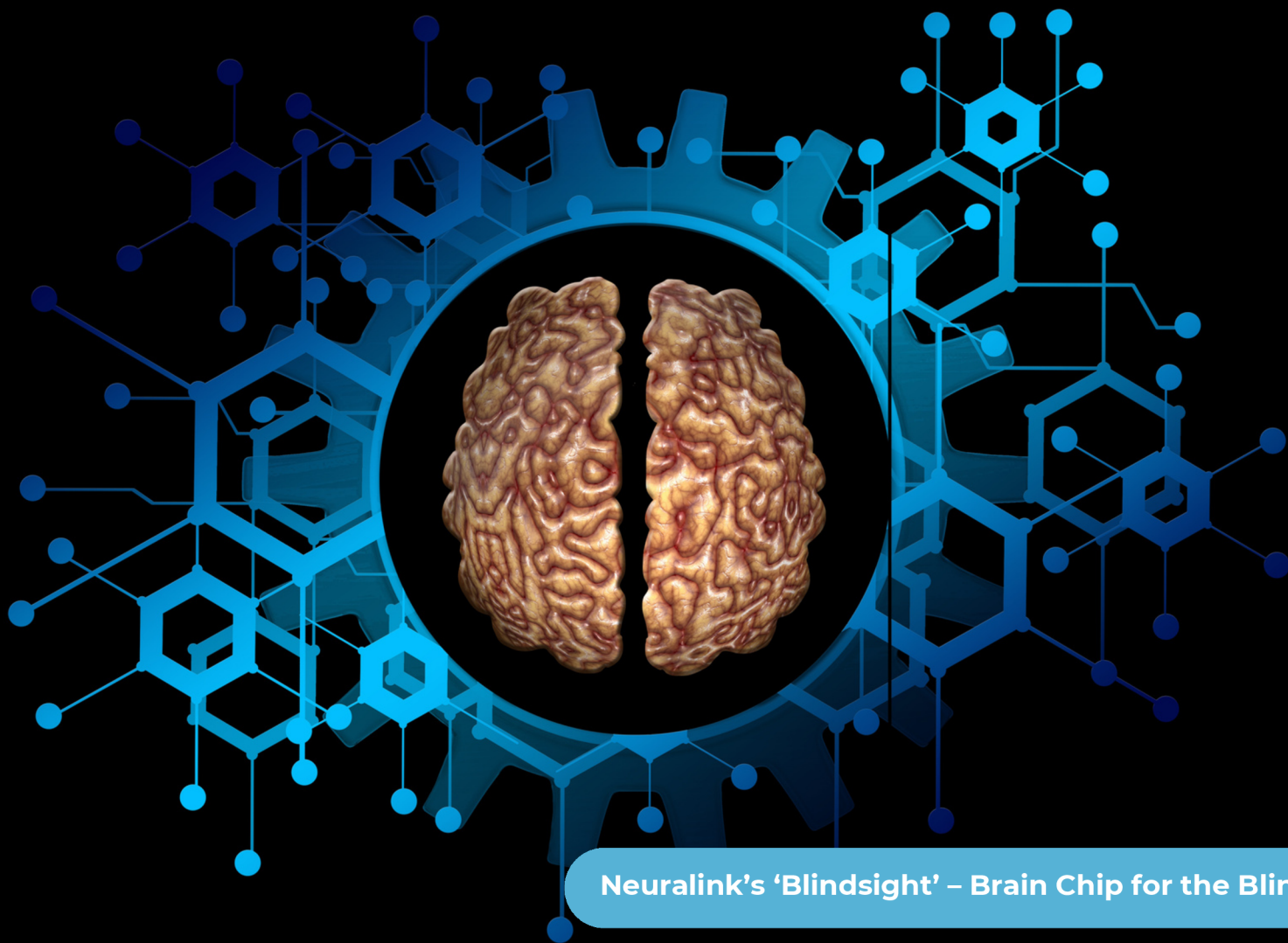WEEKLY

25 MARCH - 3 APRIL 2025

CURRENT AFFAIRS

For UPSC, PCS and Other Exams | Pre & Mains Practice Questions

Neuralink's 'Blindsight' – Brain Chip for the Blind

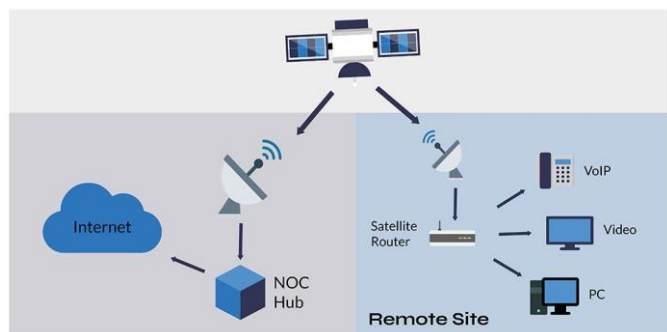|		
Geopolitics of Satellite Internet	**Digital Child Abuse & AI-Based Exploitation**	**SC Sets up Task Force to Address Student Suicides**
Call for Changing the Collegium System	**Petition on CAG Appointment Process**	**Disaster Management (Amendment) Bill 2024 Passed**
India's Bioeconomy and the Road Ahead	**Free Movement Regime between India and Myanmar**	**Concerns of Rising '1 Person, 1 Family' Culture**

Geopolitics of Satellite Internet

GS Paper 3: Awareness in IT and Space, Cybersecurity, Digital Sovereignty

Context: Satellite internet is emerging as a strategic asset with implications on national security, digital sovereignty, and geopolitical influence.

Key Points:

- **Strategic Importance:**
  Satellite internet bridges digital divides in underserved regions, enabling education, healthcare, and disaster response. However, it also serves military, surveillance, and dual-use functions.

- **Geopolitical Race:**
  Nations are competing for Low-Earth Orbit (LEO) dominance, spectrum allocation, and data control. The race is driven by economic value and strategic autonomy.

- **Major Players:**
  - **US:** Dominates via SpaceX's Starlink.
  - **China:** Developing GuoWang constellation to ensure data sovereignty.
  - **India:** Backing OneWeb, Jio-SES, and working with SpaceX to improve connectivity.

- **India's Strategy & Concerns:**
  - **Gaps:** Many regions still lack basic connectivity.
  - **Spectrum Access:** First-come-first-serve rule under ITU challenges equitable access. India advocates a Global South-centric model.
  - **Private Monopolies:** SpaceX's dominance raises concerns on pricing, influence, and digital dependency.
  - **Space Debris:** Orbital crowding is a growing environmental hazard.

- **Policy Directions:**
  - Scale up indigenous capability (ISRO, private sector).
  - Update Satellite Communication and Spacecom Policies.
  - Leverage forums like Quad/BRICS for global space norms.
  - Ensure strategic autonomy in digital infrastructure.

Conclusion: India must balance foreign partnerships with self-reliance to safeguard digital sovereignty and ensure inclusive, secure access to satellite internet.

Digital Child Abuse & AI-Based Exploitation
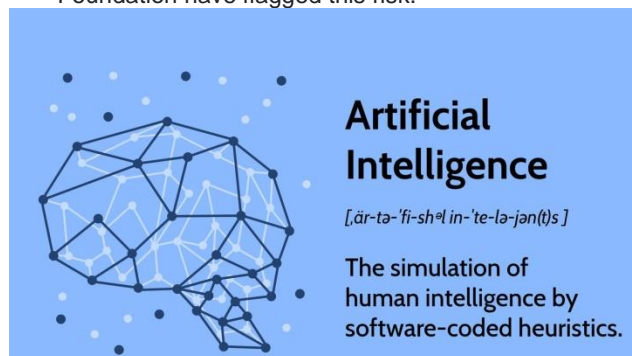
GS Paper 2: Children's Issues, Governance
GS Paper 3: Cybersecurity, Ethics in Tech

Context: AI-generated child sexual abuse material (CSAM) is an alarming trend that demands urgent policy, legal, and technological intervention.

Key Issues:

- **Forms of Abuse:**
  Includes cyberbullying, grooming, exposure to explicit content, data misuse, and AI-generated deepfakes.

- **Role of AI:**
  AI tools can create realistic child exploitation content,

making detection and prosecution harder. International bodies like the WEF and Internet Watch Foundation have flagged this risk.

- **Legal and Enforcement Gaps:**
  - **POCSO & IT Act:** Existing laws do not fully cover AI-generated CSAM.
  - **Slow Processes:** Weak digital forensics, anonymity of offenders, and legal delays hamper justice.

- **Current Framework:**
  - **Laws:** IT Act 2000 (Sec 67B), POCSO Act 2012 (Sec 13-15), Bharatiya Nyaya Sanhita (Sec 294, 295).
  - **Initiatives:** National Cyber Crime Portal, collaboration with global agencies and social media platforms, awareness campaigns under Digital India.

- **Challenges:**
  - Rapid tech advancement outpaces regulation.
  - Social stigma and lack of awareness hinder reporting.
  - Parents and teachers lack digital literacy.

Way Forward:

- **AI-powered detection** of CSAM content.
- **Stronger laws** to address AI-generated abuse.
- **Cyber literacy programs** in schools and homes.
- **Global collaboration** for transnational offender tracking.

Conclusion: Digital child abuse, especially with AI involvement, poses complex threats. India must enhance its legal frameworks, technical capabilities, and societal awareness to protect its children in the digital era.

NEP 2020 in the Classroom: From Policy to Practice

GS Paper 2 – Education | Government Policies & Interventions

Context: The National Education Policy (NEP) 2020, hailed as a transformative framework, aims to overhaul India's education system. However, transitioning from policy to classroom-level implementation presents unique challenges and opportunities.

Constitutional Status of Education:

- **Fundamental Right:**
  - *Article 21A* – Free and compulsory education (ages 6–14) through the 86th Amendment (2002).
  - *Article 30* – Rights of minorities to establish and administer educational institutions.

- **Directive Principles of State Policy:**
  - *Article 45* – Provision for early childhood care and education (below 6 years).

- **Fundamental Duty:**
  - *Article 51A(k)* – Duty of parents to ensure education for children (6–14 years).

- **7th Schedule & Federal Aspect:**
  - Education moved from **State List** to **Concurrent List** via the 42nd Amendment (1976), enabling national policies like NEP 2020.

Earlier Education Policies in India:

- **NEP 1968:** Based on Kothari Commission recommendations.
- **NEP 1986:** Focused on access, equity, and women's education.
- **NEP 2020:** Replaces 1986 policy; supported by National Curriculum Framework (NCF 2023).

NATIONAL EDUCATION POLICY 2020

Universalization of Education from pre-school to secondary level with **100% GER in school education by 2030**

GER in higher education to be raised to **50% by 2035**; 3.5 crore seats to be added in higher education

NEP 2020 will bring **2 crore** out of school children back into the main stream

New 5+3+3+4 school curriculum with **12 years** of schooling and **3 years** of Anganwadi/ Pre-schooling

No rigid separation between academic streams, extracurricular, vocational streams in schools

Vocational Education to start from **Class 6** with **Internships**

Teaching upto at least **Grade 5** to be in **mother tongue/regional language**

Key Highlights of NEP 2020

1. School Education Reforms
- **5+3+3+4 Structure:** Replaces 10+2 system.
  - *Foundational (Ages 3–8)*: Preschool + Grades 1–2
  - *Preparatory (8–11)*: Grades 3–5
  - *Middle (11–14)*: Grades 6–8
  - *Secondary (14–18)*: Grades 9–12
- **ECCE Strengthened:** Via Anganwadis and pre-primary integration.
- **Mother Tongue Instruction:** Till Grade 5 (preferably till Grade 8).
- **No Stream Separation:** Students can mix science, arts, vocational subjects.
- **Board Exam Reforms:** Conceptual focus, offered twice a year.
- **Universalisation Goal:** 100% Gross Enrollment Ratio (GER) by 2030.
- **Coding/Vocational Training:** From Grade 6, including internships.
- **Assessment Reforms:** Competency-based exams; *PARAKH* as a national assessment body.

2. Higher Education Reforms in India:
- **Multidisciplinary Institutions:** Target by 2040.
- **Flexible Degrees:**
  - 1-year certificate
  - 2-year diploma
  - 3-year degree
  - 4-year research-based degree
- **Common Entrance Tests:** Conducted by NTA (e.g., CUET).
- **Higher Education Commission of India (HECI):** To replace UGC, AICTE, NCTE.
- **GER Target:** 50% by 2035.
- **Foreign Universities:** Top 100 can set up campuses in India.
- **Digital Push:** NDEAR, virtual labs, e-content for all subjects.

3. Teacher Education & Professional Development:
- **4-Year Integrated B.Ed.:** Mandatory by 2030.
- **NPST & ITEP:** New standards for teacher training.
- **Performance-Based Promotion:** Linked to student outcomes.
- **AI-Based Teacher Training:** Through platforms like DIKSHA.

4. Vocational & Skill Development:
- **Mandatory Vocational Education:** From Grade 6.
- **Skill-Based Courses:** Coding, AI, biotech, carpentry, entrepreneurship.
- **Internships & Hands-On Learning:** Integrated into curriculum.
- **National Credit Bank:** For academic credit transfers.

Key Features in Classroom Implementation
- **Foundational Learning (NIPUN Bharat):** Focus on literacy and numeracy.
- **Multidisciplinary Learning:** Flexibility in subject combinations (e.g. Math + Music).
- **Choice-Based Credit System (CBCS):** In schools and colleges.
- **Competency-Based Education (CBE):** Focus on critical thinking, application.
- **Digital Integration:**
  - Platforms: DIKSHA, SWAYAM, PM e-Vidya
  - Tools: Virtual labs, AI-powered assessments, hybrid learning models.
- **Mother Tongue Instruction:** Supports comprehension and cognitive development.
- **Reformed Assessments:**
  - Continuous Comprehensive Evaluation (CCE)
  - AI-based adaptive testing
  - *PARAKH* for standardized national assessments
- **Vocational Integration:** Early exposure to real-world skills and jobs.
- **Teacher Upskilling:** Through online modules and experiential learning techniques.

Challenges in Implementation:
- **Infrastructure Gaps:** Especially in rural areas (digital divide, lack of facilities).
- **Teacher Readiness:** Inadequate training for new pedagogies.
- **Language Barriers:** Shortage of textbooks and trained teachers in regional languages.
- **Assessment Transition:** Requires systemic change from marks-based to competency-based evaluations.

Way Forward:
- **Continued Policy Support:** Coordination between Centre and States.
- **Digital Ecosystem Strengthening:** Universal access to tech tools.
- **Teacher Empowerment:** Focused training and capacity-building.
- **Student-Centric Education:** Encouraging inquiry, creativity, and flexibility.
- **Monitoring & Evaluation:** Regular feedback and mid-course corrections.

Conclusion: NEP 2020 marks a paradigm shift from rote learning to **holistic, flexible, and experiential education**. If implemented effectively, it can transform India's classrooms into hubs of innovation, critical thinking, and skill development—fostering future-ready citizens.

Govt Notifies Revised Criteria for Classifying MSMEs

GS Paper 3 – Indian Economy | MSME Sector

In News: The Government of India has revised investment and turnover criteria for classifying MSMEs. The new rules take effect from **April 1, 2025**.

Significance of MSMEs:
- **Backbone of Indian Economy:**
  - 6.13 crore registered MSMEs; employ **24.14 crore people**.
  - Second-largest employer after agriculture.
  - Nearly **40% women-owned enterprises**.
- **Inclusive Growth Driver:**
  - Support large industries through ancillary units.
  - Promote **regional balance** by industrializing rural/backward areas.
  - Significant in exports and import substitution (~**48% of exports**).

- Key to *Atmanirbhar Bharat* with innovation and self-reliance.

New MSME Classification Criteria as per Union Budget 2025

ENTERPRISE CATEGORY	CURRENT INVESTMENT LIMIT	REVISED INVESTMENT LIMIT	CURRENT TURNOVER LIMIT	REVISED TURNOVER LIMIT
MICRO ENTERPRISE	₹1 crore	₹2.5 crore	₹5 crore	₹10 crore
SMALL ENTERPRISE	₹10 crore	₹25 crore	₹50 crore	₹100 crore
MEDIUM ENTERPRISE	₹50 crore	₹125 crore	₹250 crore	₹500 crore

Challenges Faced by MSMEs

1. **Limited Access to Finance**
   - Only 16% get formal credit (SIDBI).
   - Dependence on NBFCs and informal credit.
2. **Low Technology Adoption**
   - Outdated machinery → poor quality & productivity.
   - Example: Surat textile units vs. Chinese competitors.
3. **Limited Market Access**
   - Poor online presence, export capability.
   - Example: Handicraft MSMEs in **Rajasthan** lack export licenses.
4. **Skill Gaps & Labour Issues**
   - **70% MSMEs** struggle to hire skilled workers (FICCI survey).
5. **Delayed Payments**
   - **Govt PSUs** delay payments by 3–6 months.
   - Affects working capital and survival.

