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Current Affairs

Quarterly

REVISION

MARCH 2025 TO MAY 2025

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Note to Students

Dear Students,

In our endeavour to streamline your preparation and revision, here is the next **Quarterly Revision** document.

This curated compilation is designed to reinforce your learning journey and make your revision more structured and effective for the Civil Services Examination.

The Quarterly Revision gathers all the insightful articles from our latest three Monthly Current Affairs Magazines, offering you a comprehensive yet concise resource to revisit pivotal topics.

We understand that aspirants come from diverse backgrounds, manage various professional and personal commitments, and may not always find time to consistently read and revise monthly updates. This document is crafted keeping such aspirants in mind — especially those with a foundational understanding of the syllabus who are seeking a quick yet thorough revision tool.

Features of the Quarterly Revision Document:

Consolidated Coverage: A single document covering three months of Current Affairs, saving time and effort.

Exam-Focused Content: Only the most relevant and high-yield topics selected by subject experts.

Precise and Concise: Designed for quick revision without compromising on depth and understanding.

Ideal for Working Aspirants: Perfect for those juggling jobs, studies, or other commitments.

Test your learning: Monitor your learning and identify areas for improvement through MCQs and Mains Practice Questions.

Let this Quarterly Revision be your reliable companion in staying updated and confident throughout your preparation.

"Stay focused, stay consistent — success is closer than you think."

Warm regards,
Team Current Affairs,
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1.1. CASTE CENSUS

Why in the News?

- Centre issued notification for census which begin from 2026 in Ladakh and 2027 across rest of India which includes caste census.

More on the News

- **First since Independence:** to collect **caste data (beyond Scheduled Castes and Scheduled Tribes).**
- **Discrepancies in State-Level Caste Surveys:** eg., Bihar, Karnataka etc.

Census in India

- It is a **decennial exercise** that provides **demographic, social, and economic data** relating to all persons in the country.
  - Censuses have been **conducted regularly every ten years since 1881 except** the last census (2021) -delayed due to COVID-19
- **Legal Framework**
  - **Constitutional Provision:** Entry 69 of **Union list under Seventh Schedule (Article 246)**
  - **Statutory Provisions: Census Act, 1948** and the **Census Rules, 1990** includes duties and responsibilities of census officers.
    - ❖ The **Registrar General and Census Commissioner** (RG&CC) is authorized to design the census proforma.

History of caste census

- **Pre independence** – Caste data was regularly collected from 1881 to 1941, but 1941 data couldn't published (world war).
- **Post-independence (1951)-** Discontinued caste enumeration **except for SC and ST.**
- **Since 1961 – States** could conduct their own survey of **obcs**
- **2011-** Along census, Socio Economic Caste Census **(SECC)** was also conducted (data was not published).

Need for Caste Census

- **Constitutional mandate: Article 340.**
- **Data led Policy Making** eg OBC's claim of **often getting neglected due to lack of data.**
- **Affirmative Action:** Supreme Court has held caste as a relevant criteria for defining a backward class, and has demanded caste data.
  - Demands of OBC reservation (eg Marathas (Maharashtra), Jats (Haryana) etc.) can be ascertained.
- **Sub-categorization** of OBCs to ensure equitable distribution of benefits.
- **Comprehensive National Database for data led good governance.**

Issues associated with Caste Census

- **Data accuracy & reporting:** Self-reported caste and untrained officials cause errors, duplicates, misspellings—e.g., 2011 SECC had large no of inaccuracies
- **Classification:** Varying Centre/state lists cause inconsistencies (e.g. Jats in Haryana vs UP).
- **Political sensitivity:** Recognition prompts demands from other too (e.g. Gujjar ST request).
- **Identity politics:** Data can fuel divisions.
- **Privacy:** eg data misuse

Way Forward

- **Consultative Process:** The Office of the Registrar General of India and the Census Commissioner must consult with academics, caste groups, political groupings and the public to device a method of caste enumeration accurately.
- **Caste Directory:** A national directory of castes to standardize list across states.
- **Training** of officials and use of tech (AI, Big data)

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1.2. ASSENT TO STATE BILLS

Why in the News?

