented
Pakistan's Proxy Influence	Especially through the Haqqani Network
Human Rights Record	Violations create a moral dilemma for Indian diplomacy
Geopolitical Competition	Rising Chinese and Russian presence may sideline Indian efforts
Connectivity Barriers	Pakistan blocks land routes ; reliance on Iran's Chabahar Port

6. Way Forward

a. Continue Pragmatic Engagement

- Avoid formal recognition while ensuring **counter-terror guarantees**
- Maintain **backchannel communications** and diplomatic presence

b. Expand Humanitarian Diplomacy

- Focus on **healthcare, education, food security, and women-led projects**

c. Secure Strategic Investments

- Ensure protection for India's major projects through local partnerships and community engagement

d. Regional Coordination

- Strengthen trilateral ties with **Iran and Russia**
- Leverage regional forums like **SCO, SAARC, and SAGAR/MAHASAGAR**

e. Push for Inclusive Governance

- Advocate for **women's rights, education, and ethnic inclusivity**, especially through Track II diplomacy

f. Bolster Intelligence Sharing

- Expand **counterterrorism coordination** with Central Asian states and global agencies

✓ Conclusion

India's engagement with the Taliban is a **strategic necessity** rather than ideological endorsement. It aims to **secure national interests, counter regional threats, and support Afghan stability**. Navigating this complex landscape requires **strategic pragmatism, ethical diplomacy, and robust regional cooperation**.

India–Bhutan Relations

❖ Syllabus Mapping:

✓ GS Paper 2 – India and its Neighbourhood, Bilateral Relations, Regional and Global Groupings

✓ GS Paper 3 – Security (Border Management), Economy (Hydropower, Connectivity)

1. Why in News?

- During his **state visit to Bhutan**, the **Prime Minister of India** was conferred the **Order of the Druk Gyalpo**, Bhutan's **highest civilian award**.
- This gesture symbolizes Bhutan's recognition of India's **people-centric diplomacy**, deep bilateral ties, and India's **growing global stature**.

2. Key Developments During the Visit

- ₹10,000 crore assistance from India to Bhutan for the next five years, focusing on **energy, technology, and infrastructure**.
- Signing of **MoUs for two rail projects**:
 - **Kokrajhar-Gelephu** (Assam-Bhutan)
 - **Banarhat-Samtse** (West Bengal-Bhutan)
- Progress in **hydropower cooperation**:
 - **1,020 MW Punatsangchhu-II** project to be commissioned in 2024.

3. Strategic Importance of Bhutan for India

Domain	Significance
Geopolitical	Bhutan shares 699 km border with India and lies near the Siliguri Corridor , a strategic chokepoint.
Economic	Bhutan's hydropower exports are vital for India's energy needs.
Ecological	Shared interest in Himalayan ecosystem , disaster management, and climate change resilience.
Regional Integration	Crucial for SAARC, BIMSTEC, and BBIN regional groupings.

4. Overview of Bhutan

- **Capital:** Thimphu
- **Geography:** Landlocked between **India and China** in the Eastern Himalayas
- **Rivers:** All flow south into India, joining the **Brahmaputra**
- **Unique Features:**
 - World's first **carbon-negative country**
 - Promotes **Gross National Happiness (GNH)** over GDP

5. Areas of India–Bhutan Cooperation

a) Diplomatic and Institutional

- **Treaty of Friendship (1949)**, revised in **2007**, allows **sovereign foreign policy** for Bhutan.
- India-Bhutan diplomatic ties are rooted in **non-interference and mutual respect**.

b) Trade and Investment

- **India = Bhutan's largest trading partner**
- **Trade & Transit Agreement (2016)**: Duty-free trade and seamless transit
- India contributes to **50% of Bhutan's FDI**

c) Developmental Partnership

- Bhutan is the **largest recipient of Indian foreign aid**
- India supports Bhutan's '**High-Income Nation by 2034**' vision

d) Connectivity Initiatives

- **Gelephu Mindfulness City** to become a regional connectivity hub
- **Rail and road infrastructure** development through India's support

e) Hydropower Cooperation

- India has built:
 - **Chukha (336 MW)**
 - **Tala (1,020 MW)**
 - **Kurichhu (60 MW)**
 - **Mangdechhu (720 MW)** – handed over in 2022

f) Technology and Digital Diplomacy

- **India-Bhutan SAT** jointly developed and launched by **ISRO**
- Launch of **RuPay** and **BHIM App**
- India helping to **bridge STEM teacher gaps** in Bhutanese schools

g) Cultural and Educational Relations

- **Shared Buddhist heritage**
- **India-Bhutan Foundation (2003)** promotes cultural and people-to-people exchanges

h) Security Cooperation

- **Indian Military Training Team (IMTRAT)** permanently based in Bhutan
- **BRO's Project DANTAK** has developed most roads in Bhutan
- Joint efforts in **counter-terrorism and intelligence sharing**

6. Major Challenges in India–Bhutan Relations

Issue	Concerns
Hydropower tensions	Delays in Punatsangchhu projects and India's power purchase policy shift
Militant hideouts	NE insurgent groups (ULFA, NDFB) have used Bhutanese territory
BBIN Roadblock	Bhutan withheld ratification over environmental concerns
Financial Model Shift	India's aid changed from 60:40 (grant:loan) to 30:70 , increasing Bhutan's financial burden
China Factor	Bhutan's border negotiations with China could affect India's interests (e.g., Doklam)

7. The India–Bhutan–China Triangle

a) Rising Chinese Influence

- Bhutan–China trade growing, with China supplying **telecom, infrastructure, and fiber optics**
- 2023: Bhutanese **Foreign Minister's visit to China** marks growing engagement
- China aims to resolve **border disputes (Doklam, Jakarlung, Sakteng Wildlife Sanctuary)** with Bhutan
- **China building infrastructure** in contested areas (e.g., **Pangda village near Doklam**)

b) Implications for India

- Doklam is close to the **Siliguri Corridor (Chicken's Neck)** — a vital lifeline to NE India
- Chinese presence threatens India's strategic **buffer space**
- Could **undermine India's influence** in Bhutan and impact **regional security architecture**

8. Way Forward

Pillar	Policy Recommendation
Strategic Engagement	Use projects like Gelephu Mindfulness City to deepen presence and offer alternatives to Chinese investment
Economic Diversification	Invest in fintech, biotech, space tech , aligned with Bhutan's GNH philosophy
Trilateral Dialogue	Open backchannels or structured India–Bhutan–China talks to manage border friction
People-to-People Diplomacy	Encourage Buddhist pilgrimages , student exchanges, and cultural ties
Security Measures	Set up real-time coordination mechanisms against militant infiltration
Environmental Cooperation	Lead joint projects on climate resilience, afforestation, and disaster management

9. Conclusion

India–Bhutan relations are a **model of neighbourly cooperation**, rooted in **trust, development, and shared values**. As China's engagement in Bhutan rises, India must **recalibrate its diplomatic and strategic tools** to ensure the Himalayan kingdom continues to see New Delhi as its **primary partner for growth, security, and regional collaboration**.

Cross-Border Remittances and India's Push for Cost Reduction at WTO

❖ Syllabus Mapping:

✓ GS Paper 2 – International Institutions (WTO), India and the World Economy

✓ GS Paper 3 – Economy (Banking, Financial Inclusion, Digital Payments, Inclusive Growth)

1. Why in News?

- At the **13th WTO Ministerial Conference (MC13)** in Abu Dhabi, India proposed measures to **reduce the high cost of cross-border remittances**, particularly to benefit **low- and middle-income countries**.
- However, the proposal was **not included in the final declaration**, primarily due to **opposition from the US and Switzerland**.

2. Key Highlights of India's Proposal

Focus Area	India's Proposal
Problem Addressed	High remittance costs —global average is 6.18% , which is above the SDG target of 3%
UN SDG Goal 10.c	Aims to reduce remittance cost to less than 3% of transaction value
Recommendations by India:	

- Promote **digital remittance transfers**
- Enhance **pricing transparency**
- Foster **interoperable payment systems**
- Encourage **market competition** in remittance services
- Streamline **cross-border regulatory frameworks** |

3. Global Context of Remittance Flows

- **Global Remittances in 2023:**
 - **USD 860 billion** total
 - **USD 669 billion** (~78%) went to **low- and middle-income countries**
- **India was the largest recipient**, with ~**USD 125 billion** in 2023
 - Approx. **USD 7–8 billion** spent on transaction costs alone (World Bank)

4. Opposition to the Proposal

Countries Opposing	Rationale
US and Switzerland	Home to major international banks and financial service providers , which benefit from higher transaction fees
Concerns	Fear that liberalizing remittance systems may reduce their financial sector profitability and regulatory grip

5. Significance of Reducing Remittance Costs

a) Boost to Personal and National Economies

- Reduced costs **increase the net amount received** by beneficiaries
- Enhances **household consumption, education, healthcare, and savings**

b) Enhancement of India's Digital Payment Infrastructure

- Would promote **global adoption of India's UPI platform**
- Already linked with **Singapore, UAE, Bhutan, France**, and expanding further
- Helps India **export its fintech innovations** and gain **soft power** in global financial markets

c) Support to Economic Growth

- Lower costs encourage **formal remittance channels**
- Enhances **business efficiency**, particularly for **MSMEs and cross-border trade**

d) Strengthening Indian Banking Sector

- Indian banks can **expand their reach globally using efficient digital infrastructure**
- Will reinforce India's leadership in **digital financial inclusion**

6. Way Forward

Strategy	Recommendations
Bilateral & Multilateral Engagement	India should continue advocating for this issue in BRICS, G20, SAARC, and IBSA forums
Expand UPI Linkages	Enhance cross-border UPI compatibility with developing economies and labour-exporting nations
Regulatory Harmonization	Collaborate on data protection, AML/CTF regulations, and currency exchange rules to ease remittance compliance
Private Sector Engagement	Partner with fintech firms and digital wallet providers for affordable remittance corridors
WTO Diplomacy	Form coalitions with LDCs and remittance-dependent nations to strengthen negotiating power at WTO

7. Conclusion

India's proposal to **lower remittance costs** aligns with its goals of **financial inclusion, digital empowerment, and support for diaspora communities**.

Though the initiative faced **opposition at WTO**, India must **persist through alternate diplomatic and digital channels** to ensure that **remittances become faster, cheaper, and more accessible**, thereby transforming them into powerful tools for **development and poverty reduction**.

Human Development Report 2023–24

❖ Syllabus Mapping:

✓ GS Paper 2 – International Institutions, Development Processes and the Role of NGOs, Human Development

✓ GS Paper 3 – Inclusive Growth and Human Development Indicators

1. Why in News?

- The **United Nations Development Programme (UNDP)** released the **Human Development Report (HDR) 2023–24** titled **"Breaking the Gridlock: Reimagining Cooperation in a Polarised World"**.
- The report highlights growing global inequality, development divergence, and the rise of political polarization.
- India's HDI ranking improved** from 135 (2021) to 134 (2022).

2. About the Human Development Report (HDR)

Feature	Details
Published By	UNDP (since 1990)
Purpose	To assess human development beyond economic growth, focusing on health, education, and standard of living
Core Component	Human Development Index (HDI)
Developer of HDI	Mahbub ul-Haq , Pakistani economist

3. Understanding the Human Development Index (HDI)

◆ HDI Dimensions and Indicators:

Dimension	Indicator
Health	Life expectancy at birth
Education	Mean years of schooling and Expected years of schooling
Standard of Living	Gross National Income (GNI) per capita (PPP adjusted)

- **HDI Value Range:** Between 0 (least developed) and 1 (most developed)

◆ Limitations of HDI:

- Does **not include inequality**, human security, gender gaps, or environmental degradation
- Supplemented with **composite indices** like:
 - **IHDI**
 - **MPI**
 - **GDI**
 - **GII**
 - **PHDI**

4. India's Performance in HDR 2023–24

Indicator	2022	2021
HDI Rank	134	135
HDI Value	0.644	0.633
Life Expectancy	67.7 years	67.2 years
Expected Schooling Years	12.6 years	11.9 years
Mean Schooling Years	6.57 years	—
GNI per capita (PPP)	\$6,951	\$6,542

- Category: Medium Human Development



◆ India vs Neighbours (HDI Rank):

COUNTRY	RANK
CHINA	75
SRI LANKA	78
MALDIVES	87
BHUTAN	125
BANGLADESH	129
INDIA	134
NEPAL	146
PAKISTAN	164
AFGHANISTAN	182



5. Global Findings of HDR 2023–24

a) Top HDI Countries:

1. Switzerland
2. Norway
3. Iceland

b) Key Global Trends:

- **Uneven Recovery:** High-income nations reaching record HDI levels; **poorer nations lagging post-COVID**
- **Trade Concentration:** ~40% of global goods trade controlled by **3 or fewer countries**
- **Reversal in Inequality Gains:** The gap between developed and developing countries is **widening again**
- **Rise in Democracy Paradox:** People value **democracy**, yet increasingly **support undemocratic leaders** due to frustration with political systems

6. India's Performance in Other Human Development Indices

Index	Measures	India's Performance
Gender Inequality Index (GII)	Gender gaps in health, empowerment, labor	Rank 108 in 2022 (↑ from 122 in 2021)
Multidimensional Poverty Index (MPI)	Deprivations in health, education, living standards	Over 230 million people in 2021
Gender Development Index (GDI)	HDI gaps between men and women	Deviates >10% from gender parity

Inequality-adjusted HDI (IHDI)	HDI minus inequality	Rank 140 (↓ 6 places)
Planetary Pressure-adjusted HDI (PHDI)	HDI adjusted for environmental footprint	Rank 127 (3% loss from HDI value)

7. Significance for India

a) Positive Trends:

- Improvement in **schooling, life expectancy**, and **GNI per capita**
- GII improvement** reflects better female participation in public and economic life

b) Concerns:

- High **gender disparity** and **environmental degradation**
- Persistent **multidimensional poverty**
- IHDI fall** shows that inequality undermines overall development progress

8. Way Forward for India

Area	Policy Direction
Health & Nutrition	Strengthen public health systems and nutrition schemes (e.g., Poshan 2.0)
Education Access	Improve quality of schooling , teacher-student ratio, and digital infrastructure
Gender Empowerment	Enforce laws ensuring equal wages, representation, and female literacy
Inclusive Growth	Focus on tribal, rural, and minority inclusion in welfare and employment
Sustainability Focus	Integrate climate resilience and green policies in development planning

9. Conclusion

The **HDR 2023-24** reminds us that **economic growth alone** is not sufficient for holistic development.

India's **marginal rise in HDI ranking** is welcome, but **inequality, gender disparity**, and **environmental degradation** continue to pull down overall human development.

A **balanced and inclusive policy approach**, emphasizing **social justice, sustainability, and empowerment**, is essential to **realize India's demographic dividend** and ensure **resilient human development**.

India–EU Free Trade Agreement

❖ Syllabus Mapping:

✓ **GS Paper 2 – International Relations:** Bilateral agreements, regional groupings

✓ **GS Paper 3 – Economy:** Trade agreements, FDI, IP rights, industrial policy

1. Context

India and the **European Union (EU)** have committed to **finalize a comprehensive Free Trade Agreement (FTA) by end of 2025**, aiming to deepen economic ties and enhance strategic autonomy amidst global geopolitical shifts.

2. About the India–EU FTA

Feature	Details
Negotiation Deadline	End of 2025
Deal Scope	Goods, services, investments, IPR, geographical indications (GI)
Trade Value (2023–24)	\$137.41 billion in goods and \$51.45 billion in services
Complementary Deals	Investment Protection and GI Agreements
Geopolitical Rationale	Diversification amid tensions with China and USA

3. Key Strategic and Economic Benefits for India

◆ Market Expansion

- Textiles, Apparel, and Leather** will gain from **tariff reduction**, enhancing competitiveness in Europe.

◆ Boost to Key Sectors

- Pharmaceuticals:** Faster regulatory approvals for Indian generics.
- IT and Services:** Relaxed norms for skilled professional movement, data transfer.
- Agriculture & Processed Foods:** Easier access for tea, spices, and value-added exports.

◆ Investment and Job Creation

- EU is already a **top investor in India**; FTA will encourage **FDI in green energy, EVs, and infrastructure**.
- Expected to generate **millions of jobs** in MSMEs, textiles, and tech sectors.

◆ Intellectual Property & Innovation

- Strengthened **IPR regime** to boost tech transfer, patent protection, and R&D collaboration.

4. Challenges in FTA Negotiations

Party	Key Demands	Concerns & Resistance
EU	Lower duties on wines, spirits, automobiles	Affects India's small producers, tax base, and domestic auto sector
	Stronger IP protections	Risks access to affordable medicines , impacts pharma exports
India	Data adequacy status for IT/ITES	EU's General Data Protection Regulation (GDPR) complicates this
	Greater access to services and skilled visas	EU's internal labour concerns and varied immigration policies

5. Domestic & Diplomatic Sensitivities

- Indian industries** fear competition from cheaper EU imports (e.g., dairy, alcohol, automobiles).
- EU nations** have differing interests (e.g., protection of regional products like cheese, wines).
- EU Carbon Border Adjustment Mechanism (CBAM)** poses challenges for Indian exporters unless a green transition is adopted.

6. Strategic Significance

◆ Enhancing Strategic Autonomy

- Reduces overdependence on **Chinese supply chains** and counterbalances **U.S. tariff threats**.
- Boosts India's **Act West Policy** and EU's **Indo-Pacific Strategy**.

◆ Complementary Tech and Security Ties

- Collaboration on **semiconductors, AI, 6G, green hydrogen**, and the **India-Middle East-Europe Corridor (IMEEC)**.

◆ Global Benchmark

- Could become a model for balancing **free trade with sustainability, labour rights, and digital ethics**.

7. Way Forward

✓ Mutual Compromise

- India**: Consider phased duty cuts on EU automobiles and wines.
- EU**: Grant **data adequacy** and **visa flexibility** for Indian professionals.

✓ Institutional Dialogue

- Leverage the **India-EU Trade and Technology Council (TTC)** for:
 - Dispute resolution
 - Aligning on digital trade and green transition
 - Coordinated rule-making in emerging tech

✓ Green Transition Diplomacy

- Collaborate on **green tech, carbon trading, circular economy**, and align with **EU's Green Deal and CBAM**.

✓ Support for MSMEs

- Establish **FTA support cells** for Indian MSMEs to ensure compliance and competitiveness in EU markets.

✓ Conclusion

The **India-EU FTA** is more than a trade deal—it's a **strategic framework for a future-ready partnership**. If concluded effectively, it could boost India's global trade standing, support self-reliant manufacturing, and offer a **blueprint for equitable globalization** amidst rising protectionism.

India–New Zealand FTA Talks Resume After a Decade

📌 Syllabus Mapping:

✓ **GS Paper 2 – International Relations:** Bilateral trade and cooperation

✓ **GS Paper 3 – Economy:** Foreign trade policy, FTA negotiations

1. Context

India and New Zealand have **resumed negotiations for a Free Trade Agreement (FTA)** after nearly a decade-long pause. The move came during New Zealand Prime Minister **Christopher Luxon's visit** to India in April 2025, signaling renewed interest in bilateral economic engagement.

2. Background of India–New Zealand FTA

Timeline	Details
Start of Talks	April 2010 – Negotiations began for a Comprehensive Economic Cooperation Agreement (CECA)
Stalemate	Talks stalled in 2015 after 9 rounds due to unresolved issues around market access and dairy exports
Revival	Revived in 2025 following diplomatic engagement and increased trade potential

3. Key Objectives of the Proposed Agreement

- Improve access for goods and services in both countries.
- Enhance regional and global value chain participation.
- Encourage bilateral investments and economic cooperation.
- Address imbalances in trade through diversified trade offerings.

4. Significance of the FTA for India

Strategic Market Expansion



India seeks to expand its footprint in the **Oceania region**, using New Zealand as a strategic trade gateway.

Agri-Tech and Clean Energy Cooperation

New Zealand's expertise in **agriculture, agri-processing, clean energy, and dairy** offers valuable collaboration potential for India's rural and green economy missions.

Enhanced Investment and Services Trade

India's strengths in **IT services, pharmaceuticals, education, and skilled manpower** align with New Zealand's economic requirements.

IQRA *Wisdom leads to success*

5. Benefits for New Zealand

- Access to India's **1.4 billion-strong consumer base**
- Scope for growth in **dairy, wine, and agri-food exports**
- Opportunities in **education and vocational training** through student mobility and institutional partnerships

6. Challenges in FTA Negotiations

Issue	Concern
Dairy Exports	India is cautious about New Zealand's competitive dairy sector affecting its domestic market
Trade Imbalance	India has a persistent trade deficit with New Zealand, which it seeks to address in the new deal
Skilled Labour Mobility	Visa norms and recognition of Indian qualifications are key concerns for India
Non-Tariff Barriers	Regulatory standards and SPS (Sanitary and Phytosanitary) measures may hinder Indian exports

7. Trade Snapshot: India–New Zealand (2023–24)

Indicator	Value (Approx.)
Bilateral Trade	USD 2.4 billion
India's Exports	Pharmaceuticals, textiles, machinery
India's Imports	Dairy products, fruits, wood, wool

8. Way Forward

- Balanced Deal Structuring: A **phased liberalization approach** for sensitive sectors (e.g., dairy) with safeguard mechanisms.
- Mutual Recognition Agreements (MRAs): Fast-track agreements on **education, services, and professional qualifications**
- Collaboration in Emerging Sectors: Focus on **climate technology, green hydrogen, EVs, and agri-innovation**
- Regional Diplomacy: Strengthen ties under broader Indo-Pacific frameworks like **IPEF** and support **Act East + Pacific** policy

Conclusion

The revival of **India-New Zealand FTA negotiations** signals a fresh momentum in India's bilateral and multilateral trade outreach. A carefully negotiated agreement can open new vistas of cooperation, strengthen regional partnerships, and contribute to India's larger goal of becoming a **global trade and manufacturing hub** under **Atmanirbhar Bharat**

INTERNAL SECURITY & DEFENCE

Tackling Left-Wing Extremism in India

📌 Syllabus Mapping:

✓ GS Paper 3 – Internal Security, Role of Security Forces, Linkages of Organized Crime with Terrorism, Government Policies

1. Why in the News?

- The **Ministry of Home Affairs (MHA)** released a **booklet titled 'Decisive Battle with Left Extremism'**, highlighting the government's strategy and progress in countering **Left-Wing Extremism (LWE)**.

2. What is Left-Wing Extremism?

- **Definition:** LWE represents the **radical leftist ideologies**, often Maoist/Naxalite, which seek to overthrow the state through **armed revolution**.
- **Origins in India:** The movement began with the **1967 Naxalbari uprising in West Bengal**.
- **Current Geography – India's Red Corridor:**
 - Includes **Chhattisgarh, Jharkhand, Odisha, Bihar, Telangana, Andhra Pradesh, Maharashtra, Madhya Pradesh, West Bengal, and parts of Kerala**.

3. Factors Behind the Rise of LWE

IQRA
Wisdom leads to success

- ◆ **Resource Exploitation (Jal, Jungle, Jameen):** Displacement without rehabilitation, denial of **tribal land rights**, and poor implementation of **Forest Rights Act** have fueled discontent.
- ◆ **Socio-Economic Deprivation:** Lack of **education, employment, infrastructure, and healthcare** has created a fertile ground for extremism.
- ◆ **Governance Deficit:** Inaccessibility of administration, corruption, and ineffective implementation of welfare schemes fuel alienation.

4. Reasons for the Decline in LWE

A. Strategic Interventions

- **Doctrine of SAMADHAN (2017):**
 - **S:** Smart leadership
 - **A:** Aggressive strategy
 - **M:** Motivation & training
 - **A:** Actionable intelligence
 - **D:** Dashboard-based KPIs
 - **H:** Harnessing technology
 - **A:** Action plan
 - **N:** No access to financing
- Successful operations: *Operation Octopus, Double Bull, Chakrabandha.*

B. Developmental Measures

- **Schemes:** Security Related Expenditure (SRE), Special Infrastructure Scheme (SIS).
- **Surrender & Rehabilitation:** Skill development, training, financial aid.
- **Community Participation:** Development projects with local support (e.g., Peace March 2021).
- **Education & Livelihood:** Schools, Industrial Training Institutes (ITIs), infrastructure.

5. Persistent Challenges

Challenge	Explanation
Geographical Terrain	Dense forests aid guerrilla warfare and mobility.
Security Loopholes	Illegal arms flow and poor surveillance continue to empower insurgents.
Political Alienation	Low tribal representation in political institutions creates a disconnect.
Ideological Appeal	Maoist narrative resonates with marginalized tribal youth .

6. Way Forward

◆ Bridging the Trust Deficit

- Increase **local recruitment** in administration and police.
- **Civil society** must be included to build dialogue and trust.

Example: The **2021 Peace March** by tribals of Bastar, Odisha, and Telangana under the slogan: “**Bastar maange hinsa se azadi**”.

- ◆ **Counter the Ideology:** Promote **democratic values, constitutional rights, and grassroots empowerment** to challenge Maoist narratives.
- ◆ **Improve Centre-State Coordination:** Clearly defined **roles and responsibilities** and seamless coordination between central and state forces.
- ◆ **Security & Capacity Building:** Modernize **local police**, use **smaller combat units**, and **intelligence-driven action**.
- ◆ **Technological Integration:** Use of **GIS (Geographic Information Systems)** and **GPS** for locating camps and planning operations.

7. Conclusion

India's approach to Left-Wing Extremism has evolved into a **balanced mix of force and development**. While **decisive security operations** have weakened Maoist strongholds, **inclusive governance, rights-based development, and democratic empowerment** are essential to erode the ideological base of extremism. A **citizen-centric, trust-building approach**, reinforced by **technology and coordination**, remains the key to achieving lasting peace in LWE-affected regions.

India's First Private Ammunition and Missile Facilities

❖ Syllabus Mapping:

- ✓ **GS Paper 2 – Governance (Policy & Initiatives), International Relations**
- ✓ **GS Paper 3 – Security, Defence Technology, Infrastructure**

1. Why in the News?

- **India's first private sector manufacturing facilities for ammunition and missiles** have been inaugurated in **Kanpur, Uttar Pradesh**, under the **Uttar Pradesh Defence Industrial Corridor (UP DIC)**.
- This marks a **milestone in the indigenisation and privatisation** of India's defence production ecosystem.

2. Defence Industrial Corridors (DICs)

State	Key Features
Uttar Pradesh	Nodes: Kanpur, Lucknow, Jhansi, Aligarh, Agra, Chitrakoot
Tamil Nadu	Nodes: Chennai, Tiruchirappalli, Salem, Coimbatore, Hosur

- **Objective:** Promote domestic defence production, attract investment, and reduce import dependence.
- **Significance:** Enables a robust ecosystem for **design, development, and manufacturing** of defence systems.

3. Opening Up of Defence Sector to Private Participation

- **Since 2001**, the Indian private sector is allowed up to **100% participation** in defence manufacturing.
- **FDI limit:** Up to 74% via automatic route; beyond that through government approval.

4. Rationale for Privatisation of Defence Sector

◆ Strategic and Economic Drivers

- **High defence import dependency:** India is the **world's largest arms importer** (SIPRI, 2023).
- **Third-largest military spender** globally (after the US and China).
- **Reduce defence budget burden:** Defence outlay is around **13.04%** of total government expenditure.

◆ Self-reliance and Export Boost

- Surplus production can contribute to India's **target of ₹35,000 crore in defence exports** by 2024–25.
- Helps in achieving the goals of **Atmanirbhar Bharat** and **Make in India in Defence**.

◆ Technology and Innovation

- Collaboration with private firms fosters **innovation, R&D investment, and use of emerging technologies** (AI, robotics, etc.).

5. Key Concerns with Private Participation

Concern	Description
Sensitive Data Protection	Risk of critical defence data being exposed to unauthorised actors.
Weapon Sales Risk	Potential for private firms to engage with clients not aligned with Indian interests.
Accountability and Oversight	Difficulty in enforcing compliance without a robust regulatory framework.

6. Related Development: SAMAR Certification

◆ System for Advance Manufacturing Assessment and Rating (SAMAR)

Feature	Details
Launched by	DRDO in collaboration with Quality Council of India (QCI)
Objective	To assess and rate the competency and maturity of defence manufacturers
Validity	2 years
Applicability	All defence manufacturing enterprises
Significance	Promotes quality standards, benchmarks capabilities, boosts investor and buyer confidence

- Recently, **9 industry partners received SAMAR certificates**, signifying India's intent to strengthen **standards and compliance** in defence production.

7. Way Forward



- **Strengthen oversight:** Establish clear data protection and export control norms for private players.
- **Encourage PPP models:** Facilitate collaboration between PSUs, private sector, and start-ups.
- **Invest in R&D:** Promote private sector investment in defence R&D through incentives and innovation grants.
- **Skill ecosystem:** Train and upskill workforce to meet global manufacturing standards.
- **Diversify exports:** Build strategic defence partnerships with Africa, ASEAN, and Middle East to boost exports.

8. Conclusion

The **inauguration of India's first private missile and ammunition facilities** signals a **paradigm shift in defence manufacturing**. With strong regulatory frameworks like **SAMAR**, and supportive infrastructure through **DICs**, India is on track to emerge as a **global defence manufacturing hub**, promoting **strategic autonomy** and **economic growth** in line with **Atmanirbhar Bharat** goals.

India's Maritime Vision 2.0: From SAGAR to MAHASAGAR

❖ Syllabus Mapping:

✓ GS Paper 2 – International Relations

- Bilateral, regional, and global groupings
- India's foreign policy and role in international institutions
- ✓ **GS Paper 3 – Internal Security**
- Maritime security, strategic infrastructure, and disaster management

1. Context

India's maritime strategy has undergone a paradigm shift from **SAGAR (Security and Growth for All in the Region)** launched in 2015, to **MAHASAGAR (Mutual and Holistic Advancement for Security and Growth Across Regions)** announced in 2025 during the Indian PM's visit to Mauritius. This reflects a broader engagement with the **Indo-Pacific and the Global South**.

2. Why the Shift: From SAGAR to MAHASAGAR?

SAGAR (2015)	MAHASAGAR (2025)
Focused on Indian Ocean Region (IOR)	Broadened to Indo-Pacific, Africa, Latin America, Pacific Islands
Maritime security and sustainable development	Trade, connectivity, disaster resilience, cultural & digital cooperation
India-centric regional cooperation	India as a leader in the Global South

3. Objectives of MAHASAGAR

- Strengthen trade & digital connectivity
- Enhance maritime security & domain awareness
- Expand blue economy partnerships
- Provide HADR (Humanitarian Assistance and Disaster Relief)
- Deepen engagement with island and littoral nations

4. India's Role in Indo-Pacific and Global South

- **Empathetic Partner:** India is seen as a **reliable alternative to China**, offering capacity-building and non-exploitative financing.
- **Trustworthy Leadership:** India avoids **debt diplomacy**, preferring sustainable growth.
- **Champion of South-South Cooperation:** Through partnerships with Africa, ASEAN, Latin America, and island nations.

5. Geopolitical Significance

a. Countering China's Maritime Expansion

- China's bases in **Djibouti, Gwadar, Hambantota**, and its **Maritime Silk Road** strategy challenge regional balance.
- India offers a counter-narrative of **inclusivity and sovereignty respect**.

b. Enhancing India's Global Standing

- Leadership in **G20, IORA, BRICS, QUAD**, and **BIMSTEC** underlines India's multilateral diplomacy.

c. Mauritius as a Strategic Hub

- Unveiling both SAGAR and MAHASAGAR from Mauritius signifies its **centrality to India's Indian Ocean policy**.

6. Key Initiatives & Infrastructure Support

- **Agalega Island, Mauritius:** ₹1,600 crore investment for airstrip and jetty.
- **Coastal Surveillance Systems:** Installed in Seychelles, Maldives, Sri Lanka, and Mauritius.
- **IFC-IOR (Gurugram):** Tracks vessels and strengthens **Maritime Domain Awareness**.
- **India's SAGARMALA Project:** Boosts port-led infrastructure and logistics.

7. Challenges to India's Maritime Aspirations

- **Strategic Competition:** Growing Chinese naval influence and infrastructure in IOR.
- **Climate Vulnerabilities:** Rising sea levels threaten coastal and island nations.
- **Resource Constraints:** Limited naval capacity vis-à-vis China and USA.
- **Regional Political Instability:** Regime changes in partner nations can impact cooperation (e.g., Maldives, Sri Lanka).
- **Fragmented Maritime Governance:** Overlapping roles of IORA, CSC, IOC.
- **Non-compliance with UNCLOS:** China's violations in South China Sea threaten global maritime order.

8. Way Forward

a. Strengthen Regional Cooperation

- Leverage platforms like **IORA, BIMSTEC, and QUAD** for economic and security dialogues.
- Engage proactively in **Africa, ASEAN, and Pacific Islands** through trade, grants, and capacity-building.

b. Boost Maritime Infrastructure & HADR Capabilities

- Invest in **dual-use port infrastructure**, especially in **Andaman & Nicobar** and **Lakshadweep**.
- Deploy **pre-positioned disaster relief supplies** and mobile naval teams.

c. Promote a Rules-Based Order

- Uphold **UNCLOS 1982** and freedom of navigation through **UN, ASEAN, and BRICS** forums.
- Oppose unilateral maritime claims and ensure a **transparent Indo-Pacific**.

d. Capacity Building and Blue Economy

- Expand India's leadership in **ocean sciences, fisheries, and marine biodiversity**.
- Promote **Digital Blue Economy**, renewable ocean energy, and maritime startups.

✓ Conclusion

India's transition from **SAGAR** to **MAHASAGAR** represents not just a **semantic shift**, but a strategic recalibration towards a **comprehensive, inclusive, and empathetic maritime policy**. It positions India as a **balancer in the Indo-Pacific**, a **leader in the Global South**, and a **champion of a rules-based maritime order**.

Indo-Pacific Oceans Initiative (IPOI)

📌 Syllabus Mapping:

✓ **GS Paper 2 – International Relations:** India and its neighborhood, regional groupings, international institutions

✓ **GS Paper 3 – Security:** Maritime security, international cooperation

1. Context

- During his 2025 visit to India, **New Zealand Prime Minister Christopher Luxon** expressed interest in joining the **Indo-Pacific Oceans Initiative (IPOI)**—highlighting its growing geopolitical relevance.

2. About IPOI

Feature	Details
Nature	Voluntary and non-treaty-based framework for regional maritime cooperation
Launched By	India at the East Asia Summit (EAS) in Bangkok, 2019
Underlying Doctrine	Based on India's SAGAR (2015) – Security and Growth for All in the Region
Objective	Promote a free, open, inclusive, and rules-based maritime order in the Indo-Pacific
Strategic Focus	Enhancing maritime security, sustainable development, economic connectivity, and capacity building

3. Pillars of IPOI

PILLAR	LEAD PARTNER COUNTRY
MARITIME SECURITY	India
MARITIME ECOLOGY	France
MARITIME RESOURCES	Indonesia
CAPACITY BUILDING AND RESOURCE SHARING	Australia
DISASTER RISK REDUCTION AND MANAGEMENT	India
SCIENCE, TECHNOLOGY AND ACADEMIC COOPERATION	United Kingdom
TRADE, CONNECTIVITY, AND MARITIME TRANSPORT	Japan and Singapore

4. Significance of IPOI

- ◆ Strengthens SAGAR Doctrine: Reinforces India's vision of a **regional maritime security provider** and first responder.
- ◆ Enhances Multilateralism: Encourages **collaborative partnerships** across a wide network of Indo-Pacific nations, without rigid institutional frameworks.
- ◆ Counters Strategic Competition: Seen as a **counterbalance to China's Belt and Road Initiative (BRI)** and maritime assertiveness in the South China Sea and Indian Ocean.
- ◆ Bridges Indo-Pacific Gaps: Supports regional **infrastructure development, blue economy, climate resilience, and maritime domain awareness**.

5. Geopolitical Context and India's Strategic Goals

INDIA'S GOALS VIA IPOI	GLOBAL/REGIONAL RELEVANCE
EXPAND INFLUENCE IN INDO-PACIFIC	Aligns with QUAD, ASEAN Outlook on Indo-Pacific (AOIP)
PROMOTE RULES-BASED ORDER	Upholds UNCLOS 1982 and freedom of navigation
CREATE REGIONAL TRUST-BASED MARITIME ARCHITECTURE	Complements IPOI with IFC-IOR and IORA cooperation
BUILD CONSENSUS THROUGH SOFT POWER AND AID DIPLOMACY	Enhances India's image as a responsible maritime actor

6. Challenges to IPOI's Success

- **Divergence in Interests:** Indo-Pacific countries differ in threat perception, particularly regarding China.
- **Lack of Binding Framework:** Being voluntary, IPOI lacks **legal enforceability** and funding commitments.
- **Overlap with Other Initiatives:** May duplicate efforts with ASEAN, QUAD, and BIMSTEC unless coordinated properly.
- **Capacity Gaps:** Many smaller nations lack technical capacity to implement large-scale maritime initiatives.

7. Way Forward

- **Institutional Synergy:** Align IPOI with ASEAN Outlook on Indo-Pacific (AOIP) and IORA initiatives for coherence.
- **Expand Partnerships:** Encourage participation from key maritime nations like South Korea, Vietnam, and New Zealand.
- **Resource Mobilization:** Establish **pooled funding mechanisms** and **technology-sharing platforms** for common challenges.
- **Maritime Capacity Building:** Increase focus on training, infrastructure development, and blue economy cooperation.

8. Conclusion

The IPOI represents India's proactive maritime diplomacy aimed at building a secure, stable, and inclusive Indo-Pacific. As geopolitical tensions rise and maritime domains gain prominence, the initiative serves as a strategic tool for consensus-building, regional connectivity, and sustainable maritime governance.

ECONOMY

Household Consumption Expenditure Survey (HCES) 2022–23

📌 Syllabus Mapping:

✓ GS Paper 2 – Welfare Schemes for Vulnerable Sections
 ✓ GS Paper 3 – Indian Economy (Inclusive Growth, Poverty, Development Indicators)

1. Why in News?

- The National Sample Survey Office (NSSO) under MoSPI released the Household Consumption Expenditure Survey (HCES) 2022–23 after a gap of more than a decade (last conducted in 2011–12).
- The 2017–18 round was discarded by the government citing concerns over data quality.