Major Government Initiatives

Scheme	Objective
Udyam Portal	Online registration, access to schemes
Public Procurement Policy	Mandatory sourcing from MSEs
ESDP	Skill training, entrepreneurship development
CGTMSE	Collateral-free loans up to ₹5 crore
PM MUDRA Yojana	Loans up to ₹20 lakh – *Shishu to Tarun Plus*
SFURTI	Cluster development for traditional industries
PM Vishwakarma	Support to artisans – training, toolkit, credit

Impact of New MSME Criteria (April 2025 Onward)

- Ensures **better inclusion of growing enterprises**.
- Aligns classification with **market realities** (inflation, tech cost).
- Aids in **targeted policy implementation**, credit disbursal, and data accuracy.

Way Forward

- **Ensure Timely Payments** – Strengthen MSME SAMADHAAN portal.
- **Wider Credit Access** – Leverage fintech, digital KYC.
- **Technology Upgradation** – Encourage participation in TReDS, ZED certification.

- **Skill Integration** – Align with Skill India & NEP vocational reforms.

Conclusion: MSMEs are crucial for inclusive, job-intensive growth. Updated classification **helps bring more enterprises under the formal umbrella** and ensures tailored support in line with their scale and needs.

SC Sets up Task Force to Address Student Suicides

GS Paper 1 – Society | GS Paper 2 – Governance
Context: Amid rising student suicides, the **Supreme Court has constituted a national task force** to investigate the causes and recommend systemic reforms in higher educational institutions.

Background

- **Student Suicide Stats (NCRB 2022):**
  - Over **13,000 student suicides** recorded.
  - Annual increase: **4%** (double national average).
  - **States:** Maharashtra, Tamil Nadu, and MP lead in numbers.
- **Gender Trends (2021–22):**
  - Male suicides ↓ 6%
  - Female suicides ↑ 7%

Reasons Behind Rising Suicides

Factor	Details
Academic Pressure	Intense competition, especially in hubs like Kota
Mental Health Issues	Depression, anxiety, poor support systems
Social Discrimination	Caste, gender-based bias in campuses
Family/Financial Pressure	Performance expectations, monetary stress
Failures/Setbacks	Fear of exams, poor coping mechanisms
Lack of Support	Inadequate counselling infrastructure
Digital Stress	Peer pressure, bullying via social media

Task Force Details

- **Composition:** 10-member panel
- **Mandate:**
  - Investigate causes: ragging, caste issues, academics, mental health
  - Review existing laws and institutional frameworks
  - Submit **interim report in 4 months**, **final in 8 months**
  - Conduct **surprise inspections**
  - Expand recommendations beyond mandate if required

Current Government & State Initiatives

Initiative	Objective
Manodarpan	Helpline & support for students' psychological well-being
Rajasthan Model	90 counselors appointed; toll-free helpline (104); "Dinner with DM" program
National Mental Health Policy	Integration of mental health in education systems

Way Forward

- **Mental Health First:** Prioritize student well-being over academic pressure.
- **Institutional Support:** Appoint full-time counselors in every college.
- **Inclusive Frameworks:** Strong anti-discrimination policies on campuses.

- **Career Counseling:** Promote IC3-like models for informed student choices.
- **Periodic Audits:** Mandatory mental health audits in institutions.

Conclusion: The rising trend of student suicides demands **urgent, systemic intervention**. The SC's proactive role can push institutions toward becoming **emotionally safe spaces** focused not just on academic excellence but also **mental resilience** and inclusion.
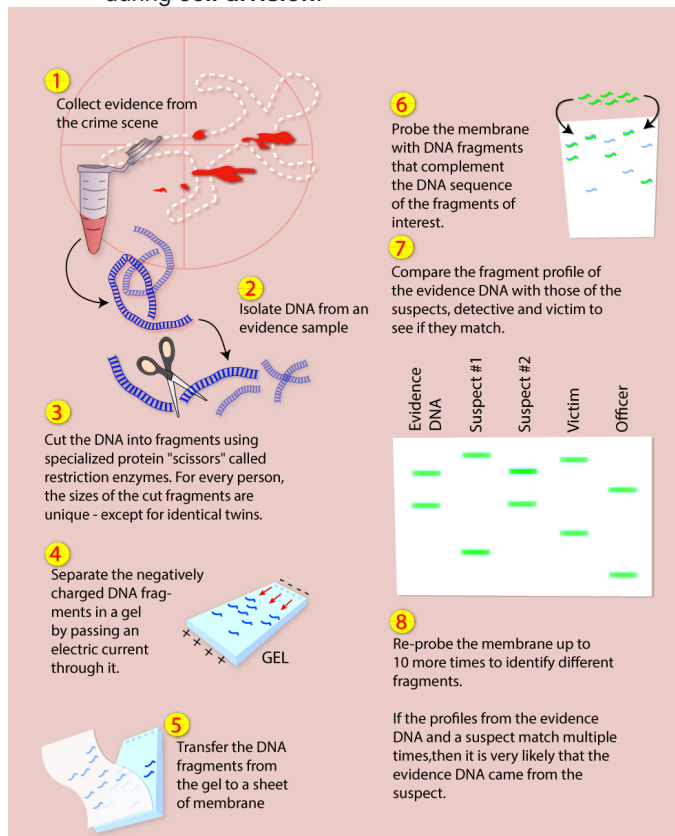
DNA's Role in Identification

GS Paper 3 – Science and Technology

Context: DNA technology is increasingly being used to solve **cold cases**, identify individuals, and provide critical inputs in forensic and legal investigations.

What is DNA?

- **Deoxyribonucleic Acid (DNA):**
  Hereditary material present in almost all living organisms.
  Most DNA is located in the **cell nucleus (nuclear DNA)**, with a small amount in **mitochondria (mtDNA)**.
- **Structure:**
  Composed of four chemical bases:
  - Adenine (A), Thymine (T), Guanine (G), and Cytosine (C).
  - Pairing: A-T and C-G → form base pairs in a **double helix structure**.
  - Nucleotides = Base + Sugar + Phosphate.
- **Replication Ability:**
  DNA can replicate itself, ensuring genetic continuity during **cell division**.

1. Collect evidence from the crime scene
2. Isolate DNA from an evidence sample
3. Cut the DNA into fragments using specialized protein "scissors" called restriction enzymes. For every person, the sizes of the cut fragments are unique - except for identical twins.
4. Separate the negatively charged DNA fragments in a gel by passing an electric current through it. GEL
5. Transfer the DNA fragments from the gel to a sheet of membrane
6. Probe the membrane with DNA fragments that complement the DNA sequence of the fragments of interest.
7. Compare the fragment profile of the evidence DNA with those of the suspects, detective and victim to see if they match.
8. Re-probe the membrane up to 10 more times to identify different fragments.

If the profiles from the evidence DNA and a suspect match multiple times,then it is very likely that the evidence DNA came from the suspect.

DNA and Human Identification

- **Unique Biological Fingerprint:**
  Like an Aadhaar for the body — each person's DNA is unique (except identical twins).
  - 46 DNA molecules per cell: 23 from mother, 23 from father.
  - DNA is packed in **chromosomes**; e.g., Chromosome 3 has ~6.5% of total DNA.

Key Concepts

- **Polymorphisms:**
  Genetic variations among individuals; help trace ancestry and biological relations.
- **Short Tandem Repeats (STRs):**
  - Repeated short DNA sequences (e.g., GATC-GATC-GATC).
  - Polymorphic: The number of repeats varies among individuals → basis of DNA fingerprinting.
- **Polymerase Chain Reaction (PCR):**
  - Technique to **amplify DNA** from minute samples.
  - Enables millions of copies in under an hour — essential in forensics.

Applications of DNA Fingerprinting

- **Forensic science:** Crime scene investigations, cold case resolution.
- **Disaster victim identification.**
- **Paternity and maternity testing.**
- **Organ donation matching.**
- **Historical and archaeological research:** DNA extracted from ancient remains (up to 65,000 years old).

Significance

- **High stability of DNA** enables solving decades-old cases.
- Promotes **justice, transparency, and scientific accuracy** in legal systems.
- Supports **evidence-based policing** and human rights.

Way Forward

- **Ensure privacy and consent** in DNA data handling.
- **Passage and implementation** of robust **DNA Technology (Use and Application) Regulation Bill**.
- **Invest in forensic labs**, training, and infrastructure.
- Establish **national DNA databanks** for criminal investigations with proper oversight.

Conclusion: DNA is a transformative tool in criminal justice and identity verification. Its precise and stable nature makes it indispensable for a **modern forensic system**.

Expansion of India's Social Security Net

GS Paper 2 – Governance & Social Issues

Context: India has significantly expanded its social security net, with a focus on **inclusive welfare** for both organized and unorganized workers.

What is Social Security?

- **Social Security = Financial and social protection** for individuals against risks like old age, illness, unemployment, and disability.
- Recognized as a **human right** under:
  - **Article 22, Universal Declaration of Human Rights.**
  - **ILO's Social Protection Floors Recommendation.**

Legal Framework in India

Act	Purpose
EPF Act, 1952	Provident fund for salaried employees
ESI Act, 1948	Medical insurance for low-wage earners
Maternity Benefit Act, 1961	Paid maternity leave
Unorganized Workers' Social Security Act, 2008	Benefits for informal workers
Code on Social Security, 2020	Consolidates 9 laws under one code

Key Government Schemes:

Pension & Provident Fund
- **EPF** – 12% contribution by employee & employer each.
- **NPS** – Voluntary pension scheme with tax benefits.
- **PM-SYM** – Pension for unorganized workers (< ₹15,000/month).
- **PM-KMY** – Pension for small/marginal farmers.
- **Atal Pension Yojana (APY)** – Guaranteed pension for low-income groups.

Insurance
- **PMJJBY:** Life insurance (₹2 lakh) at ₹436/year.
- **PMSBY:** Accidental insurance (₹2 lakh) at ₹20/year.
- **ESI Scheme:** For salaried workers (up to ₹21,000/month).
- **RSBY:** Health insurance for BPL families.

Healthcare: Ayushman Bharat (PM-JAY): ₹5 lakh health cover per family/year.

Maternity & Disability
- **Maternity Benefit Act:** 26 weeks paid leave.
- **IGNDPS:** ₹300–₹500/month to disabled individuals.

Employment Guarantee
- **MGNREGA:** 100 days of wage employment to rural households.

Recent Expansions & Innovations

Focus Area	Key Measures
Gig & Platform Workers	Inclusion via e-Shram portal, Code on Social Security
JAM Trinity	Jan Dhan, Aadhaar, Mobile → Ensures DBT & transparency
One Nation One Ration Card (ONORC)	Migrants can access food rations anywhere
Digital Enrollment	Boost in outreach & accessibility

Challenges in Social Security Expansion
- **Low coverage in unorganized sector** (90% of workforce, but low enrollment).
- **Awareness gap:** Many remain unaware of their entitlements.
- **Fragmentation:** Multiple schemes, overlapping coverage.
- **Funding constraints** and **last-mile delivery issues**.
- **Corruption & bureaucracy** delay benefits and reduce efficiency.

Way Forward
- **Integration of schemes:** Unified social security framework.
- **Digital delivery platforms:** Mobile apps, biometric IDs.
- **Formalization of workforce:** Incentives to employers.
- **Private sector partnerships** in pensions & insurance.
- **Simplified procedures** and multilingual support for accessibility.

Conclusion: India's evolving social security architecture reflects a commitment to inclusive growth. The focus must now shift toward **universal coverage**, especially for the **unorganized and gig workforce**, to ensure social justice and sustainable development.

Call for Changing the Collegium System
GS Paper 2 – Judiciary | Governance
Context: The Vice President recently held a meeting with **Rajya Sabha** floor leaders in light of a controversy involving a **Delhi High Court judge**. This triggered fresh discussions on judicial accountability and reform, particularly the need to reconsider the **Collegium system** of judicial appointments.

What is the Collegium System?
- **Definition:**
  A system through which judges of the Supreme Court and High Courts are appointed and transferred. It evolved through **Supreme Court judgments**, not through any legislation or constitutional provision.
- **Composition:**
  - **Supreme Court Collegium:** Chief Justice of India (CJI) + 4 seniormost judges.
  - **High Court Collegium:** Chief Justice of the HC + 2 seniormost judges.
- **Functioning:**
  - **SC Collegium recommends appointments to SC**.
  - HC Collegium recommends names to the SC Collegium for approval.
  - Government conducts **IB inquiries**, but if the Collegium reiterates a name, it is binding on the government.
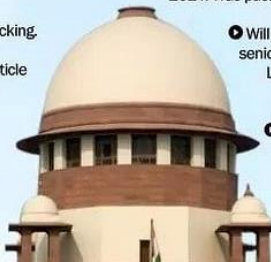

Criticisms of the Collegium System
- **Lack of transparency:** No records or explanations made public.
- **No fixed criteria for selection.**
- **No independent secretariat.**
- **Closed-door decisions:** Even lawyers are unaware of whether their names are being considered.

Earlier Reform Attempt: NJAC
- **Recommended by:** Justice M.N. Venkatachaliah Commission (2000).
- **National Judicial Appointments Commission (NJAC):**
  Proposed to include:
  - CJI
  - 2 seniormost SC judges
  - Union Law Minister
  - 1 eminent person (nominated by President in consultation with CJI)
- **NJAC Act, 2014:** Passed by Parliament but struck down by the Supreme Court in 2015 for violating judicial independence.

Way Forward
- **Preserve judicial independence** while improving **transparency and accountability**.
- Consider a revised version of NJAC with **checks and balances**.
- Define **clear selection criteria**, maintain **public records**, and ensure **diverse representation**.

Conclusion: The Collegium system, while aimed at ensuring judicial independence, must evolve to meet democratic standards of **transparency, accountability, and public trust**.

Transgenic Organisms and Their Applications
GS Paper 3 – Science and Technology | Biotechnology

Context: A recent controversy involving the misunderstanding of research on **transgenic mice** brought public attention to the role of **transgenic organisms** in modern science.

What are Transgenic Organisms?

- **Definition:**
  Organisms whose genome has been **artificially modified** by inserting DNA from another species. These are created in laboratories using **recombinant DNA technology**

Applications of Transgenic Organisms

- **Medical Research:**
  - Transgenic mice used in studies on **cancer, HIV, reproductive health**, etc.
  - Model human diseases due to genetic similarity.
- **Therapeutic Proteins:**
  - Animals like cows/goats engineered to produce **insulin, clotting factors**, etc.
- **Agriculture:**
  - Transgenic crops resistant to **pests, diseases, and environmental stress**.
  - Faster growth and higher yield.
- **Environmental Use: Bioremediation** – using genetically modified microbes to clean oil spills or detoxify heavy metals.

Challenges and Concerns

- **Ethical issues:** Animal welfare and moral objections.
- **Environmental risks:** Unintended **gene transfer, loss of biodiversity**.
- **Health risks:** Allergenicity or unknown long-term effects.
- **High cost and technical barriers.**

Way Forward

- **Strict regulations** and **ethical oversight**.
- Promote **public awareness** and **transparent risk assessments**.
- Encourage **research in safer technologies** (e.g., CRISPR, gene silencing).

Conclusion: Transgenic organisms are powerful tools in biotechnology, but their development must balance **innovation with ethics, safety, and sustainability**.

Disaster Management (Amendment) Bill 2024 Passed

GS Paper 3 – Disaster Management

Context: Parliament has passed the **Disaster Management (Amendment) Bill 2024**, updating the Disaster Management Act, 2005, in light of new climate-related and urban risks.
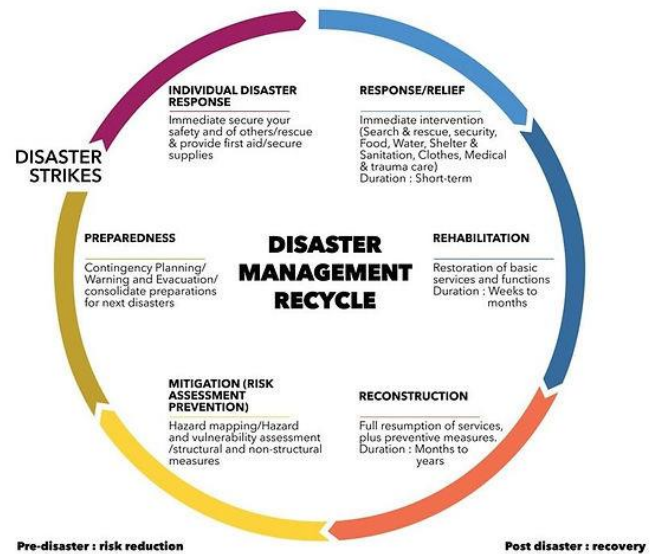
About the Act

- **Existing Framework:**
  - National Disaster Management Authority (NDMA)
  - State Disaster Management Authority (SDMA)
  - District Disaster Management Authority (DDMA)

These bodies manage disaster preparedness, response, and mitigation at respective levels.

Key Features of the Amendment

- **Disaster Management Plans:**
  NDMA and SDMA to directly prepare plans (earlier delegated to executive committees).
- **Expanded Functions:**
  - Regular review of disaster risks, including **climate risks**.
  - Technical support to lower authorities.
  - Setting **minimum relief standards**.
  - Creation of **disaster databases** at national and state levels.
- **Urban Disaster Management Authorities:** States may create separate bodies for **urban areas and capital cities**.