Recently, the Supreme Court (SC) in the **State of Tamil Nadu v. The Governor of Tamil Nadu** issued directions to ensure the timely approval of Bills passed by the **State Legislature.**

More in the News

The Supreme Court exercised its inherent powers under **Article 142** of the Constitution, which empowers the SC to pass a decree/order necessary for doing complete justice.

Constitutional Provisions regarding assents to the state bill	
Governor can (Article 200)	**For bills reserved by Governor, the President (Article 201) can**
● **Grant assent.** ● **Withhold assent.** ● **Return for reconsideration** (except Money Bills) – If the legislature passes it again, the **Governor must give assent.** ● **Reserve for President's Consideration.**	● **Grant assent.** ● **Withhold assent.** ● **Return for reconsideration –** Legislature must act within 6 months; after reconsideration, **President can still accept or reject.**
Unlike the Governor, the **President is not obligated** to give assent to a reconsidered bill.	

Key Highlights of the Judgement

● **Inaction is unconstitutional:** There is no Pocket or Absolute Veto available to the governor or President.
  ➡ In case the Governor/President exhibits inaction, the State Government could seek a writ of mandamus from a competent court.
● **Governor can't reserve a re-enacted Bill for President's assent:** The Bill can be reserved for the President's assent in the first instance itself.
  ➡ **Exception** is when the **bill presented in the second round is materially different** from that in the **first instance.**
● **Prescribed timeline for assent of Bills**

Timelines set by Supreme Court for State Bill

Timelines set by SC

One Month → **With Council of Ministers' Advice** →
- **Give** or **Withhold Assent.**
- **Reserve** the **bill** for the **Consideration of the President.**

→ **Assent** to **Bills Re-considered by State Legislature.**

Three Months → **Against Council of Ministers' Advice** →
- **Returning Bill** for **Re-consideration with a message.**
- **Reserve** the bill for the **Consideration of the President.**

→ **President must decide** on Bills **reserved** by **Governor (Any delay to be justified and communicated to the States).**

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- **Governor Lacks Absolute Discretion Under Article 200** and has to mandatorily abide by the advice tendered by the Council of Ministers except in following situations:
  - **State Bills that** would derogate the powers of the High Court, will not become effective without assent of President, relating to a subject enumerated in the Concurrent List etc.
- **Discretionary power under Article 200 is subject to judicial review:** Withholding assent or reserving a Bill using the Governor's discretion or the President withholding assent, can be challenged in the Supreme Court.
- **President should consult the Supreme Court** on Bills reserved for unconstitutionality **(Article 143)**.

1.3. PRIVATE MEMBERS' BILL

Why in the News?

- As per PRS Legislative Research report, the space for private members' bill has declined in both the Houses of the Parliament in recent years.

About Private Members' Bill (PMB)

- Any bill initiated and drafted by Member of Parliament **who is not a minister** (private member).
- **One month of notice** is to be given to the presiding officer of the house before its introduction. If selected then
  - **Lok Sabha** allots **last two-and-a-half hours every Friday** for discussion.
  - **Rajya Sabha** allots **two and a half hours** on **every alternate Friday.**
  - The **first such bill** passed was the Muslim Wakfs bill,1952 (introduced by Syed Mohammad Ahmed Kazmi.)

Significance of PMB

- **Policy Innovation:** MPs can propose novel ideas. **E.g., Right to Disconnect Bill** 2019-employees can disengage from work-related communication beyond working hours.
- **Reform Potential E.g., The Rights of Transgender Persons Bill, 2014.**
- **Expression beyond Party Line:** Frees the MP from whip **(10th schedule).**
- **Checks and Balances:** Holding govt accountable.

Why are PMBs in Decline?