2. About Household Consumption Expenditure Survey (HCES)

Aspect	Details
Conducted By	NSSO (MoSPI)
Objective	To collect data on household consumption of goods and services
Frequency	Roughly every five years since 26th NSS round
Significance	Used to assess poverty, recalibrate GDP, inflation indices, and standard of living
Recent Innovations	For the first time, included data on in-kind/free consumption from social welfare schemes

3. Key Findings of HCES 2022–23

◆ a) Overall Consumption Trends

- **Rural MPCE:** ₹3,773
- **Urban MPCE:** ₹6,459
- **Growth:** MPCE has increased 2.6 times (rural) and 2.5 times (urban) since 2011–12

◆ b) Rich-Poor Divide

Group	Consumption (approx.)
Top 5% Rural	~8x more than bottom 5%
Top 5% Urban	~10x more than bottom 5%

◆ c) State-wise Variations

Category	Highest MPCE	Lowest MPCE
States	Sikkim	Chhattisgarh
UTs	Chandigarh	Ladakh

- **9 States Below National Rural Average:**
Uttar Pradesh, Bihar, Jharkhand, Odisha, Chhattisgarh, Assam, Madhya Pradesh, West Bengal, Meghalaya

4. Sector-Specific Insights

a) Agricultural Households

- MPCE: ₹3,702 (below rural average ₹3,773)
- Indicates a **widening vulnerability** of farmers and **rural income stress**
- However, the **gap has been narrowing**, suggesting **moderate improvements**

b) Disadvantaged Social Groups

Group	Trend
Rural STs & SCs	Reported MPCE below rural average
Urban SCs, STs, OBCs	MPCE lower than urban average

- Reflects **persistent social inequalities** in consumption and well-being

5. Shifts in Consumption Patterns

a) Decline in Food Share

- Share of **expenditure on food** has **declined** over the years:
 - **Rural:** From ~59% (1999–2000) to ~46%
 - **Urban:** From ~48% to ~39%

b) Rise in Non-Food Expenditure

- Growth in spending on:
 - **Education, Health**
 - **Durables, Communication, Transportation**

c) Nutritional Transition

- Increased demand for:
 - **Animal-based proteins** (milk, meat, eggs)
 - **Horticultural products** (fruits, vegetables)
- Decrease in:
 - **Cereal and pulse consumption share**

6. Data on Social Welfare Consumption

- **New addition in 2022–23:** Captures **free/subsidized items** received through **government schemes**
- Crucial for evaluating the impact of:
 - **Public Distribution System (PDS)**
 - **Mid-Day Meal Scheme (MDMS)**
 - **PM Poshan, PM Ujjwala, etc.**

7. Significance of HCES

Use	Application
Policy Formulation	Input for poverty line estimation, welfare targeting
GDP Estimation	Used in revising consumption component of national accounts
Inflation Indices	Helps update Consumer Price Index (CPI) weights

Socio-economic Equity | Understands consumption disparity across **states, classes, and castes**

8. Way Forward

Challenge	Policy Suggestions
Regional Inequality	Enhance development focus in lagging states (e.g., Bihar, MP, Odisha)
Support for Agricultural Families	Strengthen price support, crop diversification, and direct income transfers
Empower Disadvantaged Groups	Expand nutrition and education schemes for SC/ST households
Monitor Welfare Delivery	Use HCES data to audit and improve in-kind benefit schemes
Update Poverty Estimates	Use the new consumption data to update poverty lines and indices (last revised in 2011–12)

9. Conclusion

The **HCES 2022–23** presents a **crucial dataset** capturing how Indian households consume, spend, and survive in a **post-pandemic economy**. While **rising MPCE** reflects **economic recovery**, the persistence of **inter-state and inter-group disparities** demands **targeted welfare measures** and **recalibrated development priorities**.

This data will be pivotal in **reassessing poverty estimates, CPI baskets, and inclusive growth strategies** in the coming years.

Reserve Bank – Integrated Ombudsman Scheme (RB-IOS), 202

❖ Syllabus Mapping:

- ✓ GS Paper 2 – **Government Policies & Interventions, Governance Mechanisms**
- ✓ GS Paper 3 – **Indian Economy (Banking, Regulatory Bodies, Consumer Protection)**

1. Why in News?

- The **Reserve Bank of India (RBI)** released its **first standalone Annual Report** of the **Integrated Ombudsman Scheme (RB-IOS)**, 2022–23, offering key insights into grievance redressal in India's financial ecosystem.
- The report reveals a **68% rise in complaints**, with a **disposal rate of 98%** and increased reliance on **digital modes for grievance registration**.

2. About RB-IOS, 2021

Aspect	Details
Launched	November 12, 2021 by RBI
Objective	To provide a cost-free, simple, and effective grievance redressal mechanism for customers of RBI-regulated entities
Jurisdiction	Follows " One Nation One Ombudsman " approach (jurisdiction-neutral)
Legal Basis	Banking Regulation Act, 1949; RBI Act, 1934; Payment and Settlement Systems Act, 2007

◆ Integrated Earlier Schemes:

- **Banking Ombudsman Scheme (2006)**
- **Ombudsman Scheme for NBFCs (2018)**
- **Ombudsman Scheme for Digital Transactions (2019)**

3. Scope and Coverage

Regulated Entities Covered	Criteria
Banks	All Commercial, RRBs, Co-operative Banks (₹50 crore+ deposits)
NBFCs	Authorized NBFCs with ₹100 crore+ assets
Payment System Participants	UPI, Wallets, etc.
Credit Information Companies (CICs)	All CICs licensed by RBI

4. Key Highlights: Annual Report 2022–23

Parameter	Finding
Total Complaints Received	~7 lakh (↑68.24% over previous year)
Digital Mode Complaints	85.64% submitted online
Complaint Disposal Rate	98% resolved
Average Turnaround Time (TAT)	33 days
Top Method of Redressal	57.48% via mutual settlement/conciliation
Complaint Share – Banks	83.78% of total complaints

5. Major Reasons for Rising Complaints

Category	Issues Reported
Digital Fraud	Unauthorized transactions, phishing, lack of secure systems
Transaction Reversals	Delay in crediting failed UPI/ATM transactions
Loan Communication	Hidden charges, confusing terms by Digital Lending Apps (DLAs)

Pension Complaints	No centralized resolution framework in banks
Penalty Charges	Arbitrary charges for non-maintenance of minimum balance
Cross-selling Misconduct	Financial product mis-selling due to information asymmetry
CIC Errors	Delay in reporting corrected credit data to Credit Bureaus

6. Institutional Mechanism

Body	Function
Office of RBI Ombudsman (ORBIO)	24 offices across India to resolve complaints
Centralized Receipt and Processing Centre (CRPC)	Primary intake center for complaints
Contact Centre	Multi-lingual support for grievance registration and follow-up
Internal Ombudsman (IO)	In-house officer in each RE for second-level appeal on complaints

7. RBI's Future Strategy – *Utkarsh 2.0 Vision (2023-25)*

Strategic Goals	Action Plan
Enhance Consumer Protection	Consolidate all customer service regulations under a single framework
Expand Contact Centres	New centres in regional languages for inclusivity
Use of Technology	Deploy AI-based Complaint Management System (CMS)
Auto-escalation	Rejected complaints should go automatically to Internal Ombudsman
Data-led Regulation	Learn from models like the US CFPB , which uses financial well-being surveys

8. Challenges and Concerns

- **Low financial literacy** increases customer vulnerability to frauds
- **Information asymmetry** between consumers and Regulated Entities (REs)
- **Rise in digital transactions** without proportionate rise in grievance redress awareness
- **Lack of harmonization** in REs' internal CMS and grievance policies

9. Way Forward

Policy Direction	Recommendation
Strengthen RE SOPs	RBI must mandate standard operating procedures for all REs based on ombudsman inputs
Promote Financial Literacy	Nationwide programs on consumer rights and complaint mechanisms
Digital Grievance Dashboard	Develop a real-time complaint tracker with resolution timelines
International Benchmarking	Adopt best practices from EU, UK, and US financial regulators
Strengthen Internal Ombudsman System	Mandate independent functioning and timely escalation protocols

10. Conclusion

The **RB-IOS 2021** marks a significant step in India's efforts to **democratize financial grievance redressal**, especially amid the **rise in digital financial services**.

As complaints surge and financial products evolve, it is crucial for **RBI**, **regulated entities**, and **citizens** to collaborate towards a **transparent, responsive, and tech-enabled redressal ecosystem**.

The vision of "One Nation, One Ombudsman" can only be achieved through **continuous review, technological upgrades, and consumer empowerment**.

India's Spice Market: Challenges, Potential & Way Forward

❖ Syllabus Mapping:

✓ **GS Paper 3 – Indian Economy:** Exports, food processing, agriculture marketing, infrastructure

✓ **GS Paper 1 – Indian Geography:** Cropping patterns, climatic conditions, regional agriculture

1. Context

India is the **world's largest producer and exporter of spices**, yet its **share in the \$14 billion global seasoning market is just 0.7%** (2024), compared to **China (12%)** and the **USA (11%)**.

2. Overview of India's Spice Sector

Feature	Details
Global Rank	1st in production and export of spices
Varieties Grown	76 out of 109 ISO-listed spices
Domestic Consumption	85% of spices are consumed within India
Major Regions	South India (pepper, cardamom), North India (cumin, coriander), MP (largest state)
Major Spices	Turmeric, red chilli, cumin, cardamom, coriander, black pepper

3. Drivers of Growth in the Indian Spice Market

- **Expanding Food Processing Industry:** Demand for processed spices in packaged foods.
- **Convenience Packaging:** Shift to zip-locks, sachets, and resealable bags.
- **Organic and Natural Trends:** Preference for chemical-free and GI-tagged spices.
- **Cultural Demand:** Essential in Indian households and traditional medicine.

4. Key Institutions

Institution	Role
Spices Board of India	Export promotion, quality control, registration (CRES), ₹10 billion target by 2030
CRES Certificate	Required for legal spice export from India
World Spice Organisation (WSO)	Focus on food safety, sustainability; based in Kochi (est. 2011)

5. Major Challenges

- ◆ Quality Concerns and Adulteration: MDH and Everest spice recalls in **Hong Kong & Singapore** over **Ethylene Oxide (ETO)** residues.
- ◆ Low Value Addition: Most exports are raw; countries like UAE and Germany reprocess and brand them for profit.
- ◆ High Input Costs: Rising fertilizer, pesticide, and labor costs, especially in Kerala and Karnataka.
- ◆ Climate Change and Pests: Erratic rainfall and fungal diseases impacting cardamom, cumin, and black pepper crops.
- ◆ Global Competition: Vietnam dominates black pepper exports; Africa is emerging as a competitor.
- ◆ Distribution & Logistics: Unorganized markets and lack of cold chains reduce export efficiency and traceability.

6. Government and R&D Initiatives

Initiative	Impact
Organic Certification by Spices Board	Boosted pesticide-free turmeric exports
ICAR & NRCSS (Ajmer)	Developed drought-tolerant cumin and coriander varieties
GI-tag Promotion	Branding for unique regional varieties (e.g., Kandhamal Haldi, Bydagi chilli)
Hadoti Seed Coriander Focus	Kota-Baran-Bundi-Jhalawar region supplies 70% of India's coriander

7. Way Forward

- ✓ Enhance Production Efficiency: **Precision farming, drip irrigation** and **organic inputs** to reduce cost and improve yield.
- ✓ Strengthen Quality & Certification: Promote **GI-tagging, organic labels**, and **traceability through blockchain**.
- ✓ Develop High-Value Products: Invest in **value-added spice mixes**, nutraceuticals, and pharma-grade extracts.
- ✓ Expand R&D and Climatology: Develop **climate-resilient spice strains** and integrated pest management (IPM).
- ✓ Promote Technology Integration: **IoT and robotics** in sorting, drying, and packing to ensure hygiene and export standards.
- ✓ Market Diversification: Target non-traditional markets and reduce dependence on the US, EU, and Middle East.

8. Global Best Practices for Inspiration

Country	Initiative
Vietnam	Export-centric pepper processing and price competitiveness
China	High-value spice derivatives for pharma and nutraceuticals
Sri Lanka	Branded Ceylon cinnamon for global market access

9. Conclusion

India's spice economy has **historical depth, cultural pride**, and **export potential**, but underperforms due to low value addition and quality issues. With **technology adoption, quality branding (GI)**, and **climate-resilient farming**, India can move from a **bulk exporter** to a **global market leader** in the seasoning and spice value chain.

National Umbrella Organisation (NUCFDC)

❖ Syllabus Mapping:

✓ GS Paper 2 – Government Policies and Interventions, Cooperative Federalism

✓ GS Paper 3 – Indian Economy (Banking Sector, Cooperative Institutions, Financial Inclusion)

1. Why in News?

- The Ministry of Cooperation has constituted the National Urban Cooperative Finance and Development Corporation Ltd. (NUCFDC) as an Umbrella Organisation (UO) for Urban Cooperative Banks (UCBs).
- This marks a major institutional reform aimed at modernizing, regulating, and reviving India's urban cooperative banking ecosystem.

2. Background and Evolution

Year	Development
2006	RBI's Working Group under Shri N.S. Viswanathan recommended the need for a UO for UCBs
2009	Another RBI Working Group under Shri V.S. Das proposed a national-level UO model
2019	RBI gave regulatory approval to NAFCUB to form NUCFDC
2024	NUCFDC formally constituted under Ministry of Cooperation as the national UO

3. Need for an Umbrella Organisation

Reason	Explanation
Fragmentation	India has ~1,502 UCBs, most of which are small and financially weak
Economies of Scale	A UO offers a viable alternative to forced mergers of small UCBs
Public Confidence	Enhances trust among depositors and regulators
Regulatory Compliance	Assists UCBs in meeting Banking Regulation Act, 1949 obligations
Learning from Global Models	Successful UO frameworks exist in USA, Canada, France , aiding cooperative resilience

4. Legal and Regulatory Status

- NUCFDC is registered as a **Type II NBFC-ND (Non-Banking Financial Company – Non-Deposit Taking)** under the **RBI**.
- Type II NBFCs:
 - **Have a customer interface**
 - **Accept or intend to accept public funds**
- Will function as a **Self-Regulatory Organization (SRO)** for the UCB sector.

5. Major Functions of NUCFDC

◆ a) Capital and Liquidity Support

- Mobilise funds with a **target capital base of ₹300 crore**
- Offer **fund management services** and act as a **lender of last resort** for UCBs
- Enable **credit and investment pooling** to improve financial strength

◆ b) Regulatory Compliance Support

- Help UCBs align with:
 - **Banking Regulation Act (BRA), 1949**
 - **RBI's prudential norms**
- Act as a **liaison** between UCBs and the RBI

◆ c) Technology Platform and Modernization

- Develop a **shared digital platform** to provide:
 - **Core banking services**
 - **Cybersecurity frameworks**
 - **Digital lending & UPI infrastructure**
- Reduce tech-cost burden for small UCBs

◆ d) Capacity Building and Governance

- Provide **training, consultancy, and HR support**
- Promote **good governance practices and audit frameworks**

6. Significance of NUCFDC

Impact Area	Expected Benefit
Financial Stability	Addresses UCBs' NPAs , liquidity crunch, and mismanagement
Inclusion & Access	Empowers UCBs to compete with commercial banks , especially in semi-urban and rural India
Regulatory Coordination	Creates a single-window interface with RBI and other regulators
Digital Leap	Enables UCBs to participate in India's digital banking ecosystem (e.g., UPI, DBT)

7. Challenges Ahead

- Capital Mobilization:** Achieving and sustaining ₹300 crore corpus in the short term
- Governance Reforms:** Many UCBs have a history of **political interference and mismanagement**
- Tech Adoption:** Resistance to centralized tech platforms and digital compliance
- Uniform Policy Implementation:** Varying size and capacities of UCBs complicate **standardization efforts**

8. Way Forward

Action Area	Suggestions
Phase-wise Onboarding	Gradual integration of all UCBs into the NUCFDC ecosystem
Financial Inclusion Mission	Align NUCFDC with PM Jan Dhan Yojana and Digital India goals
Public-Private Partnerships	Partner with fintechs and PSUs for technology sharing and infra support
Autonomous Governance	Ensure NUCFDC remains professionally managed , insulated from local politics
Audit & Monitoring	Annual audits and third-party reviews for transparency and course correction

9. Conclusion

The formation of NUCFDC is a long-awaited step towards **revitalizing the Urban Cooperative Banking sector** in India. As a **centralized financial and regulatory support system**, it promises to address structural weaknesses, improve trust, and foster **inclusive financial services** at the grassroots level. To succeed, it must blend **technology, governance, and capacity building** in a sustainable and cooperative spirit.

Rethinking India–China Economic Relations

❖ Syllabus Mapping:

✓ **GS Paper 2 – International Relations:** Bilateral relations, international economic institutions

✓ **GS Paper 3 – Economy:** Trade policies, FDI, manufacturing sector, protectionist measures

1. Context

The **Central Board of Indirect Taxes and Customs (CBIC)** recently imposed **anti-dumping duties** on five Chinese products including **vacuum-insulated flasks** and **aluminium foil**, highlighting long-standing concerns in India–China trade dynamics.

2. Understanding Dumping and Anti-Dumping Measures

◆ What is Dumping?

- Dumping** occurs when a product is **exported at a price lower than its domestic market value**, leading to **international price discrimination**.
- Recognised under **WTO rules** as an unfair trade practice when it causes **material injury** to the importing country's domestic industry.

◆ WTO's Legal Provision for Anti-Dumping

- Anti-Dumping Duty** can be imposed if:
 - There is **material injury** or **threat of injury** to domestic producers.
 - The duty must not exceed the **dumping margin** (normal value – export price).

3. Why Dumping is a Global Concern

Issue	Implication
Unfair Competition	Undermines local manufacturers, especially MSMEs.
Job Losses & Factory Closures	Persistent dumping can result in long-term loss of employment .
Market Distortion	Violates fair trade principles , distorts competition.
Risk of Monopoly	Once local competitors are driven out, exporters may raise prices later.

4. Key Challenges in India–China Economic Relations

a. Widening Trade Deficit

- **India's Exports:** Mostly low-value raw materials (e.g., iron ore, cotton).
- **China's Exports:** High-value items like **telecom equipment, electronics, chemicals**.
- **2023 Trade Deficit:** Over **\$80 billion**, with imports from China exceeding \$100 billion.

b. Overdependence on Chinese Imports

- **Critical Sectors** affected:
 - **Pharmaceuticals (APIs)** – ~70% sourced from China.
 - **Electronics & Solar Modules** – Dominated by Chinese suppliers.
 - **Telecom** – Key components and infrastructure equipment.

c. Investment Tensions Post-Galwan

- Post-2020 border clashes, India tightened **FDI rules** for land-border countries.
- All Chinese FDI now requires **government approval**.
- In 2025, proposals to ease **sector-specific Chinese investment** are under discussion.

d. Non-Tariff Barriers (NTBs) by China

- **India's exports of IT, pharma, agriculture** face market access challenges.
- Despite bilateral dialogues, **NTBs persist**, limiting India's economic penetration into China.

5. India's Strategic Dilemma: Dependency vs. Self-Reliance

Strategy	Challenges
Atmanirbhar Bharat	Reducing reliance in electronics, APIs, and semiconductors requires long-term investment.
China Plus One	Shifting supply chains to countries like Vietnam, Thailand, Mexico.
FDI Restrictions	Hinders investment in high-tech manufacturing where Chinese expertise is substantial.

6. Strategic Policy Recommendations: The Way Forward

◆ 1. Reduce Import Dependency

- Implement **"China Plus One" strategy** to diversify suppliers.
- Strengthen **domestic manufacturing** in high-impact sectors:
 - Electronics (PLI schemes)
 - Telecom and semiconductor fabrication
 - Bulk drug parks for APIs

◆ 2. Boost High-Value Exports

- Focus on **pharmaceuticals, IT services, defence products**, and renewable energy.
- Improve **product competitiveness** and export incentives.

◆ 3. Leverage FDI with Strategic Filters

- Allow **selective Chinese FDI** in non-sensitive sectors.
- Encourage **technology transfers** through joint ventures.

◆ 4. Negotiate Market Access

- Use trade engagements (e.g., RCEP, BRICS, SCO platforms) to:
 - Remove **non-tariff barriers**
 - Demand **reciprocity** for Indian products

◆ 5. Enhance Anti-Dumping Enforcement

- Empower **DGTR** to proactively monitor and respond to suspicious imports.
- Regularly **review product categories** vulnerable to dumping.

◆ 6. Digital and Strategic Technology Security

- Reduce Chinese role in **5G, surveillance, fintech, and AI-based platforms**.

- Strengthen India's **cybersecurity ecosystem** and promote **domestic innovation**.

✓ Conclusion

India's economic ties with China are marked by **high interdependence and strategic competition**. A **multi-pronged approach**—reducing over-reliance, protecting domestic industries, strengthening anti-dumping laws, and cautiously engaging with Chinese investments—will help India secure both **economic resilience** and **strategic autonomy**.

Primary Agricultural Credit Societies (PACS)

📌 Syllabus Mapping:

✓ GS Paper 2 – Government Policies & Interventions, Cooperative Governance

✓ GS Paper 3 – Indian Economy (Agriculture, Rural Credit, Infrastructure, Financial Inclusion)

1. Why in News?

- The **Ministry of Cooperation** has launched **several new initiatives to expand, modernize, and strengthen Primary Agricultural Credit Societies (PACS)**.
- This includes laying the **foundation for 500 new PACS**, **computerisation of 18,000 PACS**, and the launch of the **National Cooperative Database (NCD)**.

2. About Primary Agricultural Credit Societies (PACS)

Parameter	Details
Definition	PACS are grassroot-level cooperative institutions that provide short-term agricultural credit and input services to farmers
Legal Status	Registered under State Cooperative Societies Acts ; not regulated by RBI or under the Banking Regulation Act, 1949
Refinancing Agency	NABARD , through District Central Cooperative Banks (DCCBs) and State Cooperative Banks (SCBs)
Current Number	Over 65,000 functional PACS in India
Regulatory Body	Managed by State Registrars of Cooperative Societies (RCS)

3. Major Functions of PACS

- Disburse short-term and crop loans**
- Collect **loan repayments** from farmers
- Act as **input centers** for seeds, fertilizers, and pesticides
- Provide **agri-implements and machinery**
- Offer **storage facilities** (godowns)
- Can be expanded to act as **CSC, PM-KSK, and PM-BJAK** outlets

4. Key Highlights of Recent Initiatives

Area	Initiative
Expansion	Foundation laid for 500 new PACS with godown and agri-infra facilities
Modernization	

- Computerisation of 18,000 PACS**
- Target to computerise **63,000 PACS** under **Centrally Sponsored Scheme** || **Data Infrastructure** | Launch of **National Cooperative Database (NCD)** for comprehensive cooperative tracking || **Capacity Building** | **1,100 FPOs** to be created through PACS with NCDC support | **Diversification** | Model byelaws for enabling **25+ business activities** under PACS || **Multi-functionality** |
- PACS to operate as **Pradhan Mantri Kisan Samriddhi Kendras**
- PACS to function as **Jan Aushadhi Kendras**
- PACS as **Common Service Centers (CSCs)** |

5. Significance of PACS in Rural Economy

- Financial Inclusion:** PACS provide **41%** of all KCC loans; **95%** of which go to **small and marginal farmers**
- Credit Penetration:** Vital for farmers in **remote, underserved rural areas**
- Agri-value chain:** PACS can serve as **integrated service providers**, reducing dependence on intermediaries
- Decentralized development:** Promote **self-reliance** and **community ownership**

6. Key Challenges Faced by PACS

Area	Issue
Infrastructure	Lack of computerization , poor connectivity, outdated records
Finance	Low capital, high NPAs , impact from loan waivers and interest subventions
Human Resources	Shortage of trained staff and managerial expertise
Governance	Political interference, non-transparent functioning , delayed audits
Geographical Disparity	High concentration in Western & Southern India (e.g., Maharashtra, Gujarat) vs lagging in East & Northeast

7. Institutional Support

Institution	Support Provided
NABARD	Refinancing support via DCCBs/SCBs
NCDC	Financial and technical assistance for cooperative infrastructure and FPOs
Ministry of Cooperation	Policy formulation, computerisation, diversification initiatives

8. Way Forward

a) Technological Modernization

- Implement **Common Accounting System (CAS)** and **Management Information System (MIS)**
- Promote **e-governance**, **UPI**, and **mobile banking** services
- Create **shared technology hubs** for training and support

b) Financial Reforms

- Introduce **risk-based lending frameworks**
- Encourage **external capital infusion**, diversify income streams (dairy, fisheries, etc.)
- Strengthen **NPA recovery systems**

c) Human Resource Development

- Conduct **capacity-building programs**
- Offer **career incentives**, better remuneration and training

d) Governance Improvements

- Enforce **regular third-party audits**, disclosure standards
- Set up **autonomous boards**, free from political interference
- Promote **member awareness** and participative governance

e) Balanced Regional Growth

- Launch **targeted expansion missions** in underserved states
- Provide **extra incentives and subsidies** for backward regions

9. Conclusion

PACS remain a vital pillar of India's rural credit structure, especially for **small and marginal farmers**.

Recent efforts at **digitization**, **diversification**, and **infrastructure development** mark a **transformational shift** in their functioning.

However, addressing the **deep-rooted structural challenges** will be key to making PACS **financially viable**, **technologically empowered**, and **institutionally autonomous**, thereby contributing to **inclusive agricultural growth** and **rural development**.

UNNATI 2024: Catalysing Inclusive Industrial Growth in North-East India

❖ Syllabus Mapping:

- ✓ GS Paper 2 – **Government Policies & Interventions**
- ✓ GS Paper 3 – **Economic Development (Industrial Growth, Infrastructure, Investment Promotion)**
- ✓ GS Paper 1 – **Regional Development (North-East India Focus)**

1. Why in the News?

- The Union Cabinet has approved the **Uttar Poorva Transformative Industrialization Scheme, 2024 (UNNATI – 2024)** to boost **industrialization and employment generation** in the **North Eastern Region (NER)**.

2. Overview of UNNATI – 2024

Aspect	Details
Ministry	Department for Promotion of Industry and Internal Trade (DPIIT)
Type	Central Sector Scheme
Tenure	10 years (plus 8 years for committed liabilities)
Financial Outlay	₹10,000 crore
Nodal Agency	North Eastern Development Financial Corporation Ltd. (NEDFi)

3. Scheme Structure

◆ Part A – Incentives (97% Outlay)

Covers 3 incentive components:

Incentive	Description
Capital Investment Incentive (CII)	For new and expanding units in manufacturing/services with fixed asset investment
Capital Interest Subvention (CIS)	Interest support on loans up to ₹250 crore for setting up units
Manufacturing & Services Linked Incentive (MSLI)	Linked to Net GST Payment , applicable for new units only

Minimum Investment Required:

- ₹1 crore for manufacturing
- ₹50 lakh for services
- ₹50 lakh for micro units (both sectors)

◆ Part B – Institutional Arrangements (3% Outlay)

For capacity building, digital systems, compliance monitoring.

4. Key Features of UNNATI – 2024

- Eligible Units:** New and expanding businesses
- Production Timeline:** Units must commence operations within **4 years** of registration
- District Categorization:**
 - Zone A:** Industrially advanced
 - Zone B:** Industrially backward (higher incentives)
- Fund Allocation:**
 - 60% earmarked for 8 NE states
 - 40% on **First-In-First-Out (FIFO)** basis
- Coverage Approach:**
 - Negative list** for manufacturing (excluded industries)
 - Positive list** for services (included industries)



IQRA
IQRA leads to success

5. Other Complementary Initiatives for NER

Scheme	Objective
PM-DevINE	Infrastructure, social development, youth & women employment
NESIDS	Special infrastructure in roads and non-road sectors
NEC Schemes	Area-specific development, priority sectors, and social upliftment
SARDP-NE	Road connectivity under Bharatmala Pariyojana
Digital NE Vision 2022	Promotes e-governance, innovation, digital services
NITI Forum for NE (HIRA)	Focuses on Highways, Inland Waterways, Railways, Airways
SEZ Development	4 SEZs notified, none operational yet

6. Significance of UNNATI for the Region

✓ Employment Generation

- Direct creation of industrial and service-sector jobs
- MSMEs and micro-units supported for self-employment

✓ Encouragement of Private Investment

- Financial incentives improve **investment viability**
- Lower risk enhances investor confidence in the NER

Balanced Regional Development

- Higher incentives for **Zone B districts** bridge the industrial disparity
- Supports equitable growth across all 8 NE states

Strengthens Atmanirbhar Bharat

- Boosts **domestic manufacturing**
- Enhances **service sector competitiveness**

7. Status of Industrialization in Northeast India

Sector	Current Status
SEZs	5 approved, 4 notified, 0 operational
Handloom & Handicraft	Major unorganized employment sector
Bamboo	NER holds 40% of India's bamboo stock
Rubber	Tripura is India's second rubber capital
MSMEs	NER houses only 2.98% of India's MSMEs, 2.62% of employment
Top 3 MSME states	Assam > Tripura > Meghalaya

8. Connectivity & Infrastructure Status

◆ Road Connectivity: National Highways: **16,125 kms**

◆ Waterways

- **NW-2** (Brahmaputra) fully developed
- 20 NWs declared, feasibility pending for 18

◆ International Projects

Project	Objective
IMT Highway	India-Myanmar-Thailand connectivity
Kaladan Project	Links India's northeast to Sittwe port (Myanmar)
BBIN MVA	Cross-border vehicle movement in BBIN nations
India-Bangladesh Protocol Route	Boosts water-based trade

9. Challenges to Industrialization in NER

Issue	Impact
Low industrial base	Limited value addition and exports
Infrastructure gaps	Impedes movement, supply chain and logistics
Land & law complexities	State-specific rules deter external investors
Skilled manpower	Shortage in specialized industrial domains
Low digital penetration	Hampers e-commerce and IT-based industries
Geopolitical sensitivities	Border disputes and insurgency reduce investor confidence

10. Conclusion

UNNATI 2024 represents a strategic shift toward unlocking the **economic potential of the Northeast** through targeted **incentives, institutional support, and employment generation**. If synergized effectively with other schemes and infrastructure projects, it could **transform NER into a dynamic industrial and services hub**, contributing meaningfully to **inclusive national growth** and **Atmanirbhar Bharat**.

Centre Grants 'Navratna Status' to IRCTC and IRFC

Syllabus Mapping:

GS Paper 3 – Indian Economy

GS Paper 2 – Government Policies and Interventions (Public Sector Enterprises)

1. Context

The **Union Government** has conferred **Navratna status** to two Public Sector Undertakings (PSUs) – **Indian Railway Catering and Tourism Corporation (IRCTC)** and **Indian Railway Finance Corporation (IRFC)**, enhancing their operational and financial autonomy.

- **Total Navratna PSUs:** 26 after the latest addition.

2. What is Navratna Status?

The **Navratna status** is conferred to select Central Public Sector Enterprises (CPSEs) to grant them greater autonomy in decision-making, investment, and global operations, aiming to make them competitive and self-reliant.

4. Classification of CPSEs

Category	Eligibility Criteria	Key Powers Granted
Maharatna	<ul style="list-style-type: none"> - Must be a Navratna company - ₹25,000+ crore turnover (last 3 years) - ₹15,000+ crore net worth - ₹5,000+ crore net profit (last 3 years) - Significant global presence 	<ul style="list-style-type: none"> - Can invest up to ₹5,000 crore or 15% of net worth in a project without government approval - Greater autonomy in mergers and acquisitions
Navratna	<ul style="list-style-type: none"> - Must be a Miniratna-I - Score of 60+ based on six parameters (including net profit, net worth, etc.) - Listed on stock exchange 	<ul style="list-style-type: none"> - Can invest up to ₹1,000 crore or 15% of net worth in a project - Moderate autonomy, more than Miniratnas
Miniratna-I	<ul style="list-style-type: none"> - Profitable for the last 3 consecutive years - Minimum ₹30 crore pre-tax profit in one of the three years 	<ul style="list-style-type: none"> - Can invest up to ₹500 crore or equal to net worth, whichever is lower, without approval
Miniratna-II	<ul style="list-style-type: none"> - Profitable for the last 3 consecutive years - Lower financial thresholds than Miniratna-I 	<ul style="list-style-type: none"> - Limited autonomy in capital investment decisions

4. About the Newly Upgraded Navratna PSUs

Indian Railway Catering and Tourism Corporation (IRCTC)

- A subsidiary of Indian Railways under the **Ministry of Railways**
- Provides catering, tourism, and online ticketing services.
- Listed on NSE and BSE.
- Significant revenue from online ticketing and packaged drinking water (**Rail Neer**).

Indian Railway Finance Corporation (IRFC)

- A dedicated financing arm for Indian Railways.
- Responsible for raising funds for railway infrastructure through market borrowings.
- Plays a crucial role in financing rolling stock and expansion projects.

5. Significance of Navratna Status

Domain	Impact
Operational Autonomy	Enables quicker investment decisions and reduced bureaucratic delays.
Financial Efficiency	Ability to mobilize larger capital without government intervention.
Global Expansion	Encourages participation in international joint ventures and projects.
Public Accountability	Listing on stock exchanges brings greater transparency and governance.
Support to Rail Sector	Strengthens the financial and service backbone of Indian Railways.

6. Way Forward

- **Further strengthening of Miniratna companies** to qualify for Navratna and Maharatna status.
- **Strategic disinvestment or functional autonomy** for select CPSEs with consistent profitability.
- **Encouraging innovation and technology adoption** in PSU functioning to align with *Atmanirbhar Bharat* and *Digital India* goals.
- **Benchmarking with global PSUs** to improve competitiveness and governance.

7. Conclusion

The elevation of **IRCTC** and **IRFC** to **Navratna status** reflects the government's commitment to empower PSUs with greater flexibility and decision-making autonomy. It is a step toward transforming CPSEs into **globally competitive enterprises**, aligning with India's vision for **economic growth, infrastructure modernization, and public sector reform**.

AGRICULTURE

Agriculture and Food Security at WTO

❖ Syllabus Mapping:

✓ GS Paper 2 – International Institutions (WTO), India and the World (Negotiations and Agreements)

✓ GS Paper 3 – Agriculture (MSP, Food Security, Subsidies), Inclusive Growth

1. Why in News?

- The 13th Ministerial Conference (MC13) of the World Trade Organization (WTO), held in Abu Dhabi, concluded without a permanent solution to the issue of Public Stockholding (PSH) for food security.
- This remains a key unresolved demand by India and other developing countries.

2. What is the Public Stockholding (PSH) Policy?

Aspect	Details
Objective	Enables governments to procure food grains at MSP and distribute them to the poor via PDS (Public Distribution System)
Mechanism	Procurement → Buffer Stock → Distribution under schemes like NFSA, MDM, ICDS
Relevance for India	Integral to food security, MSP assurance, and poverty alleviation in a predominantly agrarian economy

3. WTO Rules and De Minimis Limits

- Under Agreement on Agriculture (AoA), WTO members are restricted in giving trade-distorting subsidies.
- **De Minimis Limit:**
 - 10% of total value of agricultural production (for developing countries)
 - 5% (for developed countries)
- **Problem for India:**
 - Subsidies are calculated using 1986–88 international reference prices, which undervalues current support levels.
 - Leads to artificial inflation of subsidy estimates, bringing India close to breaching WTO limits.

5. Global Divide on PSH

Group	Position
Developing Countries (India, Indonesia, Philippines, etc.)	Demands: <ul style="list-style-type: none"> • Amendment of existing subsidy calculation formula (based on 1986–88 prices) • Increase in de minimis limits for developing countries • Recognition of food security needs and livelihood protection for farmers
Developed Countries (USA, EU, Australia)	Opposition: <ul style="list-style-type: none"> • Claim that a permanent solution to PSH could distort global trade • Fear of depressed global prices due to large procurement • Argue it may encourage excessive stockpiling and export restrictions

5. The Peace Clause: A Temporary Safeguard

- **Origin:** WTO's MC9 (Bali, 2013)
- Allowed countries to breach subsidy limits without facing legal action, under certain conditions
- Meant as a temporary arrangement till a permanent solution was agreed upon
- India invokes the peace clause regularly, especially post NFSA implementation

6. India's Demand at WTO

- Pushes for a permanent solution since:
 - Peace clause is temporary and conditional
 - Does not address structural inequities in subsidy calculation
- India demands:
 - Updating reference prices
 - Decoupling PSH from global trade obligations
 - Greater policy space for domestic food security programmes

7. Why a Permanent Solution to PSH is Crucial?

Reason	Explanation
Food Security Imperative	Supports over 80 crore beneficiaries under NFSR and other food programmes
Farmer Welfare	Ensures remunerative MSP for millions of small and marginal farmers
Social Equity	Critical for addressing nutrition, hunger, and rural poverty
Sovereign Policy Space	Provides India and other nations autonomy over food procurement and subsidy systems
Climate Uncertainty	Ensures buffer stock for times of crop failure, drought, and inflation

8. Way Forward

- **Global Consensus:** India should build coalitions with **G-33, African Group, and LDCs** to push for food security rights
- **Reform WTO Calculations:** Advocate for **updated subsidy benchmarks** reflecting **current food prices**
- **Data Transparency:** Share credible data on PSH benefits to dispel concerns of **market distortion**
- **Domestic Reforms:** Strengthen **procurement efficiency and storage infrastructure** to make PSH more sustainable

9. Conclusion

The failure of WTO MC13 to resolve the **PSH issue** underscores the persistent divide between **developed and developing countries** on the right to **food and farmer support**.

For India, achieving a **permanent solution** is not just a trade negotiation—it is a **sovereign imperative for food and livelihood security** in a country where agriculture still sustains a **majority of the population**.

WTO Fisheries Subsidies Agreement

📌 Syllabus Mapping:

- ✓ GS Paper 2 – International Institutions (WTO), India and Bilateral/Multilateral Agreements
- ✓ GS Paper 3 – Economy (Fisheries Sector, Subsidies), Environment (Marine Resources, Sustainability)

1. Why in News?

- The **13th WTO Ministerial Conference (MC13)** concluded without reaching consensus on a **permanent solution to curbing harmful fisheries subsidies**.
- The **Fisheries Subsidies Agreement**, adopted in **MC12 (Geneva, 2022)**, still lacks the required ratification from **two-thirds of WTO members**.
- **India has not yet joined the agreement**, citing concerns over fairness and developmental priorities.