- **State Disaster Response Force (SDRF):** States empowered to create SDRFs and define their functions.
- **Statutory Status to Existing Committees:**
  - **National Crisis Management Committee (NCMC)** – lead body for major disasters.
  - **High-Level Committee (HLC)** – allocates financial aid during disasters.
- **Staff Appointments:** NDMA can appoint staff and experts with Central Government approval.

Concerns Raised

- **Over-centralization:** Critics argue it may reduce states' autonomy.
- **Urban authority overlap:** May weaken existing district bodies.
- **Implementation challenges** at local levels due to capacity gaps.

Way Forward

- **Clear coordination mechanisms** between central, state, and local authorities.
- **Capacity building** at state and district levels.
- Ensure **data sharing** and regular updates to disaster databases.
- Promote **community-based disaster risk reduction**.

Conclusion: As climate-related disasters grow in intensity and frequency, the **amendments aim to modernize India's disaster response system**, ensuring preparedness and resilience at all levels.

India's Pitch for UNSC Reforms

GS Paper 2 – International Relations | International Organizations

Context: India has reiterated its call for urgent reforms in the **United Nations Security Council (UNSC)** to ensure it reflects present-day realities and is more effective in maintaining international peace and security.

Major Highlights of India's Pitch

- **Peacekeeper Security:**
  India stressed that peacekeepers today face threats from **non-state actors, terrorists, and armed groups**, demanding better protection and justice mechanisms.
- **Modernisation of Operations:**
  Advocated the use of **advanced surveillance, data analytics, and communication systems** in UN peacekeeping operations.
- **Training Support:**
  India offers training through its **Centre for UN Peacekeeping (CUNPK)** to meet modern operational demands.
- **Funding & Resources:**
  Emphasized the need for **adequate funding**,

matching mission mandates with necessary resources.

- **Inclusive Mandate Formation:** Called for **troop-contributing countries** to be involved in defining peacekeeping mandates.

About the UNSC: Established: 1945, under the UN Charter.

- **Members:** 15 in total
  - **Permanent (P5):** US, UK, France, Russia, China (with veto powers)
  - **Non-permanent:** 10 members elected for 2-year terms (no veto powers)
- **Function:** Responsible for maintaining **international peace and security**.

Why Reforms are Needed

- **Outdated Composition:** Current structure doesn't represent key regions like Africa, Latin America, or South Asia.
- **Inability to Act on Crises:** UNSC has failed to act decisively in recent conflicts (e.g., Ukraine, Gaza), damaging its credibility.
- **Veto Power Misuse:** The veto held by P5 nations blocks meaningful action on global issues.
- **Global Changes:** The world has evolved dramatically since 1945 — economically, politically, and demographically.
- **Lack of Legitimacy:** Disproportionate power with P5 undermines **democratic principles** and the Council's legitimacy.

Why India Deserves Permanent Membership

- **Population:** Represents 18% of the global population.
- **Economy:** Among top global economies (by GDP and PPP).
- **Peacekeeping Role:** Largest contributor to UN peacekeeping missions.
- **Strategic Role:** Crucial to South Asia, Indo-Pacific, and global challenges like terrorism and climate change.
- **Democratic Values:** Upholds principles of pluralism and inclusivity.
- **Global Support:** Widely supported by various countries and blocs.

Barriers to Reform

- **P5 Resistance:** Reforms need their consent; they fear loss of influence.
- **Geopolitical Rivalries:** Regional tensions (e.g., India-China, Japan-South Korea) complicate consensus.
- **Complex Process:** Amending the UN Charter requires ratification by two-thirds of member states.
- **Chinese Opposition:** China is opposed to India's inclusion in the P5.

Way Forward

- Reforms must reflect **current geopolitical and demographic realities**.
- Making UNSC more **representative and inclusive** is essential for legitimacy.
- Building **global consensus** is critical but difficult, requiring sustained diplomatic efforts.

Conclusion: To stay relevant in the 21st century, the UNSC must evolve from its **1945 structure**. Reforms are essential to uphold international peace and make the institution more democratic, effective, and legitimate.

Government Submits Status Report on Deepfakes

GS Paper 3 – Science & Technology | Cybersecurity & AI
Context: The Ministry of Electronics and Information Technology (MeitY) submitted a **status report on deepfake technology** to the Delhi High Court, highlighting its misuse and proposing regulatory actions.
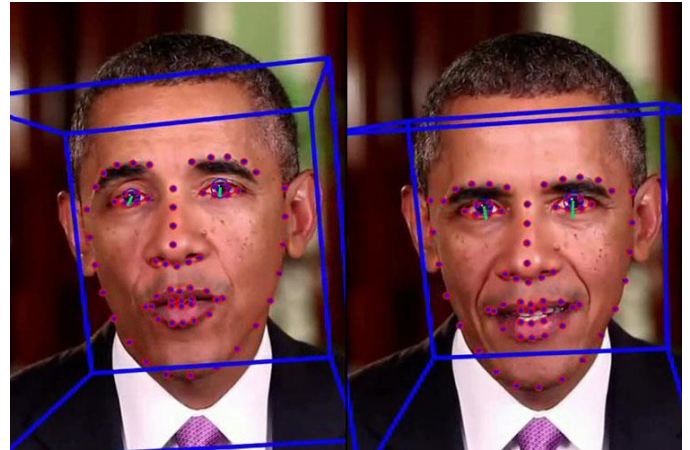
What is Deepfake Technology?

- **Definition:** "Deepfake" = *Deep Learning + Fake*. It refers to **AI-generated synthetic media** where realistic fake audio, video, or images are produced by manipulating real data.
- **Technology Used:**
  - Based on **Generative Adversarial Networks (GANs)** – one AI model creates content, another evaluates it for realism.
  - Learns from **real data** to mimic faces, voices, and expressions.

Working of Deepfakes

1. **Data Collection:** AI trained on real images/audio of a person.
2. **Feature Learning:** Understands facial expressions, speech patterns.
3. **Media Synthesis:** Produces manipulated or entirely synthetic content.
4. **GAN Refinement:** Makes the output more realistic and less detectable.

Concerns Highlighted in the Report

- **No Uniform Legal Definition:** Makes regulation and enforcement harder.
- **Targeting Women:** Deepfakes used maliciously during elections to harass women.
- **Misinformation & Political Manipulation:** Can influence elections and spread unrest.
- **Threat to National Security:** Deepfakes of officials can be used for misinformation or cyberwarfare.
- **Financial Fraud:** Mimicked voices used in scams, targeting corporates and individuals.
- **Privacy Violation:** Non-consensual explicit content disproportionately affects women.
- **Erosion of Trust in Media:** Blurs line between truth and fiction, affecting journalism and democracy.

Current Legal & Regulatory Framework

- **IT Act, 2000:**
  - **Section 66D:** Covers digital impersonation.
  - **Section 67:** Addresses publishing obscene content.
- **Digital Personal Data Protection Act, 2023:** Penalizes misuse of personal data, including via deepfakes.
- **Intermediary Guidelines (2021):** Platforms must remove deepfakes or lose legal protection.
- **Government Initiatives:**
  - **PIB Fact Check** debunks fake content.
  - Indian start-ups developing **AI-based detection tools**.
- **Global Cooperation:** India is working with tech giants and other nations to frame **AI regulation policies**.

Challenges in Regulation

- **Intermediary Liability Limits:** Difficult to define how much platforms are responsible.
- **Detection Problems:** Audio deepfakes are especially hard to detect.
- **Rapid Tech Evolution:** Laws and tools struggle to keep pace.

Recommendations in the Status Report

- **Mandatory Disclosure:** AI-generated content must be labeled.
- **Target Malicious Use:** Focus enforcement on **harmful or criminal usage**, not all AI applications.
- **Strengthen Enforcement Agencies:** Better training and tech tools to aid investigation.

Conclusion: Deepfakes pose a **serious challenge to national security, privacy, and democracy**. India's response must include **strong legal frameworks, tech innovation, and international cooperation**.

India's Bioeconomy and the Road Ahead

GS Paper 3 – Economy | Environment | Biotechnology
Context: The India BioEconomy Report (2025) estimates the sector's value at over $165 billion (4.2% of GDP), with potential to grow to $300 billion by 2030 and $1 trillion by 2047.

What is Bioeconomy?

- Bioeconomy refers to the use of **biological resources such as plants, animals,** and microorganisms to produce goods and services.
- It emphasizes the replication of natural biological processes for sustainable industrial use.
- **Example:** Ethanol production from sugarcane or corn using microorganisms.

Importance of Bioeconomy for India

1. Economic Growth and Employment

- Contributes significantly to GDP with potential to reach $1 trillion by 2047.
- 90% increase in biotech startups in the last three years.
- $78 billion generated in industrial applications, including biofuels and bioplastics.

2. Food and Agriculture Security

- **Genetically Modified (GM)** technologies increase crop yield by up to 21%.
- Use of **biofertilizers** improves soil health and productivity.
- Innovations such as golden **rice help combat micronutrient deficiencies**.

3. Healthcare Access

- **India** supplies **25% of the total vaccine** volume to WHO.
- Development of affordable vaccines such as **CERVAVAC (HPV vaccine).**
- Progress in **gene therapy**, including trials for **Hemophilia A**.

4. Environmental Sustainability

- Adoption of circular economy principles using **waste-to-energy technologies**.
- Reduction in fossil fuel dependence through **biogas and ethanol**.
- Promotion of **biodiversity and ecological restoration**, e.g., TERI's Oilzapper.

5. Climate Action

- Supports India's commitment to achieving **net-zero emissions by 2070**.
- Reduces emissions by promoting **bio-based alternatives**.

India's BioEconomy — All figures in $bn: 86 (2020), 106.3 (2021), 137.2 (2022), 150.97 (2023)

Major Government Initiatives

BioE3 Policy (2024)

- **Aims to boost Economy, Environment, and Employment** through biotechnology.
- Encourages creation of **Bio-AI Hubs, Bio-Foundries, and Bio-Enabler Hubs**.
- Assam was the first state to adopt the framework.

Other Supporting Initiatives

- **BioSaarthi Mentorship (2025):** Supports emerging entrepreneurs in biotechnology.
- **National Biotechnology Development Strategy (2020–25):** Targets $150 billion by 2025.
- **BIRAC:** Supports biotech startups with funding and incubation.
- **National Biopharma Mission:** Focuses on clinical trials and vaccine development.
- **PM-JIVAN Yojana, SATAT, and GOBARdhan Schemes:** Promote biofuels and rural waste-to-energy models.
- **Global Biofuel Alliance (2023):** Strengthens global biofuel supply chains.
- **IP Guidelines (2023):** Facilitate commercialization of public-funded research.

Key Challenges

1. **Fragmented regulatory system** causing delays in biotech approvals.
2. Limited private investment due to high risk and long **gestation periods**.
3. Weak enforcement of **Intellectual Property (IP) laws** and **cases of biopiracy**.
4. **Poor collaboration** between industry and academia.
5. High dependence on imported biotech equipment.
6. Shortage of skilled professionals in **genomics and bioinformatics**.
7. Public skepticism regarding **GMOs and lab-grown food**.
8. **Risk of environmental degradation** due to overuse of bioresources.

Way Forward

1. **Policy Implementation and Coordination**
   - Establish a **National Bioeconomy** Mission for centralized oversight.
   - Encourage **state-level policies aligned with national goals**.
2. **Investment and Public-Private Partnerships**
   - Create dedicated **bioeconomy investment funds**.
   - Offer **tax incentives and risk-sharing mechanisms** to attract private players.
3. **Regulatory and Institutional Reforms**
   - Develop a **single-window clearance** system.
   - Harmonize regulatory processes across **DBT, FSSAI, GEAC**, etc.
4. **Research and Innovation Ecosystem**
   - **Fast-track IP** approvals and establish specialized IP courts.
   - Promote applied research in **synthetic biology and gene editing**.
5. **Infrastructure and Entrepreneurship**
   - **Expand biofoundries and incubation centers** in smaller cities.
   - Support **women-led** and **grassroots biotech startups**.
6. **Skill Development and Education**
   - **Integrate biotechnology** in university curricula.
   - Establish **Centers of Excellence in key biotechnology** domains.
7. **Global Cooperation**
   - Partner with international leaders like the **US, EU, and Japan**.
   - Actively participate in global platforms such as **the Global Biofuel Alliance**.

Medical Termination of Pregnancy (MTP) in India

GS Paper 2 – Health | Ethics | Governance

Context: Ethical concerns regarding **abortion, especially during late-stage pregnancies, are rising**. Issues of fetal viability and women's rights are central to the debate.

What is Fetal Viability?

It refers to the stage at which **a fetus** can survive outside the womb.

There is no fixed timeline, and viability varies case by case.

It raises complex **legal and ethical** questions about the rights of **the fetus versus the rights of the mother**.

India's Legal Framework on Abortion

MTP Act, 1971

- Allowed **abortions up to 20 weeks** under specific conditions.
- **Up to 12 weeks**: Opinion of one registered medical practitioner.
- **Between 12–20 weeks**: Opinion of two medical practitioners.

MTP Amendment, 2021

- Extended the **upper limit to 24 weeks** for certain categories (**rape survivors, minors, widows, etc.**).
- Recognized the rights of unmarried women by replacing "**married woman" with "any woman**".
- Beyond 24 weeks: Approval required from a Medical Board in cases of **severe fetal abnormality**.

Arguments in Favour of MTP

Side Effects of Medical Termination of Pregnancy (MTP) — PACE HOSPITALS

1. **Bodily Autonomy and Reproductive Rights**
   - Supreme Court has recognized reproductive choice as part of personal liberty.
2. **Protection of Physical and Mental Health**
   - Abortions may be necessary in life-threatening conditions like eclampsia.
   - Also important in cases of mental health disorders.
3. **Termination of Non-Viable Fetuses**
   - Abortion can prevent prolonged suffering due to congenital anomalies.
4. **Addressing Unplanned Pregnancies**
   - Reduces burden on women facing socio-economic challenges.
5. **Reduction in Unsafe Abortions**
   - Legal access leads to safer procedures and reduced maternal mortality.

Arguments Against MTP

1. **Right to Life of the Fetus**
   - Ethical concerns increase as pregnancy progresses and viability approaches.
2. **Emotional and Psychological Consequences**
   - Possible long-term effects such as **guilt, depression, and trauma**.
3. **Risk of Misuse**
   - Potential for use in **sex-selective or non-medical abortions**.
4. **Cultural and Moral Objections**
   - Some communities view abortion as contrary to traditional values.
5. **Overuse as a Birth Control Method**
   - Concerns that **liberal laws** may lead to over-reliance on abortion.

Way Forward

1. **Improving Access to Safe Abortion Services**
   - Ensure availability of **MTP pills** and reduce bureaucratic hurdles.
2. **Empathy in Medical Practice**
   - Train medical professionals to **handle cases with sensitivity and respect**.
3. **Comprehensive Sexual and Reproductive Education**
   - Address social **stigma and promote** informed choices.
4. **Balanced Policy Approach**
   - **Protect fetal rights** in late-term cases while preserving **women's autonomy**.

Battling Money Laundering & Terrorist Financing

Paper: GS3 – Internal Security, Economy

Context: At the **Financial Action Task Force (FATF)** Private Sector Collaborative Forum, the **RBI Governor** emphasized the need for balanced and effective regulation to **combat money laundering and terrorist financing**, without hampering financial inclusion or investment.

Understanding Money Laundering

Money laundering is the process of disguising the **origins of money** obtained from **illegal activities** (such as **drug trafficking, corruption, or tax evasion**), so that it appears to come from legitimate sources.

Stages of Money Laundering

1. **Placement**: *Injecting illegal money* into the financial system (e.g., by depositing large sums in small amounts).
2. **Layering**: Carrying out multiple complex transactions (like **transfers across countries, investments**) to hide the trail.
3. **Integration**: Reintroducing the now **"cleaned"** money into the economy through **legal investments** (e.g., real estate, business).

Common Techniques

- Use of **shell companies** (firms that exist only on paper to conceal **ownership)**
- **Offshore accounts** to avoid scrutiny
- Buying real estate with unaccounted money
- **Trade-based laundering** (over- or under-invoicing exports/imports)
- Use of **digital currencies** (like cryptocurrency) for anonymous transactions

Understanding Terrorist Financing

Terrorist financing involves the collection and movement of funds to support terrorist activities. Unlike **money laundering**, the money may originate from both **legal (charities, donations)** and **illegal (smuggling, drug trade) sources**.

Key Methods

- **Hawala networks**: Informal money **transfer systems** based on **trust**, often outside regulated **banking**, making them **hard to trace**.
- **Charities and NGOs** misused for fundraising.
- Use of **cryptocurrencies and digital wallets** to move money anonymously.
- Fake businesses and **shell companies**.
- **Smuggling** of cash and valuables across borders.