- **Disruptions:** eg in 17th Lok Sabha and Rajya Sabha only 2 out of 729 and 14 out of 705 PMBs were discussed.
- **Procedural Issues:** limited time allocated for PMBs and **Speaker/Chairman's discretionary power** to admit or reject bills.
- **Resource Constraints** with Private members
- **Low Success Perception: E.g., only 14 PMBs have become law** till date and the **last such bill was passed in 1970.**
- **Lack of Political Will.**

Way Forward

- **Streamlining Procedures:** Allocate **uninterrupted time** for PMB, **digital tracking** of such bills
  - Amendments to the **Rules of Procedure** and **Conduct of Business** to protect the allotted time
- **Research Support:** Dedicated research unit **(like the UK's Public Bill Committee)** to assist MPs
- **Institutionalized Mechanism:** Introducing a **dedicated review committee** for screening Bills for **recommending a priority list** and encouraging cross-**party support.**
  - **UK's 10-Minute Rule Model** –MPs can introduce short bills to make their case

1.4. SEPARATION OF POWERS

Why in the News?

- The Vice President of India stressed the need for a clear separation of powers, warning that any overlap among the Legislature, Executive, or Judiciary risks institutional overreach.

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Separation of Powers

- It means demarcation of authorities and duties into three branches of government – Executive, Legislature and Judiciary.

Principles of Separation of Powers

Exclusivity Principle: Dividing the government into three structural organs.

Functional Principle: Delineating the boundaries of the organs, and that one organ shall not perform the functions of the other.

Check and Balance Principle: Check should be made on each other by these organs to look after the functions and duties performed are within the constitutional bounds.

Mutuality Principle: Creating concord, not discord, cooperation not confrontation, engagement not estrangement.

- **Origin: Aristotle** for the first time **classified the functions of the government** into three categories viz., deliberative, magisterial and judicial.
- However, **French Jurist Montesquieu** is considered the modern exponent of the theory of the Separation of Power.
- **Modern Theory:** In his book **The Spirit of the Laws (1748), Montesquieu** enunciated and explained his theory of the Separation of Powers.

Separation of Powers in India

- **Delicate Balance:** The Indian Constitution is based on a delicate principle of limited separation of powers with sufficiently differentiated functions of different organs and checks and balances.
- **Functional Overlap:**
  - The President (executive head), exercises legislative powers as in promulgating ordinances.
  - Legislature exercises judicial functions in the removal of the President and Judges, breach of its privilege, etc.
  - The judiciary exercises legislative and executive power in issuing guidelines to executives and making certain legislative amendments.
- **Part of Basic Structure** as held by the SC.
- **Conflicts among Organs:**
  - **Judicial Interventions:** Ruling that the President must decide on State Bills, reserved by the Governor for Presidential assent, within three months.
  - **Legislative encroachment:** National Judicial Appointments Commission (NJAC) Act, which included the Union Law Minister and two eminent persons in committee recommending judges.
  - **Executive overreach:** Executive majority in tribunals, frequent promulgation of ordinances

Conclusion

Organs of government cannot function in watertight compartments, so, a broad separation of power with some functional overlap and adequate checks and balances furthers the goal of democracy.

1.5. STATES' DEMAND FOR AUTONOMY

Why in the News?

- The Tamil Nadu government has formed a **high-level committee** headed by former Supreme Court judge Justice **Kurian Joseph** to suggest ways to strengthen State autonomy and federalism.

Mandate of the Committee

- Review constitutional, legal, and policy aspects of Centre-State relations, Suggest ways to restore powers shifted from the State List to the Concurrent List etc.

Federal Scheme of the Indian Constitution

- Union of states with **no right to secede** for the states from the Union.
- Single constitution, single citizenship, common all-India services, common election commission and a single unified judiciary (Unitary Features).

- **Division of Legislative Powers under** article 246 enumerated in the Seventh Schedule.
- **Indian federalism has often been characterised as quasi-federal:** stronger Centre having more power than States.

Why India Adopted Centralised Federalism?