2. WTO Agreement on Fisheries Subsidies – Overview

a) **Adopted Under:** Geneva Package during the **12th WTO Ministerial Conference (MC12), 2022**

b) **Objective:**

- To **curb harmful subsidies** contributing to:
 - **Over-capacity**
 - **Over-fishing**
 - **Illegal, Unreported, and Unregulated (IUU) fishing**

c) **Key Provisions:**

- **Prohibits subsidies** for:
 - **IUU fishing**
 - **Fishing over depleted stocks**
 - **Fishing on unregulated high seas**
- **Positive Environmental Impact:**
 - Supports **marine biodiversity conservation**
 - Encourages **sustainable fishing practices**

3. Current Status

Requirement	Status (as of March 2024)
Required Ratifications	2/3rd of WTO Members (~110 members)
Still Needed	39 countries yet to ratify
India's Position	Has not signed or ratified the agreement

4. Special and Differential Treatment (S&DT)

- Developing countries and LDCs are granted a **2-year transition period** post-agreement enforcement
- India seeks **stronger and longer exemptions** to safeguard **traditional fishers' livelihoods**

5. India's Demands and Concerns

a) Polluter Pays Principle (PPP) & Common But Differentiated Responsibilities (CBDR-RC):

- Developed nations that have historically caused marine depletion through **massive subsidies** must take **greater responsibility**

b) Moratorium on Distant Water Fishing (DWF) Subsidies:

- India proposes a **25-year moratorium** on subsidies by **DWF nations** operating beyond their **Exclusive Economic Zones (EEZs)**

c) Special Carve-out for Developing Nations:

- India seeks the **right to continue subsidies** for its domestic fisheries sector to:
 - Enhance **livelihood support**
 - Promote **food security**
 - Develop **marine infrastructure**

6. Rationale for India's Stand

Reason	Explanation
Livelihood Dependency	India has over 100 million people dependent on the fisheries sector
Poverty and Vulnerability	~ 61% of fishers live below the poverty line
Low Subsidy Footprint	India provides minimal per capita subsidy compared to advanced economies
Sustainable Practices	Indian fisheries are largely traditional and subsistence-based , not over-exploitative
Equity in Global Responsibility	Developed countries with industrial-scale trawlers contribute more to resource depletion and should bear greater obligations

7. Broader Implications of the Agreement

✓ Positive Aspects:

- Promotes **marine ecosystem protection**
- Aligns with **SDG 14.6: Eliminate subsidies that contribute to overfishing**

! Concerns for Developing Nations:

- Could **restrict policy space** to support small fishers
- Might **widen inequality** in global trade if obligations are **uniformly imposed**

8. Way Forward

Area	Recommendations
WTO Negotiations	India should lead a coalition of developing countries for equitable reform
Tailored S&DT Provisions	Push for extended transition periods, flexible subsidy allowances
Transparency and Reporting	Establish a data-backed narrative showcasing India's sustainable and minimal fishing subsidies
Domestic Reforms	Promote marine conservation, technology upgrades, and community-based monitoring in fishing zones
Alternative Livelihood Support	Encourage coastal diversification through aquaculture, eco-tourism, and marine research initiatives

9. Conclusion

India's stance at the WTO reflects its dual commitment to **sustainability** and **social justice**. While **global marine protection** is essential, any multilateral agreement must be based on **differentiated responsibilities**, ensuring that **traditional and small-scale fishers** in developing countries are **not penalized for historical damage they did not cause**.

Balancing conservation with livelihood security is key to a just and effective fisheries governance framework.

India's Grain Storage System

❖ Syllabus Mapping:

- ✓ GS Paper 2 – Government Policies and Interventions (Food Security, Cooperatives)
- ✓ GS Paper 3 – Indian Economy (Agriculture, Infrastructure, Storage and Supply Chains)

1. Why in News?

- The Prime Minister inaugurated a pilot project under the **World's Largest Grain Storage Plan in the Cooperative Sector**, covering **11 PACS in 11 States**.
- This initiative marks a **major step towards decentralised and integrated grain storage infrastructure** at the grassroots level.

2. About the Grain Storage Plan in the Cooperative Sector

Aspect	Details
Ministry	Ministry of Cooperation (MoC)
Objective	- To create decentralised grain storage infrastructure at the Primary Agricultural Credit Societies (PACS) level - Enhance rural agri-logistics
Scope	- Establishment of: • Godowns • Custom Hiring Centres • Warehouses • Cold Storage • Processing Units
Support	- Provided through: • Capital subsidy • Interest subvention • Convergence with central & state schemes
Major Implementers	• FCI (Food Corporation of India) • CWC (Central Warehousing Corporation) • NCDC (National Cooperative Development Corporation) • NABARD, NABCONS, NBCC

Institutional Structure for Implementation

Level	Body	Role
Central	Inter-Ministerial Committee (IMC)	Modifies guidelines and implementation methods
	National Level Coordination Committee (NLCC)	Strategic oversight
State	State Cooperative Development Committee (SCDC)	Implementation monitoring
District	District Cooperative Development Committee (DCDC)	District-level monitoring and execution

3. Current Grain Storage Ecosystem in India

❖ Traditional Storage (Farmers)

- 60–70% of food grains stored **at home** using traditional methods (Morai, Kothi)
- Prone to **post-harvest losses** from rodents, pests, moisture

❖ Government Agencies

Agency	Function
FCI	Operates godowns, silos , and CAP (Cover and Plinth) structures
CWC	Warehousing of agri-produce and notified commodities
State Warehousing Corporations	Manage storage at state level
Others	WDRA, Railways, Civil Supply Depts

❖ Private Sector: FCI hires space from private warehouses but faces **capacity constraints**

4. Need for a Robust Grain Storage System

Justification	Explanation
Food Security	Supports National Food Security Act, 2013 benefitting 81 crore people
Reduce Post-Harvest Losses	India loses ~ 10% of total grain output due to poor storage
Price Stabilization	Enables buffer stocking and market intervention
Farmer Income Doubling	Helps farmers delay sale, reduce distress selling, and increase income
Credit Access	Encourages use of Warehouse Receipt Financing (WRF) and e-NWRs for loans
National Security	Strategic grain reserves critical during natural disasters or geopolitical shocks

5. Other Key Initiatives to Augment Storage Capacity

Scheme/Policy	Purpose
Warehousing (Development and Regulation) Act, 2007	Establishes WDRA and Negotiable Warehouse Receipt (NWR) system
e-NWR (2017)	Electronic warehouse receipts to promote formal credit
PEG Scheme	Promotes private participation in grain storage
Grameen Bhandaran Yojana	Financial support for rural godowns
PM Kisan Sampada Yojana	Cold storage, packaging, and modern infrastructure
National Policy on Handling & Storage (2000)	Reduce losses, modernise transportation

6. Challenges in India's Grain Storage

Challenge	Details
Unscientific Storage	80% facilities use manual and outdated methods
Storage Deficit	Production = 311 MMT ; Storage = 145 MMT ⇒ Shortfall of 166 MMT
Excess Buffer Stocks	FCI holds grains above recommended norms , increasing cost
High Transport Costs	Centralized godowns far from production areas
Private Sector Constraints	Land availability, regulatory clearances deter private investment
Post-Harvest Losses	Inadequate infrastructure at farmgate level

7. Committees' Recommendations for Reform

◆ Shanta Kumar Committee (2015)

- **Phasing out CAP storage** due to loss risks
- Promote **containerised movement** for faster turnarounds
- **Flexibility for FCI** to engage in Open Market Sale Scheme (OMSS) and exports
- Convert **traditional godowns** into **modern silos** with private participation

◆ Ashok Dalwai Committee

- **Decentralised storage planning** based on state-level agri profiles
- Establish **village-level aggregation points and packhouses**
- Promote **integrated agri-logistics** from farm to consumer

8. Way Forward

Area	Suggested Actions
Decentralisation	Strengthen PACS and FPOs to own and manage godowns locally
Technology Adoption	Expand e-NWR coverage, digitize inventory and monitoring
Public-Private Synergy	Use PPP model to modernise FCI and CWC infrastructure
Incentivise Private Investment	Provide land, tax exemptions , and single-window clearances
Farmgate Infrastructure	Build mini silos and aggregation units in villages
Integrated Logistics	Invest in rail siding, cold chains, and containerised transport systems

9. Conclusion

India's grain storage architecture is **overburdened, underdeveloped**, and in urgent need of **modernisation and decentralisation**. The **Grain Storage Plan in the Cooperative Sector**, anchored at **PACS level**, offers a **transformative opportunity** to align India's food economy with **self-sufficiency, farmer welfare, and national security goals**. However, the success of this vision hinges on **technology integration, local capacity building, and coordinated governance across centre, states, and cooperatives**.

Krishi Vigyan Kendras (KVKs)

❖ Syllabus Mapping:

- ✓ GS Paper 2 – Government Policies & Interventions in Agriculture
- ✓ GS Paper 3 – Indian Economy: Agriculture, Extension Services, Rural Development

1. Why in News?

- The **Indian Council of Agricultural Research (ICAR)** recently celebrated the **Golden Jubilee of Krishi Vigyan Kendras (KVKs)**, marking **50 years** since their inception in 1974.
- This milestone reaffirms the **pivotal role of KVKs** in strengthening **agricultural extension and farmer outreach**.

2. What are Krishi Vigyan Kendras (KVKs)?

Aspect	Details
Definition	KVKs are district-level agricultural knowledge and resource centres tasked with technology assessment, refinement, and dissemination to farmers
Inception	Concept mooted by the Dr. Mohan Singh Mehta Committee (1973); First KVK at Puducherry in 1974 under TNAU
Affiliation	Operate under ICAR, State Agricultural Universities, NGOs, or Govt bodies
Funding	Fully funded by the Central Government
Network	731 KVKs across 11 Agricultural Technology Application Research Institute (ATARI) zones

3. Role of KVKs in Agricultural Extension Services (AES)

◆ 1. On-Farm Testing

- Validates new **agro-technologies** under **local agro-climatic conditions**
- Customizes technologies for **region-specific needs**

◆ 2. Frontline Demonstrations (FLDs)

- Demonstrates **newly released technologies** (varieties, pest control, agri-tools)
- Enhances **adoption rates** among progressive farmers
- E.g., 97.33% demo farmers better adopt paddy tech than non-demo farmers*

◆ 3. Advisory Services

- Provides real-time advice on **crop selection, irrigation, pest control**, etc.
- Leverages **ICT tools** for wider reach (SMS portals, mobile apps)

◆ 4. Training and Capacity Building

- Conducts training for:
 - Farmers and farm women**
 - Rural youth and extension workers**
- Focuses on **skill upgradation, post-harvest practices, and entrepreneurship**

◆ 5. Quality Seed and Planting Material Production

- Facilitates access to **high-yielding varieties and certified seeds**
- Bridges **seed gaps** and enhances **crop productivity**

◆ 6. Knowledge and Resource Hubs

- Serve as nodal centres to support **public-private partnerships (PPPs)**
- Encourage **community-based innovation and farmer-scientist interaction**

4. Institutional Ecosystem of KVKs

Institution	Role
ICAR	Apex body for agricultural research and policy
SAUs	State-level agricultural education and training
ATARI	Regional bodies overseeing KVK functioning
NARS	National Agricultural Research System integrating ICAR and SAUs

5. Challenges Faced by KVKs and AES

Category	Challenge
Infrastructure	Inadequate labs, demonstration fields, ICT tools
Human Resources	Shortage of trained staff, limited expertise in digital agriculture, climate resilience
Accessibility	Weak linkages with remote, tribal, and rain-fed areas
Farmer Connect	Small/marginal farmers often last to benefit due to weak outreach channels
Knowledge Gaps	Limited focus on emerging trends (AI in farming, carbon farming, agribusiness)

6. Recommendations & Way Forward

Focus Area	Recommended Measures
Strengthen Infrastructure	Upgrade labs, ICT-enabled advisory systems, demo plots
HR Capacity Building	Regular training in climate-smart, precision, and digital farming
Digital Integration	Use remote sensing, AI-based models, and mobile apps for advisory and M&E
Customized Outreach	Focused modules for marginal farmers, women, and youth entrepreneurs
Performance Metrics	Establish Key Performance Indicators (KPIs) for KVKs (e.g., adoption rate, farmer income rise)
Public-Private Convergence	Collaborate with agri-tech startups, CSR funds, FPOs for technology transfer and last-mile delivery

7. Conclusion

Krishi Vigyan Kendras (KVKs) have emerged as the **cornerstone of India's agricultural extension framework**, acting as a **bridge between research and farming communities**.

To make them future-ready and inclusive, KVKs must embrace **technology, diversification, and institutional reforms**. Strengthening their **capacity, autonomy, and accountability** is crucial to ensure their **transformative potential** in India's agri-economy and rural development.

EMPS 2024: A Short-Term Push to Accelerate Electric Mobility in India

❖ Syllabus Mapping:

✓ GS Paper 2 – Government Policies & Interventions (Transport Policy, Environmental Governance)

✓ GS Paper 3 – Infrastructure, Environment, Industry & Innovation

1. Why in the News?

- The **Ministry of Heavy Industries (MHI)** launched the **Electric Mobility Promotion Scheme (EMPS) 2024** to **boost adoption of electric vehicles (EVs)** and support India's shift toward a **greener transportation ecosystem**.

2. About EMPS 2024

Aspect	Details
Tenure	4 months (April 1, 2024 – July 31, 2024)
Financial Outlay	₹500 crore
Target Vehicles	3.72 lakh total: 3.33 lakh e-2W and 0.38 lakh e-3W
Objective	Faster adoption of electric 2-wheelers and 3-wheelers
Eligibility	EVs registered for commercial purposes ; privately-owned e-2Ws also eligible
Battery Requirement	Only vehicles with advanced battery technology qualify for incentives

3. Scheme Components

◆ Subsidy Provision:

- Demand incentives** available at the **point of sale** to reduce **upfront cost**.
- Incentive Amount: ₹5,000 per kWh** of battery capacity.
- Reimbursement** is made by GoI to the **Original Equipment Manufacturer (OEM)**.

◆ Administrative Support:

- Includes **Information, Education, and Communication (IEC)** activities and the **Project Management Agency (PMA)** fee.

4. Context – Review of FAME II Scheme

FAME I (2015)	FAME II (2019 – 2024)
Early push for EVs	Broader focus on public transport and infrastructure
₹895 crore outlay	₹10,000 crore outlay
Focused on pilot projects	Emphasized charging stations and demand incentives

- EMPS 2024 follows FAME II as a **bridging policy measure** until a new comprehensive policy is launched.

5. Government's Supportive Ecosystem for EV Growth

◆ PLI Schemes:

- Automobile & Auto Components PLI:** ₹25,938 crore outlay to promote Advanced Automotive Technologies.
- ACC Battery PLI:** ₹18,100 crore to promote **domestic battery manufacturing**, bringing down costs.

◆ Taxation Support:

- GST on EVs reduced from 12% to 5%**
- GST on charging infrastructure reduced from 18% to 5%**

◆ Manufacturing Push:

- Phased Manufacturing Programme (PMP)** under FAME to localize production of EV parts and increase value addition.

◆ R&D Support:

- **Technology Platform for Electric Mobility (TPEM)** formed under the Ministry of Science & Technology to:
 - Develop **standardization frameworks**,
 - Foster **public-private collaborations**,
 - Support **next-gen EV technologies**.

6. Significance of EMPS 2024

Benefit	Impact
Affordability	Reduces upfront cost, making EVs more accessible for common citizens
Green Mobility	Helps reduce vehicular emissions, supporting India's net-zero goals
Boost to EV Ecosystem	Enhances demand, encouraging OEMs and startups to expand operations
Urban & Last Mile Connectivity	Focus on e-2W and e-3W supports last-mile delivery and ride-hailing
Battery Innovation	By mandating advanced batteries, it nudges manufacturers toward R&D

7. Challenges Ahead

- **Short duration** (only 4 months) limits the impact and reach.
- **Low awareness** in Tier-II and rural markets.
- **Insufficient charging infrastructure**, particularly for e-3Ws.
- **Dependence on imports** for lithium and rare earths despite battery PLI schemes.
- **Need for long-term policy certainty** to promote private investment and innovation.

8. Way Forward

- **Transition from short-term subsidy schemes to holistic long-term policies.**
- **Incentivize public transport electrification** (e-buses, e-rickshaws).
- **Expand rural penetration** via special schemes for Tier II/III cities.
- **Integrate state EV policies** with central schemes to avoid overlaps.
- **Invest in battery recycling, green hydrogen alternatives**, and **training for EV maintenance**.
- **Promote EV leasing models and Battery-as-a-Service (BaaS)** to reduce buyer risk.

9. Conclusion

EMPS 2024 is a timely intervention to **sustain EV adoption momentum** post-FAME II. Though short in duration, its targeted nature toward **commercial two- and three-wheelers** and **advanced battery systems** could set the tone for India's next big leap in **green mobility**. For lasting impact, this must be followed by a **comprehensive, long-term national EV strategy** that integrates infrastructure, industry, and consumer needs.

International Big Cat Alliance (IBCA)

IQRA
Wisdom leads to success

❖ Syllabus Mapping:

✓ GS Paper 2 – International Institutions, Environmental Conservation

✓ GS Paper 3 – Biodiversity, Conservation

1. Why in the News?

- The Union Cabinet approved the establishment of the **International Big Cat Alliance (IBCA)** with **India as the headquarters**.
- An initial outlay of **₹150 crore** has been sanctioned for five years (2023-24 to 2027-28).

2. About IBCA

Feature	Details
Nature	Multi-country, multi-agency coalition
Launched	2023, during Project Tiger's 50th anniversary
Headquarters	India
Initial Budgetary Support	₹150 crores (for 5 years)
Foundational Inspiration	Based on International Solar Alliance (ISA) model
Origin	Concept proposed by Indian PM in 2019 to promote global big cat conservation
Focus Species (7 Big Cats)	Tiger, Lion, Leopard, Snow Leopard, Cheetah, Jaguar, Puma

3. Membership & Stakeholders

Category	Details
Countries	96 range countries of big cats invited
Confirmed Members	16 countries (e.g., Brazil, Nepal, Bangladesh, Malaysia)
International Organizations	9 organizations including IUCN, WWF-International, CITES, UNEP etc.
Stakeholders	Scientific institutions, business coalitions, governments

4. Objectives of IBCA

- Promote Conservation:** of all 7 big cats through cooperation and knowledge exchange.
- Support SDG Integration:** Align conservation with **Sustainable Development Goals**.
- Capacity Building:** Strengthen **scientific, financial, and technical capacities**.
- Policy and Research:** Promote **policy frameworks, research collaboration**, and standard setting.
- Combat Illegal Wildlife Trade:** Promote **law enforcement cooperation** among member nations.
- Community Participation:** Emphasis on **community-led conservation** and **livelihood generation**.

5. Significance for India

- Leadership Role:** Reinforces India's position as a **global leader** in wildlife conservation (e.g., **Project Tiger, Project Lion, Project Snow Leopard, and Cheetah Reintroduction**).
- Soft Power Diplomacy:** Aids India's global image as a **nature-positive nation**.
- Environmental Multilateralism:** Helps strengthen **South-South cooperation** on conservation issues.
- Science and Technology Leadership:** Facilitates exchange of **data, expertise, and best practices**.
- Tourism and Economic Value:** Promotes **eco-tourism** and strengthens the **green economy**.

6. Challenges to be Addressed

- Diverse Conservation Capacities:** Varying capabilities among member states in law enforcement and ecological management.
- Cross-border Wildlife Crime:** Needs strong coordination to curb **poaching and trafficking**.
- Funding Sustainability:** Long-term success will depend on **global financial partnerships** beyond India's initial funding.
- Climate Change:** Big cats are sensitive to habitat fragmentation and climate variability.

7. Related Conservation Milestones

Initiative	Description
Project Tiger (1973)	World's most successful tiger conservation programme
Project Lion	Focused on Asiatic Lion in Gujarat's Gir Forest
Cheetah Reintroduction	First transcontinental relocation of cheetahs (from Namibia to India in 2022)
Project Snow Leopard	Conservation efforts in the Trans-Himalayan region

8. Conclusion

The **International Big Cat Alliance (IBCA)** reflects India's strategic push towards **environmental leadership** on the global stage. As threats to biodiversity and wildlife escalate due to human-induced pressures, IBCA offers a **collective platform** to ensure the **long-term survival** of iconic species and promote **cooperative conservation models**. Successful implementation and global buy-in will determine its impact.

Recognising Farm Labourers in India's Agricultural Policy

❖ Syllabus Mapping:

✓ GS Paper 3 – Indian Economy

✓ GS Paper 2 – Welfare Schemes for Vulnerable Sections

1. Context

The **Standing Committee on Agriculture** has proposed **renaming the Ministry of Agriculture** to better reflect the contributions of **farm labourers**, while recommending a range of **policy reforms** to address their persistent socio-economic marginalisation.

2. Key Issues Highlighted by the Committee

a. Exclusion from PM-Kisan Scheme

- PM-KISAN** benefits are limited to **landholding farmers**, leaving out **landless farm labourers**.
- Nearly **55% of India's population is engaged in agriculture**, but a large proportion lacks land titles.

b. Declining Budget Allocation

- The **Agriculture Ministry's share** in Union Budget has declined from **3.53% in 2021-22** to **2.51% in 2025-26 (projected)**.
- This suggests a **deprioritisation of the farm sector**, especially labour-intensive segments.

c. Inadequate Support for Organic Farming

- Absence of **MSP for organic crops** creates **market uncertainty**, discouraging the transition to sustainable agriculture.

d. Stubble Burning Mismanagement

- Despite technological and regulatory interventions, **stubble burning remains rampant**, particularly in Punjab and Haryana.
- Current policies have failed to create **economic incentives** for crop residue management.

e. Wage Disparities and Poor Social Security

- Farm labourers continue to **receive low and irregular wages**, often below minimum wage levels.
- Lack of **formal social security**, including pensions, health insurance, or job security.

3. Key Recommendations of the Committee

a. Renaming the Ministry

- Rename **Ministry of Agriculture and Farmers Welfare** to **Ministry of Agriculture, Farmers & Farm Labourers Welfare**.
- Symbolic yet essential to **recognise the contribution of landless labourers** in agriculture.

b. Expansion of PM-Kisan

- Include **landless farm labourers** as beneficiaries.
- Leverage **Aadhaar-linked databases** and **MGNREGA records** to identify eligible individuals.

c. Comprehensive Crop Insurance for Marginal Farmers

- Propose a **free and compulsory insurance** scheme for farmers with **landholding up to 2 hectares**.
- Would reduce vulnerability to crop failure, climate risk, and debt cycles.

d. MSP for Organic Crops

- Introduce **MSP on organic produce** to encourage sustainable farming practices.
- Aligns with **India's climate commitments** under the Paris Agreement.

e. Addressing Stubble Burning

- Offer **₹100 per quintal** of paddy as incentive for **stubble collection and recycling**.
- Develop a **market ecosystem** for **biofuel, Bio-CNG**, and industrial use of **crop residue**.

f. Formation of a National Commission

- **National Commission for Minimum Living Wages for Farm Labourers** to:
 - Fix **fair wages** and address **regional disparities**.
 - Recommend **health, pension, and insurance** schemes.
 - Provide **legal safeguards** against exploitative practices.

4. Broader Significance

Area	Impact
Social Equity	Recognises invisible labour and empowers rural poor , especially Dalits and women
Agricultural Resilience	Encourages organic, insured, and sustainable farming
Environmental Management	Tackles air pollution from stubble burning
Economic Upliftment	Improves wages, job security, and income stability in rural areas

5. Challenges to Implementation

- **Administrative Hurdles** in identifying landless beneficiaries.
- **Political resistance** from states over MSP and insurance funding.
- Difficulty in enforcing **labour regulations** in informal rural economy.
- **Budgetary constraints** amid fiscal pressures.

6. Way Forward

- Use **Jan Dhan–Aadhaar–Mobile (JAM)** trinity to implement cash transfers for labourers.
- Integrate **PM-KISAN** with **MGNREGA data** to expand coverage.
- Build institutional capacities in **Krishi Vigyan Kendras (KVKs)** for **organic farming training**.
- Incentivise **private players** to invest in **residue-to-energy** projects.
- Create **district-level wage boards** under the proposed Commission to set region-specific wage floors.

Conclusion

The committee's proposal is a **progressive shift towards inclusive agricultural policy**, recognising the vital role of **landless farm labourers** in India's food economy. Structural reforms—spanning **insurance, income, MSP, and wages**—are essential to **enhance social justice, rural prosperity, and sustainable agriculture** in India.

Cotton Crisis and Bollgard-3: Battling Pest Resistance in India's Bt Cotton

📌 Syllabus Mapping:

✓ GS Paper 3 – Indian Economy: Agriculture, Biotechnology, Science & Tech, Environmental Degradation (Pest Control and GM Crops)

1. Context

India's **cotton sector**, particularly in **North India**, is reeling under the **twin threat of pink bollworms and whiteflies**, leading to crop losses and rising input costs. In this context, **farmers are demanding the approval of Bollgard-3**, a more advanced genetically modified (GM) cotton variety, as an urgent solution.

2. What is Bt Technology?

- **Bt (Bacillus thuringiensis)**: A soil-dwelling bacterium that produces **crystal (Cry) proteins**, toxic to specific insect larvae.
- **Mechanism**: Bt gene inserted into cotton produces proteins toxic to pests like **bollworms**, reducing pesticide use.

Examples of Bt Crops in India:

Crop	Target Pest	Status
Bt Cotton	Bollworms	Approved
Bt Brinjal	Fruit and shoot borer	Approved in Bangladesh; banned in India
Bt Maize	Stem borers	Trials ongoing

3. Bt Cotton in India: The Evolution

Generation	Traits	Year Introduced	Resistance Level
Bollgard-1	Cry1Ac	2002	Moderate
Bollgard-2	Cry1Ac + Cry2Ab	2006	Higher, but now reduced
Bollgard-3 (Proposed)	Cry1Ac + Cry2Ab + Vip3A	Not yet approved	Advanced

4. What is Bollgard-3?

- **Developer**: Monsanto
- **Composition**: Contains **three Bt proteins**—Cry1Ac, Cry2Ab, and Vip3A.
- **Function**: Targets **pink bollworm and other lepidopteran pests** more effectively than previous versions.

Advantages:

- ✓ Enhanced pest resistance (especially pink bollworm)
- ✓ Longer effectiveness against resistance buildup
- ✓ Reduced chemical pesticide dependency

5. Current Crisis: Bollworms & Whiteflies

A. Pink Bollworm (Pectinophora gossypiella)

- Bores into cotton **bolls**, damaging **seeds and fibers**.
- **Developed resistance** to Bollgard-2.
- Survives inside the boll—**hard to reach with external pesticides**.

B. Whiteflies (Bemisia tabaci)

- Sap-sucking insect that transmits **Cotton Leaf Curl Virus (CLCuV)**.
- Thrives in **hot, dry conditions**.
- Difficult to control due to **rapid reproduction**.

Impact on Farmers:

- ! Crop damage → yield reduction
- ! Higher pesticide use → increased costs, health risks
- ! Reduced income → distress in cotton-growing belts

6. Why Bollgard-3 Matters Now

Concern	How Bollgard-3 Helps
Bt Resistance	Vip3A protein targets new receptors in pests
Pesticide Burden	Reduces pesticide usage by targeting multiple pests
Cotton Yield	Reduces boll damage, increasing yield
Farmer Health & Profitability	Lower chemical use = safer and more profitable

7. Concerns Around Bollgard-3 and GM Crops

- ! **Regulatory Delays**: India has **not approved Bollgard-3**, citing biosafety and ethical concerns.
- ! **Environmental Risks**: Possibility of affecting **non-target organisms** and **biodiversity**.
- ! **GM Crop Debate**: Activists oppose further GM adoption fearing **corporate control, seed monopolies**, and **biosafety** issues.
- ! **Monoculture Concerns**: Repeated use of Bt crops without rotation can lead to **resistance** and **soil depletion**.

8. Way Forward

- Scientific Evaluation & Regulatory Approval: Expedite **field trials and bio-safety assessments** of Bollgard-3 under **GEAC** guidelines.
- Integrated Pest Management (IPM): Encourage crop rotation, biological controls, and **non-Bt refuge crops** to delay resistance.
- R&D Investment: Invest in **Indian-developed GM technologies** via ICAR and public-sector biotech institutes.
- Strengthening Extension Services: Educate farmers on **safe pesticide use, resistance management**, and **climate-adaptive practices**.

9. Conclusion

The cotton crisis highlights a **widening gap between pest resistance and biotechnology approval** in India. **Bollgard-3 may offer a solution**, but it must be approached with **scientific rigor, ecological sensitivity, and farmer-centric policies**. Sustainable pest control strategies and timely technology adoption are key to protecting India's cotton economy.

Reciprocal Tariffs and Implications for India

✗ **Syllabus Mapping:**

✓ **GS Paper 3 – Indian Economy: International Trade, WTO, Trade Agreements**

1. Context

The **United States**, under the leadership of **President Donald Trump**, has announced the imposition of **reciprocal tariffs** on countries including **India**, effective **April 2, 2025**, raising concerns about the future of global trade dynamics and bilateral economic relations.

2. What Are Reciprocal Tariffs?

- **Definition:** A reciprocal tariff is a tariff imposed by one country in **response to an existing tariff** levied by another country on its exports.
- **Objective:** To create a **level playing field** by mirroring the tariff structure of trading partners.

Example: If India imposes a 100% duty on imported U.S. motorcycles, the U.S. may respond with a 100% tariff on similar Indian goods.

3. Reciprocal Tariffs vs. Protectionism

Aspect	Reciprocal Tariffs	Protectionism
Definition	Tariffs imposed in response to similar tariffs from others	Broad economic policies to restrict imports and protect local industry
Purpose	Counter unfair trade barriers	Promote self-reliance and reduce foreign dependency
Scope	Specific and bilateral	Often comprehensive and unilateral
Example	U.S. tariffs matching India's import duties on autos	India's high tariffs on agricultural imports

4. Potential Impacts of Reciprocal Tariffs

a. On Indian Economy

- **Reduced Export Competitiveness:** Higher duties will make Indian goods costlier in the U.S.
- **Sectoral Vulnerability:**
 - **Agriculture:** Tariffs on rice, spices, seafood (India's major agri-exports).
 - **Automobiles:** India's 39% tariffs vs U.S. 5%.
 - **Pharmaceuticals:** Accounts for 21.9% of India's exports to U.S.
- **Economic Slowdown:** Slump in exports may reduce **GDP growth** and employment.

b. On Domestic Industries and Consumers

- **Short-term Gains:** Domestic producers may benefit from reduced competition.
- **Consumer Burden:** Retaliatory Indian tariffs on U.S. imports may raise prices of electronics, machinery, etc.

c. On Bilateral and Multilateral Ties

- **Strained U.S.-India Relations:** Especially in **defense, tech, and counterterrorism** partnerships.
- **Undermining WTO Rules:** A threat to **multilateralism** and global **rule-based trade order**.
- **Impact on U.S. Investments in India:** Higher tariffs may discourage tech and manufacturing sector investments.

5. Challenges for India

Challenge	Details
Export Dependency	India relies heavily on the U.S. as a key export destination
Tariff Imbalance	High Indian tariffs on agriculture and autos may invite reciprocal penalties
Multilateral Fallout	Contradiction with WTO norms may reduce India's global negotiating strength
Agricultural Sector Exposure	Price sensitivity and climate challenges already hurt Indian farm exports

6. Way Forward

- Diversify Export Markets: Focus on **EU, Africa, Latin America, and ASEAN** to reduce dependence on the U.S.
- Strengthen FTAs: Expedite agreements with the **UK, Canada, Australia, EU** to **secure market access**.
- Promote Resilient Sectors: Boost **IT & software services**, less prone to tariff disruptions.
- Enhance Manufacturing Base: Position India as a **China-plus-one** destination via **PLI schemes** and **logistics improvements**.
- Improve Regional Connectivity: Projects like **INSTC, Chabahar Port, and India-Middle East-Europe Corridor** can open new trade routes.

7. Conclusion

The U.S. decision to impose **reciprocal tariffs** may challenge India's export competitiveness and diplomatic positioning. However, with **strategic diversification, targeted policy reforms, and stronger regional and multilateral alliances**, India can **mitigate risks** and **seize the opportunity** to enhance its **self-reliance and global economic standing**.

ETHICS, SOCIETY AND SOCIAL ISSUES

Happiness and Development: Ethical Reflections Beyond GDP

❖ Syllabus Mapping:

- ✓ **GS Paper IV – Ethics and Human Interface; Values and Lessons from Great Leaders and Philosophers**
- ✓ **GS Paper II – Governance and Social Justice**
- ✓ **GS Paper III – Environment and Sustainable Development**

I. Introduction

While **GDP (Gross Domestic Product)** has long served as the dominant benchmark for measuring a nation's development, it fails to encompass the **multidimensional nature of human well-being and happiness**. The **World Happiness Report (2024)** and global trends point to a growing need for redefining success beyond mere material accumulation.

II. Conflicts Between Traditional Development Indicators and Genuine Happiness

Parameters	GDP-Focused Development	Happiness-Centered Approach
Economic Growth	Prioritizes production, consumption, and income	Prioritizes well-being, equity, and fulfillment
Well-being Metrics	Neglects health, education, mental peace, and relationships	Emphasizes physical, emotional, and psychological well-being
Environmental Considerations	Ignores degradation and resource exhaustion	Emphasizes sustainability and ecological balance
Social Cohesion	Income inequality and competition	Trust, community bonding, and empathy
Mental Health	Rising anxiety, burnout, consumerism	Mindfulness, inner peace, purpose
Ethical Considerations	Focus on profits and consumption	Altruism, justice, values-based living

► **Case Study: United States** – Despite GDP growth post-World War II, **self-reported happiness levels stagnated**, showing the **Easterlin Paradox** – beyond a certain threshold, more income doesn't increase happiness.

► **India's Rank (126th)** in WHR 2024 despite GDP being the 5th largest – shows disconnect between **economic output and well-being**.

III. Philosophical Dimensions of Happiness

Thinker/School	Perspective on Happiness
Taittiriya Upanishad	<i>Ananda</i> is ultimate bliss – rooted in self-realization
Aristotle	Eudaimonia – flourishing by living virtuously
Buddha	Detachment from desire, compassion
Jeremy Bentham / J.S. Mill	Utility and greatest happiness principle
Nietzsche	Happiness as self-defined, beyond illusion of conventional morality

IV. Proposed Framework for Sustainable and Ethical Development

A. Economic Dimension

- Shift from **GDP to GNH (Gross National Happiness)**.
- Encourage **inclusive economic growth** with redistributive policies.
- Promote **decent work**, social protection, and job satisfaction.

B. Social Dimension

- Universal access to **education, healthcare**, and **social security**.
- Foster **community networks, volunteerism**, and **social capital**.
- Promote **gender equity, digital inclusion**, and cultural tolerance.

C. Environmental Dimension

- Enforce **ecological accountability** through green policies and climate action.

- Adopt **circular economy models**, local sustainability efforts.
- Foster a **nature-connected lifestyle** (aligned with LiFE – *Lifestyle for Environment* initiative).

D. Ethical and Value-Based Dimension

- Embed **empathy, compassion, and justice** in governance.
- Promote **value education** in schools and civil services.
- Support **ethical leadership** and **transparency** in public institutions.

Example: Bhutan integrates cultural preservation, equitable socio-economic development, ecological conservation, and good governance in its **GNH framework**.

V. Way Forward

1. **Policy Shift:** Governments must revise national priorities to center human well-being and environmental sustainability.
2. **Measurement Reform:** Introduce alternative indicators such as **OECD's Better Life Index, UNDP's Human Development Index (HDI)** with an emotional well-being layer.
3. **Public Discourse:** Build awareness on **long-term satisfaction vs short-term pleasure**, emphasizing **mindfulness and ethical living**.

VI. Conclusion

As nations race toward economic growth, a **holistic and ethically informed development paradigm** is the need of the hour — one that upholds **happiness, sustainability, justice, and dignity** as its core pillars. In the words of **Mahatma Gandhi**, “*The world has enough for everyone's needs, but not everyone's greed.*”

Bare Necessities and Ethical Dilemma of Resource Scarcity

📌 Syllabus Mapping:

- ✓ GS Paper IV – Ethics and Human Interface; Public/Civil Service Values and Dilemmas; Utilization of Public Funds
- ✓ GS Paper II & III – Welfare Schemes; Inclusive Development; Health & Resource Allocation

I. Case Study Context

The government is introducing a **health insurance scheme worth ₹5 lakh** to provide healthcare as a basic necessity. While the program benefits the poor, critics argue that it places an increasing **fiscal burden**, risking underfunding of other critical services like education and sanitation.

II. Stakeholder Analysis

Stakeholders	Interests/Roles	Ethical Concerns
Beneficiaries (Poor Citizens)	Affordable healthcare, reduced out-of-pocket expenditure	May become dependent on welfare, inadequate awareness of rights
Government (Policy Makers)	Welfare of citizens, fiscal sustainability, public trust	Budget constraints, prioritization dilemmas, accountability
Healthcare Providers (Public & Private)	Fair remuneration, service quality	Risk of overpricing, neglect of non-insured services
Other Service Sectors (Education, Housing, etc.)	Adequate budget allocation	Risk of fund diversion due to prioritization of health insurance
Taxpayers and Middle Class	Effective utilization of taxes, equitable service access	Ethical concern if subsidies benefit only a few
Civil Society and Media	Advocacy for equity, watchdog role	Risk of partial narratives or politicization
Future Generations	Sustainable public finance	Mounting debt and future fiscal instability

III. Ethical Dilemma

Core conflict:

- ✓ *Upholding Right to Health (as bare necessity)*
- vs.
- ✓ *Ensuring Equitable Allocation of Scarce Public Resources*

IV. Ethical Frameworks for Decision Making

Ethical Theory	Application
Utilitarianism	Allocate resources where the maximum number of lives are improved , such as preventive healthcare over expensive tertiary care.
Rights-Based Approach	Right to health is non-negotiable , but must be balanced with other rights (e.g., right to education, clean water).
Justice as Fairness (Rawls)	Prioritize schemes that benefit the least advantaged while preserving opportunities for others .
Gandhian Ethics	Focus on Sarvodaya (welfare of all) and Antyodaya (upliftment of the last person) but promote self-reliance .
Deontological Ethics	Duty of state to uphold constitutional guarantees (Article 21) but ensure procedural justice in allocation.