Challenges in Tackling the Issue

- Rise of **digital currencies** complicates tracking.
- **Hawala networks** evade formal banking scrutiny.
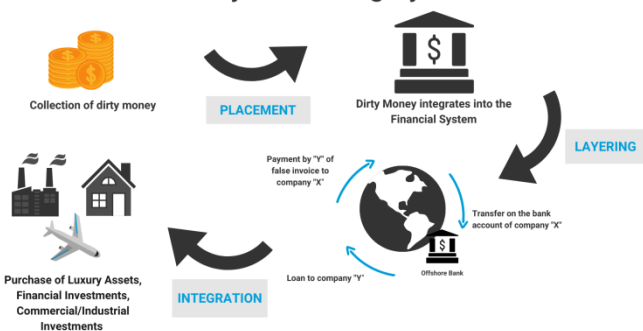- Complex **cross-border transactions** and **corporate setups**.

- Delay in trials and low **conviction rates**.
- Difficulty in proving intent behind **transactions**.

India's Legal and Institutional Framework

1. **Prevention of Money Laundering Act (PMLA), 2002**
   o Main **law against money laundering** in India.
   o Mandates banks to report suspicious activities.
   o Empowers authorities to **attach and confiscate assets**.
   o Enforced by **Enforcement Directorate (ED)**.
2. **Unlawful Activities (Prevention) Act (UAPA), 1967**
   o Criminalizes funding of **terrorist activities**.
   o Used to **freeze bank accounts and prosecute** those supporting extremism.
3. **Financial Intelligence Unit – India (FIU-IND)**
   o Collects and analyzes financial transactions for signs of **laundering/terror funding**.
   o Works under the **Ministry of Finance**.
4. **RBI Guidelines on KYC/AML/CFT**
   o Banks must implement **Know Your Customer (KYC)**, **Anti-Money Laundering (AML)**, and **Countering Financing of Terrorism (CFT)** measures.
5. **Foreign Contribution Regulation Act (FCRA), 2010**
   o Regulates foreign donations to **NGOs**.
   o Ensures funds are not used for illegal or **anti-national activities**.

Money Laundering Cycle

Recent Developments

- Crackdown on **shell companies** involved in dubious transactions.
- Efforts to regulate **cryptocurrency transactions** to ensure AML compliance.
- Strengthening **inter-agency coordination** between ED, FIU, RBI, and intelligence bodies.
- FATF evaluations push India to improve enforcement mechanisms.

Way Forward

- Strengthen coordination between **government** agencies and financial institutions.
- Expand use of **AI and blockchain** for monitoring suspicious transactions.
- Improve judicial processes to ensure timely conviction.
- Public awareness on risks of informal networks like Hawala.
- Strengthen laws around cryptocurrency and digital payments.

Would you like me to do the same expansion and simplification for the other topics like **FMR, India-Myanmar relations, or coral bleaching**?

Free Movement Regime between India and Myanmar
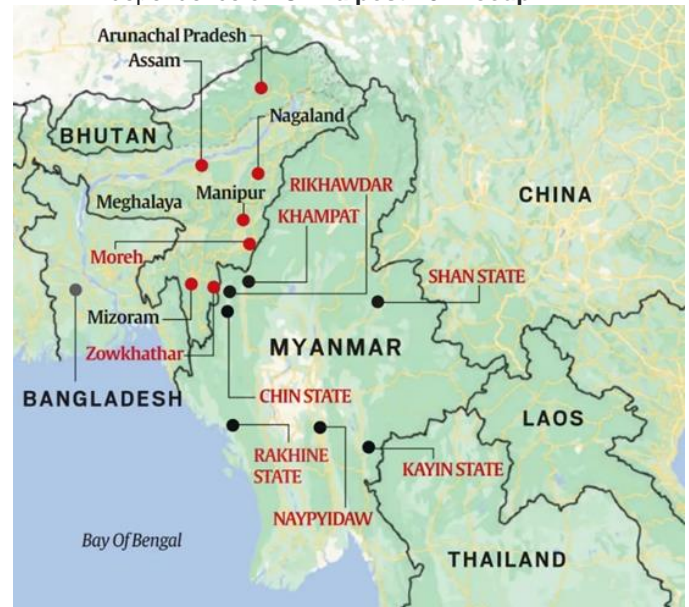*Paper: GS2 – International Relations / GS3 – Internal Security*
Context

- Union Home Minister proposed scrapping the **Free Movement Regime (FMR) with Myanmar** in 2024. No progress made yet.

What is FMR?

- Agreement since 1968 allowing tribal people on either side of the **India-Myanmar border to travel up to 16 km** into the other country without a visa.

Reasons for Scrapping FMR

- **Internal Security Risk**: Armed groups and insurgents operating across the **porous border**.
- **Drug Trafficking**: Proximity to the **Golden Triangle** (Thailand-Laos-Myanmar).
- **Insurgent Camps**: Hideouts in **Myanmar's jungles**.
- **Refugee Influx**: Particularly affecting Manipur and other **NE states**.
- **China's Rising Influence**: Myanmar's increased dependence on **China post-2021 coup**.

India-Myanmar Relations Overview

- **Geography**: Shares land and **maritime boundaries**; 4 Indian NE states border Myanmar.
- **Diplomatic Relations**: **Treaty of Friendship (1951)**, regular diplomatic engagements.
- **Cultural Ties**: Shared history **of Buddhism, trade, and ethnicity**.
- **Strategic Importance**: Key to **India's Act East** and Neighborhood First Policies.
- **Economic Ties**:
   o Bilateral trade (2023–24): **$1.5 billion**.
   o Under **ASEAN-India and DFTP schemes**.
- **Security Cooperation**: Joint patrolling, **intelligence exchange**.
- **Connectivity Projects**:
   o **Kaladan Multi-Modal Transit Project (KMMTTP)**
   o India-Myanmar-Thailand **Trilateral Highway**.
   o Development of **Sittwe Port**
- **Development Assistance**: Infrastructure, education, healthcare.
- **Multilateral Platforms**: BIMSTEC, Mekong-Ganga Cooperation.

Way Forward

- Regulate cross-border movement with **security screening**.
- Engage local **communities and ensure awareness**.
- **Strengthen infrastructure and border monitoring** mechanisms.

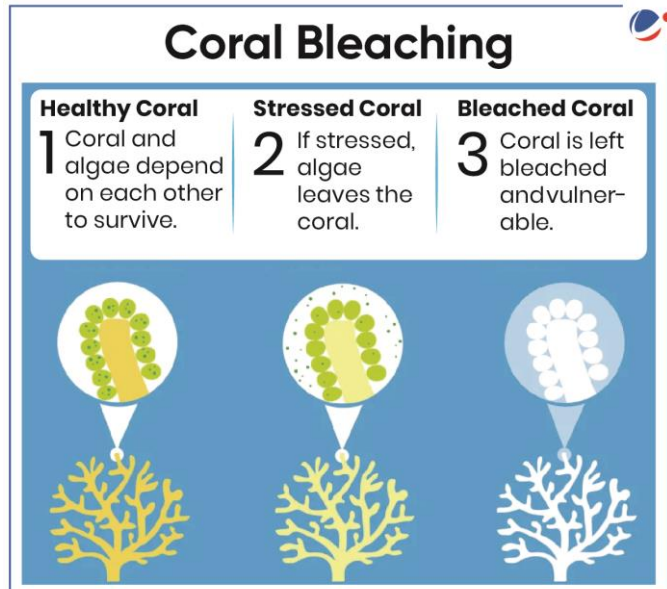**Coral Bleaching at Ningaloo Reef**
Paper: GS3 – Environment
In News

- Severe coral bleaching event reported at **Western Australia's Ningaloo Reef**, a **UNESCO World Heritage Site**.

Cause

- Fourth **global coral bleaching** episode since 2023.
- Rising sea temperatures due to **climate change**.
- Pollution, overfishing, and habitat degradation **worsen the crisis.**

What are Coral Reefs?

- Underwater ecosystems formed by **colonies of coral polyps bound by calcium carbonate**.
- Symbiotic relationship with **algae (zooxanthellae).**
- **Ideal Conditions**:
  - Temperature: 20°C to 35°C
  - Salinity: 27–40%
  - Shallow depths (<50 m) for sunlight

Major Coral Reefs

- **Global**: Great Barrier Reef, Australia
- **India**: Gulf of Kutch, Gulf of Mannar, Andaman & Nicobar Islands, Lakshadweep, Malvan.
  ### Importance of Coral Reefs
- **Marine biodiversity hotspots**.
- Buffer coastlines from storms and erosion.
- Carbon sequestration for **climate mitigation**.
- Provide livelihoods and support Blue Economy.
- **Source of medicines** (e.g., antivirals, anticancer agents).

Threats to Coral Reefs

- **Climate-related**: Ocean warming, acidification, algal blooms.
- **Human-driven**: Overfishing, **pollution, mining**, tourism pressure.
- **Developmental**: **Coastal construction and sedimentation.**

Way Forward

- Meet **Paris Agreement targets** (limit warming below 2°C).
- **Strengthen global and regional** marine governance.
- Enforce SDG goals, especially **SDG 13** (Climate Action).
- Promote **R&D** for climate-resilient reef species.
- Improve global coordination to **reduce overfishing and pollution**.

Concerns of Rising '1 Person, 1 Family' Culture – Supreme Court

GS1: Society
Context
The Supreme Court has raised concerns about the growing trend of individuals choosing to live alone or in **nuclear setups**, moving away from **India's traditional joint family system**. This shift reflects a **deeper erosion of family values** and stands in contrast to India's civilizational ethos of *Vasudhaiva Kutumbakam* (the world is one family).

What is a Family?
A family is a basic social unit characterized by shared **residence, emotional bonding, economic cooperation, and socialization.**
In Indian society, family is not just a **blood-based group** but a moral and emotional system that provides:

- Emotional security
- Generational wisdom
- A support system during crisis

What is the '1 Person, 1 Family' Culture?
It refers to the rising trend where individuals prefer to live alone or in **small, nuclear setups** instead of joint families.
This trend is seen more in **urban areas**, where modern lifestyles and values are replacing **traditional family norms**.

Key Reasons Behind This Shift

1. **Urbanization & Economic Independence**
   - Migration to cities for **jobs leads** to separate living.
   - Professionals value **independence and flexibility**.
2. **Rise of Individualism**
   - Personal ambitions, **mental space**, and freedom are prioritized.
   - Traditional hierarchy in joint families is often seen as **restrictive**.
3. **Delayed Marriages & Relationship Norms**
   - Rise in **live-in relationships**, single parenting, and remaining unmarried.
   - India's **Total Fertility Rate (TFR) has dropped to 2.0** (below replacement level).
4. **Financial & Practical Pressures**
   - **High cost** of living in **cities** makes joint family arrangements tough.
   - Time constraints and **work-life imbalance limit family bonding**.
5. **Western Influence**
   - Global exposure through education, travel, and social media has **reshaped family ideals**.
   - Independence and privacy are valued over **collectivism**.
6. **Decline in Shared Moral-Ethical Values**
   - Decline in **empathy, patience, and respect for elders**.
   - **Consumerism and materialism** overpower emotional bonding.

Challenges of This Cultural Shift

- **Mental Health Issues** – Increased **loneliness, depression,** especially among the elderly and remote workers.
- **Weakened Intergenerational Ties** – Loss of life **wisdom transfer and emotional** safety net.
- **Financial Strain** – Running a household alone is more expensive.
- **Erosion of Social Solidarity** – Families traditionally served as micro-units of social stability.

Conclusion
The SC's concerns are not just legal but deeply sociological. Legal frameworks can address disputes, but restoring empathy, respect, and shared responsibility within families is key to preserving India's social fabric.

Dark Side of Digital Gambling in India
GS1: Social Issues
Context (Case Study)
The tragic case of **21-year-old Sai Kiran**, who died by suicide after accumulating debt from online gambling, has brought **national attention** to the growing crisis of digital betting addiction.
Rising Trend

- **India's online gaming market**: ~$3 billion
- **Illegal offshore betting market**: $20–100 billion
- **Children in India reportedly spend** $1,000+ daily on online gambling

- **Betting surges** during IPL and major tournaments

Why is Online Gambling Rising?
1. **Smartphone Penetration + UPI**
   - Over 600 million Indians use **smartphones.**
   - Seamless digital payments make **gambling easy**.
2. **Aggressive Digital Marketing**
   - Betting apps use **influencers and celebrities**.
   - Often disguised as **"fantasy sports" or "gaming reviews."**
3. **Easy Loans Without Checks**
   - Instant **app-based credit** without documentation.
   - Users bet beyond their means.
4. **Psychological Triggers**
   - **Gambling mimics reward-based gaming – quick wins, near misses**.
   - Highly addictive, especially for **youth seeking thrill**.
5. **Weak Law Enforcement**
   - **Most illegal apps** operate from countries like **Curaçao, Cyprus, or Dubai**.
   - They avoid **Indian laws and taxes** using loopholes.

Implications
- **Mental Health Crisis** – Gambling addiction causes **anxiety, depression, and suicides**.
- **Financial Ruin** – People borrow from loan sharks, sell valuables, or fall into debt traps.
- **Money Laundering & Cybercrime** – Offshore apps use UPI, crypto wallets, and mule accounts.
- **Youth Vulnerability** – "Get rich quick" appeal targets students and unemployed youth.

Key Terms Explained
- **Hawala**: An informal money transfer system that operates outside formal **banking channels**. Often used in terrorist financing and money laundering because **it's hard to trace**.
- **Mule Account**: Bank accounts used to **unknowingly or knowingly move illicit money on behalf of criminals**.
- **Fantasy Sports**: Platforms where users build virtual teams and earn money based on **real-game outcomes**. Some are legal but are used as fronts for **illegal gambling**.

Current Regulatory Landscape
- **IT Rules (2021, amended 2023)** – Guidelines for online **gaming content and operations**.
- **28% GST** – Levied on gaming companies, but many **offshore platforms evade this**.
- **Telangana Gaming Act (2017)** – Banned online **gambling in the state**.
- **GST Council Mandate (2023)** – Offshore betting sites must **register in India**, but most don't **comply**.

Challenges in Regulation
- Offshore **nature of platforms**
- Legal ambiguity between **"skill" and "chance" games**
- Fragmented **advertising and influencer loopholes**

Way Forward
1. **Unified National Law** – Clearly define and separate **legal and illegal gaming**.
2. **Stronger Enforcement** – Empower **Indian Cyber Crime Coordination Centre (I4C)**.
3. **Global Cooperation** – Block foreign illegal platforms via **joint action.**
4. **Strict Influencer Oversight** – **Penalize celebrities endorsing** gambling apps.

Child Labour in India – Data Discrepancy & Persistent Challenges

GS1/GS2 – Society/Governance

Issue Highlighted
- Judicial data (e-Courts) revealed **8x more child labour trials (9,193)** than cases reported by NCRB (1,329) between 2015–2022.
- Discrepancy arises due to **NCRB's "Principal Offence Rule"**, which overlooks minor charges like child labour in **multi-offence cases**.

Core Issues Behind Child Labour
- **Poverty & illiteracy** remain root causes.
- **Cultural normalization** and **demand for cheap labour** in informal sectors.
- **Migration** and lack of **education access** worsen the problem.
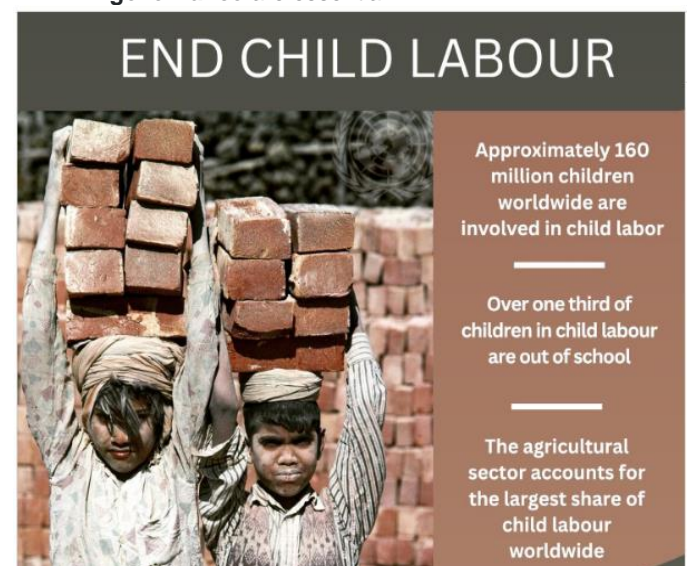
Impact on Society
- **Hinders education** and skill development.
- **Perpetuates poverty** and unemployment.
- Results in **social inequality** and weakens **human capital development**.

Constitutional & Legal Provisions
- **Article 24**: Prohibits child labour in **hazardous work**.
- **Article 21A & 39(e)(f)**: Mandate education and protection of **child rights**.
- **CLPR Act (1986, amended 2016)**: Bans child labour under 14 years and in hazardous work for **14–18 years**.
- **NCLP, ICPS, RTE Act**: Focused on **rescue, rehabilitation, and mainstreaming** into education.

Way Forward
- **Improve data transparency** and inter-agency coordination.
- **Targeted policy interventions** in vulnerable districts.
- **Community awareness** and **rehabilitation-focused governance** are essential.