- **Safeguard Unity and Integrity of India** as legacy of partition created a general fear of fissiparous tendencies.
- **Ensuring equitable distribution of Wealth and Development between** rich and poor states.
- **Promoting core Constitutional values** of justice, parliamentary democracy, liberty, etc., that can be extended through strong centre.
- **Promoting uniformity of Laws**

Key Issues Highlighting the Erosion of States' Autonomy

- **Central interference in subjects under the State List:** UGC draft regulations on the appointment and promotion of university teachers and Vice-Chancellors.
  - Tamil Nadu opposed NEET for entry to medical colleges.
- **Centralization of Fiscal Powers:** Limited taxation powers under GST, Delays in tax devolution and cuts in grants-in-aid.
- **Uniform Policies Ignoring State Diversity:** Tamil Nadu's opposition to the three-language policy demands.
- **Weak Institutional Checks:** Planning Commission was created by executive order, lacked constitutional accountability, Governor's delays in assenting to State bills.
- **Increasing instances of Centralisation:** For example the improper use of assenting powers of the Governor in Tamil Nadu under Article 200, West Bengal opposed Central Bureau of Investigation (CBI) investigations without state consent.

Key Initiatives to Improve Centre-State Relations

- **Inter-State Council (Article 263)**: To promote coordination between Centre and States.
- **Replacement of Planning Commission:** NITI Aayog promotes cooperative federalism with more state participation.
- **Tax Devolution Increased:** 14th Finance Commission raised states' share of central taxes from **32% to 42%**.
- **GST Council:** A joint forum **(Article 279A)** with members from both Centre and States to decide GST policies.
- **Fewer Centrally Sponsored Schemes (CSS):** Reduced from 130 to 75, aiming for 50.
- **Decentralisation: 73rd & 74th Amendments** gave powers to Panchayats and Municipalities.

Ways for Effectively Addressing the Demand for State Autonomy

- Implementing **Sarkaria Commission's** (1983) Key Recommendations
  - **Shift all residuary powers** (except taxation) to the Concurrent List, **Union must consult States before legislating** on Concurrent List subjects.
- **Promoting Equitable Development:** As recommended by the **Punchhi Commission** (2007), Increase financial transfers to underdeveloped States, focus on boosting physical and human infrastructure.
- **Use Inter-State Council:** For both collective and individual State consultations **(Venkatachaliah Commission)**.
- **Promote coordination and policy consensus:** Through, Zonal Councils, GST Council, NITI Aayog, and Other cooperative platforms

Conclusion

As Annadurai said in 1967, "Through mutual goodwill and understanding we should forge a fraternal and beneficial nexus."

1.6. JUDICIAL ACCOUNTABILITY

Why in the News?

The discovery of wads of cash at the residence of Delhi High Court judge has raised concerns regarding accountability in India's higher judiciary.

Existing Key Mechanism for Ensuring Judicial Accountability

- **Impeachment:** Governed by **Articles 124, 217, 218** of the constitution and the **Judges Inquiry Act, 1968.**

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- **In-House Mechanism of 1999:** Based on two important charters governing judicial ethics— **the Restatement of Values of Judicial Life 1997 and the Bangalore Principles of Judicial Conduct 2002.**
  - The CJI **can receive complaints** against the conduct of the Judges of the Supreme Court and the Chief Justice of the High Courts. High Court Chief Justices can handle complaints within their courts.
  - A **three-member committee** examines the complaint and may recommend removal or criminal action.
    - ❖ **For HC judge,** committee consists of **two Chief Justices of HCs other than the HC to which judge belongs and one HC judge.**
    - ❖ For a **HC Chief Justice,** committee consists **of a SC judge and two Chief Justices of other HCs.**
    - ❖ For **a SC judge,** committee consists of **three SC judges.**
- **Bangalore Principles of Judicial Conduct:** Independence, Integrity, Equality, Impartiality, Propriety, Competence and Diligence.