V. Strategies for Balancing Bare Necessities with Scarce Resources

1. Prioritization Based on Need and Impact

- Use **evidence-based health impact assessments** to prioritize spending.
- Focus on **preventive and primary healthcare**, which is more cost-effective.

2. Fiscal Prudence and Sustainability

- Gradual rollout based on **pilot models** and **feedback loops**.
- Rationalize subsidies and plug leakages using **DBT** and **Aadhaar-based authentication**.

3. Cross-sectoral Convergence

- Integrate health scheme with **nutrition, water, and sanitation missions** to reduce disease burden.
- Leverage **CSR funds and PPP models** for hospital infrastructure and diagnostics.

4. Ethical Budgeting

- Use **participatory budgeting** to engage citizens in trade-off decisions.
- Evaluate budget allocation using a "**Happiness Quotient**" or "**Bare Necessities Index**" (BNI).

5. Technology as a Force Multiplier

- Use **AI, telemedicine, digital health records** to expand reach without excessive spending.
- Monitor outcomes through **real-time dashboards** and grievance redress systems.

VI. Conclusion

The **ethical responsibility of the state** is to ensure that basic human needs are fulfilled while also ensuring **intergenerational equity** and **efficient use of public funds**. The balance lies not in cutting down welfare, but in **prioritizing, innovating, and collaborating** to meet the greatest needs with the most sustainable means.

Wisdom leads to success

"True progress lies not in how much we grow, but in how justly we distribute what we already have." — Inspired by Gandhiji's vision of Antyodaya

Reconciling Faith and Innovation

❖ Syllabus Mapping:

✓ GS Paper IV – Ethics Case Studies

✓ Conflict of values, Ethical dilemmas, Tolerance and Empathy, Public/Civil Service Values, Harmony in Diversity

Case Overview

A **space company** is launching **human remains into lunar orbit** as part of a commercial memorial service. However, a **native tribe** has **religious objections**, claiming the Moon is sacred and should not become a "graveyard." The company defends the practice as **individual freedom** and claims that **space is a global commons**. The dilemma arises between **commercial innovation** vs. **preservation of cultural and religious sentiments**.

I. Ethical Dilemmas Involved

Ethical Concern	Description
Individual Autonomy vs. Collective Beliefs	The right to choose one's posthumous ritual vs. communal religious sentiments of the tribe.
Scientific Progress vs. Cultural Sensitivity	Progress in space technology and privatization vs. respecting spiritual and ancestral values.
Use of Global Commons	Ethical responsibility in the use of space (a shared resource) for commercial/private ends.

Respect for Minorities	Protection of indigenous rights and heritage in the face of corporate and majority decisions.
Commercialization of Death	Turning human remains into a business may violate ethical norms around dignity in death.

II. Whose Argument Should be Prioritized?

Priority to the Native Tribe – Justification

1. Constitutional and Ethical Grounds

- **Cultural and religious rights** are protected under international human rights norms and national constitutions.
- Articles like **UNDRIP (United Nations Declaration on the Rights of Indigenous Peoples)** affirm the right of indigenous communities to safeguard spiritual practices and sacred sites.

2. Ethical Principle: “Do No Harm”

- The service could **irreversibly harm** the cultural fabric of a community. The company's action, even if well-intended, is not value-neutral.

3. Public vs. Private Interests

- **Space is a global commons** (Outer Space Treaty, 1967). Commercial use must not violate public or communal interests, especially when linked to deep religious or spiritual sentiments.

4. Precedents of Respect for Sacredness

- Just as **river Ganga** is held sacred in India, or **Mount Fuji in Japan**, **cosmic entities** can hold immense spiritual value and should be respected as such.

III. How Can the Conflict Be Resolved? (As a Government Arbitrator)

Strategy	Actionable Steps
Stakeholder Consultation	Engage both parties in a mediation process . Promote mutual understanding.
Regulation with Restrictions	Allow lunar memorials in specific, non-sacred zones of space, based on cultural mapping.
Cultural Impact Assessment (CIA)	Similar to environmental impact, mandate CIA before such launches.
Global Ethical Guidelines for Space Use	Collaborate with UN COPUOS (Committee on Peaceful Uses of Outer Space) to frame international norms.
Awareness and Sensitivity	Promote cultural awareness among tech innovators . Institutions like NASA already consult anthropologists before launches.
Alternative Innovation	Encourage the company to explore symbolic or virtual space memorials that don't involve physical remains.

Conclusion

While **individual autonomy** and **scientific progress** are essential components of a modern society, they must **coexist with compassion, cultural respect, and ethical responsibility**. As a government arbitrator, one must adopt a **balanced approach**, where **sacredness of heritage** is upheld and **technology aligns with humanity**.

“Science without conscience is the ruin of the soul.” — Rabelais

India's Declining Total Fertility Rate – Causes, Impacts and the Way Forward

Syllabus Mapping:

- GS Paper 1 – Indian Society (Population and associated issues)**
- GS Paper 2 – Governance (Health, Welfare Schemes), Issues related to vulnerable sections**
- GS Paper 3 – Economy (Demographics, Human Capital)**

1. Why in the News?

- The **Global Burden of Disease Study 2021**, published in *The Lancet*, projects that **India's Total Fertility Rate (TFR)** will fall to **1.29 by 2050** and **1.04 by 2100**, far below the replacement level of 2.1.

2. What is Total Fertility Rate (TFR)?

- **TFR**: The average number of children a woman is expected to have during her reproductive years (15–49), assuming current fertility patterns.
- **Replacement Level**: TFR of **2.1** is required to maintain population stability (accounting for child mortality).

3. Causes of Declining TFR in India

Factor	Explanation
Education	Increased female literacy and higher education delay marriage and reduce fertility.
Family Planning	Government programs and awareness on contraception have improved birth spacing and limited family sizes.
Rising Infertility	Lifestyle diseases , pollution, and stress are increasing infertility among couples (affecting 30 million people).
Delayed Marriages & Parenthood	Urbanization and career focus have shifted average age of first childbirth to late 20s or 30s.
Improved Child Health	Lower infant mortality reduces the perceived need to have more children.

4. Impacts of Declining TFR

✓ Positive Impacts

- **Environmental sustainability**: Less pressure on land, water, and air.
- **Better educational outcomes**: With fewer children, **more public resources** per child.
- **Gender equity**: Can improve if fewer children translate to higher women's participation in the workforce.

✗ Negative Impacts

Area	Challenges
Demographics	Ageing population , rising dependency ratio (less workforce, more elderly).
Fiscal burden	Increased need for pensions , healthcare , and elderly care .
Economic growth	Labour shortages may reduce productivity and economic dynamism .
Migration dynamics	May force India to open up to skilled immigration to maintain workforce.
Social structure	Shrinking family sizes can lead to social isolation among elderly, breakdown of traditional care systems .

5. Comparative Global Trends

Country	TFR	Policy Response
Japan	1.3	Subsidized childcare, eldercare infrastructure, robotics to assist ageing population
China	1.2	End of one-child policy, now promoting 3-child policy
France	1.8	Tax credits, generous maternity/paternity leave , public nurseries

6. Way Forward for India

✓ Enhance Family Support Systems

- Increase **government and employer support** for young families.
- **Subsidized childcare**, flexible parental leave policies, creches at workplaces.

⚖ Promote Gender Equality

- Encourage **shared household and parenting responsibilities**.
- Incentivize men's involvement in domestic and caregiving roles.

🧠 Skill-Based Economy

- Focus on **continuous skilling**, including for older citizens, to **maximize workforce productivity**.
- Emphasize **formal sector job creation** to absorb the existing working-age population.

👵 Elderly Welfare and Healthcare

- Establish **integrated elder care systems**, geriatric training for health professionals.
- Build **social security nets** for the aged.

🌐 Migration Policy

- Design **strategic immigration policies** to plug labour gaps while ensuring social cohesion.

7. Conclusion

The declining TFR in India is a **double-edged sword**. While it may ease environmental and resource pressures, it poses serious **demographic, economic, and social challenges** in the long term. A **holistic policy framework** that balances family welfare, gender equity, economic restructuring, and active ageing is critical to **harness demographic transition** without adverse consequences.

Live-In Relationships and the Evolving Socio-Legal Landscape in India

❖ Syllabus Mapping:

✓ GS Paper 1 – Indian Society (Salient features of Indian society, Diversity of India, Social Empowerment)

✓ GS Paper 2 – Governance, Constitution, Polity (Rights Issues, Judiciary, UCC Debate)

1. Why in the News?

- The *Uttarakhand Uniform Civil Code (UCC) Bill, 2024* has mandated **compulsory registration of all live-in relationships** in the state, creating constitutional debates around **privacy, liberty, and state interference in personal choices**.

2. Key Highlights: Uttarakhand UCC & Live-In Relationships

- Mandatory Registration:** All couples in a live-in relationship must register with the registrar, irrespective of residence.
- Maintenance Provisions:** Maintenance rights granted to women deserted by their live-in partners.
- Penalty for Non-Registration:** Non-compliance could result in up to *six months of imprisonment*.
- Police Station Records:** Registration details are to be maintained at police stations, raising surveillance concerns.
- Constitutional Questions:**
 - Right to Privacy:** Guaranteed under Article 21 (*Justice K.S. Puttaswamy case*).
 - Right to Personal Liberty:** Compulsory registration arguably infringes upon *adult autonomy and consensual relationships*.

3. Judicial Recognition of Live-In Relationships

Case	Judgment/Principle Established
<i>Badri Prasad v. Dy. Director of Consolidation (1978)</i>	50-year live-in accepted as marriage, granting legal validity.
<i>Indra Sarma v. V.K.V. Sarma (2013)</i>	Live-in not illegal if consensual and between adults. Defined "relationship in the nature of marriage".
<i>Lalita Toppo v. State of Jharkhand (2018)</i>	Women in live-in relationships entitled to protection under <i>Protection of Women from Domestic Violence Act (PWDVA)</i> .
<i>Bharatha Matha v. R. Vijay Renganathan (2010)</i>	Children from live-in relationships are legitimate.

4. Social and Legal Dimensions of Live-In Relationships in India

Social Dynamics

- Urbanization & Global Influence:** Changing cultural norms and delayed marriages are making live-in arrangements common in metros.
- Autonomy & Consent:** Especially among the youth, it's seen as a **choice-driven model** focusing on *emotional and practical compatibility*.
- Stigma & Cultural Resistance:** Traditional families, especially in rural India, continue to associate live-ins with *moral decay*.

Legal Protection (Evolving but Fragmented)

Wisdom leads to success

- No codified legislation** governing live-in relationships.
- Legal gray areas** in terms of *inheritance rights, property, child custody, and maintenance*.
- PWDVA, 2005** recognizes some forms of cohabitation under "relationship in the nature of marriage."

5. Impact on Institution of Marriage

Parameter	Live-In Relationship Impact
Individual Autonomy	Emphasizes personal freedom over social approval.
Evolving Commitment Norms	Reduces pressure of lifelong commitment inherent in marriage.
Compatibility Testing	Offers trial before formalizing relationships.
Redefining Family	Challenges heteronormative, patriarchal family norms.
Economic Freedom	Avoids legal and financial liabilities associated with divorce and alimony.

6. Concerns and Challenges

- Legal Ambiguity:** Unclear status on **inheritance, succession, and property rights**.
- Surveillance State:** Mandatory registration may lead to **state overreach** into personal matters.
- Gender Protection:** Women may be vulnerable in unregulated live-in settings without legal protection.
- Generational Conflict:** Traditional family systems may clash with modern relationship choices.

7. Way Forward

- ✓ Need for Specific Legislation: Introduce **separate law** governing rights and responsibilities in live-in relationships, akin to **civil unions** in many Western countries.
- ✓ Protecting Women's Rights: Ensure **maintenance, protection from abuse, and legal recourse** for deserted or harassed partners.
- ✓ Child Welfare Provisions: Clear codification on **legitimacy, guardianship, and inheritance rights** for children born out of live-in relationships.
- ✓ Voluntary Registration: Instead of *mandatory police registration*, encourage **voluntary legal recognition**, perhaps via a civil registry or court declaration.

8. Conclusion

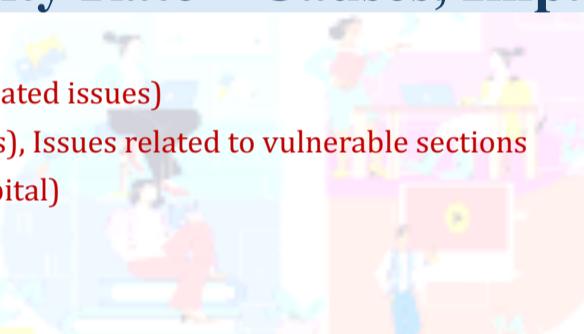
Live-in relationships reflect an **evolving socio-legal reality** in India, especially among urban youth. While judicial recognition has broadened their legitimacy, **statutory clarity is essential** to balance **individual freedoms with legal protection**, without infringing on the constitutional **right to privacy and liberty**.

A progressive, rights-based legislative framework—not a surveillance-driven one—is the need of the hour.

India's Declining Total Fertility Rate – Causes, Impacts and the Way Forward

❖ Syllabus Mapping:

- ✓ GS Paper 1 – Indian Society (Population and associated issues)
- ✓ GS Paper 2 – Governance (Health, Welfare Schemes), Issues related to vulnerable sections
- ✓ GS Paper 3 – Economy (Demographics, Human Capital)



1. Why in the News?

- The **Global Burden of Disease Study 2021**, published in *The Lancet*, projects that **India's Total Fertility Rate (TFR)** will fall to **1.29 by 2050** and **1.04 by 2100**, far below the replacement level of 2.1.

2. What is Total Fertility Rate (TFR)?

- **TFR**: The average number of children a woman is expected to have during her reproductive years (15–49), assuming current fertility patterns.
- **Replacement Level**: TFR of **2.1** is required to maintain population stability (accounting for child mortality).

3. Causes of Declining TFR in India

Factor	Explanation
Education	Increased female literacy and higher education delay marriage and reduce fertility.
Family Planning	Government programs and awareness on contraception have improved birth spacing and limited family sizes.
Rising Infertility	Lifestyle diseases , pollution, and stress are increasing infertility among couples (affecting 30 million people).
Delayed Marriages & Parenthood	Urbanization and career focus have shifted average age of first childbirth to late 20s or 30s.
Improved Child Health	Lower infant mortality reduces the perceived need to have more children.

4. Impacts of Declining TFR

✓ Positive Impacts

- **Environmental sustainability**: Less pressure on land, water, and air.
- **Better educational outcomes**: With fewer children, **more public resources** per child.
- **Gender equity**: Can improve if fewer children translate to higher women's participation in the workforce.

✗ Negative Impacts

Area	Challenges
Demographics	Ageing population, rising dependency ratio (less workforce, more elderly).
Fiscal burden	Increased need for pensions, healthcare, and elderly care .
Economic growth	Labour shortages may reduce productivity and economic dynamism .
Migration dynamics	May force India to open up to skilled immigration to maintain workforce.
Social structure	Shrinking family sizes can lead to social isolation among elderly, breakdown of traditional care systems .

5. Comparative Global Trends

Country	TFR	Policy Response
Japan	1.3	Subsidized childcare, eldercare infrastructure, robotics to assist ageing population
China	1.2	End of one-child policy, now promoting 3-child policy
France	1.8	Tax credits, generous maternity/paternity leave , public nurseries

6. Way Forward for India

👉 Enhance Family Support Systems

- Increase **government and employer support** for young families.
- **Subsidized childcare**, flexible parental leave policies, creches at workplaces.

⚖️ Promote Gender Equality

- Encourage **shared household and parenting responsibilities**.
- Incentivize men's involvement in domestic and caregiving roles.

🧠 Skill-Based Economy

- Focus on **continuous skilling**, including for older citizens, to **maximize workforce productivity**.
- Emphasize **formal sector job creation** to absorb the existing working-age population.

👵 Elderly Welfare and Healthcare

- Establish **integrated elder care systems**, geriatric training for health professionals.
- Build **social security nets** for the aged.

🌐 Migration Policy

- Design **strategic immigration policies** to plug labour gaps while ensuring social cohesion.

7. Conclusion

The declining TFR in India is a **double-edged sword**. While it may ease environmental and resource pressures, it poses serious **demographic, economic, and social challenges** in the long term. A **holistic policy framework** that balances family welfare, gender equity, economic restructuring, and active ageing is critical to **harness demographic transition** without adverse consequences.

Global Food Waste Crisis: Bridging the Gap Between Plenty and Poverty

Wisdom leads to success

📌 Syllabus Mapping:

- ✓ GS Paper 1 – Society (Social Issues, Hunger, Urbanization)
- ✓ GS Paper 2 – Governance (SDG Goals, Food Policies, Institutional Reforms)
- ✓ GS Paper 3 – Environment (Waste Management, Climate Change, Sustainable Development)

1. Context: A Startling Revelation by UNEP

The UN Environment Programme's **Food Waste Index Report 2024** presents an alarming picture—**1.05 billion tonnes of food** were wasted globally in **2022**, constituting nearly **20% of consumer-available food**. Among the worst contributors is **India**, where food waste remains high due to structural, cultural, and infrastructural inefficiencies.

2. Understanding the Terminology

- **Food Waste**: Refers to **edible and inedible portions** discarded at the consumer, retail, or restaurant level.
- **Food Loss**: Occurs **early in the supply chain**, often due to **inefficient harvesting, storage, or transportation**.

3. India's Food Waste Dynamics: The Scale of the Problem

- **Per Capita Waste**: Indians waste around **55 kg of food annually**, which is lower than the **73 kg per person in the U.S.**
- **Total Volume Concern**: Due to India's **large population**, the **absolute volume** of household and commercial waste remains **among the highest globally**.

4. Paradox of Excess and Hunger

- Globally, while **1.3 billion tonnes of food** is wasted every year, over **735 million people** suffer from **chronic undernourishment**.
- **India ranks high on both counts:** substantial food wastage coexists with **widespread hunger and child malnutrition**.
- **Industrialized nations** like the **U.S., China, and Europe** waste more than **222 million tonnes annually**, more than Sub-Saharan Africa's total food production.

5. Sources of Food Waste and Loss in India

a. Households (61% of Global Food Waste)

- **Overbuying and Poor Meal Planning**
- **Cultural Norms:** Overcooking during festivals or hospitality rituals.
- **Plate Waste and Leftovers**
- **Lack of Cold Storage** in homes leads to faster spoilage.

b. Food Service Sector

- **Buffet dining, large portion sizes, and inventory mismanagement** in restaurants and hotels.
- **Improper refrigeration** in markets reduces shelf life of perishables.

c. Retail and Supermarkets

- **Aesthetic Rejection:** Discarding edible produce for visual blemishes.
- **Surplus and Overstocking:** Short shelf-life items often expire unsold.

d. Post-Harvest and Supply Chain Loss

- **Lack of cold chains, poor handling during transit, and inadequate storage infrastructure.**
- **Sorting and Processing Waste:** Nutrient-rich parts often discarded.

e. Climate Linkages

- **Warmer Climates** → More spoilage due to poor refrigeration.
- Countries with **hot climates** have **higher food waste per capita**.
- **Weather Extremes:** Droughts, floods, and erratic monsoons disrupt **crop yields and supply chains**.

6. Economic, Social, and Environmental Consequences

a. Economic Losses

- **Global loss** from food waste exceeds **\$1 trillion annually**.
- Increases **operational costs** in hospitality and retail.
- Drives **inflation**, as resources like **land, water, labor, and fertilizers** are wasted.
- Adds pressure on **urban waste disposal systems**, where food waste constitutes **10-12% of municipal solid waste**.

b. Social Impact

- Prevents food from reaching **nutritionally insecure populations**.
- Worsens **inequality**, with excess coexisting with starvation.
- Hampers progress on:
 - **SDG 2: Zero Hunger**
 - **SDG 12.3:** Halving global food waste at retail and consumer levels

c. Environmental Impact

- **GHG Emissions:** Food waste contributes to **8-10% of global emissions**, mainly **methane** from landfills.
- **Water and Soil Pollution:** Chemical leachates from decomposing food contaminate groundwater.
- **Biodiversity Threats:** Unnecessary cultivation leads to **deforestation and habitat destruction**.

7. Institutional and Policy Interventions in India

a. Policy & Programme Initiatives

- **FSSAI's "Save Food, Share Food, Share Joy":** Promotes food donation.

- **Operation Greens:** Strengthens **cold storage and supply chains** for perishables.
- **PM Kisan Sampada Yojana:** Boosts **food processing infrastructure** to minimize spoilage.
- **E-NAM (National Agriculture Market):** Improves **price discovery and direct market access**, reducing post-harvest losses.

b. Behavioural and Retail Practices

- Incentivizing supermarkets to donate unsold but edible food.
- Encouraging standardization and reduction of **visual aesthetic barriers** in produce acceptance.

8. Way Forward: Towards a Sustainable Food Ecosystem

a. Household-Level Measures

- **Smart Shopping and Meal Planning**
- **Leftover Reuse and Creative Cooking**
- **Composting** organic waste to reduce landfill burden.
- **Food Donation** partnerships with NGOs and shelters.

b. Systemic and Structural Reform

- **Expand Cold Chain Infrastructure** across districts.
- **Efficient Logistics** to reduce supply chain breakdown.
- **Enforce Food Waste Audits** in retail and hospitality.
- Taxing **ultra-processed foods** and **incentivizing surplus redistribution** (Economic Survey 2024–25 recommendation).

c. Education and Cultural Change

- Integrate **food conservation curriculum** into schools and colleges.
- Conduct **mass campaigns** like "No Waste Week" and urban **food-sharing networks**.

✓ Conclusion: Time to Rethink Food as a Resource, Not a Commodity

India's food waste problem is a **multi-dimensional crisis**—economic, social, and environmental. Addressing it will require a **holistic policy push, grassroots awareness, and behavioral change**. Reducing waste is no longer just a sustainability goal; it is a **moral imperative** for ensuring **food security, climate resilience, and inclusive development**.



IQRA
Wisdom leads to success

GEOGRAPHY AND DISASTER

Subduction Zones and the Future of the Atlantic Ocean

📌 Syllabus Mapping:

✓ GS Paper 1 – Geography (Geomorphology, Plate Tectonics, Earthquakes and Volcanoes)

1. Why in the News?

Portuguese geologists have predicted that the **Gibraltar subduction zone** could **close the Atlantic Ocean in 20 million years**, marking a **key phase in the Wilson Cycle**, and reshaping Earth's geological structure.

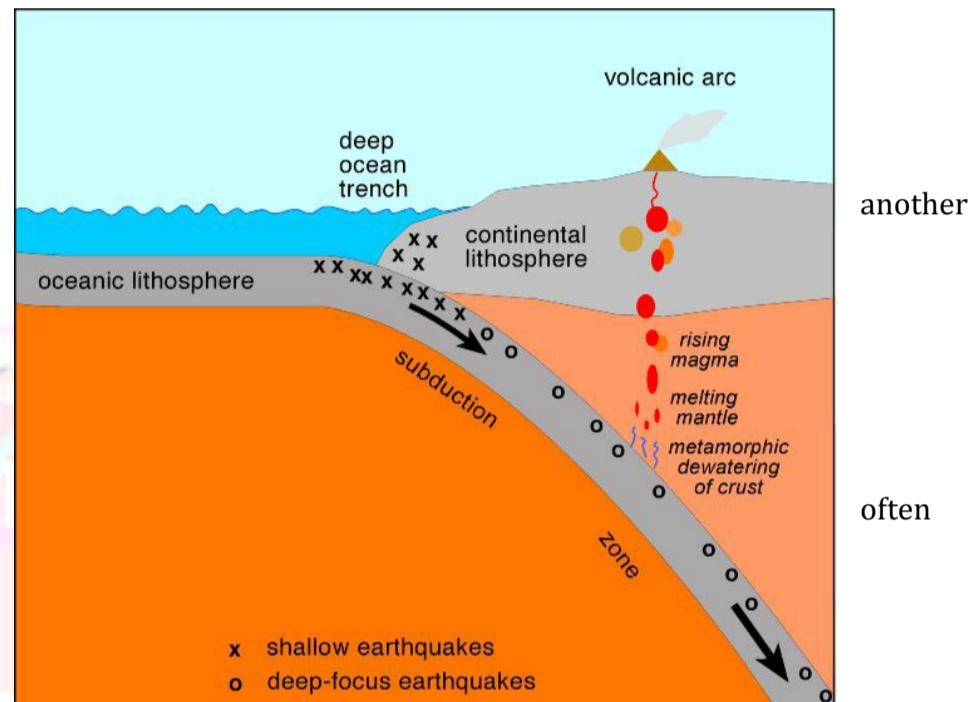
2. What is a Subduction Zone?

► **Definition:** A **subduction zone** is a type of **convergent plate** boundary where **one tectonic plate (usually oceanic)** is forced beneath (usually continental or lighter plate), into the **mantle**, where it is **recycled**.

► **Features:**

- **Benioff Zone:** The inclined zone of earthquake activity along the subduction path.
- **Volcanoes:** Chains of volcanoes often form on the overriding plate.
- **Earthquakes:** Subduction zones generate **megathrust earthquakes**, exceeding magnitude 8.

Plate Boundary Type	Motion	Example
Convergent	Towards each other	Andes, Himalayas
Divergent	Away from each other	Mid-Atlantic Ridge
Transform	Slide past	San Andreas Fault



3. Key Highlights from the Gibraltar Subduction Study

Aspect	Detail
Location	Gibraltar Strait – Tectonic boundary between African Plate and Eurasian Plate
Prediction	Subduction invasion into Atlantic, possibly leading to its closure
Phenomenon	May form a new Ring of Fire -like structure in Atlantic
Process	Gradual pulling of ocean floor into mantle → Shrinking of the ocean basin
Geological Cycle	Aligns with Wilson Cycle of ocean basin evolution

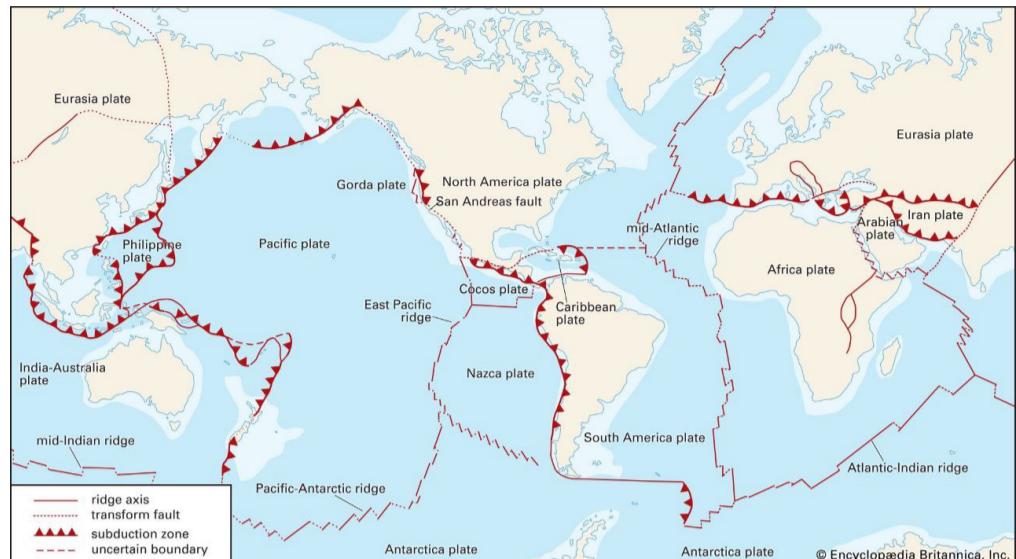
4. What is the Wilson Cycle?

Stage	Explanation
Rifting	A supercontinent breaks, forming a new ocean basin
Divergence	Plates move apart; seafloor spreading occurs
Subduction	Converging plates begin closing the ocean
Collision	Plates collide, forming mountains
Closure	Ocean disappears; new supercontinent forms

The current **Atlantic Ocean** is in a **mature divergent phase**, but **incipient subduction zones** like **Gibraltar** may shift it into a **convergent phase**.

5. Global Subduction Zones – Examples

Subduction Zone	Plates Involved	Impact
Andes (South America)	Nazca Plate under South American Plate	Andes Mountains, earthquakes
Japan Trench	Pacific Plate under Eurasian Plate	Frequent earthquakes, tsunamis
Mariana Trench	Pacific Plate under Philippine Plate	Deepest ocean trench
Cascadia (Northwest US)	Juan de Fuca Plate under North America	Seismic risk, potential megathrust quake
Lesser Antilles (Atlantic)	Atlantic Plate under Caribbean Plate	Tsunami potential



6. Gibraltar Subduction Zone: Special Case

- **Mature Atlantic-type Ocean:** Typically passive margins (no subduction) make initiating subduction **difficult** due to **thick, stable lithosphere**.
- **However,** Gibraltar Arc exhibits signs of **slow but active subduction**—suggesting **rare tectonic reactivation**.
- **Similar systems:** Lesser Antilles, Scotia Arc.

7. Geopolitical and Environmental Implications (Contemporary Dimension)

- **Seismic Risk:** Western Mediterranean cities (e.g., southern Spain, Morocco) may face increasing earthquake risks.
- **Sea Level and Coastal Changes:** Subduction-induced topographic shifts could influence **marine navigation** and **coastal infrastructure**.
- **Resource Shifts:** Changing plate boundaries may open up **new resource zones** or alter **undersea cable placements**.

8. Conclusion

The study reveals the **long-term dynamism of Earth's interior**, illustrating how **subduction** can **initiate in passive margins** and dramatically reshape **continental and oceanic geography** over millions of years. The **Gibraltar Arc**, though slow-moving today, might be the **beginning of the end for the Atlantic Ocean**, echoing deep tectonic rhythms of the **Wilson Cycle**.

Vanishing Ice: 9 Trillion Tonnes of Glaciers Lost Since 1975

❖ Syllabus Mapping:

- ✓ GS Paper 1 – Geography (Physical Geography, Climate Systems)
- ✓ GS Paper 3 – Environment and Disaster Management (Climate Change, Resource Conservation)

1. Context: Alarm Bells Over Global Glacier Decline

A recent **UNESCO report**, released in tandem with the **first-ever World Day for Glaciers (March 21, 2025)**, reveals that **global glaciers have lost over 9,000 gigatonnes of ice since 1975**. This crisis has led to **UNESCO and WMO declaring 2025 as the International Year of Glaciers' Preservation**, with urgent calls for climate action and international cooperation.

2. What Are Glaciers?

- Glaciers are **slow-moving bodies of ice** formed by **compressed snowfall over time**, predominantly found in **polar regions** and **high-altitude mountain ranges** such as the **Himalayas, Alps, Andes, and Tibetan Plateau**.
- Globally, there are over **200,000 glaciers**, covering approximately **700,000 km²**.
- Glaciers **gain mass** via **accumulation** (snowfall, deposition) and **lose mass** through **ablation** (melting, sublimation).

3. Key Findings from UNESCO's 2024 Glacier Report

Indicator	Value / Trend
Total Ice Lost (since 1975)	9,000 gigatonnes, equal to a Germany-sized ice block with 25m thickness
Glacial Loss in 2024	450 gigatonnes
Recent Trend	5 of the last 6 years saw record-breaking glacial decline
Most Affected Regions	Arctic, Tibetan Plateau, Andes, European Alps

4. Consequences of Rapid Glacial Retreat

a. Sea-Level Rise

- Melting glaciers are among the **primary drivers of global sea-level rise**.
- Every **1 mm rise** in sea level potentially endangers **up to 3 lakh people** annually through coastal flooding.

b. Water Security Threats

- Glacier-fed rivers support **agriculture, drinking water, and hydropower** for **billions**, particularly in **Asia**.
- Their disappearance could lead to **seasonal water shortages**, especially in **Himalayan and Andean nations**.

c. Disasters and Hazards

- Loss of ice increases vulnerability to:
 - **Glacial lake outburst floods (GLOFs)**
 - **Landslides, flash floods, avalanches**
 - **Ecosystem disruption**

d. Cultural and Indigenous Displacement

- Glaciers hold **spiritual significance** for several communities (e.g., **Bakonzo people of Uganda**).
- Melting glaciers lead to **cultural erosion** and **loss of identity**.

e. Conflict Over Resources

- Regions like **East Africa** are already witnessing **water-sharing tensions** due to **shrinking glacial streams**.

f. Climate System Disruption

- Glaciers act as **climate regulators**, reflecting solar radiation.
- Their decline contributes to **climate feedback loops**, exacerbating **global warming** and **extreme weather events**.

5. Himalayan Significance: India's Regional Concerns

- The **Himalayan glaciers** feed major rivers like the **Ganga, Brahmaputra, and Indus**.
- Retreating glaciers threaten **1.1 billion people** in **South Asia** with **water scarcity**, energy disruption, and disaster risks.
- Increasing **GLOF events** and changes in **monsoonal runoff patterns** are already being observed in the Indian Himalayan Region.

6. Way Forward: A Multi-Layered Strategy

a. Strengthening Glacial Research

- Expand satellite-based monitoring via **ISRO, Cartosat, Sentinel, and Landsat missions**.
- Encourage global collaborations under **Cryosphere-focused programs**.

b. Early Warning Systems and Resilience

- Use **AI/ML models** and **remote sensing** to predict **glacial hazards** like **avalanches and GLOFs**.
- Implement real-time surveillance near **high-risk lakes** and settlements.

c. Accelerated Climate Commitments

- Enforce **Net-Zero targets, transition to renewables**, and strengthen global climate compacts like the **Paris Agreement**.
- Introduce **glacier preservation** into climate financing mechanisms and loss and damage frameworks.

d. Adaptive Water Resource Management

- Build **alternative water storage systems** like **snow harvesting, aquifer recharge**, and **community-level reservoirs**.
- Promote **micro-irrigation techniques** in glacial regions to conserve water.

✓ Conclusion: Glaciers—Earth's Dying Reservoirs

Glaciers are not merely frozen rivers—they are **lifelines for ecosystems, cultures, and economies**. Their accelerated melt, fueled by **climate change**, signals a planetary emergency. It is imperative that nations **act collectively and swiftly** to **preserve the cryosphere**, not only for environmental integrity but also for **ensuring water and climate security** for future generations.

Mount Erebus: Volcanic Fire Amidst Antarctic Ice

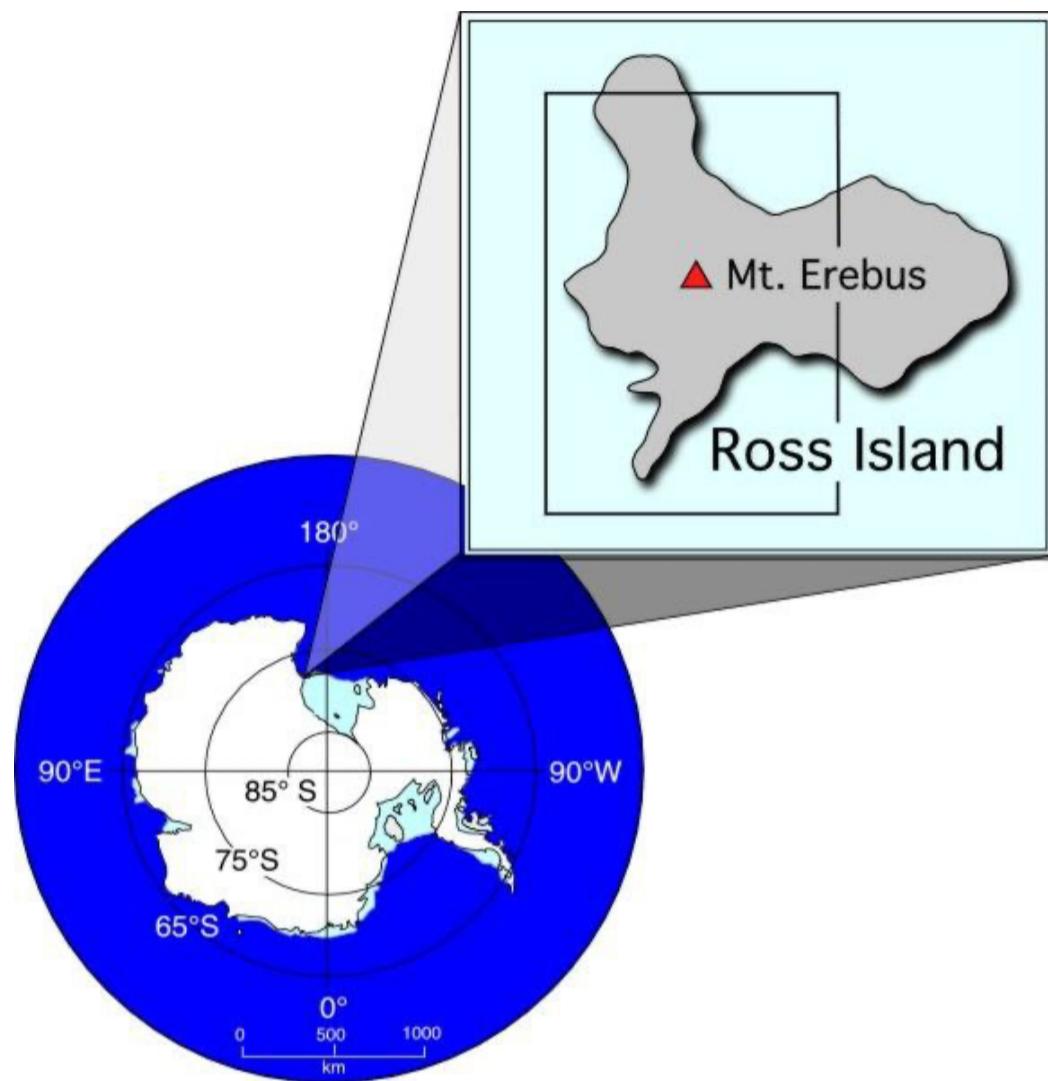
❖ Syllabus Mapping:

✓ GS Paper 1 – Physical Geography (Landforms, Volcanoes, Geomorphology)

✓ GS Paper 3 – Environment & Science and Technology (Biodiversity in Extreme Environments)

1. Context: Microbial Life Discovered Beneath Antarctic Ice

Recent scientific exploration in **ice caves beneath Mount Erebus**, Antarctica's southernmost active volcano, has uncovered **thriving microbial communities**, reshaping the understanding of **life sustainability in extreme, sunlight-deprived environments**.