END CHILD LABOUR

Approximately 160 million children worldwide are involved in child labor

Over one third of children in child labour are out of school

The agricultural sector accounts for the largest share of child labour worldwide

Vibe Coding: AI & Future of Software Development

GS3 – Science and Technology

Context

OpenAI co-founder Andrej Karpathy coined the term *"Vibe Coding"* in Feb 2025, denoting an AI-driven, intuitive style of coding using **Large Language Models (LLMs).**

What is Vibe Coding?
- A **prompt-based, intuitive approach** to coding using tools like **ChatGPT and Cursor.**
- Prioritizes *"feeling the vibes"* over formal logic, making it suitable for **low-risk and creative projects**.

How It Works
- Users describe desired functionality in plain language.
- **AI generates code**, suggests fixes.
- Minimal user engagement in **debugging or understanding**.

Advantages

- **Democratizes coding**: Enables non-programmers to build apps/tools.
- **Boosts creativity** and rapid prototyping.
- **Saves time** for experienced developers.
- **Gateway for learners** to enter coding.

Limitations & Concerns

- **Low-quality or redundant code**; not optimized.
- **Security vulnerabilities** due to unchecked code.
- **Lack of understanding** limits scalability.
- **Ethical/legal risks**: Plagiarism, misuse in evaluations.
- Not suitable for **critical systems** (finance, healthcare, enterprise).

Conclusion

Vibe coding complements but cannot replace traditional programming. It holds potential for **innovation and access**, but requires **regulation, caution, and human oversight**.

Energy Statistics India 2025: Highlights & Concerns

GS3 – Energy

Context

The **Ministry of Statistics and Programme Implementation (MoSPI)** released *Energy Statistics India 2025* via NSO.
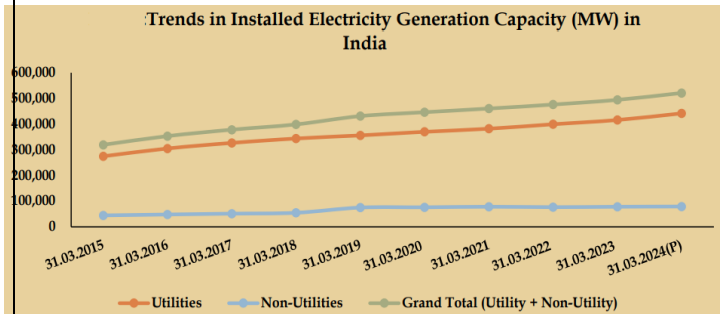
India's Energy Profile – 2025

- **Total Supply**: 1,800 MToE (↑4.5% YoY).
- **Demand Drivers**: Industry (40%), Transport (25%), Residential (20%).
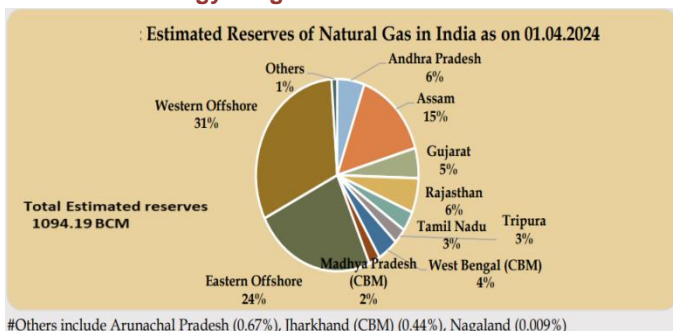
Energy Mix

- **Coal**: 48%
- **Oil**: 28%
- **Natural Gas**: 8%
- **Renewables**: 12%
- **Nuclear**: 4%

Fossil Fuel Reserves & Production

Trends in Installed Electricity Generation Capacity (MW) in India

- **Coal**: 320 billion tonnes; major reserves in Odisha, Jharkhand, Chhattisgarh.
- **Lignite**: 47.3 billion tonnes; **79% in Tamil Nadu**.
- **Annual Coal Production**: 950 MT (85% of demand met domestically).
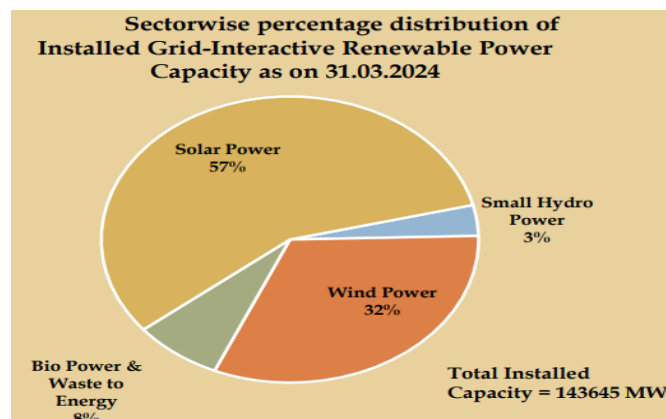- **Oil & Gas Reserves**: Mostly **in Western Offshore** and Assam.

Renewable Energy Progress

Estimated Reserves of Natural Gas in India as on 01.04.2024

Total Estimated reserves 1094.19 BCM

#Others include Arunachal Pradesh (0.67%), Jharkhand (CBM) (0.44%), Nagaland (0.009%)

- **Solar Capacity**: 175 GW
- **Wind Capacity**: 50 GW
- **Hydro**: 52 GW

- **Biomass/Waste-to-Energy**: 15 GW
- **Top States**: Rajasthan, Maharashtra, Gujarat, Karnataka (55% RE potential)

Electricity Trends

Sectorwise percentage distribution of Installed Grid-Interactive Renewable Power Capacity as on 31.03.2024

Solar Power 57%, Small Hydro Power 3%, Wind Power 32%, Bio Power & Waste to Energy 8%. Total Installed Capacity = 143645 MW

- **Installed Capacity**: 450 GW
- **Generation**: 1,700 TWh
- **Per Capita Consumption**: 1,500 kWh
- **Transmission Loss**: Reduced to 17% (from 23% in 2014-15)

Key Government Initiatives

- **National Hydrogen Mission**
- **PAT Scheme** (energy efficiency in industries)
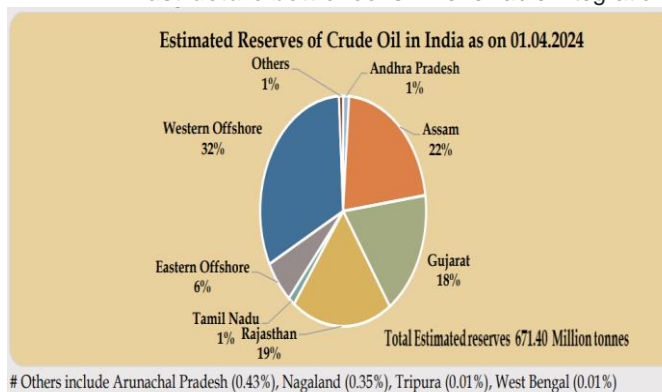- **FAME-III** (EV promotion)

Environmental Impact

- **Carbon Emissions**: 2.9 billion tonnes CO_2 (↓4%)
- Commitment to **Net-Zero by 2070**

Future Outlook (2026–2030)

- **Renewables to reach 25%** of energy mix.
- **Annual demand growth**: 5%
- **Focus**: Grid modernization, storage, and energy security.

Challenges

- Over-reliance on **coal and oil imports**.
- **Geopolitical risks** in energy trade.
- **Infrastructure bottlenecks** in renewable integration.

Estimated Reserves of Crude Oil in India as on 01.04.2024

Others 1%, Andhra Pradesh 1%, Western Offshore 32%, Assam 22%, Eastern Offshore 6%, Tamil Nadu 1%, Rajasthan 19%, Gujarat 18%. Total Estimated reserves 671.40 Million tonnes

Others include Arunachal Pradesh (0.43%), Nagaland (0.35%), Tripura (0.01%), West Bengal (0.01%)

Why Are Tensions High in the Arctic?

GS2 – International Relations
GS3 – Resource Geography

Context

The Arctic has emerged as a **geopolitical flashpoint** due to climate change, **untapped resources, and great power rivalries**.

About the Arctic Region

- Includes **Arctic Ocean and parts of Canada**, Russia, Greenland, the U.S. (**Alaska),** and **Nordic countries**.
- Warming nearly **4x faster** than the global average.
- Rich in biodiversity, critical for global climate regulation.

Geopolitical Drivers of Tension

1. **Resource Race**
   - Estimated **13% of global undiscovered oil and 30% of gas reserves**.
   - **Melting ice making extraction feasible**.
2. **New Trade Routes**
   - **Northern Sea Route (NSR)** along Russia's coast and **Northwest Passage** via Canada could reduce shipping time significantly.
   - Disputes: Canada calls NW Passage *internal waters*; US sees it as *international*.
3. **Russia's Arctic Militarization**
   - Reopened Cold War-era bases, deployed nuclear icebreakers, frequent military drills.
4. **NATO's Counteractions**
   - U.S. Arctic drills; enhanced military coordination with Norway, Canada.
   - **GIUK gap** (Greenland-Iceland-UK) gaining NATO attention.
   - Finland and Sweden joined NATO citing Arctic security.
5. **China's Arctic Ambitions**
   - Self-declared *"near-Arctic state"*.
   - Investing in ports, research bases under **Polar Silk Road**.
6. **Legal & Territorial Disputes**
   - Competing claims under **UNCLOS** to extend continental shelf.
   - U.S. hasn't ratified UNCLOS, limiting its legal leverage.

Institutional and Legal Frameworks

- **UNCLOS**: Allows seabed claims beyond 200 nautical miles with scientific proof.
  - Russia, Denmark, Canada filed claims; US cannot due to **non-ratification**.
- **Arctic Council**: Comprising 8 Arctic nations, focuses on environmental and research collaboration.
  - India is an Observer (established research base **Himadri** in 2008 at Svalbard, Norway).
  - India's Arctic Policy: *'India and the Arctic'* (focus on sustainability and research).

Conclusion

The Arctic is transforming from a frozen frontier to a geopolitical chessboard. Peaceful cooperation, legal clarity, and sustainable development are key to avoiding conflict.

House Panel Suggests Raising Creamy Layer Limit

GS2 – Polity and Governance

Context

A Parliamentary Committee recommended revising the ₹8 lakh income limit for the OBC "creamy layer".

Key Recommendations

1. **Income Limit Revision**
   - Proposes **raising current ₹8 lakh cap** (last updated in 2017) after consultation.
   - **Aims to extend reservation** benefits to more truly backward individuals.
2. **Transparency in Job Quota Data**
   - Urged public access to **quota implementation data** (currently restricted to ministries via RRCPS portal).
3. **Uniform Income Calculation Formula**
   - Highlights variation in creamy layer criteria across states; recommends national-level standardization.
4. **Post Equivalence in Autonomous Bodies**
   - Calls for urgent clarity in equating posts across **autonomous institutions and govt services to avoid OBC exclusion**.
5. **Scholarship Reforms**
   - Double income limit for **pre- and post-matric scholarships**.
   - Extend **pre-matric scholarships** to start from Class V (currently from Class IX).
   - Increase slots for **Top-Class Scholarships** for OBCs, EBCs, and DNTs.

Creamy Layer Principle – Explained

- Ensures **social justice within OBCs** by excluding the economically advanced from reservation benefits.
- Origin: **Indra Sawhney Case (1992)** – Mandal Commission Verdict.
- Prevents misuse and targets truly disadvantaged individuals.

Constitutional Provisions

- **Article 16(4)**: Reservation for backward classes.
- **Article 16(4A)**: **Reservation in promotions for SC/STs.**
- **Article 335**: Balance between efficiency and affirmative action.
- **103rd Constitutional Amendment**: **10% EWS reservation.**

Conclusion

Revising the creamy layer limit and scholarship reforms can strengthen the **targeting efficiency** of affirmative action and uphold the **spirit of social equity** in reservation policies.

India's Defence Exports Hit New Record

GS3 – Defence, Economy

Context

India recorded defence exports worth ₹23,622 crore in FY 2024–25 — a 12% increase from the previous year — highlighting the success of defence reforms and the *Atmanirbhar Bharat* push.

What's Driving the Growth?

- Simplified industrial licensing & SOPs
- De-licensing of components
- Faster online export authorizations
- International trust in *Made-in-India* arms

Key Policy Initiatives

Initiative	Key Features
DPEPP 2020	Aims ₹50,000 crore exports by 2029; encourages private & MSME participation
Simplified Export Authorizations	1,762 licenses in FY25, up by ~17%
Strategic Partnership Model	Private-foreign OEM co-development model
Licensing Reforms	De-licensing of components; extended validity benefits startups
Defence Attachés Empowered	Promote exports & liaise with foreign clients
Export Promotion Cell (DDP)	Resolves industry issues; streamlines clearances
International Expos	Boost brand visibility via Aero India, DefExpo, etc.
iDEX Platform	Supports 250+ startups in defence tech (AI, drones, etc.)
Make in India & Atmanirbhar Bharat	Focus on import substitution, R&D, and incentives

Significance

- **Indigenous Boost**: Defence production **up 174% since 2014–15**
- **Global Outreach**: Exports to nearly **80 countries**
- **Private Sector Role**: ₹15,233 crore exports by private players in **FY25**
- **Strategic Leverage**: Enhances India's diplomatic & military stature

Key Challenges

- **Technological Dependence**: Still reliant on foreign tech
- **DPSU Inefficiencies**: Innovation and marketing gaps
- **Policy-Execution Lag**: **Delays in implementation**
- **Global Competition**: Tough to break into established defence markets

- **Product Gaps**: Lack of scalable, flagship platforms
- **Support Services**: Need better after-sales and **certification systems**
- **Industrial Base Weakness**: Gaps in **supply chain, workforce, infrastructure**

Conclusion
India's defence export surge reflects strong policy push and private sector dynamism. **Bridging the innovation gap** and scaling indigenous platforms are vital for sustaining this momentum and achieving the ₹50,000 crore export target by 2029.

SpaceX's Fram2 Mission
GS3 – Science & Technology (Space)
Context
SpaceX launched the **Fram2 Mission**, the world's first private astronaut mission to travel in a *polar orbit*, performing pioneering experiments in space.

Historical Link
- Named after Norwegian ship **Fram**, known for its Arctic and Antarctic expeditions in early 20th century.

Mission Highlights
- Launched via **Falcon 9** from NASA's Kennedy Space Center.
- Carried private astronauts aboard **Crew Dragon Resilience** in a **polar orbit**.
- Duration: 3–5 days
- Objectives:
  - Study human physiology in microgravity
  - Conduct **first-ever x-ray in space** to study bone/muscle loss
  - Experiment on mushroom cultivation for future space food sustainability
  - Post-landing: Astronauts will **exit spacecraft unassisted** to assess physical recovery

About Polar Orbit
- **Definition**: Satellite passes near the North & South Poles
- **Type**: Low Earth Orbit (LEO); **200–1000 km above Earth**
- **Coverage**: Eventually scans the entire Earth as it rotates beneath
- **Applications**:
  - Earth mapping & remote sensing
  - Environmental monitoring
  - Military surveillance

Challenges of Polar Launches
- Require **more fuel** compared to equatorial launches
- Can't leverage Earth's rotation for velocity gain

Significance
- Demonstrates the growing role of **private space players**
- Contributes to **space medicine**, sustainable food systems, and orbital science
- Opens new frontiers in **space tourism, commercial research, and global monitoring**

India's Air Pollution Concern
Syllabus: GS3 – Environmental Pollution
Context:
India ranks among **the world's most polluted nations**; 13 of top 20 most polluted cities are Indian.

Key Data (World Air Quality Report 2024):
- Byrnihat (Assam-Meghalaya border) **most polluted city globally**.
- Delhi: Most polluted capital (PM2.5 = 91.8 µg/m³).
- India's average AQI: 50.6 µg/m³ (10x WHO limit of 5 µg/m³).

Major Pollutants:
PM2.5, NO_2, SO_2, O_3, CO, VOCs, Lead

Sources of Pollution:
- Vehicular & industrial emissions

- **Biomass/**crop residue burning
- **Construction** & waste burning
- High population density
- Seasonal & **geographic trapping** (e.g., winter smog)
- Deforestation reduces **natural filtration**

Impacts:
- **Health:** Respiratory & **cardiovascular diseases**
- **Environment:** Crop damage, **biodiversity loss**, climate change
- **Economic:** Rising **healthcare** costs

Government Initiatives:
- **NCAP (2019):** Target 20-30% PM reduction by 2026
- **BS-VI Norms (2020):** Cleaner **fuels & engines**
- **Ujjwala Yojana:** Promotes **LPG** to reduce biomass use
- **FAME Scheme:** Promotes **EVs** to cut vehicular emissions
- **GRIHA:** Green rating for **eco-friendly** construction
- **Swachh Bharat Abhiyan:** Waste management
- **Commission for Air Quality Management: NCR** coordination
- **Green India Mission:** Afforestation

Way Forward:
- Improve **local data**, especially on **traffic & fuel patterns**
- **Avoid overdependence** on imported high-tech models
- Prioritize basic **pollution sources** (biomass, old vehicles)
- Implement contextual, scalable, short-term solutions.

Waqf (Amendment) Bill, 2025 (UMEED Bill)
Syllabus: GS2 – Governance, Minority Welfare
Context:
Lok Sabha passed Waqf (Amendment) Bill, 2025 and repealed the outdated Mussalman Wakf Act, 1923.