Concerns Surrounding Judicial Accountability in India

- **Conflict with Judicial Independence**, eg: striking down of NJAC, collegium's opaqueness etc.
- **Complex Impeachment Process**
- **No Mandatory Asset Disclosure Norm**
- **Limited checks and balances:** Judiciary self-governs most of its aspects like **appointment of judges, etc.**
- **Other Provisions Hindering Accountability: Immunity from Criminal Action, Restriction on RTI.**

Way Forward to Ensure Judicial Accountability

- **Judicial Standards and Accountability Bill:** Introduced in 15th Lok Sabha but **lapsed due to dissolution of Lok Sabha.**
- **National Judicial Commission (NJC):** Proposed by Law Commission of India reports (80th & 121st) to handle appointments and misconduct investigations. **Judicial member and non-Judicial member in NJC.**
- **Permanent Disciplinary Committee**
- **Judicial Oversight:** A continuous performance evaluation mechanism may be devised for judges.

1.7. 5 YEARS OF SVAMITVA SCHEME

Why in the news?

The SVAMITVA (Survey of Villages and Mapping with Improvised Technology in Village Areas) Scheme has completed 5 years of its launch.

About SVAMITVA

- **Launch:** 2021.
- **Implemented by:** Ministry of Panchayati Raj, State Revenue Department, State Panchayati Raj Department and Survey of India.
- **Key Technology Partner:** Survey of India, and National Informatics Centre Services Inc. (NICSI)
- **Major Components**
  - **Establishment of Continuously Operating Reference Stations (CORS) network:** For accurate geo-referencing and land demarcation.
  - **Drone Mapping: To create accurate property maps** for issuing ownership rights.
  - **Information, Education, and Communication (IEC) Initiatives:** To educate local populations about the scheme's methods and benefits.
  - **Gram Manchitra Enhancement:** Digital spatial data **from drone surveys powers analytical tools for Gram** Panchayat Development Planning.

Significance of the scheme

- **Legal Empowerment and Dispute Resolution:** Through

SVAMITVA Scheme

- Accurate land records for rural planning and reduce disputes
- Create survey infrastructure and GIS maps for departmental use
- Enable property tax determination for Gram Panchayat or the State exchequer
- Financial stability by allowing citizens to use property as a financial asset
- Better-quality Gram Panchayat Development Plans using GIS maps
- Better-quality Gram Panchayat Development Plans using GIS maps

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issuance of property cards, 1.3 lakh+ property cards issued.

- **Economic Transformation through Financial Inclusion:** Property cards serve **as valuable collateral to get finance.**
- **Governance Revolution and Resource Optimization:** Ekhatpur-Munjvadi village (Maharashtra) has experienced increased Own Source Revenue (OSR) through updated property records.
- **Technological Innovation in Rural Development:** Use of **survey-grade drones coupled with CORS networks.**
- **Holistic Rural Transformation and Planning:** In **Haryana and Uttarakhand (100% completion in both drone surveys and property card preparation),** the scheme creates a **blueprint for planned, sustainable rural development.**

Challenges for the implementation of the scheme

- **Unclear Legal Validity of Property Cards:** May not be recognized as conclusive proof of ownership by financial institutions.
- **Variations in State Land Laws and Record-Keeping Practices:** Andhra Pradesh maintains records of both registered and unregistered liabilities, while most other states only record registered mortgages.
- **Limited Property Tax Collection Authority:**
  - Odisha **has not empowered Gram Panchayats to collect property tax.**
  - In **Uttar Pradesh and Uttarakhand, District Panchayats** (not Gram Panchayats) collect property tax.
- **Inadequate Protection for Marginalized Communities:** There is risk of influential groups securing land titles at the expense of marginalized populations.
- **Data Management:** Lack of clear framework and gap in provisions for making non-personal land data publicly accessible for transparency.