2. Mount Erebus: Geological Identity and Location

a. Geographic Placement

- Situated on **Ross Island**, along the **Ross Sea coast of Antarctica**.
- Stands at an elevation of **3,794 meters (12,448 feet)**, making it:
 - The **second-highest volcano in Antarctica** (after Mount Sidley).
 - The **southernmost active volcano** on Earth.

b. Tectonic and Volcanic Features

- Classified as an **intraplate stratovolcano**.
- Part of the **Ring of Fire**, which is characterized by frequent seismic and volcanic activity around the **Pacific Ocean Basin**.
- **Lava Composition:** Alkalic lava—typical of **rift and intraplate volcanism**, rich in sodium and potassium.

3. Unique Geological and Climatic Features

a. Permanent Lava Lake

- One of the **few volcanoes globally** with a **persistent lava lake**, maintained despite extreme cold conditions.

b. Ice Caves and Fumaroles

- **Geothermal heat** carves out extensive **ice caves**, where temperatures can reach up to **25°C (77°F)** even as surface temperatures drop to **-73°C (-100°F)**.

- **Fumarolic activity** leads to the formation of **ice towers**, as steam vents condense and freeze at the surface.

4. Discovery and Nomenclature

- Discovered during **Sir James Clark Ross's expedition in 1841**, a British naval officer and polar explorer.
- The volcano was named "**Erebus**" after **HMS Erebus**, one of the two ships in his Antarctic exploration fleet.

5. Volcanic Activity and Eruption Type

- **Continuous Activity:** Active since **1972**, exhibiting **Strombolian-type eruptions**—characterized by:
 - Moderate explosions
 - Frequent emission of **gas-rich basaltic magma**

6. Microbial Life in the Ice Caves: A Breakthrough Discovery

a. Extremophiles in Action

- Microorganisms found here survive in **complete darkness**, thriving in the absence of sunlight.

b. Chemosynthesis Over Photosynthesis

- Unlike typical ecosystems, these microbes rely on **chemosynthesis**—a process using **chemical energy** from gases like **methane and sulfur compounds**, not solar energy.

c. Unprecedented Biodiversity

- Scientists discovered **entirely new strains of microorganisms**:
 - Some with **no genetic links** to known species.
 - Certain **DNA sequences remain unclassified**, suggesting the existence of **previously unknown evolutionary branches**.

d. Implications for Astrobiology

- These findings fuel **scientific curiosity about life on icy extraterrestrial bodies** like **Europa (Jupiter's moon)** or **Enceladus (Saturn's moon)**, where similar subsurface volcanic activity and ice environments exist.

7. Why Mount Erebus Matters

Feature	Scientific Significance
Permanent Lava Lake	Rare geological phenomenon; useful for magma behavior studies
Ice Caves	Natural labs for studying extremophiles and climate interactions
Active Volcanism	Offers insights into plate tectonics and magmatic activity
Microbial Discovery	Opens avenues in astrobiology , genetics , and biotechnology

✓ Conclusion: A Frozen Frontier of Fiery Secrets

Mount Erebus stands not only as a monument of natural extremes—**lava and ice coexisting in the coldest continent**—but also as a gateway to understanding **life's resilience in harsh conditions**. Its **volcanic activity**, **subterranean ecosystems**, and **unexplored biodiversity** underscore its significance for **climate science**, **geology**, and the **search for extraterrestrial life**.

Petrification: Nature's Way of Turning Life into Stone

❖ Syllabus Mapping:

- ✓ GS Paper 1 – Physical Geography (Geological Processes, Fossil Formation)
- ✓ GS Paper 3 – Environment & Ecology (Natural Heritage, Biodiversity Conservation)

1. Context: Fossil Discovery in Rajmahal Hills, Jharkhand

A rare and **well-preserved** **petrified fossil** was recently uncovered near **Barmasia village in the Pakur district**, located in the **Rajmahal Hills of Jharkhand**. This finding is significant for **India's paleobotanical and geological heritage**, offering insights into the region's prehistoric ecological conditions.

2. What is Petrification?

- **Petrification** (or **permineralization**) is a **fossilization process** where **organic material is gradually replaced by minerals**, effectively **turning biological matter into stone**.
- It preserves even the **microscopic structure** of the original organism, often in stunning detail.

3. The Science Behind Petrification

a. Mechanism of Formation

Stage	Description
Burial	Organism (e.g., wood, plant, or bone) is buried under sediment .
Infiltration	Mineral-rich water percolates through the organic tissue.
Mineral Replacement	Organic material begins to decay and dissolve , and minerals such as silica (SiO₂) or calcite (CaCO₃) fill the cellular voids.
Solidification	Over thousands to millions of years , the entire structure becomes fully mineralized , forming a petrified fossil .

b. Conditions Required

- **Mineral-rich groundwater** (especially containing silica or carbonate).
- **Anaerobic environment** to prevent complete decomposition.
- **Long burial time** with minimal disturbance.

4. Types of Materials That Undergo Petrification

- **Petrified Wood**: Most common; tree trunks and branches.
- **Bones and Shells**: Hard tissues of animals can petrify under ideal conditions.
- **Plant Tissues**: Rare but valuable for studying extinct flora.
- **Soft Tissues** (less common): Occasionally preserved under exceptional conditions.

5. Geological Significance of Petrified Fossils

- **Paleoclimatic Indicators**: Reveal information about **past climates**, **vegetation**, and **atmospheric composition**.
- **Stratigraphic Markers**: Useful in **dating sedimentary rock layers** and understanding **geological timelines**.
- **Biodiversity Record**: Offers insight into **extinct species**, especially flora from the **Jurassic and Cretaceous periods**.

6. Rajmahal Hills and Fossil Richness

- The **Rajmahal Hills** in Jharkhand are known for their **Jurassic-era plant fossils**, including **petrified ferns and gymnosperms**.
- These hills are part of the **Gondwana rock system**, making them one of the most fossil-rich regions in India.
- Earlier discoveries in this region have been vital to the **Birbal Sahni Institute of Palaeosciences (BSIP)** and other research institutions.

7. Conservation and Heritage Implications

- Petrified forests and fossil beds** are valuable for **scientific research, geotourism, and educational outreach**.
- Sites like **National Fossil Wood Parks** (e.g., in **Tamil Nadu and Rajasthan**) showcase India's petrified treasures.
- Recent calls for **UNESCO Global Geopark status** for fossil-rich areas like Rajmahal highlight the need for **preservation** against mining, deforestation, and vandalism.

✓ Conclusion: Preserving the Past in Stone

Petrification is more than just a geological curiosity—it is a **window into prehistoric life**, formed through **complex natural processes over millions of years**. Discoveries like those in **Rajmahal Hills** help us decode the **Earth's deep-time history**, making it essential to **protect fossil-rich landscapes** as part of our **natural and scientific heritage**.

Wular Lake: Kashmir's Natural Reservoir Under Threat

📌 Syllabus Mapping:

✓ GS Paper 1 – Geography (Lakes and Wetland Ecosystems)

✓ GS Paper 3 – Environment & Disaster Management (Wetlands, Flood Regulation, Ramsar Sites)

1. Context: Shrinking of India's Largest Freshwater Lake

The **Wular Lake**, located in **Jammu & Kashmir**, is rapidly shrinking due to **siltation and encroachment**, posing **serious flood threats** to the **Kashmir Valley**. This decline has raised alarm over the **loss of ecosystem services, biodiversity, and livelihood opportunities**.

2. Geographical Location and Formation

- Location:** Situated in **Bandipora district**, roughly **50 km northwest of Srinagar**, in the northwestern part of the **Kashmir Valley**.
- Fed by:** Primarily by the **Jhelum River**, which enters the lake before flowing into **Pakistan**.
- Origin:** A **tectonic lake**, believed to be the **remnant of the ancient Satisar Lake**, formed due to **geological faulting**.

3. Environmental Recognition

- Recognized as a **Wetland of International Importance** under the **Ramsar Convention in 1990**.
- Listed under **Montreux Record** (threatened Ramsar sites) due to ecological degradation.

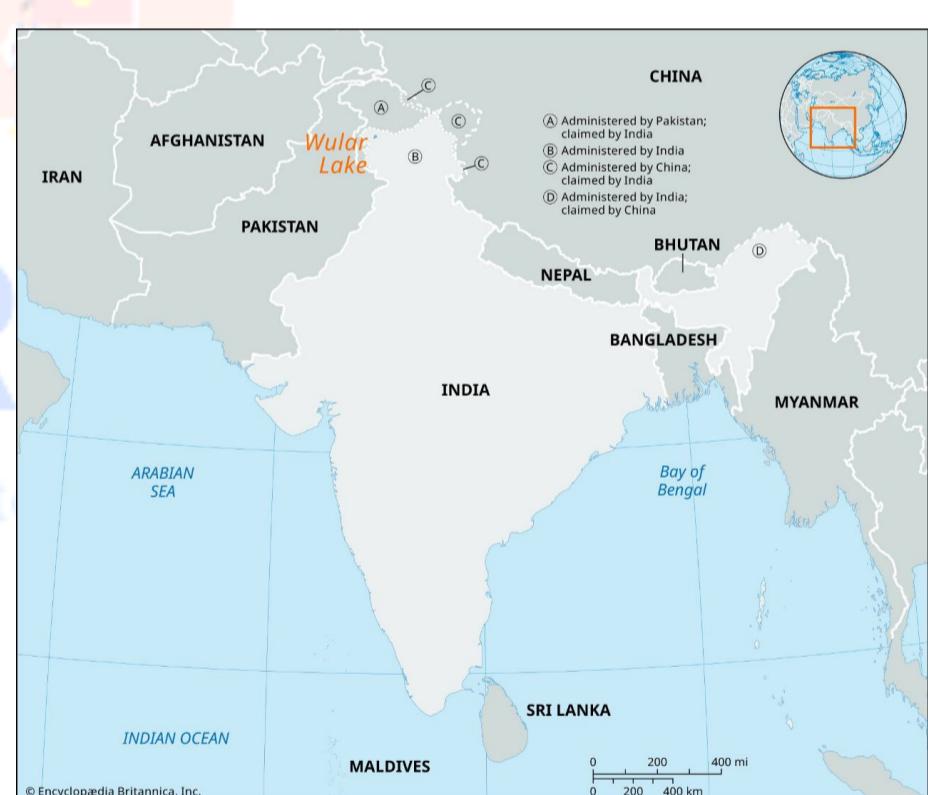
4. Ecological and Hydrological Importance

a. Flood Mitigation

- Functions as a **natural flood basin**, absorbing excess flow from the **Jhelum River**, thereby reducing flood risks in **Srinagar and South Kashmir**.

b. Biodiversity Hotspot

- Fauna:** Home to **Himalayan monal, otters**, and numerous fish species.
- Birdlife:** Supports **migratory birds** along the **Central Asian Flyway**, including **common teal, Eurasian coot, and mallards**.
- Flora:** Aquatic vegetation includes **lotus, water chestnut**, and submerged macrophytes.



5. Socio-Economic Relevance

- **Fisheries:** Over **8,000 families** depend on **fishing** from the lake.
- **Agriculture:** Fertile surrounding lands benefit from its moisture-retaining capacity.
- **Tourism:** Offers **boating, birdwatching**, and scenic views, attracting visitors to **Zaina Lank**.

6. Cultural and Historical Significance

- **Zaina Lank (Zainul Lank):** A **man-made island** built by **Sultan Zain-ul-Abidin (15th century)**, showcasing the lake's historical legacy.
- Ancient texts refer to **Wular** as part of the **mythical Satisar Lake**, highlighting its spiritual and cultural presence in **Kashmiri folklore**.

7. Current Threats to Wular Lake

Threat	Explanation
Siltation	Sediments from upstream deforestation and soil erosion choke the lake bed.
Encroachments	Agricultural expansion and settlements reduce water spread.
Pollution	Discharge of untreated sewage and solid waste.
Overfishing and Weed Infestation	Disturbs the lake's ecological balance and reduces aquatic biodiversity.

8. Restoration and Conservation Measures

a. Wular Lake Conservation and Management Plan

- Initiated by the **Wular Conservation and Management Authority (WUCMA)**.
- Focuses on:
 - **Desiltation**
 - **Catchment treatment**
 - **Biodiversity protection**
 - **Livelihood restoration**



b. Integration with National Wetlands Programme: Supported by **MoEFCC** under **National Plan for Conservation of Aquatic Ecosystems (NPCA)**.

c. Community Involvement: Eco-restoration is being carried out through **community-based afforestation** and **controlled fishing cooperatives**.

✓ Conclusion: A Lake in Need of Urgent Attention

Wular Lake is not only India's **largest freshwater lake** but also a **critical ecological, economic, and hydrological lifeline** for Kashmir. Its degradation threatens not only biodiversity but also flood regulation and the livelihoods of thousands. **Sustainable wetland management**, combined with **community participation and scientific intervention**, is essential to **restore this Ramsar jewel** and secure Kashmir's water and ecological future.

Geo-Environmental Watch

❖ Syllabus Mapping:

✓ GS Paper 1 – Geography (World Physical Features, Lakes, Volcanoes)

✓ GS Paper 3 – Disaster Management (Natural Disasters: Cyclones, Volcanoes), Environmental Governance

1. Colossal Iceberg A23a: World's Largest Ice Mass on the Move

a. What is A23a?

- **A23a** is currently the **largest iceberg in the world**.
- It originally **broke off from Antarctica's Filchner-Ronne Ice Shelf in 1986** but remained **stationary for over three decades**.

b. Recent Movement

- In 2023, A23a **started drifting again** and has now **grounded about 70 km from South Georgia Island**, a key wildlife-rich region.

c. Why It Matters?

- Massive icebergs like A23a can **disrupt marine ecosystems**, especially **krill and penguin colonies** in the South Atlantic.

- It serves as a **climate change indicator**, showing the long-term movement and melt of ancient Antarctic ice.

2. Understanding Icebergs

- Icebergs are **large floating chunks of freshwater ice** that **calve from glaciers or ice shelves**.
- They drift in **polar and subpolar oceans** and vary in size from small fragments to structures like A23a, covering hundreds of square kilometers.

3. South Georgia Island: Biodiversity at Risk

- **Location:** South Atlantic Ocean
- **Political Status:** British Overseas Territory (South Georgia and South Sandwich Islands)
- **Ecological Importance:** Critical breeding ground for **seals, penguins, and seabirds**; under threat from drifting icebergs and climate shifts.

4. Ana Sagar Lake, Rajasthan: Court Orders Demolition for Wetland Violation

a. About the Lake

- **Location:** Ajmer district, Rajasthan
- **Type:** Artificial freshwater lake, constructed between **1135-1150 AD** by **King Arnoraja** (also known as **Ana**), grandfather of **Prithviraj Chauhan**.

b. Historical Significance

- **Mughal Additions:**
 - **Jahangir** built **Daulat Bagh** garden on its bank.
 - **Shah Jahan** constructed **five marble Baradaris (pavilions)** enhancing its architectural legacy.

c. Environmental Concern

- The Supreme Court has ordered the demolition of the **Seven Wonders Park**, citing violations of **wetland conservation norms** and **urban encroachment**.
- The lake is **seasonally replenished by the Luni River**, originating from the **Aravalli hills**.

5. Cyclone Alfred: Unusual Weather Event Hits Australia

a. Cyclone Overview

- **Category:** 2 Tropical Cyclone
- **Winds:** Sustained winds at **95 km/h**, gusts up to **130 km/h**
- **Region Affected:** **Eastern Australia**, developed in the **Coral Sea**

b. Meteorological Uniqueness

- Alfred formed alongside **two other low-pressure systems** from a **single trough**, a **rare occurrence in the South Pacific**, complicating early predictions.

6. Mount Lewotobi Laki Laki Eruption: Volcanic Alert in Indonesia

a. About the Volcano

- **Location:** Flores Timur district, East Nusa Tenggara province, Indonesia
- Part of a **twin-volcano system** along with **Mount Lewotobi Perempuan**
- Classified as a **stratovolcano (composite volcano)**

b. Geological Significance

- Part of the **Pacific Ring of Fire**, a **tectonically active belt** responsible for over **75% of the world's active and dormant volcanoes**.
- **Height:** 1,584 meters (5,197 feet)
- Known for **explosive eruptions**, posing **local hazards** and disrupting aviation.

✓ Conclusion: Interconnected Natural Systems, Global Implications

From **melting Antarctic icebergs** to **volcanic eruptions in the Pacific**, and from **heritage lake conservation** to **tropical cyclones**, these events reflect the **vulnerability of Earth's dynamic systems**. Understanding and managing such natural events through **scientific foresight, conservation laws**, and **climate resilience** strategies is essential to reduce environmental and humanitarian risk.

Ensuring Dam Safety in India: Challenges and the Way Forward

📌 Syllabus Mapping:

✓ GS Paper 3 – Disaster Management, Infrastructure (Energy, Dams), Environment

1. Why in the News?

The National Dam Safety Authority (NDSA) has formed an **expert committee** to examine the **safety of the Medigadda barrage** under **Kaleshwaram Lift Irrigation Project (KLIP)** in Telangana — the **world's largest multi-stage lift irrigation project**.

2. Institutional Framework for Dam Safety

Tier	Institution	Function
1st	National Committee on Dam Safety (NCDS)	Policy making, strategic guidance
2nd	National Dam Safety Authority (NDSA)	Implementation, technical expertise
3rd	State Committee on Dam Safety (SCDS)	Compliance & reporting
4th	Dam Safety Units (DSUs)	Operation and maintenance of individual dams

3. About Dam Safety Act, 2021

- **Objective:** Ensure **safe operation, surveillance, inspection and maintenance** of specified dams.
- **Applicability:** Dams >15m height or 10–15m with specific conditions.
- **Roles Defined:** Puts legal accountability on dam owners (state agencies, PSUs, private entities).

4. Major Dam Safety Concerns in India

1. Ageing Infrastructure

- Nearly **300 dams >100 years old** in India.
- Structural fatigue, outdated design, and material deterioration are common issues.



2. Seismic Vulnerability

- **Many large dams lie in seismic zones.**
 - *Example:* Chang Dam suffered liquefaction during **2001 Bhuj earthquake**.

3. Extreme Weather Events

- *Example:* Chungthang Dam (Sikkim) destroyed due to **glacial lake outburst flood (2023)**.

4. Overtopping & Sedimentation

- Causes **embankment erosion** and reduces **storage capacity**.
- **UN estimates** India will lose **26% of dam storage by 2050** due to sedimentation.

5. Financial & Maintenance Challenges

- **Budgetary constraints** affect timely inspections and repairs.
- *Example:* CAG report on **Gandhi Sagar Dam (MP)** flagged non-compliance with safety norms.

5. India's Initiatives for Dam Safety

A. Regulatory & Monitoring

- **Dam Rehabilitation and Improvement Project (DRIP)**
 - Supports **736 dams across 19 States**, funded by **World Bank & AIIB**.
- **Dam Health and Rehabilitation Monitoring Application (DHARMA)**
 - Captures dam condition data; enabler of **AI-based decision making**.

B. Institutional Mechanisms

- **National Register of Large Dams (NRLD)**
- **India WRIS** – GIS-based data portal for water resource assets.
- **SHAISSYS** – Tool to assess seismic risks to dam structures.
- **National Centre for Earthquake Safety of Dams** – MNIT Jaipur.

C. International Cooperation

- Indian National Committee on Large Dams (INCOLD) – interfaces with ICOLD.
- World Commission on Dams – best practices in planning & decommissioning.

6. Global Dam Failures – Lessons for India

Incident	Country	Casualties
Banqiao Dam (1975)	China	80,000+
Machchhu Dam (1979)	India	2,000+
Derna Dam (2023)	Libya	3,800+

7. Innovative Solutions and the Way Forward

A. Subsurface Dams

- Adopted in Japan – store water underground without surface reservoir.
- Benefits:
 - No evaporation or siltation loss
 - No displacement or submergence
 - Lower disaster risk

B. Smart Design and Modern Construction

- Consider climate resilience and earthquake-resistant engineering.
- Enforce updated BIS design codes during new constructions.

C. Decommissioning Ageing Dams

- Evaluate economic and environmental costs.
- Example: US decommissioned over 900 dams since 1990s.

D. Improve Capacity and Funding

- States must allocate dedicated dam maintenance budgets.
- Train DSUs in AI, GIS, and drone technologies for inspection and monitoring.

E. Citizen Awareness and Transparency

- Public dashboard of dam safety scores and audit reports.
- Encourage community vigilance and disaster drills in dam downstream areas.

8. Conclusion

IQRA
Wisdom leads to success

Dam safety is critical to national water security, disaster prevention, and energy resilience. With aging infrastructure, climate uncertainties, and growing demand, India must prioritize technological innovation, institutional coordination, and proactive maintenance. The Dam Safety Act, 2021, if implemented robustly, can be a watershed moment in India's dam governance.

Avalanche Hazards in the Himalayas: Causes, Vulnerabilities & Mitigation

❖ Syllabus Mapping:

- ✓ GS Paper 1 – Indian Geography (Physical Geography, Himalayan Region)
- ✓ GS Paper 3 – Disaster Management (Preparedness, Mitigation Strategies)

1. Context: BRO Site Hit by Avalanche in Chamoli, Uttarakhand

A recent avalanche near Mana Pass in Chamoli district disrupted a Border Roads Organisation (BRO) project, highlighting the recurring threat of snow avalanches in the Himalayan belt. This incident reaffirms the need for enhanced preparedness and monitoring infrastructure in vulnerable zones.

2. What Is an Avalanche?

- An avalanche is a sudden and rapid descent of snow, ice, and debris down a mountain slope.
- It can be triggered by natural events like heavy snowfall or human actions such as construction, skiing, or military movement.
- Avalanches pose severe risks to human life, infrastructure, and connectivity, particularly in mountainous terrain.

3. Key Triggers and Causes of Avalanches

Trigger	Explanation	Examples
Heavy Snowfall & Wind Load	Rapid accumulation of snow weakens surface layers	Manali Village (Feb 2025)
Slope Angle (30°–45°)	Ideal slope inclination increases the likelihood of slippage	Chamoli (2021)
Temperature Variation	Melting and refreezing cycles weaken the snowpack	Rohtang Pass (2019)
Seismic Vibrations	Earthquakes dislodge unstable snow masses	Sikkim Quake (2011)
Weak Snow Layers (Slab Formation)	Poorly bonded snow layers collapse under stress	Gulmarg Avalanche (2010)
Deforestation & Infrastructure Projects	Disturb slope stability	Char Dham Project, Uttarakhand
Recreational & Military Activities	Skiing and troop movements disturb snow cover	Siachen Incident (2016)

4. Avalanche-Prone Zones in India

Avalanches occur predominantly in the **Western Himalayan states**, where steep terrain and high snowfall converge.

- **Jammu & Kashmir**: Kashmir Valley, Gurez, Kargil, and Ladakh regions.
- **Himachal Pradesh**: Kullu, Chamba, Kinnaur, and Lahaul-Spiti valleys.
- **Uttarakhand**: Chamoli, Tehri Garhwal, and higher reaches along the Indo-China border.

5. Why the Himalayas Are Highly Avalanche-Prone

- Topographical and Geological Features
 - Steep gradients (30°–45°) with fragile mountain geology.
 - **Young fold mountains** formed by the **Indian-Eurasian plate collision** make the region inherently unstable.
- High Snowfall and Rapid Accumulation: Winters bring **heavy snowfall**, especially in **high-altitude zones**, leading to deep snowpack layers.
- Temperature Volatility: **Sharp fluctuations** between day and night temperatures cause **freeze-thaw cycles**, weakening snow cohesion.
- Seismic Vulnerability: The Himalayas fall under **Seismic Zones IV and V**, making them prone to **earthquake-induced avalanches**.
- Climate Change: Rising global temperatures contribute to **glacial melting**, reducing snow stability and increasing avalanche frequency.
- Unregulated Development: **Road-building**, **tunnel excavation**, and **deforestation** further destabilize mountain slopes.

6. Mitigation and Protection Measures

- Technological Forecasting and Early Warning Systems
 - **Doppler Radars** and **Automatic Weather Stations (AWS)** collect real-time data on snowpack and wind conditions.
 - **AI and Machine Learning-based models** are being integrated for better prediction accuracy.
 - **Satellite Monitoring** using **Cartosat, Sentinel-2, Landsat** helps track snow movement and accumulation zones.
- Structural Measures
 - **Snow Fences and Barriers**: Prevent excessive snow buildup by reducing wind drift.
 - **Avalanche Deflectors and Dams**: Redirect snow flows away from infrastructure and settlements.
 - **Protective Tunnels and Galleries**: Secure routes through known avalanche corridors.
 - **Controlled Blasting**: Artificial triggering of small-scale avalanches to reduce larger risks.
- Land Use Regulation
 - Enforcing **zoning laws** to restrict settlements and construction in **high-risk avalanche paths**.
- Slope Stabilization Techniques
 - **Terracing, afforestation**, and **rock-bolting** to reinforce slope strength and reduce mass movement.
- Community Engagement and Preparedness
 - **Awareness drives, mock drills**, and **training in survival techniques** for local residents and workers.

7. Government Measures for Avalanche Management

a. NDMA Guidelines – 2009

- Issued “**Management of Landslides and Snow Avalanches**” guidelines with a focus on:
 - Hazard zonation mapping**
 - Early warning system deployment**
 - Training and capacity-building** in vulnerable zones

b. IMD Avalanche Forecasting

- The **India Meteorological Department** issues **daily avalanche bulletins** for high-risk zones by analyzing:
 - Snowfall intensity, temperature changes, slope angle, and wind speed**

c. SASE – DRDO Initiative

- The **Snow and Avalanche Study Establishment (SASE)** under **DRDO** is India’s nodal agency for avalanche research.
- Uses **Remote Sensing, Infrared Satellite Imaging (DrISS)**, and **GPS mapping** for real-time tracking.

✓ Conclusion: Need for Integrated Avalanche Risk Management

Avalanches are a **recurring natural hazard in the fragile Himalayan ecosystem**, posing challenges to infrastructure, military logistics, and civilian safety. Mitigation must go beyond post-disaster response to include:

- Predictive science**
- Sustainable construction**
- Inclusive disaster preparedness**



IQRA
Wisdom leads to success

HISTORY, ART & CULTURE

PEPSU Muzhara Movement: A Forgotten Struggle for Land Justice

❖ Syllabus Mapping:

- ✓ GS Paper 1 – Modern Indian History (Post-Independence Agrarian Movements)
- ✓ GS Paper 2 – Governance (Land Reforms, Rights of Vulnerable Sections)
- ✓ GS Paper 3 – Agriculture (Land Ownership and Agrarian Reforms)

1. Context: Remembering a Milestone in Agrarian Resistance

March 19 marks the **anniversary of the PEPSU Muzhara Movement**, a significant but often overlooked agrarian uprising in **post-independence Punjab** that symbolized the **fight for land ownership and agrarian justice** for tenant farmers known as **muzharas**.

2. Historical Background: Roots of the Agrarian Crisis

a. What Was PEPSU?

- PEPSU (Patiala and East Punjab States Union) was a union of princely states formed in **1948** after independence, comprising parts of present-day **Punjab** and **Haryana**.

b. Who Were the Muzharas?

- Muzharas were **landless tenant farmers** who cultivated lands for generations without formal **ownership rights**.
- They worked under **biswedars** (landlords or jagirdars), often facing **feudal exploitation**, high rents, and social oppression.
- This exploitative tenancy system had **colonial roots**, intensified under British rule through the **Permanent Settlement** and princely land grants.

3. The Movement: Demand for Land and Dignity

a. Timeline and Expansion

- Though it began in a **nascent form in the 1930s**, the movement gained real momentum **post-1947**, peaking around **1950–52**.

b. Key Demands and Issues

- **Abolition of feudal tenures** and jagirdari practices.
- **Ownership rights for muzharas** who had been tilling land for generations.
- **Reduction in rent and land redistribution**, especially surplus land owned by large landlords.

c. Forms of Protest

- Mass mobilizations, petitions, and **peaceful civil disobedience**.
- Support from **peasant organizations, Kisan Sabhas, and socialist and leftist political groups**.

4. Outcome and Legacy: Reforming the Agrarian Structure

a. Legislative Impact

- The movement culminated in **land reform legislation in 1952** in PEPSU, which:
 - Granted **land ownership rights** to tenant farmers.
 - Abolished intermediary rent-seeking classes.
 - Strengthened the **bargadar system** (sharecroppers' rights).

b. Broader Impact

- Inspired similar **agrarian reforms in other parts of India**, including the **Tenancy Reforms Acts** in West Bengal, Kerala, and Andhra Pradesh.
- Highlighted the **importance of farmer resistance and grassroots mobilization** in democratic change.

c. Recognition

- The movement is today remembered as a **landmark in Punjab's agrarian history**, reflecting the **resilience of farmers** against oppressive structures.
- It also laid the foundation for **later farmers' movements**, including the **Green Revolution beneficiaries** in Punjab.

5. Contemporary Relevance

- **Land rights** remain a **core issue** in India, especially for **marginal and tenant farmers**.
- As per the **NSSO 77th Round (2019)**:
 - Over **55% of rural households** do not own any agricultural land.
- The Muzhara movement serves as a **reminder of the historical struggles** that shaped **modern land policy**.
- In the context of recent farmer protests (e.g., **2020-21 Farm Laws agitation**), such movements highlight the **ongoing conflict between agrarian communities and structural inequities**.

✓ Conclusion: A Legacy of Resistance and Reform

The **PEPSU Muzhara Movement** was not just a local agrarian protest—it was a **pivotal moment in India's land reform journey**, driven by **grassroots mobilization and legislative transformation**. It exemplifies how **social justice and land redistribution** became vital to the making of **postcolonial India's democratic fabric**.

The Battle of Karnal (1739): Prelude to the Fall of the Mughal Empire

❖ Syllabus Mapping:

✓ GS Paper 1 – Modern Indian History (Decline of Mughal Empire, Foreign Invasions)

✓ GS Paper 2 – Governance (Collapse of Central Authority and Rise of Regionalism)

1. Historical Context: The Crumbling Mughal Authority

By the early 18th century, the **Mughal Empire** was already **showing signs of administrative decay**, military fatigue, and economic distress. The invasion by **Nader Shah of Persia** was a major external shock that **exposed the vulnerabilities** of the once-powerful empire.

2. The Battle of Karnal: Key Facts

- **Date:** 24 February 1739
- **Location:** Karnal, present-day Haryana, approximately 110 km north of Delhi.
- **Belligerents:**
 - **Mughal Empire** led by **Emperor Muhammad Shah Rangila**.
 - **Persian Empire** led by **Nader Shah**, the founder of the **Afsharid dynasty**.
- **Outcome:** A decisive Persian victory.

3. Reasons Behind the Mughal Defeat

a. Military Inferiority

- The **Mughal forces**, though numerically larger (~1,00,000 troops), were **disorganized, poorly trained**, and **lacked leadership**.
- In contrast, Nader Shah's army was **well-disciplined, modernized**, and adept in **gunpowder warfare** and **flanking tactics**.

b. Internal Court Politics

- Mughal nobles were divided; **self-interest and infighting** led to poor coordination on the battlefield.
- Some generals, like **Nizam-ul-Mulk**, avoided full engagement, anticipating future gains from imperial collapse.

c. Poor Strategic Planning

- The Mughals failed to **anticipate Persian military strength**, and **logistics** were poorly managed.
- Nader Shah used **deception tactics**, drawing Mughal forces into open terrain, ideal for Persian cavalry.

4. Immediate Consequences: A National Catastrophe

a. Massacre of Delhi

- After entering Delhi **unopposed**, Nader Shah ordered a **brutal massacre** in retaliation to rumors of Persian soldiers being attacked.

- An estimated **20,000 to 30,000 civilians** were killed, causing **panic and terror**.

b. Looting of Enormous Wealth

- Nader Shah **plundered the royal treasury**, seizing:
 - The famed **Peacock Throne**
 - The **Koh-i-Noor** and **Darya-i-Noor** diamonds
 - Approximately **₹70 crore** worth of gold, silver, and jewels (in contemporary value)

5. Long-Term Impact on the Mughal Empire

a. Decline in Central Authority

- The **imperial treasury was emptied**, crippling the empire's **military and administrative capacity**.
- Provinces became increasingly **autonomous**, and the emperor's authority became **ceremonial**.

b. Rise of Regional Powers

- The vacuum left by the weakening Mughals led to the **emergence of powerful regional states**, such as:
 - **Marathas** in the Deccan
 - **Sikhs** in Punjab
 - **Nawabs of Bengal, Awadh, and Hyderabad**

c. Opening for European Expansion

- The **destabilized political environment** post-Karnal facilitated the **entry and consolidation of British and French trading companies**.
- Within decades, the **East India Company** would transition from trade to **territorial control** (e.g., Battle of Plassey in 1757).

6. Exposure of Mughal Military Inefficiency

- The defeat highlighted the **obsolete nature of the Mughal army**, which still relied on **cavalry and outdated weaponry**.
- The battle demonstrated the need for **military modernization**, which the Mughals failed to implement.

7. Legacy and Final Collapse

- Though the empire continued **nominally until 1857**, it was **politically hollow** post-1739.
- The final blow came during the **Revolt of 1857**, after which **Bahadur Shah Zafar** was exiled and **British Crown rule** formally replaced Mughal sovereignty.

✓ Conclusion: A Defining Turning Point in Indian History

The **Battle of Karnal** was more than a military defeat—it was a **symbolic collapse of the Mughal Empire's might**, revealing the **fragility of India's centralized rule** in the face of modern warfare. It set in motion a series of transformations, from **regional assertion to colonial conquest**, forever altering the subcontinent's trajectory.

Lachit Barphukan: Legacy of the Ahom Warrior

❖ Syllabus Mapping:

- ✓ **GS Paper 1 – Indian History, Culture and Personalities**
- ✓ **GS Paper 2 – Government initiatives for Heritage and Valorization**
- ✓ **Essay & Ethics – Patriotism, Civilizational Values**

1. Why in News?

- Prime Minister unveiled the "Statue of Valour", a 125-foot bronze statue of Ahom General Lachit Barphukan at Jorhat, Assam, celebrating his **military brilliance** and **resistance against Mughal expansionism**.

2. Who was Lachit Barphukan?

Feature	Details
Born	1622, Charaideo district, Assam
Parents	Mother – Kunti Moran; Father – Momai Tamuli Barbarua
Position	Barphukan (Commander-in-chief), appointed by King Chakradhwaj Singha
Clan	Lukhurakhun (One of many Ahom clans)
Legacy	Defeated Mughals in Battle of Saraighat (1671)
Military Innovations	Guerrilla warfare, espionage (Katajis), naval strategy

3. The Battle of Saraighat (1671)

- **Location:** Brahmaputra River near Guwahati, Assam
- **Ahom Forces Leader:** Lachit Barphukan
- **Mughal Commander:** Raja Ram Singh (under Aurangzeb)
- **Background:** Mughals had earlier won **Battle of Alaboi (1669)**; aimed to consolidate Assam
- **Outcome:** Ahoms decisively defeated the Mughals using superior riverine tactics
- **Significance:**
 - **Halted Mughal expansion** into Northeast India
 - Marked a **symbol of regional resistance and strategic military leadership**

4. The Ahom Kingdom (1228–1826)

Founding and Expansion

- **Founder:** Sukaphaa, a Shan prince from Mong Mao (present-day Myanmar)
- **First Capital:** Charaideo (modern-day UNESCO Tentative List site)
- Expanded under rulers like **Suhungmung**, annexing Chutiya and Koch territories.

Political Structure

- **Centralized Monarchy** with **Patra Mantris** (Council of Ministers)
- Key officials:
 - **Barphukan:** Military-civil head (like a Viceroy)
 - **Barbarua:** Military and judicial head
- **Suppression of Bhuiyan rule** to establish strong centralized state

Military System

- **Mandatory military service** for all adult males
- **Navy:** Core strength of the Ahom army
- **Divisions:** Elephant cavalry (Hatibaruah), naval units, foot soldiers
- **Espionage:** Utilization of **Katajis** for intel and infiltration

Economy & Society

- **Paik system:** Forced rotational labour – backbone of administration
- **Land Reforms:** Community consent needed for land transfer
- **Artisans:** Often sourced from outside regions due to limited caste diversity
- **Rice cultivation** innovations introduced

Culture and Religion

- **Initially animistic**, converted to Hinduism under **Siv Singh (1714–1744)**
- **Buranjis:** Historical chronicles in Tai-Ahom and later Assamese
- **Art & Literature:** Land grants to poets and scholars; translation of Sanskrit works
- **Charaideo Maidams:** Royal burial sites known as "**Pyramids of Assam**"

5. End of the Ahom Rule

- **Burmese Invasion** and subsequent **Treaty of Yandabo (1826)** led to British annexation
- Marked the **end of a 600-year-old dynasty** which fiercely defended its sovereignty

6. Legacy and Recognition

Contribution	Details
Statue of Valour (2024)	125-foot bronze statue in Jorhat, Assam
Lachit Diwas (24th Nov)	Celebrated annually in Assam
Lachit Borphukan Gold Medal	Awarded to the best graduating cadet at National Defence Academy

7. Conclusion

Lachit Borphukan epitomizes the values of **patriotism, tactical brilliance, and cultural resilience**. His leadership in the **Battle of Saraighat** stands as a testament to **India's regional resistance against imperial forces**. As India honours its unsung heroes through monuments and recognition, **Lachit's legacy becomes a guiding light for youth and defence forces alike**.

Geo-Heritage Sites: India's Natural Geological Legacy

❖ Syllabus Mapping:

- ✓ **GS Paper 1 – Indian Heritage & Culture: Art forms, Literature, Architecture**
- ✓ **GS Paper 1 – Geography: Physical geography – landforms and geological features**
- ✓ **GS Paper 3 – Environment and Conservation**

1. Why in News?

- **Pandavula Gutta** (Telangana) and **Ramgarh Crater** (Rajasthan) have been recently **declared as Geo-Heritage Sites** by the **Geological Survey of India (GSI)**.

2. What are Geo-Heritage Sites?

Definition

Geo-heritage sites are geological locations of scientific, educational, cultural, or aesthetic value, **recognized for their rare and unique geological, paleontological, geomorphological, or stratigraphic significance**.