What is Waqf?
Property dedicated irrevocably for religious or charitable purposes under Islamic law. Managed by **Mutawalli**.

Objectives of the Bill:
- Reform and streamline **Waqf property management**
- Ensure transparency, digital records, audits
- Mandate **gender and community inclusion**

Key Features:
- **Composition Changes:**
  - Central Waqf Council to include 2 non-Muslim members
  - **At least 2 Muslim women in every board**
  - Include members from **Shia, Sunni, and backward Muslim communities**
- **Tribunal Changes:**
  - Expert in **Muslim law** removed
  - Now chaired by **District Judge** with senior officials
  - Appeals allowed in **High Courts** (within 90 days)
- **Digitization & Transparency:**
  - Unified online portal for **Waqf property records**
- **Audit & Revenue Oversight:**
  - Institutions earning over **₹1 lakh to be audited**
- **Creation Rules:**
  - **Waqf** only by Muslims with 5+ years of religious practice
  - Special inheritance rights for **widows/divorced women/orphans**

Concerns:
- Inclusion of **non-Muslim members** may dilute representation
- Removal of **Muslim law experts from Tribunals**

- Ambiguity around the **5-year Islam practice clause**

Significance:
- Boosts transparency, gender justice & modernization
- **Reduces litigation** and ensures better governance

Mains Practice Questions

1. Discuss the strategic implications of satellite-based internet services on India's digital sovereignty and cybersecurity.
2. What ethical and regulatory challenges do brain-computer interface technologies pose in India?
3. Examine the threat posed by deepfakes in the context of electoral integrity and social harmony in India.
4. Highlight the benefits and concerns of using transgenic organisms in agriculture and healthcare.
5. Critically analyze the rise of digital gambling in India and suggest regulatory measures.
6. How does AI technology contribute to child abuse in digital spaces? Suggest policy solutions.
7. Discuss the psychological and systemic factors behind rising student suicides in India. How can institutional reforms help?
8. Why does child labour persist in India despite legal safeguards? Comment on the data challenges in policy response.
9. Critically assess the implementation challenges of NEP 2020 at the school level.
10. Examine the scope and limitations of the Medical Termination of Pregnancy (MTP) Act in ensuring reproductive rights in India.
11. Do you think the collegium system needs reform? Discuss with reference to transparency and accountability in judicial appointments.
12. What are the implications of dynastic politics on India's democratic structure?
13. How does the revised classification of MSMEs affect their access to finance and ease of doing business?
14. Evaluate India's legal and institutional framework to combat money laundering and terror financing.
15. Why does India seek reform in the United Nations Security Council? Examine the barriers to achieving it.
16. Explain the emerging geopolitical tensions in the Arctic and their implications for India.
17. Discuss the potential of India's bioeconomy in promoting green growth and rural development.
18. What do recent energy statistics reveal about India's progress in energy transition?
19. What factors have contributed to the growth of India's defence exports? How can this trend be sustained?
20. Air pollution is both an environmental and public health crisis. Discuss the effectiveness of India's current mitigation strategies.
21. Critically examine the proposed changes in the Disaster Management Act. Will it enhance India's disaster preparedness?
22. Discuss the objectives and concerns related to the proposed Waqf Amendment Bill, 2025.

NEWS IN BRIEF

Cape Town Convention & Aircraft Objects Bill, 2025

Syllabus: GS2 – International Treaties / Governance

Context:
The Bill enables domestic implementation of the **Cape Town Convention (2001) and Aircraft Protocol**.

Objective of the Convention:
- Create uniform legal framework for aircraft financing
- Protect rights of lessors, ease repossession in defaults

India's Status:
- Ratified in 2007
- **2025 Bill** gives it **statutory recognition**

Key Provisions:
- **Creditor Protection:**
  - Creditors can reclaim aircraft within 2 months of default
- **DGCA as Registry:**
  - Responsible for recording international interests
- **Mandatory Reporting:**
  - Airlines must report dues per aircraft
- **Insolvency Protections:**
  - Provides clear rights to lessors in airline bankruptcies

Benefits:
- Lowers leasing costs by **8–10%**
- Attracts global lessors to India
- Potential to lower **airfare due to cheaper aircraft availability**

Pay Hike for MPs

Syllabus: GS2 – Governance
- **Centre notified** a 24% salary hike for MPs from April 1, 2023.
- **Salary raised** from ₹1 lakh to ₹1.24 lakh/month; **daily allowance** from ₹2,000 to ₹2,500; **pension** from ₹25,000 to ₹31,000.
- Based on **Cost Inflation Index** under **Income Tax Act, 1961**.
- MPs also get **rent-free accommodation** in Delhi.
- **Rajya Sabha:** 250 max members; 6-year term; 1/3rd retire every 2 years.
- **Lok Sabha:** Max 550 members; direct elections; 5-year term.

PM VIKAS Scheme

Syllabus: GS2 – Governance
- **PM VIKAS (Pradhan Mantri Virasat Ka Samvardhan)**: Central Sector Scheme by MoMA.
- For 6 notified minorities: Muslims, Sikhs, Christians, Buddhists, Jains, Parsis.
- Merged Schemes: Seekho Aur Kamao, Nai Manzil, Nai Roshni, USTTAD, Hamari Dharohar.
- **Focus Areas:** Skilling, Women leadership, Education (NIOS), Infra (PMJVK), Credit (NMDFC).
- **EPCH**: Knowledge partner for training, branding, and marketing.
-
- **Placement target:** 75% under NSQF skill programs.

Syllabus: GS3 – Economy
- Govt proposes to remove **6% Equalisation Levy** on online ads from April 1, 2025.
- Introduced in 2016; extended in 2020 to e-commerce (2%, removed in 2024).
- Applied to **non-resident platforms** like Google, Meta, X.

- Move aims to ease **US-India trade tensions** (US threatened reciprocal tariffs).

Dalle Chilly Export

Syllabus: GS3 – Agriculture
- **APEDA exported first consignment** of GI-tagged **Dalle Chilly** from Sikkim to Solomon Islands.
- Features: Bright red, pungent (100k–350k SHU), high nutrition.
- Got **GI tag in 2020**.
- **MOVCD-NER scheme** supports organic farming in NE India.
- **GI Tag**: Legal protection; boosts exports; valid for 10 years (renewable).

AIKEYME & IOS Sagar – Indian Navy

Syllabus: GS3 – Defence
- **AIKEYME**: India-Africa maritime exercise (means "Unity" in Sanskrit), co-hosted with Tanzania.
  - Participating nations: 9 African countries + India.
- **IOS Sagar**: INS Sunayna deployed with crew from India + 9 Friendly Foreign Countries (FFCs).
  - FFCs include: Comoros, Kenya, Madagascar, Maldives, Mauritius, etc.
- Aim: Strengthen India's role in IOR as **First Responder and Security Partner**.

Black Carbon

Syllabus: GS3 – Environment
- India is 2nd largest emitter of **black carbon** (after China).
- Also called **soot**; part of **PM2.5**; classified as a **Short-Lived Climate Pollutant (SLCP)**.
- **Causes:** Glacier melt, disrupts monsoons, extreme weather
- E.g., 39% mass loss of **Yala Glacier** (Tibetan Plateau) due to black carbon.
- Increases solar absorption by reducing **albedo** of snow/ice.

Blue Flag Tag – Rushikonda Beach

Syllabus: GS3 – Environment
- **Rushikonda Beach (Visakhapatnam)** regained **Blue Flag certification**.
- India now has **13 Blue Flag beaches**.
- **Awarded by FEE (Copenhagen)** for eco-friendliness, safety, water quality, and cleanliness.
- **33 criteria** across 4 categories: education, water quality, environment management, safety.

Permafrost Thawing – Kashmir Himalaya

Syllabus: GS3 – Environment
- Study warns of **melting permafrost** in Kashmir Himalaya.
- Permafrost = ground frozen for ≥2 years; common in high latitudes/mountains.
- Impacts: Infrastructure damage, increased **GLOF risk** (65 out of 332 proglacial lakes at risk).
- Causes: Deforestation, tourism, infrastructure.
- Affects **groundwater and river base flows**.
- Recommendations: Better EIA, monitoring (satellite + in-situ), consider permafrost in infra planning.

India's Heat Action Plans (HAPs)

Syllabus: GS3 – Environment
- Study: "Is India Ready for a Warming World?"
- Findings:
  - **Short-term** steps (water access, shift timings) present.
  - **Long-term** steps (cooling infra, insurance, fire mgmt.) lacking or poorly implemented.
  - Poor targeting of vulnerable populations.
- Implemented in **23 heatwave-prone states** by **NDMA**.

- Heatstroke deaths: 730 (2022) → 161 (2024).
- **Suggestions**: Strengthen both short- & long-term strategies; improve funding & coverage.

Third Battle of Panipat (1761)
Syllabus: GS1 – History
- Fought on **14 January 1761** between **Marathas (Sadashivrao Bhau)** and **Ahmad Shah Durrani (Afghanistan)** with **Rohilla allies**.
- One of the **deadliest 18th-century battles** – ~60,000–70,000 Marathas killed.
- Marathas faced **severe food shortages**; suffered a **decisive defeat**.
- Result: **Maratha northern expansion halted for a decade**, regained under **Peshwa Madhavrao by 1771**.
- Maharashtra CM termed it a **symbol of Maratha bravery**.

Vikramshila University Revival
Syllabus: GS2 – Education
- Founded by **King Dharmapala (Pala Dynasty)** – 8th to 9th century CE.
- Located in **Bhagalpur, Bihar**; second only to **Nalanda** in importance.
- Renowned for **Tantric Buddhist studies**
- Destroyed in **late 12th century** by **Bakhtiyar Khalji**.
- **Atisa Dipankara**, key scholar, helped revive Buddhism in **Tibet**.
- Revival effort underway like that of **modern Nalanda University**.

BHIM 3.0 Launch
Syllabus: GS2 – Governance
- Launched by **NPCI BHIM Services Ltd (subsidiary of NPCI)**.
- BHIM: **UPI-based app**, introduced in 2016 to promote **digital payments**.
- **BHIM 3.0 Features**:
  - Available in **15+ languages**
  - Works in **low-internet areas**
  - Tools: **Expense tracker, bill split, family mode**

Boilers Bill, 2024
Syllabus: GS2 – Governance
- **Replaces Boilers Act, 1923** with modern provisions.
- Regulates boilers to ensure **safety from explosions**.
- **Key Features**:
  - Safety rules, **qualified personnel** required
  - **Simplified law**; colonial terms removed
  - States retain powers
  - **Tiered penalties**: Criminal, fiscal, executive
  - Follows **Jan Vishwas Act, 2023** – promotes ease of business
  - Retains **third-party inspections (since 2007)**

Regional Rural Banks (RRBs)
Syllabus: GS3 – Economy
- **FY24 profit: ₹7,571 crore** – highest ever.
- Origin: **1975**, post **Narasimham Committee**.
- Legal backing: **RRB Act, 1976**
- **1st RRB**: Prathama Bank (U.P.), sponsored by **Syndicate Bank**
- **Objective**: Rural credit to farmers, artisans, small entrepreneurs.
- **Ownership pattern**:
  - GoI – 50%
  - State – 15%
  - Sponsor bank – 35%
- Regulated by **RBI**, supervised by **NABARD**
- Consolidated based on **K.C. Vyas Committee (2001)**

Gold Monetisation Scheme – Changes
Syllabus: GS3 – Economy

- **MTGD and LTGD discontinued** from **March 26, 2025**.
- Launched in **2015** to **mobilise idle gold**.
- Components:
  - **STBD** (1–3 yrs) – handled by banks
  - **MTGD** (5–7 yrs), **LTGD** (12–15 yrs) – GoI managed
- Excludes **RRBs**; only scheduled commercial banks implement it
- Aim: Reduce gold imports, boost productive use of gold

Disaster Relief Funds & Freebies
Syllabus: GS3 – Disaster Management
- **Disaster Management (Amendment) Bill, 2024**:
  - Clarified that **freebies can't be funded** using disaster relief funds
- **SDRF**:
  - Created under **Disaster Management Act, 2005**
  - Central share: 75% (general states), 90% (special category states)
  - Can use **10% for local disasters** (with State approval)
- **NDRF**: Fully funded by Centre; used in **severe disasters**
  - Accepts private donations
  - Based on **Finance Commission recommendations**

AI Washing
Syllabus: GS3 – Science & Tech
- Companies exaggerate use of **AI for marketing** = "AI washing"
- Inspired by "**greenwashing**"
- Examples:
  - Claiming **AI use**, but using basic tech
  - Overstating **AI efficiency**
- **Impacts**:
  - **Misleads consumers/investors**, affects innovation detection
  - May lead to **overpriced tech investments**
- Growing concern in **tech industry & regulatory circles**

Bhadra Wildlife Sanctuary (Karnataka)
Syllabus: GS3 – Environment
- Location: **Shivamogga & Chikmagalur**, Western Ghats, Karnataka
- Named after **Bhadra River**
- Declared **Tiger Reserve** in 1998
- Also known as **Muthodi Wildlife Sanctuary**
- Wildlife: 250+ bird species (many endemic), mammals, **Jagara Giant** (largest teak tree in Karnataka)
- Current action: **Phased elephant rehabilitation plan**

Signal App – Privacy & Risk
Syllabus: Miscellaneous (Sci & Tech, Security)
- **Signal**: Encrypted messaging app with end-to-end encryption
- Used for text, calls, and group chats
- **Minimum data collection**, auto-deletes messages
- Recently, **US officials accidentally added a journalist**, exposing security lapses
- Raises concerns on **national security use of consumer apps**

Bedmap3
Syllabus: GS1 – Geography
In News: Scientists have created *Bedmap3*, the most comprehensive map of Antarctica's landscape beneath its ice sheet.
About Bedmap3:
- Extension of the earlier **Bedmap2** dataset.
- Includes:

- o **84 new aero-geophysical surveys**
- o **15 data sources**
- o **52 million additional data points**
- o **1.9 million line-km** of measurements
- Fills major knowledge gaps in:
  - o Mountain ranges
  - o Deep interior of **East Antarctica**
  - o Coastlines of **West Antarctica** and **Antarctic Peninsula**

Importance:
- Provides a clearer understanding of Antarctica's subglacial topography.
- Crucial for:
  - o Ice sheet modeling
  - o Predicting **sea-level rise** due to global warming

Did You Know?
- Antarctica is Earth's **coldest continent**.
- Covered almost entirely by **ice**, it surrounds the **South Pole**.
- Only hardy plants like **lichens, mosses, and algae** survive here.

Privilege Motion
Syllabus: GS2 – Governance
In News: An opposition leader moved a privilege motion against a Union Minister alleging false statements on MGNREGS fund allocations.
What is a Privilege Motion?
- Moved when an MP believes there is a **breach of parliamentary privilege**.
- Must relate to a **recent** incident and **warrant House intervention**.
- Admitted/rejected by **Speaker (Lok Sabha)** or **Chairman (Rajya Sabha)**.
- If admitted → Referred to **Committee of Privileges**.
  - o Investigates
  - o Summons witnesses/documents
  - o Submits report in 1 month

Outcome:
- House considers report; **penal action** only in **extreme** cases.