- **Examples** include: Rock formations, minerals, meteorites, fossils, caves, rock sculptures, and sediments.
- **Governing Authority**: Declared and maintained by the **Geological Survey of India (GSI)**.

3. Site 1: Pandavula Gutta (Telangana)

Feature	Description
Location	Jayashankar Bhupalpally district, Telangana
Discovery Year	1990
Age	Considered older than the Himalayas
Key Features	Rock shelters, boulders, and caves with Palaeolithic rock paintings
Themes in Paintings	Wildlife (Bison, Tiger, Antelope), Weapons (bows, arrows), Swastika motifs
Significance	One of the few sites in South India showcasing prehistoric man's rock art
Cultural Insight	Depicts early human understanding of nature, tools, and symbolic expression

4. Site 2: Ramgarh Crater / Astrobleme (Rajasthan)

Feature	Description
Location	Baran district, Rajasthan (Vindhyan Range, Parbati River)
Type	Astrobleme – geological structure caused by meteorite impact
Discovered by	Geological Survey of India (1869)
Geological Age	Mesoproterozoic Era (~1000 to 1600 million years ago)
Diameter	~3.2 km, with 200+ metre elevation
Proof of Impact	Presence of Coesite – high-pressure form of SiO ₂
Associated Structures	10th-century Bhand Devara Shiva Temple , cave temples (Kisnai, Annapurna)
Environmental Status	Protected under Wildlife (Protection) Act, 1972
Wetland Recognition	Pushkar Talab notified under Wetlands Rules, 2017
Global Recognition	Listed in Earth Impact Database (Planetary and Space Science Centre, Canada)

5. Other Important Meteorite Craters in India

Crater	Location	Key Details
Lonar Crater	Maharashtra	Formed ~50,000 years ago in Deccan Basalt
Dhala Crater	Madhya Pradesh	India's oldest known impact crater (~2.5 billion yrs)
Ramgarh Crater	Rajasthan	Recently added to Earth Impact Database

6. Significance of Geo-Heritage Sites

- **Scientific:** Offers valuable insight into Earth's evolution, geological history, and cosmic interactions
- **Cultural:** Preserves ancient **civilizational knowledge and human-environment interaction**
- **Educational:** Serves as **natural classrooms** for geosciences and archaeology
- **Tourism Potential:** Promotes **geotourism** and sustainable development in rural areas
- **Environmental:** Many sites overlap with **wetlands, forests, and biodiversity hotspots**

7. Way Forward

- **Legislation:** Need for a comprehensive **Geo-Heritage Conservation Act** to protect unrecognized sites
- **Community Awareness:** Promote **local engagement** and **eco-tourism models** for conservation
- **UNESCO Tagging:** Push for **World Heritage Site status** for prominent geo-heritage locations like Charaideo Maidams and Lonar Crater
- **Integration with NEP 2020:** Promote **geoscience education** and field-based learning at school and university levels

Conclusion

Geo-heritage sites like **Pandavula Gutta** and **Ramgarh Crater** are not just relics of Earth's past but **living classrooms and cultural assets**. Their conservation must be integrated into India's broader strategy for **sustainable development, education, and heritage preservation**.

Six Madhya Pradesh Heritage Sites in UNESCO Tentative List

📌 Syllabus Mapping:

- ✓ **GS Paper 1 – Indian Heritage and Culture**
- ✓ **GS Paper 1 – History of Art, Architecture, and Culture**

1. Why in News?

- Six historical and cultural sites of Madhya Pradesh have been included in the **UNESCO Tentative List**, marking the **first formal step** toward recognition as **UNESCO World Heritage Sites**.

2. What is UNESCO's Tentative List?

- A **Tentative List** is an inventory of properties that a country intends to consider for nomination to the **World Heritage List** in the coming years.
- Inclusion in the tentative list is **mandatory** before nomination for the final inscription.

3. Details of the Six Sites

Site	Key Features	Cultural Significance
Gwalior Fort	Built in 8th century AD by Raja Surya Sena ; includes Man Mandir Palace, Gujari Mahal, Sas Bahu Temples	Represents Rajput architecture , strategic military architecture, and cultural syncretism
Khooni Bhandara, Burhanpur	Underground water management system developed during Jahangir's reign by Abdur Rahim Khan-i-Khanan	Based on the Persian qanat system ; reflects medieval hydro-engineering excellence
Rock Art Sites of Chambal Valley	Found in Vindhyan, Satpura, and Kaimur ranges ; prehistoric rock art	Offers insight into early human life , art and symbolic expression
Bhojeshwar Mahadev Temple, Bhojpur	Incomplete 11th-century Shiva temple , built by Raja Bhoj	Exemplifies Bhumija style of Nagara architecture from the Paramara dynasty
Gond Monuments of Ramnagar, Mandla	Includes Moti Mahal, Begum Mahal, Raibhagat ki Kothi	Testifies to the cultural legacy of Gond tribal kings , reflecting tribal-royal fusion architecture
Historical Ensemble of Dhamnar	Rock-cut architecture with 51 Buddhist caves (5th-7th CE) and Dharmarajeshwara Shiva temple	Symbol of religious harmony and architectural synthesis of Hindu and Buddhist traditions

4. About UNESCO World Heritage Designation

- **World Heritage Sites** are designated for having **Outstanding Universal Value (OUV)** to humanity.
- Must meet **at least one of the ten criteria** of cultural/natural significance as defined by **UNESCO's World Heritage Committee**.

Current Status in India (as of 2024):

- **42 sites** in total:
 - **34 Cultural**
 - **7 Natural**
 - **1 Mixed**

5. Significance of Tentative List Inclusion

- Enhances **national and international recognition** of the site's historical, architectural, or cultural importance.
- Can lead to **global funding, tourism, and conservation support**.
- Strengthens India's soft power and **heritage diplomacy**.

6. Way Forward

- Detailed nomination dossiers** to be prepared for final submission.
- Strengthen **local and community participation** in conservation.
- Provide infrastructure and **tourism management plans** in line with UNESCO guidelines.
- Promote **digital documentation** and awareness campaigns.

Conclusion

The inclusion of six sites from Madhya Pradesh in UNESCO's Tentative List is a **major boost to India's cultural diplomacy**. With its rich **medieval and tribal legacy**, MP stands at the forefront of heritage preservation and promotion.

Echoes of Devotion: Preserving the Kamba Ramayana Legacy

📌 Syllabus Mapping:

✓ GS Paper 1 – Indian Heritage and Culture

✓ GS Paper 2 – Government Initiatives in Cultural Preservation

1. Recent Initiative: Reviving Tamil Epics through Cultural Policy

The **South Zone Cultural Centre (SZCC)**, functioning under the **Ministry of Culture**, has launched a **focused initiative to safeguard and promote the oral recital tradition** of the *Kamba Ramayana* across Tamil Nadu. This reflects a broader governmental push to revive classical regional literature and oral traditions.

2. Understanding the Kamba Ramayana

a. Origin and Literary Significance

- The *Kamba Ramayana*, also known as **Ramavataram**, is a **12th-century Tamil epic** authored by the revered poet **Kambar**.
- It serves as a **Tamil retelling of Valmiki's Sanskrit Ramayana**, with rich **regional and philosophical reinterpretations**.
- This adaptation is not a literal translation but a **creative reimagination** infused with **Dravidian ethos, Tamil poetic meters, and Vaishnavite symbolism**.

b. Cultural Patronage

- The epic was composed under the **patronage of Thiruvannai Nallur Sadayappa Vallal**, a philanthropist and arts patron.
- As a mark of reverence, Kambar mentions **Sadayappa Vallal's name every 1,000 verses**, symbolizing the **deep gratitude tradition in classical Tamil literary culture**.

c. Notable Features

- It blends **Bhakti (devotion)** with **epic storytelling**, elevating **Rama as an incarnation of Vishnu**, consistent with **Vaishnavite thought**.
- Divided into **six kandams (sections)**, Kambar notably omits the **Uttara Kanda**, which was later added by other Tamil poets.
- Recognized as a **pillar of Tamil classical literature**, it holds literary status equivalent to that of **Thirukkural** and **Silappatikaram**.

3. About the Author: Kambar – The Emperor of Tamil Poets

a. Title and Recognition: Referred to with reverence as **Kavi Chakravarthy (Emperor of Poets)**, symbolizing his unmatched command over **Tamil prosody and poetic expression**.

b. Historical Context

- Kambar flourished during the **Chola Empire**, particularly under the reign of **Kulothunga Chola III (late 12th century CE)**.
- His literary genius received **royal acclaim**, reflecting the **Chola dynasty's tradition of nurturing temple arts and classical learning**.

c. Spiritual Influences

- Though primarily a poet, Kambar's verses reflect strong influences from **Vaishnavite philosophy**.
- He lived **after the time of the philosopher Ramanuja** (11th century CE), and his writings contain **implicit and explicit references to Ramanuja's teachings**.
- His works project **deep theological understanding**, often blending **epic narrative with spiritual metaphor**.

4. Importance in Contemporary Cultural Discourse

a. Oral Tradition and Recitation

- Kamba Ramayana is often performed as a **kathakalakshepam** (narrative musical discourse) in temples and community gatherings, especially during **Ramayana month (Aadi)**.
- These performances blend **narration, music, and commentary**, promoting **intergenerational knowledge transfer**.

b. Educational and Moral Value

- The text is integrated into **Tamil Nadu's school syllabi**, celebrated for its **ethical teachings, poetic depth, and cultural pride**.
- The epic continues to be a **source of moral instruction**, especially regarding themes of **dharma, sacrifice, and devotion**.

5. Broader Cultural and Policy Implications

- The **Ministry of Culture's initiative** aims not just at documentation but at **active revival through public engagement**, workshops, and support for reciters.
- It aligns with India's **National Culture Mapping Programme** and **Intangible Cultural Heritage (ICH) conservation goals** under **UNESCO guidelines**.
- It also supports **linguistic heritage preservation**, especially under **Article 29 and 51A(f) of the Indian Constitution** that emphasize the duty to preserve composite culture.

✓ Conclusion: A Testament to India's Living Epics

The preservation of *Kamba Ramayana* is not merely about archiving literature—it is a **celebration of regional identity, devotional art, and literary genius**. In the age of cultural homogenization, initiatives like these help **revive India's plural traditions** and reaffirm the importance of **vernacular literary treasures** in the national consciousness.

Hmar and Zomi Tribes in India

✗ Syllabus Mapping:

✓ GS Paper 1 – Indian Society: Tribal Communities, Diversity of India

✓ GS Paper 2 – Governance: Welfare Policies for Vulnerable Sections, Role of Health Workers in Tribal Areas

1. Context: Tribal Cooperation and Grassroots Governance in Manipur

In the backdrop of recent ethnic unrest in **Manipur**, **leaders from the Hmar and Zomi tribes** have agreed to cooperate in restoring peace and community harmony. This development coincided with the **Union Health Minister's announcement of increased remuneration for ASHA workers**, many of whom serve in tribal regions like those inhabited by the Hmar and Zomi.

2. Who Are the Zomi People?

a. Ethnic Identity

- The term "**Zomi**" encompasses the broader **Zo ethnic group**, which includes:
 - Mizo, Kuki, and Chin communities**
- They are spread across **northeastern India** (Manipur, Mizoram, Nagaland, Assam), **Myanmar**, and parts of **Bangladesh**.

b. Linguistic Roots

- They communicate in **Kukish dialects**, belonging to the **Kuki-Chin branch of the Tibeto-Burman language family**.

c. Cultural Traditions

- Festival:** *Chapchar Kut*, celebrated after jhum (slash-and-burn) clearing, is marked by:
 - Group dances, folk music, and feasting** as a form of communal celebration.

d. Religious Landscape

- While traditionally **animists**, the majority now follow **Christianity** (predominantly **Baptist and Presbyterian** denominations).
- Churches play a pivotal role in community life, education, and administration.

3. The Hmar Tribe: Identity and Culture

a. Demographic and Geographic Presence

- The **Hmar**, also referred to as "Mhar" or "Mar", are a distinct sub-group within the **Chin-Kuki-Mizo tribal cluster**.
- They reside across **Manipur, Mizoram, Tripura, Meghalaya, Assam**, and in **Bangladesh's Chittagong Hill Tracts**.
- Recognized as a **Scheduled Tribe**, they receive constitutional safeguards under the **Sixth Schedule** in certain states.

b. Language and Origins

- They speak the **Hmar dialect**, part of the **Kuki-Chin-Mizo linguistic group**.
- Oral traditions trace their ancestry to "Sinlung", an ancestral land believed to be in southern China.

c. Cultural Life and Traditions

- **Sikpui Ruoi** is the major **post-harvest festival**, celebrated through:
 - **Traditional dance, community feasts, and ritual songs**.
- The tribe maintains a rich **oral literature**, folk tales, and **ritual chants** passed down through generations.

d. Occupational Profile

- The Hmar are primarily **agrarian**, practicing **jhum (shifting) cultivation** in hill areas.
- They construct **timber-planked homes on elevated hilltops**, adapted to their ecological environment.

4. Social Organization and Governance

a. Clan-Based Structure

- Hmar society is **clan-centric**, with each clan having unique customs and dialect variations.
- Clan identity determines **marital norms**, social ties, and cultural roles.

b. Traditional Leadership

- Each village is headed by a **chief known as "Lal"**, who exercises authority over local governance, land allocation, and dispute resolution.
- The **Lal system** reflects a blend of **customary tribal law** and **social consensus**.

5. Role of ASHA Workers in Tribal Regions like Hmar and Zomi

- In **remote tribal habitations**, ASHA workers serve as **the first point of contact for healthcare**.
- The **ASHA-to-population ratio** is adapted in such regions, with **one ASHA per habitation** rather than per 1,000 people, acknowledging sparse settlement patterns.
- These workers play a **vital role in maternal and child health, immunization, and disease awareness**, especially where formal healthcare infrastructure is limited.

6. Challenges Faced by Tribes like Hmar and Zomi

- **Geographical Isolation**: Limited access to roads, hospitals, and digital services.
- **Economic Marginalization**: Dependence on subsistence agriculture; limited market access.
- **Cultural Alienation**: Tribal identities often misrepresented or homogenized in mainstream discourse.
- **Conflict and Displacement**: Ethnic tensions in Manipur and border regions affect livelihoods and security.

✓ Conclusion: Preserving Identity, Empowering Communities

The **Hmar and Zomi** tribes are integral to India's **ethnolinguistic diversity** and hold a rich legacy of **resilience, tradition, and community governance**. Strengthening support systems—through **ASHA workers, inclusive development programs**, and **conflict-sensitive governance**—is essential to ensuring **dignity, peace, and sustainable development** in tribal areas.

Reawakening a Seat of Wisdom: The Revival of Vikramshila University

📌 Syllabus Mapping:

- ✓ GS Paper 1 – Indian Heritage and Culture (Ancient Indian Education Systems, Buddhist Institutions)
- ✓ GS Paper 2 – Governance (Government Policies for Cultural Revival)
- ✓ GS Paper 3 – Infrastructure (Heritage Infrastructure Development)

1. Contemporary Context: A Second Renaissance for Ancient Learning

Following the **revival of Nalanda University** in Rajgir, the Government of India has turned its focus toward the **reconstruction of Vikramshila University**, another **forgotten jewel of Indian Buddhist learning**. The plan aims not only at physical restoration but also at **reinstating its academic legacy** for modern relevance.

2. Historical Overview: Glory of Vikramshila Mahavihara

a. Geographic Location

- Situated in **Bhagalpur, Bihar**, the ancient site rests on a **hillock near the Ganges river**, facilitating **intellectual exchange via riverine trade routes**.

b. Foundation and Patronage

- Founded in the **late 8th century CE** by **King Dharmapala** of the **Pala Dynasty**, a major patron of Mahayana and Tantrayana Buddhism.
- Part of the famed **triad of Buddhist universities**: **Nalanda, Odantapuri, and Vikramshila**.

3. Academic and Cultural Legacy

a. Focus on Tantrayana Buddhism

- Vikramshila stood out for its **specialization in Tantrayana (Vajrayana) Buddhism**, integrating **rituals, mantras, and esoteric practices** into the curriculum.

b. Multidisciplinary Curriculum

- Besides Buddhist philosophy, subjects taught included:
 - **Theology and Metaphysics**
 - **Sanskrit Grammar and Logic**
 - **Medicine and Ayurveda**
 - **Astronomy and Ethics**

c. Prominent Scholars and Alumni

- **Atisha Dipankara**:
 - Renowned for **reviving Buddhism in Tibet** and establishing **Bka'-gdams-pa school**.
 - Instrumental in spreading **Indian Buddhist thought across Asia**.
- **Vasubandhu** (though more commonly associated with Nalanda in other records) is also cited in some Tibetan texts as **linked to Vikramshila**, highlighting its intellectual outreach.

4. Architectural and Archaeological Features

a. Structural Layout

- The university was centered around a **large central stupa**, possibly used for **meditation and ceremonial purposes**.
- A **life-size replica of the Mahabodhi tree** was housed in the main shrine, underlining its **devotional significance**.

b. Terracotta Artistry

- Both levels of the structure featured **terracotta panels** depicting scenes from **Jataka tales**, monastic life, and Buddhist iconography.
- Unfortunately, **most of these artworks have been lost** due to **centuries of neglect and vandalism**.

5. Source Evidence and Historical Mentions

- The earliest mention of Vikramshila comes from **Tibetan scholar Taranath**, who referred to it as "**Vikramashila Mahavihar**", emphasizing its **Pan-Asian spiritual influence**.

- Later records by **Chinese pilgrims** like **Xuanzang** and **Yijing**, though primarily associated with Nalanda, further validate the **interconnected monastic network** of the period.

6. Destruction and Decline

- Like many ancient Indian centers of learning, Vikramshila met its end in the **12th century CE** during the **invasions led by Bakhtiyar Khilji**, a general under **Qutbuddin Aibak**.
- The university was razed to the ground, its monks **killed or dispersed**, and its **libraries burned**, alongside the destruction of **Nalanda** and **Odantapuri**.

7. Modern Revival Efforts

a. Governmental Plans

- The revival includes:
 - Restoration of **architectural remains**
 - Development of a **research institute on Buddhist studies**
 - Construction of a **world-class museum and interpretation center**
 - Creation of **monastic learning centers** for global Buddhist practitioners

b. Tourism and Education Integration

- Plans are underway to connect Vikramshila with the **Buddhist tourist circuit** (along with Bodh Gaya, Rajgir, Sarnath, and Kushinagar).
- Collaboration with **international Buddhist universities** (like those in Thailand, Sri Lanka, and Bhutan) is expected to **globalize the revived institution**.

✓ Conclusion: From Ruins to Renaissance

The **rebirth of Vikramshila University** marks more than the reconstruction of ancient ruins—it symbolizes **India's commitment to reclaiming its role as a global knowledge center**. This initiative not only restores heritage but reactivates **civilizational memory**, reinforces **cultural diplomacy**, and promotes **academic soft power** through Buddhism.

Preserving the Sacred: The Need for Restoration of Jalanatheswarar Temple

📌 Syllabus Mapping:

✓ GS Paper 1 – Indian Heritage and Culture (Temple Architecture, Cultural Preservation)

✓ GS Paper 2 – Government Schemes and Interventions in Heritage Protection

1. Current Concern: Structural Damage and Urgent Conservation

The **Jalanatheswarar Temple**, a significant ancient shrine located in Tamil Nadu, is facing **deterioration**, particularly with the **collapse of its northern outer wall**. This incident has raised urgent calls for **restoration and preservation**, drawing attention to the neglect of India's historic religious architecture.

2. Location and Historical Identity

a. Geographical Setting

- Located in **Thakkolam town**, in the **Ranipet district of Tamil Nadu**.
- The temple stands near the **Kosasthalai river**, a tributary of the Arani River, contributing to its sacred geographical positioning.

b. Ancient Names and Historical References

- Originally known as **Aparajita-chaturvedimangalam**, denoting a Brahmin settlement under royal patronage.
- During the reign of **Chalukya king Vimaladitya**, who married **Kundavai**, the sister of **Rajendra Chola I**, the town was renamed **Thakkolamana Thiruvuralpuram**.

3. Architectural Legacy

a. Dynastic Patronage: The temple was constructed in the **6th century CE by the Pallavas**, renowned for pioneering early **Dravidian temple architecture**.

b. Structural Features

- The temple features:
 - A **three-tiered gopuram** (gateway tower) characteristic of **early Dravidian style**.
 - All shrines are housed within **concentric granite enclosures**, creating a **fortified sacred complex**.
- This form of enclosure-based layout aligns with **Pallava design elements** seen in other temples like **Kanchipuram Kailasanatha**.

4. Deity and Religious Significance

a. Presiding Deity

- **Shiva** is worshipped here in the form of **Jalanatheswarar**, represented by the **lingam**.
- The deity is also referred to as **Thiruvuralkattrali Mahadeva**, reflecting regional devotional traditions.

b. Goddess Consort

- The Goddess **Parvati** is revered as **Giriraja Kannikambal**, adding to the temple's Shakta elements.

c. Ritual and Pilgrimage Value

- The temple holds **religious and spiritual significance** for Shaivites, and is associated with **traditional ritual practices**, often observed during **Shivratri and Tamil month festivals**.

5. Cultural and Conservation Importance

a. Why It Matters

- The temple is a **living example of Pallava-era architecture**, linking the evolution of **early stone temple construction** to later Chola and Vijayanagara styles.
- Preserving it offers insights into **regional political history, marital alliances, and religious landscape** of South India.

b. Neglect and Restoration Needs

- Despite its cultural value, the temple has **suffered neglect**, leading to:
 - **Structural deterioration**, including wall collapse.
 - **Loss of inscriptions or sculptures**, crucial for epigraphic studies.
- There is an urgent need for:
 - **Structural conservation** by the **Archaeological Survey of India (ASI)** or Tamil Nadu State Archaeology Department.
 - **Community participation** and **heritage tourism integration** to ensure sustainable upkeep.

6. Broader Perspective: Temple Restoration in India

- The case of Jalanatheswarar Temple highlights the broader issue of **neglect of non-UNESCO temples**.
- India is home to **over 600,000 temples**, many of which face similar challenges due to **urban encroachment, weathering, and lack of funds**.
- Under schemes like **HRIDAY (Heritage City Development)** and **PRASAD (Pilgrimage Rejuvenation and Spiritual Augmentation Drive)**, such temples can be included for **integrated development and tourism-based conservation**.

✓ Conclusion: Reviving the Past, Protecting the Future

The **Jalanatheswarar Temple** is not just an architectural relic—it is a **cultural memory site** connecting Tamil Nadu's **sacred geography, Pallava innovation, and regional spiritual practices**. Preserving it is not just about saving a structure—it is about **safeguarding India's living heritage** for future generations and restoring **public consciousness around forgotten monuments**.

Nana Jagannath Shankarseth: Architect of Modern Mumbai

📌 Syllabus Mapping:

- ✓ *GS Paper 1 – Modern Indian History*
- ✓ *GS Paper 1 – Contributions of Indian reformers and freedom fighters*
- ✓ *Essay Paper – Nation Building and Social Reformers*

1. Why in News?

- The Maharashtra Cabinet has proposed to the Ministry of Railways to rename Mumbai Central Railway Station after Nana Jagannath Shankarseth, honouring his immense contributions to the development of Bombay (now Mumbai) and to **public life and education in colonial India**.

2. Early Life

Aspect	Details
Born	1803, in a Brahmin family in Murbad, Thane district, Maharashtra
Parents	Father: Shankar Murkute ; Mother: Bhawanibai Murkute
Inspiration	Influenced by Sir Jamsetjee Jeejeebhoy , a Parsi philanthropist

3. Key Contributions

A. Architect of Bombay

- Led **urban planning initiatives** including **streets, buildings, and public spaces** in colonial Bombay.
- Earned the epithet: "**Architect of Mumbai**".

B. Educational Reforms

- Pioneered **education for girls** in an era where it was socially discouraged.
- Donated land and funds to establish schools.
- Founded the **Native School of Bombay**, which evolved into **Elphinstone College (1856)**.

C. Promotion of Culture & Heritage

- Instrumental in establishing the **Dr. Bhau Daji Lad Museum** in Byculla.
- Constructed significant temples: **Bhawani Shankar Temple**, and a **Ram Temple**.

D. Role in Railways

- Member of the committee that conceptualized **India's first railway** between **Boribunder and Thane (1853)**.
- Played a central role in early infrastructure development of Bombay's transport system.

E. Political and Institutional Leadership

- **First Indian** nominated to the **Legislative Council of Bombay**.
- **President of the Bombay Association** (est. 1852) — early political platform for Indian voices.
- Active member of the **Asiatic Society of Mumbai**, promoting Oriental research and Indian heritage.

4. Legacy and Influence

Aspect	Contribution
Recognition	Called the " Architect of Modern India " by economist Gangadhar Gadgil
Influence	Inspired Dadabhai Naoroji and Justice Ranade , both pioneers of economic nationalism
Pioneer	Among the first Indian public intellectuals and urban reformers under British rule

5. Conclusion

Nana Jagannath Shankarseth was not merely a social reformer or political figure but a **visionary urbanist and educationist** who shaped the identity of Bombay and laid the foundation for **civic activism and Indian participation** in public life under colonial rule. His **multifaceted legacy** continues to inspire efforts toward inclusive development and **nation-building**.

75 Years of the Commonwealth: Relevance, Reform, and India's Strategic Role

❖ Syllabus Mapping:

- ✓ GS Paper 2 – International Relations (Bilateral and Multilateral Institutions), India and the World, Global Groupings
- ✓ GS Paper 1 – Modern Indian History (Decolonization and Global Developments)

1. Why in News?

- The year **2024** marks the **75th anniversary** of the modern **Commonwealth**, founded through the **London Declaration (1949)**.
- This milestone raises crucial questions about the **relevance, functioning, and role** of the Commonwealth in today's global order.

2. Genesis and Evolution of the Commonwealth

a) Origins:

- **1926 Imperial Conference:** Gave rise to the **British Commonwealth of Nations**, comprising **autonomous dominions** loyal to the British Crown.
- **India's Independence (1947):** India sought **republican status without leaving the Commonwealth**, prompting a need for redefinition.

b) London Declaration, 1949:

- Formally created the **modern Commonwealth of Nations**.
- Allowed **republics and independent countries** to remain within the association, leading to India's continued membership.

3. Organizational Framework

Institution	Purpose	Headquarters
Commonwealth Secretariat (CS)	Policy coordination and technical assistance	London
Commonwealth Foundation (CF)	Promotes civic participation and governance	London
Commonwealth of Learning (COL)	Advocates for distance education and open learning	Burnaby, Canada

- **Commonwealth Heads of Government Meeting (CHOGM):** Held every **two years** to discuss global and regional issues (last in **Rwanda, 2022**).
- Decisions are made by **consensus**; all member states are **equal**, regardless of size or wealth.
- The **Head of the Commonwealth** is chosen by member states (currently King Charles III).

4. Key Features

- **Total Members:** 56 (including **non-British colonial nations** like **Togo and Gabon**)
- **No Binding Charter or Constitution**
- **Suspension Mechanism:** For human rights violations (e.g., **Fiji, Zimbabwe, Pakistan, Maldives**)
- **Commonwealth Games:** A major **quadrennial international sporting event**

5. Major Initiatives and Achievements

Initiative	Purpose
1971 Declaration of Commonwealth Principles & 1991 Harare Declaration	Promote democracy, rule of law, and human rights
Commonwealth Charter (2012)	Articulates 16 core principles such as gender equality, democracy, and sustainable development
Ending Apartheid	Played a significant diplomatic role in South Africa's transition from apartheid
Commonwealth Fund for Technical Cooperation (CFTC)	Supports economic and institutional capacity-building
Commonwealth Youth Programme (CYP)	Only intergovernmental group with a dedicated youth agenda
Commonwealth Cyber Declaration (2018)	Promotes safe and inclusive cyberspace
Climate Initiatives:	

- **Commonwealth Blue Charter**
- **Clean Ocean Alliance**
- **Climate Finance Access Hub**

6. India's Role in the Commonwealth

a) Contributions:

- **Largest member by population** – accounts for nearly **60% of Commonwealth's population**
- **4th largest financial contributor**
- Hosted **CHOGM (1983)** and **Commonwealth Games (2010)** in New Delhi

- Supports programs under **CFTC, CF, CYP, and COL**

b) Key Initiatives:

- India-UN Development Partnership Fund (2018):**
 - Established a **Commonwealth Sub-Window** with **\$50 million** over 5 years
 - Supports **SDG-linked projects** across member nations

7. Relevance of the Commonwealth in the Contemporary World

a) Arguments in Favour:

- Election Monitoring:** Over **140 missions** since 1967, promoting **free and fair elections**
- SDG Advocacy:** Focus on **Goal 16 (Peace, Justice, and Strong Institutions)**
- Lower Trade Costs:** Intra-Commonwealth trade costs are **21% lower** than those with non-members
- Shared History and Culture:** English language and common legal-educational institutions foster **strong people-to-people ties**
- Youth and Gender Focus:** Targeted programs for **youth empowerment** and **women's leadership**

b) Arguments Against:

Criticism	Details
Colonial Legacy	Critics argue it legitimizes colonialism and delays postcolonial detachment
Limited Crisis Response	Ineffective during COVID-19 and Ukraine crisis , indicating weak crisis management capacity
Human Rights Contradictions	Hosting CHOGM in Rwanda drew criticism over rights abuses
Inconsistency Among Members	Different stances on major global issues (e.g., Russia-Ukraine conflict) reflect lack of cohesion
Funding Challenges	Operational limitations due to budget constraints ; UK's support remains primarily bilateral

8. Way Forward

- a) Reform and Modernization:** Update operational structure with **clear governance frameworks, enhanced funding, and mandated action plans**
- b) Focus on Developmental Diplomacy:** Expand focus on **climate finance, health cooperation, and digital infrastructure** across member nations
- c) Promote South-South Cooperation:** Use Commonwealth as a platform for **India and other Global South leaders** to collaborate on **inclusive growth**
- d) Augment Role in Multilateralism:** Complement efforts of the **UN, WTO, and regional groupings** (e.g., **ASEAN, AU**) instead of duplicating them

9. Conclusion

As the **Commonwealth enters its 75th year**, its **continued relevance** depends on its ability to **evolve beyond its colonial past**, strengthen its focus on **shared challenges** like **climate change, democratic resilience, and technological cooperation**, and **empower its members through equal partnership**.

For India, it remains a **strategic platform** to lead developmental diplomacy and promote the **Global South's voice** in global governance.

ENVIRONMENT & ECOLOGY

Plastic Waste Management (Amendment) Rules, 2024

❖ Syllabus Mapping:

- ✓ GS Paper 2 – Government Policies and Interventions, Governance
- ✓ GS Paper 3 – Environment (Pollution, Waste Management), Sustainable Development

1. Why in the News?

- Plastic Waste Management (Amendment) Rules, 2024 were notified by the Government of India under the **Environment Protection Act, 1986** in response to the **Public Accounts Committee's (PAC) report** titled "*Pollution Caused by Plastic*".

2. Background and Data

Indicator	Value
India's Annual Plastic Waste (2020–21)	~4.2 million tonnes
Per Capita Generation (5-year trend)	Doubled
Governing Law	Environment (Protection) Act, 1986

3. Key Features of PWM Rules (2016) — Continuity

- **Applies to:** All plastic waste generators, producers, manufacturers, importers, and local bodies.
- **Prohibits: Identified Single-Use Plastics (SUPs).**
- **Extended Producer Responsibility (EPR) framework introduced.**
- **Micron Thickness** for plastic carry bags:
 - 75 microns (from 2021)
 - 120 microns (from 2022)



4. Key Provisions of PWM (Amendment) Rules, 2024

◆ Annual Plastic Waste Assessment

- Local bodies to **assess current and future plastic waste generation** (5-year forecast).
- PAC earlier flagged absence of this assessment mechanism.

◆ Centralised Registration Portal

- For **Producers, Importers, Brand Owners (PIBOs)**, and **Compostable/Biodegradable Plastic manufacturers**.
- **Default registration clause:** Application deemed approved if not processed within 30 days.
- Addresses PAC concerns over registration delays and inactive CPCB/SPCBs.

◆ SUP Elimination Mandate

- Local bodies to **enforce and report** action against **banned single-use plastic** items.
- Targets states lagging behind in implementation.

◆ Expanded EPR Framework

- PIBOs must collect **all plastic packaging** introduced into the market.
- Now includes **manufacturers of biodegradable/compostable plastic**.
- Local bodies mandated to set up plastic waste infrastructure (collection to disposal).

◆ Online Monitoring and Reporting

- Mandatory online submission:
 - **Quarterly:** By manufacturers and importers
 - **Annual:** By recyclers, processors, and plastic raw material sellers
- Tackles PAC's observation of **invalid/incomplete offline data submissions**.

5. New Definitions and Labelling Rules

Category	New/Clarified Definition or Requirement
Biodegradable Plastic	Must degrade without microplastics or toxic residue in specified environments
Labeling Rules	'Recycled', 'Compostable (under industrial composting)', and 'Biodegradable' (with time & environment)
FSSAI Certification	Mandatory for food-contact applications of compostable/biodegradable plastics
Seller/Producer Definitions	Expanded to include intermediate materials, contract manufacturers

6. Institutional Mechanism

- Rules provide for **strengthened monitoring**, accountability, and data management through dedicated institutions.
- Aim: **Transparency + Implementation efficiency**

7. Challenges and Way Forward

! Challenges

- Weak enforcement** at local levels due to lack of manpower/funds.
- Segregation at source** still a major bottleneck.
- Lack of awareness** about biodegradable/compostable plastics.
- Limited infrastructure** for industrial composting or recycling.

✓ Way Forward

- Capacity Building** of ULBs and panchayats.
- Strict compliance and penalties** under Environment Protection Act.
- PPP models** for infrastructure and awareness campaigns.
- Promote alternatives** through incentives under **Startup India/Atmanirbhar Bharat**.
- Integration with **Swachh Bharat Mission 2.0** for maximum outreach.

8. Conclusion

The PWM Rules 2024 mark a **significant reform** towards scientific, transparent, and decentralized management of plastic waste in India. If effectively implemented, they can serve as a model for balancing economic growth with **environmental sustainability**, helping India transition towards a **circular economy** and fulfill its **global climate commitments** under the **SDGs** and **Paris Agreement**.

Battery Waste Management (Amendment) Rules, 2024

📌 Syllabus Mapping:

✓ GS Paper 3 – Environment and Ecology (Pollution, Waste Management), Science & Technology

1. Why in the News?

Wisdom leads to success

- The **Union Ministry of Environment, Forest and Climate Change** has notified the **Battery Waste Management (Amendment) Rules, 2024**, to strengthen provisions of the **Battery Waste Management Rules, 2022**.
- The rules aim to address growing concerns over **battery pollution, informal recycling, and extended producer responsibility**.

2. Context and Rationale

Aspect	Details
Global Demand for Batteries	933 GWh (2021) → 5,100 GWh by 2030 (forecast)
Lead-Acid Battery Recycling	>90% recycled by informal sector , leading to lead contamination
Environmental Risks	Toxic leakage: Lead, Cadmium, Mercury, Lithium
Health Hazards	Neurological damage, kidney failure, reproductive issues

3. Existing Framework: Battery Waste Management Rules, 2022

- Replaced:** Batteries (Management and Handling) Rules, 2001.
- Administered under:** Environment (Protection) Act, 1986.
- Key Features:**
 - Extended Producer Responsibility (EPR):** Producers must collect and recycle/refurbish used batteries.
 - Mandatory recovery targets:** For material extraction from waste batteries.
 - Polluter Pays Principle:** Environmental compensation for non-compliance.
 - Centralized online portal:** For tracking and trading of EPR certificates.

4. Key Amendments in 2024 Rules

Particulars	2022 Rules	2024 Amendments
EPR Certificate Pricing	No specific floor/ceiling. CPCB issues certificates based on verified recycling.	Price range set: Between 30%-100% of the environmental compensation levied on defaulters.
EPR Certificate Exchange Mechanism	No restriction on trading price.	Exchange only allowed through CPCB portal within notified price band .
Guidelines for Environmental Compensation	Prepared and recommended by Committee for Implementation under CPCB.	Now to be prepared directly by CPCB ; committee may be consulted.

5. Key Provisions Retained and Strengthened

- Recovery of Raw Materials:** Recovery rate targets for key materials like lithium, cobalt, nickel, lead.
- Online Portal:** For transparent monitoring and certificate issuance.
- Environmental Compensation:** Penalties for failure to meet EPR obligations; fund utilized for battery waste treatment.
- Refurbishing and Recycling Standards:** To be updated based on evolving technologies and practices.

6. Significance of Amendments

- Price Regulation:** Prevents market manipulation in certificate trading; aligns with environmental compliance.
- Accountability:** Clear delegation to CPCB promotes **transparency and clarity**.
- Ease of Implementation:** Limits discretion and ambiguity in pricing and enforcement mechanisms.

7. Challenges in Battery Waste Management

Challenge	Implications
Informal Sector Dominance	Unsafe practices, low recovery rates, widespread lead pollution
Lack of Recycling Technology	Low domestic capacity, especially for Li-ion batteries
Inadequate Collection Mechanism	Consumer apathy, absence of deposit refund schemes
Weak Enforcement Capacity	SPCBs and ULBs under-equipped for monitoring and enforcement

8. Way Forward

✓ Policy Support

- Separate licensing for Li-ion battery recyclers** (NITI Aayog recommendation).
- Ban disposal** of batteries in landfills.

✓ Incentivizing Stakeholders

- Green tax credits** or subsidies to manufacturers complying with EPR.
- Deposit Refund Systems (DRS)** for consumers to return used batteries.

✓ Strengthening Collection and Recycling

- Establish centralized battery collection agencies** under public-private partnerships.
- Mandate dedicated collection bins at EV dealerships, electronics stores, etc.**

✓ Financing R&D

- Encourage indigenous recycling technologies** via grants to IITs, CSIR labs.
- Focus on high-efficiency recovery technologies for **Li-ion and solar batteries**.

9. Conclusion

The **Battery Waste Management (Amendment) Rules, 2024** reinforce India's move towards a **circular economy**, ensuring that the rapidly growing battery consumption does not translate into an ecological and health crisis. Effective implementation, stakeholder awareness, and capacity building will be crucial to realize its full impact.