Parliamentary Privileges (Constitutional Backing):
- **Article 105**: Powers and privileges of Parliament & members
- **Article 122**: Courts barred from reviewing parliamentary proceedings

Key Features:
- Freedom of speech in House (with exceptions)
- Immunity from legal action for actions inside House
- Protection from arrest in **civil** cases during session
- No immunity in **criminal** cases

Samagra Shiksha Abhiyan (SSA)
Syllabus: GS2 – Governance
In News: Parliament panel urged Education Ministry to resolve funding disputes with Tamil Nadu, Kerala, and West Bengal.
About SSA:
- Centrally Sponsored Scheme by **Department of School Education & Literacy**
- Provides **holistic education** from pre-primary to Class XII
- Aligned with **NEP 2020**

Key Features:
- Focus on **inclusive and equitable education**
- Financial support for:
  - o Uniforms, textbooks, out-of-school children
  - o Infrastructure: classrooms, hostels, ICT tools
  - o RTE reimbursements
  - o **Teacher training**
  - o Schools for **marginalised**, tribal & border communities

Pradhan Mantri Matru Vandana Yojana (PMMVY)

Syllabus: GS2 – Governance
In News: Opposition flagged poor implementation of maternity benefits under **NFSA** due to low funding.
About PMMVY:
- A **Maternity Benefit Programme** under **NFSA 2013**
- Integrated into **Mission Shakti** from 2022
- Targets women from **disadvantaged groups**

Benefits:
- ₹5,000 direct benefit for pregnancy and lactation
- Combined with **Janani Suraksha Yojana**, total = ₹6,000
- **Free meals** during pregnancy + 6 months postpartum via **Anganwadis**
- ₹6,000 additional benefit for **second girl child** under **Mission Shakti** (to promote gender equity)

Betting and Gambling – State Subjects
Syllabus: GS2 – Governance
In News: Union Minister clarified that betting/gambling fall under **State List**.
Legal Framework:
- **Finance Act 2023**: 30% income tax on online gaming winnings
- **GST (Oct 2023):** 28% GST on online gaming
- **Simplified Registration Scheme** under IGST Act

Regulatory Measures:
- **1410 blocking orders** for illegal sites (2022–25)
- **Bharatiya Nyaya Sanhita, 2023**:
  - o Punishment: **1–7 years imprisonment + fines** for unauthorized gambling

Other Initiatives:
- Advisories on **gaming addiction** (MoE)
- **I&B Ministry guidelines** for gaming ads (disclaimers on financial risk)

MRI Technology
Syllabus: GS3 – Science & Tech
In News: India has developed its **first indigenous MRI machine**, to be tested at **AIIMS Delhi**.
About MRI:
- **Magnetic Resonance Imaging** – Non-invasive medical imaging
- Used for **brain, spinal cord, joints, muscles, organs**
- Works with **magnetic fields and radio waves**
- **Does not use ionizing radiation** → safer than X-rays or CT scans

Abel Prize
Syllabus: Miscellaneous
In News: Japanese mathematician **Masaki Kashiwara** awarded 2024 Abel Prize.
Awarded For:
- Work in **algebraic analysis**, **D-modules**, **representation theory**, **crystal bases**

About Abel Prize:
- Named after **Niels Henrik Abel** (Norwegian mathematician)
- Instituted in **2002**, first awarded in **2003**
- Given by **Norwegian Academy of Science and Letters**
- Regarded as **Nobel Prize of Mathematics**
- Includes a **cash prize** and **glass plaque** by Henrik Haugan

Black Sea
Syllabus: GS1 – Places in News
In News: Russia-Ukraine agreed to suspend strikes in the **Black Sea** region.
About Black Sea:
- Landlocked sea in **Southeast Europe**
- Bordered by: **Bulgaria, Romania, Ukraine, Russia, Georgia, Turkey**
- Connected to **Mediterranean Sea** via:
  - o **Bosporus Strait**

- o **Sea of Marmara**
- o **Dardanelles Strait**

Key Features:

- **Oxygen-poor deep waters** → rich in **hydrogen sulfide**
- Marine life exists in **upper oxygen-rich layers**
- Ports: **Odessa, Constanta, Varna, Novorossiysk**
- Importance:
  - o Strategic military and trade zone
  - o **Oil & gas reserves**, fisheries
  - o Historical flashpoint for conflicts

5 Years of National Technical Textiles Mission

Syllabus: GS3 – Economy

In News: Mission launched in 2020 completed 5 years.

What are Technical Textiles?

- Engineered textiles for functionality (not aesthetics).
- Use: Medical, agriculture, defense, automotive, infrastructure.
- Materials: Aramids, carbon fiber, nonwovens.

National Technical Textiles Mission (NTTM)

- **Launched**: 2020, Ministry of Textiles.
- **Aim**: Boost R&D, market penetration, exports, and skill development.
- **Components**:
  - o R&D support
  - o Export promotion
  - o Market development
  - o Skill training and education

Challenges

- Low awareness
- Heavy dependence on imported machinery
- Skill gap

Do You Know?

- India is the 6th largest textile exporter globally.
- Contributes ~2% to GDP, aims for $350 bn market by 2030.

Digital Excellence for Growth and Enterprise (Dx-EDGE)
Syllabus:

GS2 – Governance

In News: Launched by CII with NITI Aayog & AICTE.

About Dx-EDGE

- Aims to help MSMEs become digitally resilient and competitive.
- Aligns with *Viksit Bharat 2047* and *NITI's Frontier Tech Hub.*

District Mineral Foundation (DMF)

Syllabus: GS2 – Governance

Context: Odisha revised DMF guidelines.

About DMF

- Established under **MMDR Amendment Act, 2015**.
- Non-profit bodies for **welfare** of mining-affected communities.
- **Funding**: Contributions by leaseholders (over & above royalty).

Odisha Reforms

- Increased radius:
  - o Directly affected → 15 km
  - o Indirectly affected → 25 km
- Development within 5 km of mines on **saturation mode**.

Legal Framework: Linked to PESA Act, FRA 2006.

MGNREGS Wage Hike (FY 2025-26)

Syllabus: GS2 – Welfare Schemes

What's New?

- Wage increased by ₹7–₹26.
- **Haryana**: ₹400/day – highest ever.
- **Based on**: CPI-AL (reflects rural inflation).

About MGNREGA

- **Type**: Demand-driven wage employment scheme.
- **Guarantee**: 100 days of **unskilled manual work**.

- **Focus areas**: Water conservation, irrigation, rural infrastructure.

Reforms & Progress

- **ABPS**: 99.49**% Aadhaar-seeded** workers
- **NMMS App**: Live attendance tracking
- **NeFMS & DBT**: 100% electronic wage disbursement
- **Women participation**: Rose to 58% (2024–25)
- **Budget**: ₹86,000 crore (2024–25)

India: World's 2nd-Largest Tea Exporter (2024)

Syllabus: GS3 – Economy

Context: India overtook Sri Lanka, ranks just after Kenya.

Key Data

- **Exports**: 255 million kg
- **Value**: ₹7,111 crore (15% rise)
- **Markets**: Iraq (20% share), UAE, Russia, US
- **Types**: Mainly black tea (96%)
- **Regions**: Assam, Darjeeling, Dooars, Nilgiri

Tea Board of India

- Statutory body (1954, Tea Act). HQ: Kolkata
- Regulates tea industry & protects growers' interests.

Gaia Mission Ends

Syllabus: GS3 – Space

Context: ESA officially ended Gaia mission.

About Gaia

- Launched: 2013 by European Space Agency
- Aim: Map 3D positions/motions of Milky Way stars (astrometry)
- **Location**: Lagrange Point 2 (L2)
- **Status**: Passivated in March 2025
- **Output**: Historic datasets on star locations and motion

Green Grabbing

Syllabus: GS3 – Environment

In News: Seen in Assam's Karbi Anglong region.

What is Green Grabbing?

- Forceful land acquisition in the name of conservation/sustainability.
- Affects indigenous communities.
- Seen in solar park projects displacing locals.

Nag Missile System (NAMIS)

Syllabus: GS3 – Defence

In News: MoD signed NAMIS contract under Buy (Indian-IDDM) category.

About NAMIS

- **Type**: 3rd-gen fire-and-forget ATGM
- **Developer**: DRDO
- **Use**: Neutralizes armored tanks
- **Feature**: No guidance required post-launch

Exercise Prachand Prahar

Syllabus: GS3 – Defence

Context: Conducted in high-altitude Arunachal Pradesh.

Highlights

- Tri-service integrated multi-domain exercise
- Featured: UAVs, maritime aircraft, loitering munitions, satellites
- Follow-up to *Exercise Poorvi Prahar* (Nov 2024)

Rana Sanga

Syllabus: GS1 - Personalities, Medieval Indian History

- Rana Sanga was **the Rajput king of Mewar**, ruled from 1508 to 1528.
- He united various Rajput clans to challenge the **Delhi Sultanate**.
- His kingdom included parts of **present-day Rajasthan**, Gujarat, and Madhya Pradesh, with Chittor as capital.
- He patronised poets and artists, including Malik Muhammad Jayasi who wrote Padmavat.
- He fought Babur in the Battle of Khanwa in 1527 but was defeated due to **Babur's artillery**.

- Remains a symbol of **Rajput unity** and resistance despite defeat.
- Recent controversy involves claims that he invited Babur, which **historians dispute**.

Why is Myanmar Frequently Rocked by Earthquakes
Syllabus: GS1 - Physical Geography

- A **magnitude 7.7 earthquake** struck central **Myanmar**, followed by six aftershocks.
- It was a shallow earthquake at ten kilometres depth, near Mandalay city.
- Caused by strike slip faulting between **Indian and Eurasian plates**.
- **Myanmar is highly earthquake-prone** due to the Sagaing Fault, running north to south.
- Six earthquakes above magnitude seven have occurred near the fault since **1900.**
- Tremors were felt in **Thailand and Northeast India** but caused no major damage.

Carrige of Goods by Sea Bill 2024
Syllabus: GS2 - Polity

- The Bill replaces the Indian Carriage of Goods by Sea Act of 1925.
- It modernises India's maritime law and aligns it with global norms like the **Hague-Visby Rules**.
- Aims to support initiatives like **PM Gati Shakti and Sagarmala**.
- Clarifies rights, liabilities, and responsibilities of **sea carriers**.
- Reduces legal complexity and offers predictability to **international traders**.

First Person View Drones
Syllabus: GS3 - Defence

- Indian Army developed an indigenous **FPV drone** with anti-tank kamikaze capability.
- FPV drones transmit live video from the **drone's camera to the pilot's screen**.
- Useful for combat, surveillance, and tactical missions.
- Cost-effective in targeting **high-value military assets like tanks**.
- Seen in action during **Ukraine conflict**, showing transformative battlefield potential.

India's Coffee Production
Syllabus: GS3 - Economy

- Expected production by March 2025 is **three point five two lakh metric tonnes.**
- **Adequate blossom showers** boosted berry setting and yields.
- Coffee cultivation in India began in the 1600s by **Baba Budan.**
- India is **the seventh-largest coffee** producer globally.
- Karnataka leads production, followed **by Kerala and Tamil Nadu.**
- Exports in 2023-24 reached one point two **nine billion US dollars**.
- **Rising domestic** consumption due to **café culture and lifestyle changes**.
- Arabica and Robusta varieties dominate, mostly exported unroasted.
- **Government's ICDP** project focuses on expanding coffee in new regions and improving sustainability.

Current Account Deficit (CAD)
Syllabus: GS3 - Economy

- India's CAD widened to eleven point **five billion US dollars in Q3 FY25.**
- Merchandise trade deficit was the main reason.
- CAD stable at one point one percent of **GDP**.
- CAD occurs when imports **exceed exports**.
- CAD is part of the **broader Balance of Payments**.

- Can be reduced by increasing exports, limiting imports, or devaluing currency.

Syllabus: GS3 - Economy

- India is now a net importer of cotton, once a top producer.
- Production peaked in 2013-14 at **thirty nine point eight million bales**.
- **Bt cotton** introduction in **2002 boosted** yields significantly.
- Post 2014, yields fell below four hundred fifty kilograms per hectare.
- Policy paralysis, **anti-GM sentiment**, and halted field trials contributed to decline.
- Pests like pink bollworm worsened without newer **GM tech.**
- Global exporters like **US and Brazil** are benefitting from India's cotton imports.
- Government announced a five **year Cotton Mission to increase** productivity and promote extra-long staple varieties.

Kosi Mechi Intra-State Link Project
Syllabus: GS3 - Agriculture

- Approved by Cabinet under **PMKSY AIBP**.
- **Central support of three thousand six hundred fifty two crore rupees**.
- Will divert surplus Kosi water to Mechi river basin.
- **Remodels Eastern Kosi** Main Canal and extends it to Mechi.
- Will provide irrigation to over two lakh hectares during **Kharif.**
- Benefits districts **like Araria, Purnea, Kishanganj, and Katihar.**
- **PMKSY** launched in 2015 to improve water use efficiency and expand irrigation.
- Sixty three projects completed under **AIBP so far**.

Over 1,000 Species of Fungi Threatened With Extinction: IUCN
Syllabus: GS3 - Environment

- Over one thousand fungi species are at **risk globally**.
- Causes include **deforestation, farming expansion, and urban growth.**
- Fungi belong to their own kingdom and differ from **plants and animals**.
- Have chitin in their cell walls and are **heterotrophs**.
- Reproduce through spores and thrive in **moist, warm environments.**
- Key ecological role as **decomposers and in nutrient recycling.**
- Used in medicine, food, and agriculture.
- **Lichens and mycorrhizae** show their symbiotic relationships.

Bodh Gaya Temple
Syllabus: GS1 - Art & Culture

- Buddhist monks and organisations have been protesting the **Bodh Gaya Temple Act**, 1949 since February 2025.
- They demand exclusive Buddhist control over the **Mahabodhi Temple**, the site where **Buddha attained enlightenment.**
- The Bodhgaya **Temple Management Committee** (BTMC) was formed under the Act, with the **District Magistrate** as ex-officio Chairperson.
- Monks seek dissolution of BTMC and establishment of a **Buddhist-only** management body.
- The temple was originally built by **Ashoka in 260 BCE** and the current structure belongs to the Gupta period.
- It is a **UNESCO World Heritage** Site located in Bihar.

- Managed historically by **Buddhists till 13th century** invasion by **Bakhtiyar Khilji**.
- In the 16th century, Hindu monk Ghamandi Giri established Bodh **Gaya Math**.
- Post-Independence, Bihar government took over through **the BTA 1949**.

Tribhuvandas Patel
Syllabus: GS1 - Personalities

- Lok Sabha passed a Bill to establish **Tribhuvan Sahkari University in Gujarat**, named after Tribhuvandas Patel.
- Known as **the father of India's cooperative movement**, especially in dairy.
- Founded **Kaira District Cooperative Milk Producers' Union (KDCMPUL)** in 1946.
- Collaborated with **Verghese Kurien**, leading to the White Revolution.
- Played key role in creating **Amul, NDDB, GCMMF, and IRMA.**
- Received Ramon Magsaysay Award in 1963 and **Padma Bhushan in 1964**.

Sarhul Festival
Syllabus: GS1 - Culture

- Sarhul is a tribal festival celebrated in Jharkhand and **Chhotanagpur** region to mark the new year and arrival of spring.
- It means worship of the Sal tree and symbolises the union of **Sun (male priest) and Earth (female)**.
- Celebrated by tribes **like Oraon, Munda, Santal, Khadia, and Ho.**
- Rituals are conducted at **Sarna Sthals** or sacred groves protected by local communities.
- The festival lasts for three days and marks the beginning of agricultural activities.
- Historically a hunting festival, it has evolved into an **agricultural celebration**.
- Spread to regions like **Assam, A&N Islands, Nepal, Bangladesh** due to **tribal migration**.

Nanki trough Megaquake Warning
Syllabus: GS1 - Physical Geography

- Japan anticipates a **megaquake along the Nankai Trough, with tsunami risks.**
- A megaquake is an earthquake of magnitude 8.0 or higher with **catastrophic potential**.
- The Nankai Trough is a subduction zone where the Philippine Sea Plate goes under **the Eurasian Plate**.
- It stretches 800 km along **Japan's Pacific coast**.
- Japan estimates 70–80 percent chance of a **magnitude 8–9 quake within 30 years**.
- Past data shows such quakes occur every **100 to 150 years.**

P4 Initiative
Syllabus: GS2 - Governance

- Launched by Andhra Pradesh **CM under Swarnandhra 2047 vision.**
- Aim is to eliminate poverty in the state by 2029.
- **P4 stands for Public, Private, People Partnership**.
- Focus areas include housing, sanitation, water, electricity, internet, and solar power.
- Promotes entrepreneurship in every family.
- Targeted at the most deprived **20 lakh families termed Bangaru Kutumbam.**
- **Well-off contributors called Margadarsis** will adopt these families.
- Support can include education, health, financial help, or mentorship.

Asbestos
Syllabus: GS3 - Science and Technology

- **Global Asbestos Awareness Week** observed in first week of April.
- Asbestos is a group of **six fibrous** minerals known for heat, fire, and chemical resistance
- Widely used in industries due to its **durability**.
- Inhalation causes diseases like **Asbestosis and Mesothelioma.**
- Banned or restricted in many countries due to health risks.

Defence Exercises in News
Syllabus: GS3 - Defence
Exercise Tiger Triumph

- Fourth edition of **India-US Tri-service HADR** exercise held at **Visakhapatnam**.
- Focus is on interoperability and **SOPs** for joint coordination during disasters.
- Aims to create a **Combined Coordination Centre (CCC)** for crisis response.

Exercise INIOCHOS-25

- **Indian Air Force participated** in INIOCHOS-25, hosted by **Greece.**
- Biennial multinational air exercise with **15 countries**.
- Simulates real-world air warfare scenarios with **combined air and surface assets**.

Naini Lake
Syllabus: GS3 - Environment

- **Naini Lake in Uttarakhand** recorded a five-year low water level at **4.7 feet**.
- Zero level crossed over 10 times since 2000 compared to just twice in the **1900s.**
- It is a tectonic freshwater lake with a crescent shape formed due to landslides.
- Located in the **Kumaon region** and is the third-largest lake by surface area in the state.
- Climate change, reduced rainfall, and mismanagement may be contributing to decline.