Green Credit Program (GCP) 2023

📌 Syllabus Mapping:

✓ GS Paper 3 – Environment and Ecology (Environmental Conservation, Climate Change, Sustainable Development)

1. Why in the News?

- The Ministry of Environment, Forest and Climate Change (MoEFCC) has notified the **methodology for calculation of Green Credits** under the **Green Credit Program (GCP) 2023**, focusing on **Tree Plantation Activity**.

2. What is the Green Credit Program (GCP)?

Feature	Description
Launched by	MoEFCC under Environment (Protection) Act, 1986
Administrator	Indian Council of Forestry Research and Education (ICFRE)
Governance	Managed by inter-ministerial Steering Committee
Nature	Voluntary, market-based mechanism
Aim	Promote environment-positive actions through tradable green credits
Platform	Digital system for registration, verification, issuance of credits

3. Objectives and Alignment

- Supports 'LiFE' Mission (Lifestyle for Environment):** Launched at COP26 to encourage sustainable behavior.
- Fosters Grassroots Participation:** Involves individuals, institutions, state governments, philanthropies.
- Eco-Incentivisation:** Rewards sustainable practices through **green credit units**.

4. Green Credits (GC): Concept and Calculation

Feature	Details
Unit of Credit	1 Green Credit = 1 grown tree , planted under approved conditions
Land Criteria	Minimum 5 hectares of encumbrance-free degraded land
Tree Density	Minimum 1100 trees/hectare , adjusted for local silvi-climatic conditions
Implementation Deadline	Tree plantation must be completed within 2 years from approval
Issuing Authority	ICFRE, based on project verification and monitoring

5. Green Credit vs Carbon Credit

Criteria	Green Credit (GC)	Carbon Credit (CC)
Legal Framework	Environment (Protection) Act, 1986	Energy Conservation Act, 2001
Scope	Broad — tree planting, wetlands, soil health, etc.	Narrow — focus on GHG emission reduction
Target Stakeholders	Individuals, local bodies, philanthropies	Large industries, corporations
Tradability	Can be traded on dedicated green credit exchanges	Traded on carbon markets
Co-benefits	May qualify for carbon credits if climate benefits achieved	Carbon credits don't necessarily qualify for GCP

6. Significance of the GCP

✓ Environmental Restoration

- Boosts **afforestation and reforestation**, especially on degraded lands.
- Encourages **sustainable land-use planning**.

✓ Incentivized Participation

- Enables diverse stakeholders (from individuals to industries) to **participate voluntarily**.
- Creates economic incentives for **eco-restoration**.

✓ Market Efficiency

- Introduces **market mechanisms** in environmental governance.
- Enhances **accountability, transparency, and competitiveness** through digital tracking.

7. Challenges and Concerns

Challenge	Implication
Land Identification	Scarcity of suitable land; risk of community conflict
Monitoring and Verification	Requires robust audit and satellite monitoring systems
Market Readiness	Need for clear trading platforms and price discovery mechanisms
Overlap with other Programs	Harmonization with Carbon Credit Trading Scheme is necessary
Equity	Ensuring rural communities benefit rather than only large players

8. Way Forward

- **Digital Integration:** Strengthen the **interoperability** of GCP with **carbon markets**, e-Governance platforms.
- **Stakeholder Capacity Building:** Provide training to **Forest Departments**, NGOs, and gram sabhas.
- **Public-Private Partnerships (PPPs):** Mobilize CSR funds, philanthropic contributions for green credit investments.
- **Measurement, Reporting & Verification (MRV):** Adopt **GIS-based systems, drones** and **third-party auditing** for credible green credit certification.
- **Convergence with MGNREGA, CAMPA, etc.,** to scale tree plantation and ecological services.

9. Conclusion

The **Green Credit Program (GCP)** represents a **paradigm shift** in India's environmental policy — from a **penalty-based approach to incentive-based environmental stewardship**. Its success depends on **transparent implementation, market viability, and community engagement**, ultimately contributing to India's **climate resilience and green growth vision**.

UNEA-6: Advancing Multilateral Environmental Governance

 **Syllabus Mapping:**

 **GS Paper 2 – International Institutions**

 **GS Paper 3 – Environment and Ecology (Conservation, Pollution, Sustainable Development)**

1. Why in the News?

- The **Sixth Session of the United Nations Environment Assembly (UNEA-6)** was recently concluded at **UNEP headquarters in Nairobi, Kenya**.
- The **UNEA-7** is scheduled for **December 2025** at the same location.

2. About UNEA

Feature	Description
Established	2012 at the UN Conference on Sustainable Development (Rio+20)
Parent Body	United Nations Environment Programme (UNEP)
Membership	193 UN Member States
Mandate	Highest-level decision-making body for environmental policy
Structure	President + 8 Vice Presidents form the UNEA Bureau

3. Theme of UNEA-6

- **"Effective, inclusive and sustainable multilateral actions to tackle climate change, biodiversity loss and pollution."**
- Emphasis on tackling the **Triple Planetary Crisis**:
 - **Climate Change**
 - **Biodiversity Loss**
 - **Pollution**

4. Key Outcomes of UNEA-6

 **Ministerial Declaration**

- Reaffirmed commitment to address the **Triple Planetary Crisis** through **coordinated multilateral efforts**.

 **New Initiatives**

- **Multilateral Environmental Agreements Day** established (First observed on **28th February 2024**).

 **Adopted Resolutions**

- **Combating Sand and Dust Storms**
- **Sound Management of Chemicals and Waste**
- **Cooperation on Transboundary Air Pollution**
- **Promotion of Sustainable Lifestyles**

5. Key Reports Released at UNEA-6

Report	Key Findings
Global Resource Outlook 2024	Extraction of natural resources may rise by 60% from 2020 levels without urgent action.
	Such extraction will increase climate damage, biodiversity loss , and health risks.
Global Waste Management Outlook 2024	Municipal waste may rise from 2.3 bn tonnes (2023) to 3.8 bn tonnes (2050) .
	Waste management costs could almost double from \$252 bn (2020) by 2050.
Used Heavy-Duty Vehicles Report	Focused on pollution from second-hand heavy-duty vehicles , especially in developing nations.

6. Awards at UNEA-6

🥇 Young Champions of the Earth Award

Feature	Description
Launched	2017 by UNEP
Target Age Group	Youth aged 18–30 years
Purpose	Recognize and support young environmental innovators globally

7. Significance of UNEA in Global Governance

Contribution	Details
Global Environmental Policy	UNEA provides a unified voice of 193 nations on major ecological challenges.
Frameworks for Multilateral Action	Facilitates cooperation on emerging threats like e-waste, air pollution, plastic pollution .
Supports SDGs & Paris Agreement	Aligns resolutions with Sustainable Development Goals and climate targets .
Platform for Youth and Innovation	Showcases grassroots and youth-led solutions to global problems.

8. Conclusion

UNEA-6 highlighted the urgent need for **inclusive, sustainable, and coordinated global efforts** to tackle pressing environmental challenges. The **resolutions adopted and reports released** serve as a blueprint for **action-oriented environmental diplomacy**. The growing participation of youth and civil society adds momentum to UNEA's vision of **environmental multilateralism**.

International Big Cat Alliance (IBCA)

📌 Syllabus Mapping:

✓ GS Paper 2 – International Institutions, Environmental Conservation

✓ GS Paper 3 – Biodiversity, Conservation

1. Why in the News?

- The Union Cabinet approved the establishment of the **International Big Cat Alliance (IBCA)** with **India as the headquarters**.
- An initial outlay of **₹150 crore** has been sanctioned for five years (2023–24 to 2027–28).

2. About IBCA

Feature	Details
Nature	Multi-country, multi-agency coalition
Launched	2023 , during Project Tiger's 50th anniversary
Headquarters	India
Initial Budgetary Support	₹150 crores (for 5 years)
Foundational Inspiration	Based on International Solar Alliance (ISA) model
Origin	Concept proposed by Indian PM in 2019 to promote global big cat conservation
Focus Species (7 Big Cats)	Tiger, Lion, Leopard, Snow Leopard, Cheetah, Jaguar, Puma

3. Membership & Stakeholders

Category	Details
Countries	96 range countries of big cats invited
Confirmed Members	16 countries (e.g., Brazil, Nepal, Bangladesh, Malaysia)
International Organizations	9 organizations including IUCN, WWF-International, CITES, UNEP etc.
Stakeholders	Scientific institutions, business coalitions, governments

4. Objectives of IBCA

- Promote Conservation:** of all 7 big cats through cooperation and knowledge exchange.
- Support SDG Integration:** Align conservation with **Sustainable Development Goals**.
- Capacity Building:** Strengthen **scientific, financial, and technical capacities**.
- Policy and Research:** Promote **policy frameworks, research collaboration**, and standard setting.
- Combat Illegal Wildlife Trade:** Promote **law enforcement cooperation** among member nations.
- Community Participation:** Emphasis on **community-led conservation** and **livelihood generation**.

5. Significance for India

- **Leadership Role:** Reinforces India's position as a global leader in wildlife conservation (e.g., **Project Tiger**, **Project Lion**, **Project Snow Leopard**, and **Cheetah Reintroduction**).
- **Soft Power Diplomacy:** Aids India's global image as a **nature-positive nation**.
- **Environmental Multilateralism:** Helps strengthen **South-South cooperation** on conservation issues.
- **Science and Technology Leadership:** Facilitates exchange of **data, expertise, and best practices**.
- **Tourism and Economic Value:** Promotes **eco-tourism** and strengthens the **green economy**.

6. Challenges to be Addressed

- **Diverse Conservation Capacities:** Varying capabilities among member states in law enforcement and ecological management.
- **Cross-border Wildlife Crime:** Needs strong coordination to curb **poaching and trafficking**.
- **Funding Sustainability:** Long-term success will depend on **global financial partnerships** beyond India's initial funding.
- **Climate Change:** Big cats are sensitive to habitat fragmentation and climate variability.

7. Related Conservation Milestones

Initiative	Description
Project Tiger (1973)	World's most successful tiger conservation programme
Project Lion	Focused on Asiatic Lion in Gujarat's Gir Forest
Cheetah Reintroduction	First transcontinental relocation of cheetahs (from Namibia to India in 2022)
Project Snow Leopard	Conservation efforts in the Trans-Himalayan region

8. Conclusion

The **International Big Cat Alliance (IBCA)** reflects India's strategic push towards **environmental leadership** on the global stage. As threats to biodiversity and wildlife escalate due to human-induced pressures, IBCA offers a **collective platform** to ensure the **long-term survival** of iconic species and promote **cooperative conservation models**. Successful implementation and global buy-in will determine its impact.

Urban Water Crisis in India: A Growing Challenge

 **Syllabus Mapping:**

 **GS Paper 3 – Environmental Issues, Urbanization, Resource Management, Disaster Management**

1. Why in the News?

Bengaluru is currently facing one of its **worst water crises** in recent years due to **poor rainfall**, highlighting the broader **urban water management challenges** in Indian cities.

2. Understanding Urban Water Crisis

- **Definition:** A **water crisis** in urban areas refers to **inadequate access to clean and safe water** caused by **pollution, overuse, climate impacts, and poor management**.
- **Day Zero Concept:** Marks the **critical low levels** in reservoirs supplying urban water (e.g., Cape Town 2018, Chennai 2019). It doesn't imply total depletion, but **severely reduced availability**.
- **SDG Link:** Affects progress toward **Sustainable Development Goal 6 (Clean Water and Sanitation by 2030)**.

3. Causes of Urban Water Crisis

A. Unplanned Urbanization

- Encroachment on water bodies and loss of **green spaces**
- **Concrete landscapes** inhibit groundwater recharge
- Example: **Bengaluru's lakes reduced** from 262 (1961) to **81 (current)**

B. Pollution of Water Bodies

- Influx of **untreated sewage and industrial waste**
- Example: **Bellandur Lake** in Bengaluru is severely contaminated

C. Over-extraction of Groundwater

- Widespread use of borewells due to irregular supply
- **Groundwater tables** have dropped drastically, especially in cities like **Delhi and Bengaluru**

D. Poor Infrastructure

- **Leakage-prone pipelines**, insufficient treatment plants
- Leads to high **Non-Revenue Water (NRW)** – water lost before reaching consumers

E. Climate Change

- **Erratic monsoons**, rising drought and flood incidences
- Prolonged dry spells impact **aquifer recharge in rocky southern terrains**

4. Structural Issues in South India

Region	Aquifer Characteristics	Consequence
South India	Hard rock aquifers with low water storage	Low sustainability in drought events

5. Way Forward

1. Nature-Based Solutions

- **Restore wetlands**, develop green-blue infrastructure
- Acts as natural **buffers during droughts and floods**

2. Community-Based Water Management

- **Public awareness**, water budgeting, greywater reuse
- Example: **Orange County (USA)** uses community outreach to promote **recycled water**
- In India: **Jal Jeevan Mission** promotes **community ownership**

3. Regulatory & Policy Measures

- **Mandatory Rainwater Harvesting (RWH)** and wastewater reuse
- Example: **Tamil Nadu** mandates RWH in new constructions

4. Technological Interventions

- **Smart sensors** for leakage detection and real-time monitoring
- Example: **Clean Water AI** detects water-borne pathogens using AI

5. City-to-City (C2C) Learning

- Knowledge-sharing platforms among cities
- Example: **LOTUS-HR** Indo-Dutch project for **urban sewage recycling in Delhi**

6. Private Sector Participation

- Industries can **build storage infrastructure** and conduct **water audits**
- Example: **Tata Steel's Dimna Lake** for Jamshedpur's water supply

6. Conclusion

The **urban water crisis is not just an environmental issue**, but a **governance, infrastructural and social challenge**. Addressing it requires a **multi-pronged approach**: combining **technology, community action, policy reform, and inter-agency coordination**. The vision of **Water-Secure Cities** must be aligned with the **Sustainable Development Goals**, especially **SDG-6**, to build **resilient urban ecosystems**.

UN World Water Development Report 2024 – Water for Prosperity and Peace

❖ Syllabus Mapping:

✓ GS Paper 2 – International Reports, Governance

✓ GS Paper 3 – Environmental Resources, Water Management

1. Why in the News?

The **UN World Water Development Report (WWDR) 2024**, titled "**Water for Prosperity and Peace**", was released on **World Water Day (22nd March)** at **UNESCO Headquarters, Paris**. The report underscores the **interconnectedness of water, economic prosperity, and peace**.

2. About the Report

- Published by: UNESCO's **World Water Assessment Programme (WWAP)** on behalf of **UN-Water**
- Objective: To provide **decision-makers with knowledge and tools** to manage water resources sustainably
- SDG Relevance: Tracks global progress towards **Sustainable Development Goal 6 (Clean Water and Sanitation)**

3. Key Findings

A. Global Water Stress

- 2.2 billion people** lacked access to **safely managed drinking water** in 2022.
- None of the SDG-6 targets** are on track to be achieved by 2030.

B. Water & Prosperity

- 80% of jobs in low-income countries** are **water-dependent** (mostly agriculture).
- WASH (Water, Sanitation & Hygiene)** services yield **economic and social returns** by improving health, productivity, and environment.
- Gender aspects: **Water scarcity exacerbates gender-based violence** and early marriages.

C. Water & Peace

- Water inequality** undermines **social cohesion and stability**.
- Water as a tool of conflict**:
 - Example: **Israel-Gaza conflict**, where **water was used as a weapon**, as alleged by the UN High Commissioner for Human Rights.
- Human-animal conflict** is increasing due to **shrinking water sources**.

4. Key Challenges

1. Water-Prosperity Paradox

- Developing economies** need water to grow, but **need wealth** to invest in water infrastructure.

2. Evolving Water Pollution

Low-Income Countries	High-Income Countries
Wastewater treatment issues	Agricultural runoff contamination

3. Data Gaps

- 3 billion people** are affected due to **lack of water quality monitoring**.
- Insufficient hydro-meteorological data** limits preparedness for climate impacts.

4. Transboundary Water Issues

- Only **32 out of 153** countries with shared water bodies have **operational cooperative frameworks**.

5. Emerging Technologies and Water Use

- Artificial Intelligence and data centres** are driving up **water demand**:
 - 500 ml of water per **10-50 AI queries** for cooling systems.

5. Key Recommendations

- Strengthen Water Governance: Ensure **universal, secure access** through **inclusive governance** and **responsible institutions**.
- Leverage WASH as Neutral Ground: Promote **WASH as a non-political platform** for collaboration and **social unity**.
- Decouple Water from Industrial Output: Encourage **zero-liquid discharge systems** and **circular water economy through reuse and recycling**.
- Transboundary Cooperation: Develop **equitable water-sharing agreements** through **joint river basin institutions**.
- Shift from Volume to Benefit Sharing: Share **benefits derived from water use**, not just water volumes (e.g., electricity, irrigation benefits).

6. Conclusion

The WWDR 2024 reinforces that **water is central to both peace and prosperity**. It calls for **multi-level coordination, data-based policymaking, and international cooperation** to tackle the triple crisis of **scarcity, pollution, and inequality** in water access. For India, this aligns closely with achieving **Jal Jeevan Mission, Namami Gange**, and commitments under **SDG-6**.

BIOTECHNOLOGY & HEALTH

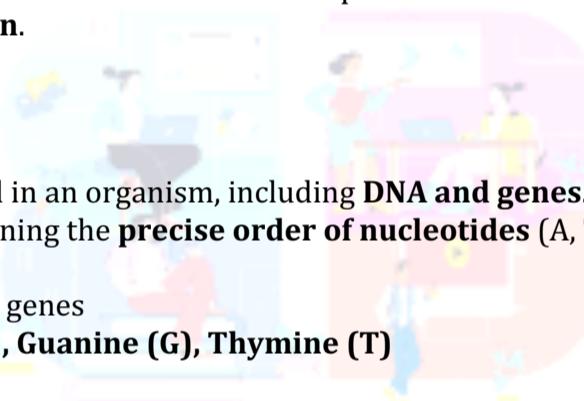
Human Genome Sequencing and the GenomeIndia Project

📌 Syllabus Mapping:

- ✓ GS Paper 3 – Science and Technology (Biotechnology, Genome Sequencing)
- ✓ GS Paper 2 – Government Policies (Health Initiatives, Regulatory Framework)

1. Why in the News?

The **Department of Biotechnology (DBT)** has announced the successful completion of the **GenomeIndia Project**, a landmark initiative to create a **Reference Genome for India's diverse population**.



2. What is Genome Sequencing?

- **Genome:** The complete set of genetic material in an organism, including **DNA and genes**.
- **Genome Sequencing:** The process of determining the **precise order of nucleotides** (A, T, C, G) in the DNA.
- **Human Genome:**
 - Approx. **3.2 billion base pairs**, 23,500 genes
 - Four bases: **Adenine (A), Cytosine (C), Guanine (G), Thymine (T)**

3. GenomeIndia Project: Key Highlights

Feature	Description
Launched by	Department of Biotechnology (2020)
Objective	Collect 10,000 genetic samples to build a Reference Genome for Indian population
Lead Institute	Centre for Brain Research, Bengaluru
Consortium	20 national institutions
Data Repository	Indian Biological Data Centre, Faridabad
Inspiration	Human Genome Project (1990–2003), which sequenced 92% of the global genome

4. Other Indian & Global Initiatives

- **IndiGen Programme:** CSIR initiative to sequence Indian genomes from diverse ethnic groups
- **Global Alliance for Genomics and Health (GA4GH):** Sets global data standards within a human rights framework
- **Human Genome Project (HGP):** Global collaboration (1990–2003) involving USA, UK, China, France, Germany, Japan

5. Applications and Significance

i. Medical Advancements

- **Early diagnosis** of inherited disorders (e.g., prenatal genetic screening)
- **Personalized medicine** and **pharmacogenomics**
- **Cancer detection** via liquid biopsy

ii. Public Health & Policy

- **Database for ethnic diversity** to improve **public health planning**
- Facilitates **predictive diagnostics** and **customized healthcare**

iii. Scientific Research

- Supports **AI-based genomic analytics**
- Enables **gene therapy** and **biotech research**

6. Challenges in Genome Sequencing in India

Type	Challenges
Regulatory	Absence of strict regulations; sequencing data often outsourced abroad
Ethical	Misuse of sensitive personal data; potential for genetic discrimination
Technological	Cybersecurity risks, data fragmentation, sample contamination
Capacity	High costs, lack of skilled personnel, insufficient infrastructure
Equity	Risk of exclusion of vulnerable groups from genomic services

7. Ethical & Legal Concerns

- **Lack of Data Protection** laws for genomic information
- **No equivalent to GINA (Genetic Information Non-discrimination Act)** as in the USA
- Potential for **genetic profiling, insurance denial, and employment discrimination**

8. Way Forward

i. Policy & Regulation

- Establish a **Genomic Data Protection Law**
- Define roles and rights of all stakeholders

ii. Infrastructure Development

- Set up **centralised sequencing facilities**
- Prioritise **public funding** in genomic sciences

iii. Capacity Building

- Introduce **training programs** in bioinformatics and genomics
- Foster **public-private partnerships** in biotech sector



iv. Ethical Governance

- Promote **open access scientific publishing** for transparency
- Ensure **equitable access** to genomic technologies across regions and communities

9. Conclusion

The **GenomeIndia Project** is a critical milestone in India's journey towards **personalised healthcare** and **precision medicine**. However, to fully harness the potential of genome sequencing, **robust ethical safeguards, data privacy laws, and inclusive public health strategies** must be institutionalised.

Gene Therapy and Clinical Trial for Haemophilia A

❖ Syllabus Mapping:

✓ GS Paper 3 – Science and Technology (Biotechnology, Healthcare Innovation)

✓ GS Paper 2 – Government Schemes and Policies (Health Sector Regulation)

1. Why in the News?

India has **conducted its first human clinical trial of gene therapy** for **Haemophilia A** at **Christian Medical College (CMC), Vellore**, marking a significant milestone in personalized medicine and biotechnology innovation.

2. What is Gene Therapy?

Definition: **Gene therapy** is a technique that introduces, removes, or alters genetic material within a person's cells to treat or cure disease.

Objective: Restore the normal function of cells by **correcting defective genes or inserting therapeutic genes**.

3. Vectors Used in Gene Therapy

Vector Type	Description
Viral Vectors	Use modified viruses like adenovirus, retrovirus, AAV , etc.
Non-Viral Vectors	Use physical and chemical methods like liposomes, nanoparticles, polymer-based carriers, gene gun (particle bombardment)

4. Types of Gene Therapy

Type	Description	Inheritance
Germline Gene Therapy	Alters genes in germ cells (egg/sperm); changes are heritable .	Yes
Somatic Cell Gene Therapy	Alters genes in body (somatic) cells ; affects only the patient.	No

 India currently permits only somatic cell gene therapy under strict regulatory guidelines.

5. National Regulation in India

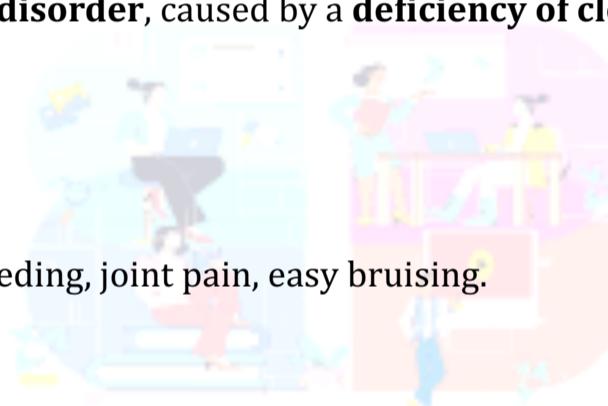
- **National Guidelines for Gene Therapy Product (GTP) Development and Clinical Trials (2019)**
 - Issued jointly by **DBT** and **ICMR**
 - Ensures **ethical, scientific, and regulatory oversight** for clinical trials involving gene therapy.

6. About Haemophilia A

Definition: A **sex-linked inherited bleeding disorder**, caused by a **deficiency of clotting factor VIII**.

Types:

Type	Cause
Haemophilia A	Deficiency of Factor VIII
Haemophilia B	Deficiency of Factor IX



Symptoms: **Prolonged bleeding**, internal bleeding, joint pain, easy bruising.

Genetic Inheritance:

- **X-linked recessive disorder**
 - **Males (XY)** with a defective X chromosome are affected.
 - **Females (XX)** are usually **carriers**; affected only if both X chromosomes carry the defective gene.

7. Applications of Gene Therapy

- **Inherited Diseases:** Sickle cell anaemia, thalassemia, haemophilia
- **Acquired Diseases:** Cancer (e.g., leukemia), viral infections (e.g., HIV)
- **Emerging Frontiers:**
 - **CRISPR-Cas9** for gene editing
 - **CAR-T Cell Therapy** for cancer
 - **mRNA therapies** for rare genetic disorders

8. Significance of First Clinical Trial

- Marks India's **entry into advanced therapeutic techniques**
- Potential to **replace lifelong factor VIII injections** with a **one-time curative treatment**
- Encourages **domestic innovation in genomic medicine**
- Aligns with India's **National Biotech Development Strategy**

9. Challenges in Gene Therapy

Challenge	Explanation
Cost	Gene therapies are highly expensive (up to ₹1–2 crore per treatment).
Ethical	Risk of misuse in germline editing, designer babies, etc.
Regulatory	Need for dynamic laws to match pace of global biotech evolution.
Access	Limited infrastructure and trained personnel in Tier-2, Tier-3 cities.
Safety	Long-term effects and immune reactions to viral vectors.

10. Way Forward

- **Build domestic R&D capacity** in genomics and personalized medicine
- Expand **public-private partnerships** to make gene therapies accessible
- Strengthen regulatory oversight through **centralized ethics boards**
- Promote **training and capacity building** in clinical genetics and molecular biology

- Develop **national gene therapy registries** to monitor patient outcomes and safety

Conclusion

India's first gene therapy clinical trial marks a **revolutionary step** in its healthcare and biotechnology sectors. By integrating ethical, affordable, and innovative practices, gene therapy has the potential to **transform the treatment landscape for genetic disorders** and **position India as a global hub for advanced therapies**.

Cervical Cancer: Global Elimination Efforts and India's Roadmap

❖ Syllabus Mapping:

- ✓ **GS Paper 2 – Health, Government Policies & Interventions**
- ✓ **GS Paper 3 – Biotechnology, Disease Awareness**

1. Why in the News?

The **first-ever Global Cervical Cancer Elimination Forum** was recently held in **Colombia**, aiming to **galvanize global stakeholders** towards the elimination of cervical cancer, especially in low- and middle-income countries like India.

2. About Cervical Cancer

What is it?



- **Cervical cancer** is a malignancy that originates in the **cervix**, the lower part of the uterus connecting to the vagina.
- It is the **fourth most common cancer among women globally** and the **second most common among Indian women**.

Age Group Affected: Most often affects **women over age 30**.

3. Cause: Human Papillomavirus (HPV)

What is HPV?

- HPV is a **sexually transmitted virus** affecting the skin, genital areas, and throat.
- There are over **200 types** of HPV, grouped into:
 - **Low-risk HPV** – rarely cancer-causing.
 - **High-risk HPV** – includes **HPV-16 and HPV-18**, which cause nearly **70% of cervical cancers**.

Transmission and Progression:

- Most HPV infections are cleared by the immune system.
- **Persistent infection** with high-risk HPV can lead to **precancerous changes** and eventually **cancer**.

4. Prevention and Control

HPV Vaccination:

- **6 vaccines available globally**, all effective against HPV 16 and 18.
- **Recommended for girls aged 9–14** (1 or 2 doses).
- Reduces the risk of developing cervical cancer later in life.

Screening:

- **Regular screening** every **5–10 years** from age 30 (or 25 for HIV-positive women).
- Detects early abnormal changes in the cervix which are treatable.

Treatment: While **HPV itself has no cure**, **precancerous lesions** and **early-stage cervical cancer** are treatable if detected early.

5. Global and National Initiatives

WHO's Cervical Cancer Elimination Initiative (CCE):

- **90-70-90 Targets for 2030:**
 - **90%** of girls fully vaccinated by age 15.
 - **70%** of women screened by 35 and again by 45.
 - **90%** of women with pre-cancer and invasive cancer treated.

India's Initiative (Budget 2024-25):

- Proposal for **pan-India HPV vaccination drive for girls aged 9–14 years**.
- Aligns with WHO's elimination goals.

6. Significance of Elimination Efforts

Benefits	Explanation
Public Health	Prevents a major cause of cancer-related deaths among women.
Cost-effectiveness	Early vaccination and screening are far cheaper than late-stage cancer treatment.
Equity in Health	Reduces disparities in cancer outcomes between high-income and low-income populations.

7. Challenges in India

- **Low awareness** and **social stigma** around reproductive health.
- **Limited access** to HPV vaccines and screening in rural areas.
- **Lack of infrastructure** and trained personnel for cancer screening.

8. Way Forward

- **Expand immunization** under Universal Immunisation Programme (UIP).
- **Integrate screening** into existing healthcare systems (e.g., ANM-level screening).
- **Public health education** to counter myths and encourage early diagnosis.
- **Partnerships** with global stakeholders (e.g., WHO, Gates Foundation) to fund and facilitate vaccine access.

Conclusion

The **elimination of cervical cancer is a realistic goal**, especially with **available vaccines, effective screening, and global cooperation**. India, with its **high disease burden**, must prioritise implementation of **preventive measures** to meet the **WHO 2030 targets** and ensure the **health security of its women**.

Obesity in India: A Growing Public Health Emergency

❖ Syllabus Mapping:

- ✓ GS Paper 1 – Society (Health Issues, Lifestyle Diseases)
- ✓ GS Paper 2 – Governance (Government Policies and Health Interventions)
- ✓ GS Paper 3 – Public Health, Non-Communicable Diseases (NCDs), Inclusive Growth

1. Context: Projected Surge in Obesity by 2050

According to a recent **Lancet study**, by **2050**, nearly **one-third of India's population** could be classified as **overweight or obese**, placing the nation at the center of a **non-communicable disease crisis**. This trend has far-reaching implications for public health, economic stability, and healthcare infrastructure.

2. Understanding Obesity

- **Definition:** Obesity is now defined by the **Obesity Medicine Association (OMA)** as a **chronic, relapsing, multifactorial neurobehavioral disorder**, characterized by excessive fat accumulation, leading to **metabolic dysfunction** and increased health risks.
- Recognized globally as a **disease** by the **World Health Organization (WHO)**.

Diagnostic Criteria:

- **Body Mass Index (BMI)** is the primary metric:
 - **Overweight:** $BMI \geq 25$
 - **Obesity:** $BMI \geq 30$
 - **Severe/Morbid Obesity:** $BMI \geq 35$
- **Waist circumference** and body composition assessments provide added precision.

3. Root Causes of the Obesity Epidemic in India

a. Dietary and Nutritional Transitions

- High intake of **ultra-processed foods (UPFs)**, saturated fats, and sugar-sweetened beverages.
- Growing trend of **eating out**, often involving **low-quality cooking oils** and **refined grains**.

b. Urban Lifestyle and Physical Inactivity

- Technological advancement and urbanization have created a **sedentary environment**.
 - Desk jobs**, excessive **screen time**, and **motorized transport** lower daily energy expenditure.
- WHO estimates: **Over 50% of Indians do not meet recommended activity levels**.

c. Environmental Constraints

- Shrinking **open spaces**, unsafe **pedestrian pathways**, and lack of **cycling infrastructure** discourage physical activity.
- Air pollution** has also been linked to **chronic inflammation**, contributing to obesity.

d. Socioeconomic Paradox

- Obesity is **no longer confined to the affluent**. It now coexists with **malnutrition**.
 - 55% of Indians cannot afford a healthy diet** (SOFI, 2024).
 - 40% lack adequate nutrient intake**, leading to "hidden hunger."

e. Psychological & Behavioral Triggers

- Stress eating, depression**, and **anxiety** contribute to **overeating and weight gain**.

f. Hormonal and Metabolic Conditions

- Disorders such as **hypothyroidism** and **polycystic ovary syndrome (PCOS)** are linked to weight gain, especially among women.

4. Alarming Trends: Findings from the Lancet Study

a. India's Youth at Risk

- India has the **highest number of obese adolescents (15-24 years)** globally.

Group	1990	2021	Projected 2050
Young Men	0.4 Cr	1.68 Cr	2.27 Cr
Young Women	0.33 Cr	1.3 Cr	1.69 Cr
Boys (0-14)	0.46 Cr	1.3 Cr	1.6 Cr
Girls (0-14)	0.45 Cr	1.24 Cr	1.44 Cr

b. Global Standing

- In 2021, **India, along with China and the U.S.**, accounted for **half of the global overweight/obese youth population**.

5. Why Obesity Is a National Concern

Wisdom leads to success

a. Public Perception Challenges

- Obesity in India is often perceived as a **personal failure**, not a **public health issue**, limiting urgency in response.

b. Economic Consequences

- Obesity cost India **\$28.95 billion in 2019** (~1.02% of GDP).
- Projected cost by 2030: **₹4,700 per capita**, or **1.57% of GDP**.

c. Healthcare Crisis

- Obesity exacerbates the **double burden of disease**—with **non-communicable diseases (NCDs)** rising alongside **malnutrition and infections**.

d. Associated Health Risks

- Strongly linked to:
 - Type 2 diabetes**
 - Cardiovascular diseases (CVDs)**
 - Certain cancers** (e.g., breast, colon, liver)
- Contributes to **3.4 million global deaths annually** (WHO data).

6. The Way Forward: Integrated and Inclusive Strategy

a. Recognizing Obesity as an NCD

- Integrate obesity prevention into **national health missions**, recognizing it as a **core NCD challenge**.

b. Awareness and Education

- Launch a **National Obesity Control Programme** including:
 - School-based nutrition education**
 - Workplace wellness programs**
 - Public media campaigns**
 - Behavioral counseling and dietary literacy**

c. Promoting Physical Activity

- Urban planning must include:
 - Parks, cycling lanes, open gyms**
 - Safe public spaces for exercise**
- Encourage **employer-led wellness initiatives** and **mandatory fitness assessments**.

d. Tightening Food Regulations

- Taxation on **High-Fat Sugar Salt (HFSS)** and **ultra-processed foods**.
- Promote **healthy school canteens** and ban **misleading advertisements**.
- Economic Survey 2024-25** recommended **higher taxes on UPFs**.

e. Affordable Healthy Food Access

- Subsidize **nutrient-rich staples**, include **CSR partnerships** with the food industry.
- Promote **online delivery of healthy meals** and **community nutrition kitchens**.

f. Regular Health Monitoring

- Routine **BMI** and **waist circumference tracking** in public healthcare.
- Create a **national obesity registry** to monitor trends, risk groups, and interventions.

✓ Conclusion: Tackling Obesity for a Healthier India

The **obesity epidemic in India** represents a **silent but severe public health challenge**, affecting both current generations and the country's long-term development trajectory. Addressing it demands **multi-sectoral collaboration**, inclusive policymaking, and **individual lifestyle shifts**. With sustained action, India can not only **reverse the trend** but also emerge as a **global leader** in tackling modern lifestyle diseases.

ASHA Workers in India: Strengthening Community-Based Public Health

❖ Syllabus Mapping:

- ✓ GS Paper 2 – Governance (Health Sector, Human Resources for Health)
- ✓ GS Paper 3 – Public Health, Development and Employment in Social Sectors
- ✓ GS Paper 1 – Society (Role of Women, Vulnerable Sections)

1. Context: Recognition and Support for India's Grassroots Health Force

In a recent announcement, the **Union Minister for Health and Family Welfare** declared an **enhancement in remuneration for ASHA workers**, acknowledging their crucial role in strengthening India's **primary healthcare system**, especially during the **COVID-19 pandemic** and routine immunization drives.

2. Who Are ASHA Workers?

- ASHA stands for **Accredited Social Health Activist**.
- These are **trained female volunteers** selected from within the community to ensure **last-mile healthcare delivery**.
- They function as **health educators, facilitators, and service providers**, working at the **grassroots level** to bridge the gap between **public health services** and **vulnerable populations**.

3. Evolution and Institutional Background

a. Genesis of the ASHA Programme

- Introduced under the **National Rural Health Mission (NRHM)** in **2005** to improve access to maternal, child, and reproductive health services in **rural India**.
- Expanded to urban areas under the **National Urban Health Mission (NUHM)** in **2013**.

b. Implementation Scope

- The ASHA scheme is currently active in **all states and union territories, except Goa**.
- The **normative ratio** mandates **one ASHA per 1,000 population**.
 - For **tribal, hilly, or desert areas**, a **habitation-based deployment** is followed to account for dispersed populations and accessibility issues.

4. Roles and Responsibilities of ASHA Workers

- Home-based care** for newborns, antenatal and postnatal mothers.
- Health education** on nutrition, hygiene, contraception, and sanitation.
- Facilitating institutional deliveries**, immunizations, and **referrals** to health centers.
- Playing a key role in national campaigns like:
 - Janani Suraksha Yojana**
 - Mission Indradhanush**
 - COVID-19 vaccination and awareness**

5. Relationship with Other Health Functionaries

- Training and Coordination:** ASHAs collaborate closely with:
 - Anganwadi Workers (ANWs)** under the **Integrated Child Development Services (ICDS)**.
 - Auxiliary Nurse Midwives (ANMs)** posted at sub-centers or primary health centers.
- This **inter-professional teamwork** ensures integrated delivery of **health, nutrition, and sanitation services**.

6. Comparative Overview: ASHA vs ANM vs ANW

Feature	ASHA Worker	ANM (Auxiliary Nurse Midwife)	Anganwadi Worker (ANW)
Institutional Origin	NRHM (2005)	NRHM/Primary Health System	ICDS (1975)
Work Location	Community-based (field worker)	Sub-centers, PHCs	Anganwadi Centres
Primary Role	Health education, awareness, support	Medical services, immunization, ANC	Childcare, nutrition, maternal care
Employment Type	Incentivized volunteer	Salaried Government Health Worker	Honorarium-based worker
Training Duration	Short-term module-based	2-year certified nursing course	On-the-job training and periodic refreshers

7. Challenges Faced by ASHA Workers

- Low and irregular honorarium**, despite increased workload.
- Lack of protective gear**, safety, and transport facilities in remote areas.
- Limited scope for **career advancement** and formal employment status.
- Mental stress** due to pandemic duties and **multi-programme responsibilities** without adequate institutional support.

8. The Hmar and Zomi Tribal Context

- In **tribal areas** such as those inhabited by the **Hmar and Zomi tribes** (found predominantly in **Manipur and Mizoram**), ASHA workers often operate in **geographically challenging terrains with limited infrastructure**.
- Here, **ASHA-to-habitation** ratio becomes essential, ensuring **customized deployment** in sparsely populated, hard-to-reach villages.
- Their role is vital in preserving **indigenous health practices** while promoting **modern maternal and child healthcare services**.

9. Way Forward: Strengthening India's Health Foot Soldiers

a. Policy Enhancements

- Convert ASHA workers into **formal cadre** of community health professionals with benefits and career pathways.
- Ensure **minimum guaranteed honorarium** apart from performance-based incentives.

b. Capacity Building

- Provide **refresher training**, access to **digital tools**, and **emergency medical kits**.

c. Monitoring and Accountability

- Deploy **mobile apps for real-time tracking** of ASHA activities.
- Ensure **grievance redressal mechanisms** for their field-level concerns.

d. Integration with Telemedicine

- Involve ASHAs in **teleconsultation facilitation**, expanding access to **remote specialist care** in underserved areas.

✓ Conclusion: ASHAs – The Unsung Pillars of Public Health

ASHA workers represent the **backbone of India's primary healthcare model**, especially in rural, tribal, and underserved areas. While their contributions are immense, **recognition, financial security, and institutional support** remain critical to sustaining their morale and effectiveness. Enhancing their role is essential to **achieving Universal Health Coverage** and fulfilling **SDG-3 (Good Health and Well-being)** in India.

SCIENCE & TECHNOLOGY

Strengthening India's Patent Ecosystem

📌 Syllabus Mapping:

✓ GS Paper 2 – Government Policies & Interventions

✓ GS Paper 3 – Science and Technology (Intellectual Property Rights), Economic Development

1. Why in the News?

- The Department for Promotion of Industry and Internal Trade (DPIIT) notified the **Patents (Amendment) Rules, 2024** under the **Patents Act, 1970**, with the aim of simplifying procedures, promoting innovation, and aligning with international best practices.

2. Key Features of Patents (Amendment) Rules, 2024

Provision	Details
Certificate of Inventorship	Introduced to officially recognize the contribution of inventors as a form of moral and legal acknowledgment.
Reduced Time Limits	<ul style="list-style-type: none"> • Request for Examination: Time limit reduced from 48 months to 31 months • Foreign Filing Details: Deadline reduced from 6 to 3 months
Advance Renewal Discount	A 10% discount is available if renewal fees are paid electronically for at least 4 years in advance .
Statement of Working	Submission frequency reduced to once every 3 financial years (previously annual).

3. Understanding Patents

◆ What is a Patent?

A **patent** is an exclusive right granted for a new invention – a product or process offering a **novel, inventive, and industrially applicable** solution.

◆ Scope

- **Territorial** in nature (valid only in the granting country)
- Requires **public disclosure** of invention
- Protects from **unauthorized commercial use**

4. Patent Governance and International Treaties

◆ National Framework

- Governed by **Patents Act, 1970** (Amended in 1999, 2002, 2005)
- 2005 Amendment aligned Indian patent law with **WTO TRIPS**, extending **product patents** to pharma & agro-chemicals
- Validity: **20 years**

◆ Global Framework

Agreement/Treaty	Objective
TRIPS (1994)	WTO framework ensuring IPR protection across borders
Paris Convention (1883)	First global agreement on industrial property rights
Patent Cooperation Treaty (1970)	International patent application system
Budapest Treaty (1977)	Standardization for microorganism-related patents
WIPO	UN agency administering global IP treaties

5. Major Issues in India's Patent Ecosystem

Challenge	Explanation
Abolition of IPAB	The Intellectual Property Appellate Board was scrapped in 2021, creating a vacuum in specialized adjudication
Evergreening	Companies extend patent life by minor modifications to maintain monopoly (common in pharma sector)
Compulsory Licensing	TRIPS-compliant provision, e.g., Nexavar case , where government allows others to produce patented drugs
Lengthy Patent Process	Patent examination timelines in India (~5 years) are much longer than in US or China (~20 months)
Low Patent Density	India: 34.4 patents per million population vs. South Korea (4037), Japan (2579), USA (1806)
Resource Gaps	Shortage of trained examiners, technical staff, and digital processing systems

6. Government Initiatives to Boost Patent Culture

Initiative	Objective
National IPR Policy (2016)	Holistic strategy to stimulate innovation
SIPP Scheme	Supports start-ups in patent filing and legal support
Expedited Examination	For start-ups, MSMEs, women inventors , etc.
NIPAM	IP awareness in schools, colleges, research institutions
Reduced Fees	For educational institutions, start-ups, and MSMEs
IP Mitra & CoEs	Platforms for legal, technical, and financial assistance
Digitisation	Computerized IP offices and digital public interface

7. Recent Developments: Trade Secrets & Economic Espionage

◆ Law Commission's 289th Report

Proposed separate laws for:

- **Trade Secrets (TS):** Confidential business information (e.g., formula, process)
- **Economic Espionage (EE):** Theft of proprietary data to benefit **foreign entities**

Need for TS/EE Law
✓ Enable cross-border tech collaboration
✓ Protect critical sectors (defence, nuclear, telecom)
✓ Consolidate fragmented laws and improve enforcement
✓ Guard MSMEs and start-ups from theft of innovation
Key Recommendations
- Broad TS definition
- Exemptions for whistleblowers, compulsory licensing
- Separate acts for TS and EE

8. Related Global Rankings

Index	Released By	India's Rank
International IP Index (2024)	US Chamber of Commerce	42nd out of 55
Global Innovation Index (2023)	WIPO, INSEAD, Cornell	40th out of 132

9. Way Forward

Focus Area	Proposed Reforms
Reinstating IPAB	Establish a specialized appellate body to deal with complex IP disputes
Strengthen Patent Offices	Recruit more examiners , expand digitization , and ensure fixed timelines
Boost R&D in Academia and Industry	Increase research funding , incentivize patentable innovations
Combat Evergreening	Enforce Section 3(d) of the Patents Act strictly in pharma sector
Legal Framework for TS & EE	Adopt new legislations for better trade and technology protection
Promote Public Awareness	Continue IP literacy missions across schools, colleges, and incubators

10. Conclusion

A robust patent regime is **vital for India's innovation ecosystem** and **economic competitiveness**. While the **2024 Patent Rules** mark a progressive step in easing compliance and encouraging inventorship, the country must address deeper systemic issues such as **long pendency, legal vacuum post-IPAB, and low patent filings**.

Strengthening institutions, adopting **new IP legislations** (Trade Secrets, EE), and ensuring a **balance between public health and patent protection** will be key to transforming India into a global innovation hub.

Ghost Particles and Neutrino Detection

❖ Syllabus Mapping:

- ✓ GS Paper 3 – Science and Technology (Awareness in the fields of space, nuclear technology, neutrinos, and advanced scientific research)
- ✓ GS Paper 1 – Geography (Interior of Earth, Geophysical phenomena)

1. Why in the News?

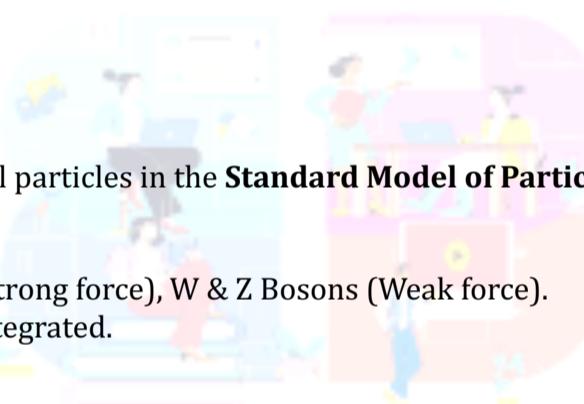
Scientists at the **IceCube Neutrino Observatory**, Antarctica, have detected **seven high-energy tau neutrinos**, also known as **ghost particles**, that passed through Earth—marking a significant achievement in cosmic particle physics.

2. What Are Neutrinos (Ghost Particles)?

- **Definition:** Subatomic particles with **negligible mass** and **no electric charge**.
- Known as "**ghost particles**" because **~100 trillion neutrinos pass through every human body per second** without any interaction.
- **Astrophysical neutrinos** are high-energy neutrinos emitted from **supernovas, black holes, and other cosmic events**.

3. Classification and Properties

Standard Model Context:



Key Properties:

- **Flavours:** Electron, Muon, Tau (can oscillate between them).
- **Speed:** Nearly equal to the speed of light.
- **Interaction:** Rarely interact with matter.
- **Path:** Travel in straight lines; unaffected by magnetic/electric fields.
- **Source:** Produced by supernovae, particle decays, sun's nuclear reactions, reactors, etc.

4. Difference from the 'God Particle' (Higgs Boson)

Neutrinos	Higgs Boson
Subatomic particles with negligible mass and no charge	Fundamental particle that gives mass to other particles
Pass through matter undetected	Detected in 2012 at CERN (Large Hadron Collider)
Present in enormous quantities	Very rare and short-lived

5. About IceCube Neutrino Observatory

- **Location:** South Pole, ~2500 metres under the ice.
- **Objective:** To detect **astrophysical neutrinos**, study **dark matter**, and cosmic rays.
- **First detection:** High-energy neutrinos in **2013**.
- **Working:**
 - Neutrinos interact with ice molecules → emit **Cherenkov light** (faint blue light).
 - Light detected by **Digital Optical Modules (DOMs)** embedded in Antarctic ice.

6. Significance of Studying Neutrinos

Application	Details
Understanding the Universe	Provide clues to early universe conditions post Big Bang.
Dark Matter & Energy	May help uncover the 95% invisible universe composition.
Nuclear Monitoring	Neutrino detectors help monitor nuclear reactors remotely. (e.g., <i>WATCHMAN project</i>)
Astrophysics	Help understand stellar interiors, core of the sun, and planetary formations.
Medical Imaging	Future potential for advanced diagnostics beyond X-rays/MRI.
Particle Physics	Helps in understanding nucleons and matter evolution.

7. Other Neutrino Observatories

Observatory	Country	Key Details
Indian Neutrino Observatory (INO)	India	Located in Theni, Tamil Nadu; underground lab to study neutrino mass and oscillation.
TRIDENT	China	Deep-sea neutrino telescope in the South China Sea; near the equator; high sensitivity.

8. Conclusion

The detection of tau neutrinos reaffirms the capability of the **IceCube Observatory** in contributing to **multi-messenger astronomy**. With neutrinos acting as silent cosmic messengers, their study promises to **unlock mysteries of the universe's origin, stellar processes, and even dark matter**. India's INO and global collaborations must capitalize on this momentum to **advance particle physics research**.

Fast Breeder Reactor (FBR): India's Next Leap in Nuclear Energy

❖ Syllabus Mapping:

- ✓ GS Paper 3 – Science and Technology (Nuclear Technology, Energy)
- ✓ GS Paper 2 – Government Policies and Interventions (Atomic Energy Act)
- ✓ GS Paper 1 – Geography (Mineral Resources: Thorium and Uranium)

1. Why in the News?

The **core-loading** process has been initiated in **India's first indigenously developed Prototype Fast Breeder Reactor (PFBR)** at **Kalpakkam, Tamil Nadu**, marking a major milestone towards achieving *criticality* and power generation.

2. About the Prototype Fast Breeder Reactor (PFBR)

- **Designed by:** Bharatiya Nabhikiya Vidyut Nigam Ltd (BHAVINI)
- **Capacity:** 500 MWe
- **Location:** Madras Atomic Power Station, Kalpakkam
- **Significance:** Once operational, India will become the **second country after Russia** to have a commercial fast breeder reactor.

3. What is a Fast Breeder Reactor?

Feature	Description
Type	Nuclear reactor that uses fast neutrons to sustain the fission process
Fuel Used	Uranium-Plutonium Mixed Oxide (MOX) fuel
Breeding Mechanism	Surrounding U-238 or Th-232 blanket absorbs neutrons → transmuted to Pu-239 or U-233 respectively
Output	Produces more fuel than it consumes – hence, <i>breeder</i>

4. Significance of PFBR for India

i. Start of Stage-II of India's Nuclear Programme

- Utilises plutonium from Pressurised Heavy Water Reactors (Stage I)
- Breeds U-233 from Thorium for Stage III

ii. Thorium Utilisation

- **India holds 25% of world's thorium reserves**
- Found in Monazite sands of **Kerala, Tamil Nadu, Odisha**, etc.
- FBR enables transmutation of **Th-232 to U-233**, unlocking full energy potential

iii. Technological Edge

- **Second only to Russia** with operational FBR
- Revives global interest after shutdown of programmes in US, France, and Japan

iv. Reduces Nuclear Waste

- Recycles plutonium from spent fuel
- Reduces burden on **geological disposal facilities**

5. India's 3-Stage Nuclear Power Programme

Stage	Reactor Type	Fuel Used	Objective
I	Pressurised Heavy Water Reactor (PHWR)	Natural Uranium	Generate energy and produce Plutonium-239
II	Fast Breeder Reactor (FBR)	MOX + U-238 blanket	Breeds Pu-239 and U-233
III	Advanced Heavy Water Reactor (AHWR)	Thorium + U-233	Achieve thorium-based sustainable energy cycle

6. BHAVINI: The Implementing Agency

- **Established:** 2003 under Department of Atomic Energy
- **Mandate:**
 - Construct and operate PFBR
 - Plan subsequent commercial FBRs under **Atomic Energy Act, 1962**

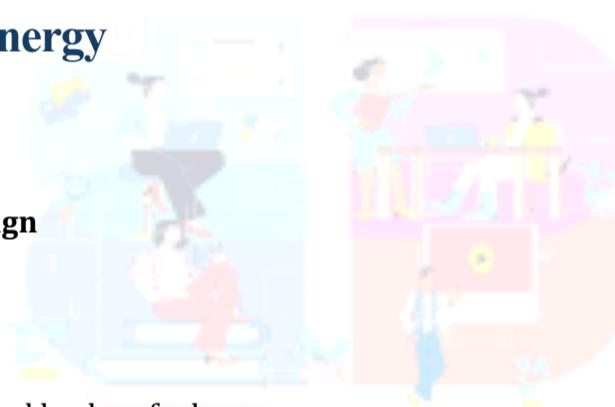
7. Current Status of Nuclear Power in India

- **Installed capacity:** 7.5 GW
- **Reactors:** 23 operational (19 PHWR, 2 BWR, 2 PWR)
- **Recent Additions:** 2x700 MW PHWR at **Kakrapar**
- **Target:** Triple nuclear capacity by **2030**
- **Contribution:** 2.8% of India's total electricity (2022-23)

8. Other Developments in Nuclear Energy

i. Small Modular Reactors (SMRs)

- Capacity up to 300 MWe
- **Faster construction, lower cost, safer design**



ii. Closed Fuel Cycle

- Spent fuel is **reprocessed**
- **Recovered Uranium and Plutonium** recycled back as fuel

iii. International Collaboration

- **India participated in the 1st Nuclear Energy Summit** in Brussels (2024)
- Summit highlighted nuclear's role in decarbonisation, energy security, and sustainable development

9. Challenges in FBR Deployment

- **High capital cost** and long gestation period
- **Safety concerns** due to use of liquid sodium as coolant
- Need for **highly skilled workforce** and robust regulation
- Public resistance due to **nuclear fears and land acquisition**



10. Conclusion

The operationalisation of the PFBR will not only mark a **technological milestone** for India but will also pave the way for the **efficient utilisation of its vast thorium reserves**, enabling **energy security, reduction in fossil fuel dependence**, and a **strong role in climate action**. India's fast breeder technology can emerge as a **global benchmark** in safe and sustainable nuclear energy.

Submarine Cable Systems: Lifeline of the Digital Age

❖ Syllabus Mapping:

- ✓ **GS Paper 2 – Governance (Digital Infrastructure, Policies)**
- ✓ **GS Paper 3 – Science & Technology (IT & Communication), Internal Security (Critical Infrastructure)**

1. Why in the News?

A recent incident in the **Red Sea** has damaged three key **Submarine Cable Systems (SMCs)**:

- **Asia-Africa-Europe-1**

- Europe India Gateway
- Tata Global Network

This disruption underscores the **vulnerability of critical internet infrastructure**.

2. What are Submarine Cable Systems (SMCs)?

- **Definition:** Fibre-optic cables **laid along ocean floors** that **connect countries and continents** to support **international internet and telecom connectivity**.
- **Installation:** Laid using specially designed ships, equipped for deep-sea cable deployment.
- **Coverage:** Carry **around 99% of global internet traffic**, making them the **backbone of global digital communication**.
- **Recognition:** Declared as "**critical communication infrastructure**" by the **UN General Assembly in 2010**.

3. Significance of SMCs

Aspect	Significance
Global Connectivity	SMCs provide real-time connectivity for voice, data, and video across continents.
Data Volume	Capable of transmitting terabytes per second , ensuring low-latency global services.
Economic Backbone	Enable e-commerce, financial services, cloud computing, and more.
Security & Sovereignty	Strategic in nature; secure national and defense communication rely on them.

4. SMC Network in India

International Connectivity

- India has **17 international SMCs**, landing at **14 Cable Landing Stations (CLS)**.
- Key hubs: **Mumbai** and **Chennai** (maximum landings).



Domestic Connectivity

- **CANI** (Chennai-Andaman and Nicobar Islands) Cable
- **KLI** (Kochi-Lakshadweep Islands) Cable

Regulation

- **Department of Telecommunications (DoT)** grants **International Long-Distance (ILD) licenses**.
- ILD licensees and Unified License holders can set up **submarine cables and CLS** with DoT approval.

5. Threats to SMCs

Threat	Details
Human Activities	Accidental cable cuts by fishing, ship anchors , and construction activities.
Natural Disasters	Earthquakes, undersea landslides, and volcanic activity damaging seabed cables.
Marine Fauna	Incidents of sharks biting cables (rare but recorded).
Geopolitical Vulnerability	Sabotage or conflict-based damage in strategic chokepoints like the Red Sea .

6. About Optical Fibre Technology

- **Structure:** Made of **glass or plastic**, uses **light pulses** for transmitting information.
- **Working Principle:** Based on **Total Internal Reflection**—light bounces within the cable core with minimal loss.
- **Advantages:**
 - **High bandwidth**
 - **Low signal attenuation**
 - **Resistance to electromagnetic interference**
- **Pioneer:** Dr. Narinder Singh Kapany, known as the **Father of Fibre Optics**.

7. Strategic and Security Dimensions

- **Cybersecurity:** Vulnerability to **eavesdropping** and **data interception** by hostile actors.
- **Geopolitical:** Need to secure cables in conflict-prone regions (e.g., Middle East, South China Sea).
- **Redundancy Planning:** Countries must invest in **diversified routes** to prevent single-point failures.

8. Way Forward

- **Indigenous Infrastructure:** Promote **Atmanirbhar Bharat** in submarine cable manufacturing.
- **Cable Protection Zones:** Designate zones with **restricted marine activity** near CLSs.
- **Collaborative Monitoring:** Partner with other nations for **real-time tracking of SMC health**.
- **Back-up Systems:** Encourage development of **satellite-based communication** as secondary support.

Conclusion

Submarine Cable Systems are **silent arteries** of the digital economy. Given their strategic importance, **proactive governance, investment, and security** measures are essential to ensure uninterrupted global and domestic connectivity.

Satellite-Based Toll Collection System: A Leap Towards Seamless Transport

❖ Syllabus Mapping:

- ✓ GS Paper 2 – Governance (e-Governance initiatives, Infrastructure)
- ✓ GS Paper 3 – Science and Technology (Developments and Applications in Transportation), Infrastructure (Road Sector)

1. Why in the News?

The **Government of India** is planning to pilot a **Global Navigation Satellite System (GNSS)-based Electronic Toll Collection (ETC)** system on **National Highways**, aiming to improve efficiency beyond the current **FASTag** mechanism.

2. Background: From FASTag to GNSS

- **FASTag:** Introduced using **RFID technology**, became **mandatory from January 2021**.
- **Need for upgradation:** With increasing congestion and the need for dynamic tolling, a shift towards **distance-based tolling** using **GNSS** is under consideration.

3. What is GNSS-Based Toll Collection?

- **Definition:** A **satellite-based imaging system** that tracks vehicle movement and calculates tolls based on **distance travelled** on tolled highways.
- **Main Components:**
 - **On-Board Unit (OBU):** GNSS-enabled tracker device in vehicles.
 - **ANPR (Automatic Number Plate Recognition) Cameras:** Reads license plates and generates data for toll deduction.

4. Key Benefits

Advantages	Details
No Need for Toll Plazas	Reduces traffic congestion and delays.
Fair and Dynamic Pricing	Toll calculated based on actual road usage .
Operational Efficiency	Less human intervention, higher accuracy.
Infrastructure Optimization	Reduction in costs for maintaining physical toll booths.
Global Best Practice	Already implemented in Germany, Singapore, and parts of Europe .

5. Challenges and Concerns

- **Signal Interference:** Accuracy of GNSS may be affected in urban canyons, tunnels, or during bad weather.
- **Privacy Concerns:** Real-time tracking raises questions around surveillance and data protection.
- **Legacy Compatibility:** Need to retrofit older vehicles with OBUs.
- **Technological Dependence:** Ensuring availability of robust, uninterrupted satellite signals is critical.

6. GNSS Infrastructure in India

India's domestic navigation systems can support this transition:

- **NavIC (Navigation with Indian Constellation):** Developed by ISRO, ensures precise location data within Indian region.
- **GAGAN (GPS-Aided GEO Augmented Navigation):** Enhances GPS accuracy using geostationary satellites.

7. Comparison: FASTag vs GNSS-based Tolling

Parameter	FASTag	GNSS-Based Toll Collection
Technology	RFID (Radio Frequency Identification)	Satellite-based + ANPR cameras
Vehicle Installation	RFID tag on windshield	On-Board GNSS Unit (OBU)
Toll Calculation	Pre-defined fixed rates	Real-time, distance-based dynamic pricing
Toll Booth Requirement	Required	Not required
Infrastructure Dependence	High (physical booths)	Low (digital ecosystem, satellite networks)

8. Way Forward

- **Pilot testing** in select corridors to refine technology and address real-time glitches.
- **Public awareness** campaigns to address privacy and usage concerns.
- **Legislation** for data protection and standards for GNSS tolling.
- **Integration with NavIC** to reduce reliance on foreign satellite systems and promote **Atmanirbhar Bharat**.
- **Gradual phasing out of toll booths**, reducing environmental footprint and improving travel times.

Conclusion

The GNSS-based tolling system represents a **paradigm shift** in India's highway infrastructure—paving the way for a **smart, efficient, and seamless tolling mechanism** aligned with global best practices. Successful implementation would significantly boost **digital governance, economic efficiency, and infrastructure modernization**.

Establishment of End-to-End Quantum Communication Link

❖ Syllabus Mapping:

GS Paper 3 – Science & Technology: Developments and applications of science and technology in communication, security, and emerging technologies.

1. Why in News?

- For the **first time in India**, Centre for Development of Telematics (C-DOT) and Physical Research Laboratory (PRL) have demonstrated the **integration of a fibre-based and free-space Quantum Key Distribution (QKD) system** to establish a secure **end-to-end quantum communication link**.

2. Key Institutions Involved

- **Centre for Development of Telematics (C-DOT)**
 - R&D arm of the **Department of Telecommunications (DoT)**.
 - Developed **indigenous fibre-based QKD system**.
- **Physical Research Laboratory (PRL)**
 - An autonomous institution under the **Department of Space (DoS)**.
 - Developed **Free Space QKD** capabilities.

3. What is Quantum Key Distribution (QKD)?

- **Definition:** A quantum communication protocol that enables **secure exchange of cryptographic keys** using quantum properties of particles.
- **Mechanism:**
 - Involves **entangled photons** and **quantum superposition** to encode and transmit information.
 - Any **external intervention or eavesdropping** disturbs the quantum state, triggering alerts and terminating the session.
- **Mediums of Deployment:**
 - **Optical fibre**
 - **Free space**
 - **Satellites**
- **Outcome:** Enables **tamper-proof encryption** and guarantees **unhackable communication**.

4. Quantum Technologies: Key Verticals

Vertical	Description
Quantum Communications	Uses QKD for secure data transfer .
Quantum Computing	Exploits quantum bits for high-speed computation beyond classical limits.
Quantum Sensors	Measure quantities like gravity, magnetic field with extreme precision.
Quantum Materials	Exhibit exotic properties like superconductivity due to quantum interactions.

5. Principles of Quantum Mechanics Utilised

- **Superimposition:** A particle can exist in multiple states simultaneously.
- **Entanglement:** Two particles remain correlated regardless of distance.
- **Tunnelling:** Particles can pass through barriers that classical particles cannot.

6. Applications of Quantum Technology

- **Secure Communications:** For military, banking, and national security purposes.
- **High-Speed Computing:** Complex simulations in **chemistry, physics, AI**.
- **Cryptography:** Creating **next-generation encryption methods**.
- **Imaging and Healthcare:** In **quantum-enhanced MRI and diagnostics**.
- **Scientific Research:** Understanding **quantum dynamics and molecular interactions**.

7. Significance of the Achievement

- **First-of-its-kind integration** in India bridging **fibre and free-space quantum channels**.
- Strengthens India's efforts towards **Quantum Communication Roadmap** under **National Mission on Quantum Technologies and Applications (NM-QTA)**.
- Enhances India's strategic capabilities in **cybersecurity** and **data protection**.

8. Way Forward

- **Scaling up** of integrated QKD systems across **government and defence networks**.
- Boosting **public-private partnerships** in **quantum R&D**.
- Creating **India-specific standards and protocols** for QKD deployment.
- Investing in **quantum education and skilling** under **National Quantum Mission**.

Conclusion

The successful integration of fibre and free-space QKD systems marks a **strategic technological milestone** for India, demonstrating indigenous capabilities in **quantum-secure communication**. It reflects India's commitment to lead in the **quantum revolution**, with far-reaching implications for **national security, digital governance, and future technologies**.

Multiple Independently Targetable Re-entry Vehicle (MIRV) Technology

❖ Syllabus Mapping:

✓ GS Paper 3 – Science & Technology (Developments in Defence Technology), Internal Security, Nuclear Technology, Strategic Capabilities.

1. Why in News?

- Defence Research and Development Organisation (DRDO) has **successfully conducted the first flight test** of an indigenously developed **Agni-5 missile** equipped with **MIRV technology** under **Mission Divyastra**.

2. What is MIRV Technology?

IQRA
Wisdom leads to success

- **Definition:** A strategic missile technology enabling **one missile** to **carry multiple nuclear warheads**, each capable of striking **independent targets**.
- **Functionality:** Warheads separate and re-enter the atmosphere at **different speeds and directions**, targeting different locations.
- **Platforms:** Can be launched from **land-based missiles** or **submarine-launched ballistic missiles (SLBMs)**.

3. Global Context and History

Country	Status of MIRV Capability
USA	First to develop MIRV in the 1960s
Russia, UK, France	MIRV-equipped strategic forces
China	Has demonstrated MIRV capability
Pakistan	Tested 'Ababeel' MIRVed missile in 2017
India	Now joins MIRV club with Agni-5 (2024)

- **Sea-based MIRVs:** Considered **less destabilizing** as submarines are harder to detect, enhancing second-strike capability.

4. Significance of India's MIRV Capability

- **Strategic Deterrence:** Enhances India's **credible minimum deterrence** and strengthens its **second-strike capability**.
- **BMD Evasion:** MIRVs are capable of penetrating **Ballistic Missile Defence (BMD)** systems due to independent targeting and multiple re-entry trajectories.
- **Regional Security:** Signals India's **technological parity** in a region marked by China's and Pakistan's nuclear postures.

5. Challenges in MIRV Deployment

- **Strategic Risks:** Land-based MIRVs may create **first-strike incentives** for adversaries during crises.
- **Technological Challenges:**
 - **Miniaturation of warheads** to fit multiple units in one missile.
 - **Advanced guidance systems** for accurate re-entry targeting.
 - **Increased demand for fissile material** like plutonium.
- **Arms Race Instability:** MIRV deployment can trigger an **arms race** as adversaries seek to match or neutralize capabilities.

6. About Agni-5 Missile

Feature	Details
Type	Surface-to-surface, intercontinental ballistic missile
Range	>5,000 km
Propulsion	Three-stage, solid-fuelled engine
Accuracy	Very high (Ring Laser Gyro and advanced navigation)
Developed Under	Integrated Guided Missile Development Programme (IGMDP)
Test Mission	Mission Divyastra

7. IGMDP – Background

- Launched in **1983**, spearheaded by **Dr. A.P.J. Abdul Kalam**.
- **Objective:** Indigenous missile development for strategic self-reliance.
- **Missile Arsenal Developed:**
 - **Prithvi** – Surface-to-surface short-range ballistic missile.
 - **Agni** – Intermediate and intercontinental ballistic missile.
 - **Trishul** – Short-range surface-to-air missile.
 - **Akash** – Medium-range surface-to-air missile.
 - **Nag** – Third-generation anti-tank missile.

8. Conclusion

India's successful MIRV test is a **milestone in strategic deterrence**, marking its entry into an elite group of technologically advanced nations. While reinforcing national security, India must tread carefully—**balancing advancement with diplomatic engagement**, ensuring its role as a responsible nuclear power.

APAAR ID: One Nation, One Student ID

❖ Syllabus Mapping:

✓ GS Paper 2 – Polity & Governance



- Government policies and interventions
- Issues relating to federalism and education policies
- ✓ **GS Paper 3 – Science and Technology**
- ICT in governance
- Data security and privacy

1. Context: APAAR ID Rollout and Concerns Raised

The Central government, in collaboration with several states, is pushing for the **widespread adoption of APAAR ID** (Automated Permanent Academic Account Registry) as part of the "**One Nation, One Student ID**" initiative.

Despite claims of voluntariness, **concerns have surfaced** about **privacy**, **data security**, and **enforced compliance by schools**.

2. What is the APAAR ID?

Feature	Description
Full Form	Automated Permanent Academic Account Registry
Issued By	Ministry of Education, Government of India
Structure	12-digit Unique Lifelong ID
Coverage	From pre-primary to higher education , including vocational and skill-based learning
Integration	Aligns with National Credit and Qualifications Framework (NCrF)
Policy Origin	Introduced under the National Education Policy (NEP), 2020
Platform Support	Part of the DigiLocker ecosystem and the Academic Bank of Credits (ABC) initiative

3. Objectives and Utility of APAAR

- ◆ **Centralized Academic Repository:** Consolidates **report cards, certificates, co-curricular achievements, credits**, etc.
- ◆ **Tracking Learning Pathways:** Enables the government to track student progress, dropouts, transfers, and transitions.
- ◆ **Mobility and Portability:** Facilitates **easy transfer of students** across institutions and states without loss of records.
- ◆ **Higher Education & Employment:** Streamlines access to academic data for admissions, scholarships, and job placements.
- ◆ **Lifelong Learning Ecosystem:** Promotes **credit-based flexible learning**, as proposed by NEP 2020 and NCrF.

4. Constitutional and Policy Framework

Aspect	Provision
Right to Education (Article 21A)	Universal access to education mandates robust tracking mechanisms.
NEP 2020	Encourages digitization and personalization of academic records.
Digital India Mission	APAAR aligns with the Digital Public Infrastructure (DPI) model for governance.
Data Protection Concern	Comes under the purview of Digital Personal Data Protection (DPDP) Act, 2023 .

5. Key Concerns and Criticisms

a. Privacy and Consent Issues

- Although the Education Ministry has claimed APAAR is **voluntary**, school-level instructions often create **coercive environments**.
- Parents and stakeholders fear **involuntary data harvesting**.

b. Data Security and Surveillance Risks

- Centralized storage of sensitive data (**biometrics, caste, religion, academic records**) could be vulnerable to **breaches or misuse**.
- Cyberattacks** on public databases raise concerns over **data integrity**.

c. Digital Divide

- Unequal digital access may **exclude marginalized groups**, leading to **inequitable outcomes**.

d. Informed Consent and Parental Awareness

- Many parents lack **awareness or literacy** to make **informed decisions** about data consent.

e. Federal Autonomy and Education

- States like Tamil Nadu have objected, citing **state rights over education (List II, Seventh Schedule)** and **central overreach**.

6. Comparative Global Models

Country	Similar Initiative	Remarks
USA	Student Longitudinal Data Systems (SLDS)	Federated structure with state-wise data control
UK	National Pupil Database (NPD)	Limited access with strict data-sharing protocols
Estonia	National Digital ID for students	Backed by strong privacy laws and citizen control

7. Way Forward

a. Voluntariness with Clear Consent

- Ensure **opt-in model** with **informed consent** protocols.
- Provide **multilingual consent forms** with **data usage transparency**.

b. Strengthen Data Governance Framework

- Strict adherence to the **DPDP Act, 2023**, including **data minimization, storage limitation, and purpose clarity**.
- Set up an **independent education data regulatory body**.

c. Robust Grievance Redressal Mechanism

- Allow **parents and students** to file complaints regarding misuse or coercion.

d. Decentralized Implementation

- Encourage **state-level customization** based on federal spirit and diversity in education boards and languages.

e. Awareness and Digital Literacy

- Conduct **community-level workshops** to educate parents and teachers about APAAR, data rights, and digital safety.

Conclusion: Balancing Innovation with Accountability

While **APAAR ID** has the potential to revolutionize India's academic data system and **realize NEP 2020's goals**, it must be implemented with a **rights-based approach**. A transparent, secure, and **federal-consulted rollout** is essential to ensure that **digitization doesn't compromise privacy or inclusion**.

Space Debris and Satellite Internet

Syllabus Mapping:

- GS Paper 2 – International Relations (Global Institutions & Governance)**
- GS Paper 3 – Science and Technology | Infrastructure | Environmental Degradation**

I. Context

- A **500-kg metal object**, suspected to be **space debris**, recently crashed in Kenya, reigniting **debates on accountability, governance, and space sustainability**.
- Simultaneously, India is witnessing a push for **satellite internet** as telecom majors partner with **Starlink and OneWeb**, raising concerns over **space congestion and cyber sovereignty**.

II. Understanding Space Debris

- Definition: As per **UN COPUOS**: All **man-made, non-functional objects** in Earth's orbit or re-entering atmosphere, including fragments of satellites, rockets, and paint chips.
- Examples: **Rocket boosters, fuel tanks, satellite fragments, paint flakes, and explosion debris**.

III. Governance Gaps in Space Debris

Issue	Explanation
No Universal Legal Definition	Existing treaties lack a binding definition for "space debris."
Weak Liability Enforcement	1972 Liability Convention is outdated. Limited compensation mechanisms.
Uncontrolled Re-entries	No global mandate to penalize damage from uncontrolled satellite re-entry.
Mega-Constellations Risk	Starlink, Kuiper, OneWeb to add 100,000+ satellites by 2030 – raises collision risk.
Low Compliance	Only 30% satellites comply with UN's voluntary 25-year deorbit rule.

Case Studies

Wisdom leads to success

- Cosmos 954 (1978)**: USSR satellite crashed in Canada. Only partial compensation paid.
- SpaceX Debris (2021)**: Rocket debris landed in Poland; FAA disclaimed responsibility.

IV. Measures to Mitigate Space Debris

Global Level

- Binding Regulations via COPUOS**
- Update Liability Convention (1972)**: Include independent **international tribunal**
- Adopt Debris Mitigation Plans**: Graveyard orbits, controlled reentry protocols

National Level

- Mandatory debris mitigation in **launch licensing**
- Expand monitoring systems like **US Space Fence**
- Promote **Reusable rockets, debris-neutral technology**

V. Satellite Internet: Opportunities & Challenges

What is Satellite Internet?

- A system where **LEO/GEO satellites** provide **broadband connectivity** to Earth using:
 - User terminals (dishes)**

- **Ground gateways**
- **Satellite constellations**

◆ Key Global Players

Company	Type	Focus Area
Starlink	Private	LEO, rural connectivity
OneWeb	PPP	Global broadband
Kuiper	Amazon-backed	Upcoming player

VI. Significance of Satellite Internet for India

Advantage	Impact
Bridging Rural Connectivity	18,000+ villages lack mobile internet (RGI, 2024)
Disaster-Resilient Network	Used in Ukraine War, US hurricanes
Strategic Communications	Vital for defense, maritime, border zones
Boost to Digital India 2.0	Integrate with CoWIN, DigiLocker, eSanjeevani etc.
Fast Deployment	Faster than laying fiber (₹10-15 lakh/km in tough terrain)
Space-Tech Ecosystem Growth	Projected \$18.6 billion global market by 2030 (Allied Market Research)

VII. Concerns with Satellite Internet & Space Congestion

Limitation	Example/Impact
High Cost	Starlink charges ₹25k-35k for dish, ₹7k/month – unaffordable for rural users
Weather Sensitivity	Signal drop during heavy rain (rain fade)
Latency	GEO ~600 ms, LEO ~20-40 ms but fluctuates
Space Debris Accumulation	Thousands of LEO satellites raise risk of Kessler Syndrome
Cybersecurity & Sovereignty	Signals from US satellites may risk Indian data sovereignty
Regulatory Hurdles	Needs DoT, ISRO, MHA clearances; cross-border licensing complex

VIII. India's Steps & Policy Direction

Measure	Details
IN-SPACe Empowerment	Authorizes private satellite internet firms like OneWeb
BharatNet, NDCP 2018	Focus on satellite broadband in underserved areas
Draft Telecom Bill 2023	Provisions to govern satellite internet
NavIC, GSAT Development	Boosting indigenous constellations and services
Direct-to-Device by BSNL	India's first indigenous satellite internet for remote regions

IX. Way Forward

Action Area	Recommendation
Policy & Regulation	Finalize Space Activities Bill , create single-window clearance mechanism
Cybersecurity & Data Sovereignty	Local hosting, encryption, security audit mandates
International Cooperation	Push for Global Code of Conduct on space internet & debris governance
PPP & Startups Boost	Support firms like Pixxel, Astrome to create Atmanirbhar space ecosystem
Sustainable Practices	Encourage reusable rockets, debris-tracking tech, eco-compliant satellites

X. Conclusion

India stands at a crossroads between satellite-driven digital empowerment and unregulated space clutter.

A well-calibrated approach that balances **inclusivity, strategic autonomy, and sustainable space governance** will be crucial.

India must lead global efforts to prevent a "**tragedy of the orbital commons**" while enabling **Digital India 2.0** via space technology.