NITI-NCAER Portal on State Finances
Syllabus: GS2 – Governance
Context:
Finance Minister launched the **"NITI NCAER States Economic Forum"** portal.
About the Portal:

- **Developed by:** NITI Aayog and NCAER
- **Coverage:** State finance data from **1990-91 to 2022-23**
- **Purpose:** To track state-wise economic progress, **offer real-time data analysis, and aid policy formulation**

Key Features:

1. **State Reports** – Demography, economic structure & fiscal indicators of **all 28 states**
2. **Data Repository** – **5 verticals: Demography, Economic Structure, Fiscal, Health, Education**
3. **Fiscal & Economic Dashboard** – Graphical visualizations & summary tables
4. **Research Section** – In-depth studies on state and **national fiscal policies**

Government Securities (G-Secs)
Syllabus: GS3 – Economy
In News:
RBI to inject ₹80,000 crore into the economy by purchasing G-Secs
About G-Secs:

- **Issued by:** Central and State governments
- **Types:**
  - **Treasury Bills:** Short-term (<1 year)
  - **Bonds/Dated Securities:** Long-term (>1 year)
- **State-issued G-Secs:** Called **State Development Loans (SDLs)**
- **Nature:** Risk-free, gilt-edged instruments
- **Debt Manager:** RBI acts on behalf of Centre & States

Future Circular Collider (FCC)

Syllabus: GS3 – Science & Technology

In News:
CERN and partners complete feasibility study on FCC

About FCC:

- **Successor to:** Large Hadron Collider (LHC)
- **Location:** CERN
- **Size:** 91 km circumference
- **Phases:**
  - Phase 1: Electron-positron collider (by 2046)
  - Phase 2: Proton-proton collider (by 2070)
- **Energy Target:** 100 TeV (7x more than LHC)

Objective:

- Study origin of mass, Higgs boson, dark matter, and **fate of the universe**

Applications:

- Medicine, energy, electricity transmission, accelerators

Saturn Gains 128 New Moons

Syllabus: GS3 – Space

In News:
Saturn is now the planet with the most moons – **274 total**

Details:

- **Discovered by:** Taiwan astronomers
- **Type:** All are **irregular moons** (elliptical orbits, small size)
- **Origin:** Likely captured small bodies, later shattered
- **Significance:** Helps understand Saturn's ring formation
- **Naming:** To be approved by **International Astronomical Union (IAU)**

Did You Know?

- **Titan:** Largest Saturn moon, bigger than Mercury
- Saturn is the **2nd largest planet** in the Solar System

Green Credit Programme

Syllabus: GS3 – Environment

In News:
MoEFCC invites voluntary participation for earning **green credits**

Launched: December 1, 2023 (COP28, Dubai)

Objective: Incentivize **pro-environmental actions** with tradable credits

Linked to: Mission LiFE

Eligible Participants: Individuals, companies, PSUs, institutions

Green Credit Activities:

- Tree plantation
- Eco-restoration
- Rainwater harvesting
- Waste & air pollution management

Uses of Green Credits:

- **Compensatory afforestation**
- **ESG compliance** (SEBI)
- **Tradable in domestic market**

Concerns:

- Legal scrutiny by Law Ministry & Supreme Court
- May weaken forest conservation principles
- Risk to scrublands and ecologically fragile areas

Migration of Painted Lady Butterflies

Syllabus: GS3 – Environment

Context:
Study reveals environmental, not genetic, factors influence butterfly migration

Key Facts:

- **Species:** Vanessa cardui
- **Range:** Every continent except Antarctica & South America
- **Migration:** Up to **15,000 km**, **multi-generational** (8–10 generations)
- **Research:** Isotope analysis of wings to trace origin

- **Finding:** No genetic difference between short- and long-distance migrants

Unique Adaptations:

- Specialized thoracic muscles
- High-speed, long-altitude flights
- Highly adaptable to diverse climates

IUCN Status: Least Concern

Chhatrapati Shivaji Maharaj

Syllabus: GS1 – History / Famous Personalities

Context: April 3 marks the death anniversary of Shivaji Maharaj.

About Shivaji Maharaj

- Born: 1630 (as Shivaji Bhosale)
- Known for: Progressive leadership, military strategy, promotion of **Swarajya** (स्वराज्य)
- Influenced by: Saints like **Tukaram**, **Ramdas**, and **Dnyaneshwar**

Key Contributions

- राज्याभिषेक **(1674)** at Raigad Fort
- **Administrative Reforms:**
  - Ashta Pradhan Mandal (Council of Eight Ministers)
  - Replaced **Jagirdari** with **Ryotwari** system
- **Military Reforms:**
  - Conflicts & alliances with Mughals, Bijapur, Europeans
  - Strong navy to protect coastline and trade routes

Legacy

- **INS Shivaji**, **Chhatrapati Shivaji Terminus** (UNESCO site)
- Inspired **Shivaji Festival** started by Bal Gangadhar Tilak in 1890s
- Influence on Indian Navy's new ensign design

North Sentinel Island

Syllabus: GS1 – Places in News

Context: US citizen arrested for entering restricted North Sentinel Island

About the Island

- Location: Bay of Bengal, part of South Andaman district
- Geography: Coral reefs, mangrove forests, uplifted by **2004 tsunami**

Sentinelese Tribe

- Hunter-gatherers, use bows & arrows
- Population: ~50–150 (est.)
- **Reject all outside contact**; considered "uncontacted tribe"

Legal Protection

- **Andaman & Nicobar Protection of Aboriginal Tribes Regulation, 1956**
- No access within 5 nautical miles
- **No prosecution of Sentinelese** for aggression
- **RAP (Restricted Area Permit)** still applies

Katchatheevu Island

Syllabus: GS1 – Places in News

Context: Tamil Nadu Assembly urged Centre to reclaim Katchatheevu from Sri Lanka

About the Island

- Location: **Palk Strait**, ~16 km from Rameswaram
- Uninhabited, has only St. Anthony's Church
- Area: ~285 acres

Dispute History

- Resolved through **1974 and 1976 bilateral agreements**
- Belongs to Sri Lanka; Indian fishermen allowed for church visit, but **fishing prohibited**
- India received **Wadge Bank** in return

Present Situation

- Sri Lankan Navy often arrests Indian fishermen
- Union Govt claims **no Indian territory was ceded**

President of Chile Visit to India

Syllabus: GS2 – International Relations

Context: President of Chile's visit marks 76 years of diplomatic ties

Key Agreements

- **CEPA** negotiations launched
- **Critical Minerals Cooperation**: CODELCO & Hindustan Copper agreement
- **Antarctica Cooperation**: Letter of Intent signed

About Chile

- Geography: Narrow country along the Pacific coast of South America
- Key Features:
  - **Atacama Desert** (world's driest)
  - **Cape Horn**, **Ring of Fire** (earthquakes & volcanoes)
  - **Escondida**: Largest copper mine globally
  - Major producer of **lithium and copper**

Fluoride Pollution in Sonbhadra

Syllabus: GS2 – Health

Context: Groundwater in Sonbhadra (UP) contaminated with fluoride levels **5–6 times above safe limits**

About Fluoride

- Natural, non-biodegradable pollutant
- Source: Soil, water, air, **coal combustion**
- WHO limit: **1.5 mg/litre**

Effects

- **Safe** levels: Tooth protection, bone health
- **Excessive** levels:
  - Dental & skeletal **fluorosis**
  - Joint pain, bone deformities
  - Harmful to ecosystems

Fiscal Health Index (FHI) 2025

Syllabus: GS2 – Governance

Context: Released by **NITI Aayog** & **PIB**

About FHI

- Assesses **fiscal performance** of 18 major states
- Data from: **CAG**, FY 2022–23

5 Sub-Indices:

1. Quality of Expenditure
2. Revenue Mobilisation
3. Fiscal Prudence
4. Debt Index
5. Debt Sustainability

Key Findings

- **Top States**: Odisha, Chhattisgarh, Goa
- **Concerns**: West Bengal & Punjab face growing **debt-to-GSDP ratios**
- States handle **2/3 of public spending** in India

SC on Disqualification of MLAs

Syllabus: GS2 – Governance

Legal Framework

- Article **102**: Grounds for disqualification
- **RP Act, 1951**, Section 8: Disqualification on conviction
- Article **103**: President decides disqualification

Tenth Schedule (Anti-Defection Law)

- Introduced via **52nd Constitutional Amendment (1985)**
- Disqualifies legislators for:
  - Leaving their party
  - Voting against party directive
- **2003 Amendment**: Removed exception for one-third split

SC Observations (2024–25)

- **Speaker's inaction** cannot defeat anti-defection law
- Courts can **mandate timely decision**
- Ref: **Lily Thomas judgment (2013)** – Removed protection for sitting members

India's 10-Year Bond Yields Declined

Syllabus: GS3 – Economy

Context

- RBI to buy ₹80,000 crore worth of bonds in April → yields fell to **6.49%**

What is Bond Yield?

- Return earned on bond investment
- **Inverse relation** with bond price
- Influenced by liquidity, interest rates, market outlook

Types of Bond Yields

- **Current Yield**
- **Yield to Maturity (YTM)**
- **Yield to Call (YTC)**
- **Yield to Worst (YTW)**

Purchasing Managers' Index (PMI)

Syllabus: GS3 – Economy

Context: PMI for manufacturing in March 2025 rose to **58.1** (8-month high)

About PMI

- Measures economic activity in **manufacturing/services**
- Compiled by: **S&P Global**, **HSBC**
- Scale
  - 50: Expansion
  - < 50: Contraction

March 2025 Surge

- Due to high **new orders index** (61.5)

Second National Gene Bank Announced

GS3 – Science & Technology

What is a Gene Bank?

A **bio-repository** to preserve **genetic material** of crops, animals, and microbes for **biodiversity conservation** and **future food security**.

New Initiative

- Second National Gene Bank (NGB) announced in **Union Budget 2025-26**.
- Aim: **Preserve 10 lakh crop germplasm** with modern infrastructure.
- Supports **climate-resilient agriculture** and **crop improvement**.

Existing NGB

- Located at **ICAR-NBPGR, New Delhi**.
- **Second-largest gene bank globally** with 4.7 lakh+ accessions from 2,157 species.

Significance

- Critical for **sustainable agriculture**, genetic research, and **disaster resilience**.
- Aligns with **SDG 2 (Zero Hunger)** and **biodiversity conservation goals**.

Neuralink's 'Blindsight' – Brain Chip for the Blind

GS3 – Science & Technology

What is Blindsight?

- A **brain-computer interface (BCI)** aimed at restoring vision in the completely blind.
- Bypasses eyes; **microelectrodes** stimulate the brain's visual cortex based on camera input.

What are BCIs?

- Devices that **read brain signals** and translate them into actions.
- **Invasive, non-invasive, and semi-invasive** categories.
- Enable **direct brain-to-device control**.

Applications of BCIs

- **Medical**: Assistive tech for paralysis, stroke rehab.
- **Mental Health**: PTSD, ADHD treatment via neurofeedback.
- **Military**: Thought-controlled drones, cognitive tracking.
- **Smart Tech**: Brain-controlled devices in IoT.
- **Research & Education**: Brain mapping, adaptive learning.

Challenges

- **Ethical dilemmas**, brain data security, **regulatory vacuum**, and **high costs**.
- Risks from **surgical implantation** and **misuse in surveillance or combat**.

Prelims Practice Questions

1. **The Cape Town Convention, recently in news, primarily deals with:**
   A. Climate change mitigation
   B. Protection of cultural heritage
   C. Mobile equipment financing and leasing
   D. Free trade agreement in Africa

2. **PM VIKAS scheme aims to:**
   A. Promote rural road infrastructure
   B. Train and support traditional artisans
   C. Provide micro-loans to startups
   D. Build urban housing for EWS

3. **The Equalisation Levy of 6% was applicable on:**
   A. Oil imports
   B. Cross-border digital advertisements
   C. Cryptocurrency transactions
   D. Foreign remittances

4. **Dalle Khursani, recently in news, is a variety of:**
   A. Rice
   B. Chilly
   C. Tea
   D. Mustard

5. **AIKEYME and Mission SAGAR are initiatives related to:**
   A. Digital education in rural India
   B. Renewable energy for coastal villages
   C. Indian Navy's outreach and maritime security
   D. Inland waterway transport

6. **Black carbon is harmful because:**
   A. It causes ozone layer depletion
   B. It contributes to global cooling
   C. It accelerates glacier melting and affects health
   D. It reduces soil fertility

7. **Blue Flag certification is awarded to:**
   A. High-quality agricultural produce
   B. Eco-friendly hotels
   C. Clean and sustainable beaches
   D. Ports with high export volumes

8. **Thawing of permafrost can lead to:**
   A. Increase in seismic activity
   B. Release of methane and carbon dioxide
   C. Formation of new glaciers
   D. Decrease in ocean salinity

9. **Heat Action Plans in Indian cities are designed to:**
   A. Prevent forest fires
   B. Provide free electricity in summer
   C. Protect vulnerable populations from heatwaves
   D. Encourage rooftop solar installations

10. **The Third Battle of Panipat was fought between:**
    A. Mughals and British
    B. Marathas and Afghans
    C. Rajputs and Mughals
    D. Sikhs and Marathas

11. **Vikramshila University was established during the reign of:**
    A. Mauryas
    B. Guptas
    C. Palas
    D. Cholas

12. **BHIM 3.0 primarily relates to:**
    A. E-governance
    B. Unified digital payment system
    C. Highway toll management
    D. Agricultural subsidy disbursal

13. **Boilers Bill, 2024 aims to:**
    A. Promote renewable energy
    B. Regulate construction of high-rise buildings
    C. Improve safety and inspection of industrial boilers
    D. Manage e-waste

14. **Regional Rural Banks (RRBs) are primarily created to:**
    A. Lend only to state governments
    B. Serve urban SMEs
    C. Provide banking services in rural areas
    D. Fund large infrastructure projects

15. **The Gold Monetisation Scheme was recently amended to:**
    A. Allow only private banks to run it
    B. Enable easier deposit and redemption
    C. Permit only digital gold storage
    D. Remove tax benefits

16. **'AI Washing' refers to:**
    A. Cleaning robots with AI
    B. Misleading claims of using AI
    C. Data sanitization using AI
    D. Use of AI for water purification

17. **Bhadra Wildlife Sanctuary is located in:**
    A. Kerala
    B. Karnataka
    C. Maharashtra
    D. Tamil Nadu

18. **Signal app is considered privacy-friendly because:**
    A. It is owned by a government agency
    B. It shares data with advertisers
    C. It uses end-to-end encryption and stores minimal data
    D. It only works offline

19. **Bedmap3 project is associated with:**
    A. Mapping biodiversity in India
    B. Antarctic ice bed mapping
    C. Urban land records
    D. GIS-based water resource management

20. **A Privilege Motion in Parliament is related to:**
    A. Budget presentation
    B. Violation of parliamentary privileges
    C. Election of the Speaker
    D. Expulsion of members

21. **Samagra Shiksha Abhiyan aims to:**
    A. Promote women's safety
    B. Boost higher education
    C. Integrate school education from pre-primary to Class 12
    D. Build new private universities

22. **Pradhan Mantri Matru Vandana Yojana offers:**
    A. Free medical treatment to pregnant women
    B. One-time maternity benefit for first childbirth

C. Mid-day meals to lactating mothers
D. Interest-free loans for maternity hospitals

23. **Betting and gambling fall under:**
A. Union List
B. State List
C. Concurrent List
D. Residuary Powers

24. **MRI (Magnetic Resonance Imaging) primarily** works on:
A. X-ray radiation
B. Radio waves and magnetic fields
C. Gamma ray bursts
D. Thermal imaging

25. **Abel Prize is awarded in the field of:**
A. Physics
B. Economics
C. Mathematics
D. Literature

26. **The Black Sea borders which of the following** countries?
A. Germany and Italy
B. Russia and Turkey
C. Egypt and Saudi Arabia
D. Greece and France

27. **The National Technical Textiles Mission focuses on:**
A. Promoting handlooms
B. Enhancing cotton exports
C. Developing high-performance technical textiles
D. Regulating textile imports

28. **Dx-EDGE initiative is aimed at:**
A. Promoting AI in rural governance
B. Digital transformation for enterprises
C. Creating edge computing devices for military
D. Cybersecurity infrastructure in banks

29. **The District Mineral Foundation (DMF) is meant to:**
A. Build roads in mining zones
B. Ensure equitable sharing of mining profits with local communities
C. Export rare earth minerals
D. Monitor mining licenses

30. **MGNREGS wage hike for FY 2025–26 is intended to:**
A. Encourage urban migration
B. Replace cash transfers
C. Boost rural employment and income
D. Increase corporate donations

31. **India became the world's second-largest tea exporter due to:**
A. Ban on coffee exports
B. Rise in global demand and domestic production
C. WTO treaty
D. Tea being declared essential commodity

32. **Gaia Mission, which recently ended, was launched to:**
A. Explore the moon
B. Map the Milky Way
C. Detect underwater life
D. Predict earthquakes

33. **'Green Grabbing' refers to:**
A. Overuse of green fertilizers
B. Land grabbing in the name of environmental projects
C. Stealing EV technology
D. Forest encroachments by nomads

34. **Nag Missile System is best described as:**
A. Air-to-air missile
B. Surface-to-sea missile
C. Anti-tank guided missile
D. Long-range ballistic missile

35. **Exercise Prachand Prahar is a:**
A. Naval exercise with the US
B. Disaster simulation exercise
C. Joint military drill of Indian Army
D. Air force combat simulation

36. **Neuralink's 'Blindsight' aims to:**
A. Restore memory in Alzheimer's
B. Enable vision in blind persons
C. Treat epilepsy
D. Cure dyslexia

37. **'Vibe Coding' refers to:**
A. Code generation through AI using prompts and intent
B. Musical coding algorithms
C. Non-digital tribal code patterns
D. Vibration-based encryption technology