Way Forward

- **Strengthen Legal Framework:** Ensure property cards have **legal recognition by financial institutions by amending state Revenue Acts to include property cards** as stamp duty documents.
- **Standardize Record-Keeping:** Developing uniform procedures to record all liabilities on property cards.
- **Empower all Gram Panchayats:** To collect property tax through legal amendments and implement comprehensive property classification systems.
- **Protect Marginalized Communities:** Train surveyors to **recognize rights of SC/ST groups, women, and sharecroppers,** ensure active community **participation.**
- **Enhance Data Management:** Make non-personal land data publicly accessible to improve transparency, Implement uniform geospatial data standards.

1.8. REGULATING BIG TECH

Why in the News?

- The Ministry of Corporate Affairs (MCA) has invited public feedback on the **Digital Competition Law Committee's Report.**

Background

- The Committee reviewed the **Competition Act, 2002** to address new challenges in the digital economy.
- Rising **global concerns** over Big Tech's anti-competitive practices have called for stronger regulatory measures for Big Techs like Google, Meta, Amazon, Microsoft, and X. e.g. **Meta & WhatsApp vs CCI (India, 2024–25) etc.**

Why Big Tech Needs Regulation?

- **Threat to Sovereignty:** Threat of misusing user data by illegally collecting, transmitting it to servers outside country.
- **Network effect:** Big techs grow fast by using network effects i.e., the more users they have, the stronger they get, making it hard for new players to compete.
- **Revenue loss to exchequer:** India **loses around $10 billion annually** due to tax abuse by multinational companies.
- **Data Privacy and Cyber Security Risks:** Massive data collection opens doors to misuse, surveillance, and data breaches.
- **Ethical Concerns:** Transparency and Accountability, Public Interest vs. Corporate Profit, Digital Divide and Equity, Ethical Policy Making and Regulation, Environmental Responsibility.

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Challenges in Regulating Big Tech

- **Regulatory Vacuum:** The **Competition Act, 2002** works on an **EX-POST** model (acting **AFTER** anti-competitive behavior).
- **Enforcement Lag:** E.g., **Digital Personal Data Protection Act (DPDPA), 2025** is yet to be enforced.
- **Non-Uniform Regulatory Mechanism:** The firms operate globally, but regulatory responses vary across jurisdictions.
- **Techno-nationalism and Protectionism:** These leads to jurisdictions favoring domestic firms.
- **Ambiguity of Law:** X challenged a government order to remove content by invoking **Section 79(3)(b)** instead of **Section 69A** of the IT Act, **Sahyog portal, Supreme Court's Shreya Singhal judgment.**
  - **Sections 69 A of the IT Act:** Government can block online content if it violates **Article 19(2)**.

Key Legislations for Regulating Big Tech

India

- **Digital Personal Data Protection Act, 2023 (DPDPA):** Provide for the processing of digital personal data.
- **Information Technology (Intermediary Guidelines and Digital Media Ethics Code) or IT Rules, 2021:** Social media platforms with large user bases in India are classified as **Significant Social Media Intermediaries (SSMIs).**
- **Competition Act, 2002**
- **Consumer Protection Act, 2019:** Penalize companies for misleading advertisements and unfair trade practices.

Global

- **European Union:** Key **ex-ante** measures include the **General Data Protection Regulation (GDPR) 2016, and the Digital Market Act (DMA).**
- **The UN Set:** Multilaterally Agreed Equitable Principles and Rules for the Control of Restrictive Business Practices.

Way Ahead to effectively regulate Big Tech: Key recommendation of the **Committee on Digital Competition Law:**

- **Need for ex-ante regulation of digital competition**
- **Systemically Significant Digital Enterprises (SSDEs):** Designate entities offering core services.
- **Thresholds for classification of SSDEs**
- **Associate Digital Enterprises (ADEs):** Enterprises should identify all other enterprises within its group.
- **Obligations of SSDEs:** SSDEs must not; Favour their own or related-party products or Block third-party apps etc.
- **Enforcement of provision: CCI** should improve its technical capacity. Additionally, **separate NCLAT bench** needed.
- **Penalties:** For contravention impose fine up to **10% of global turnover** of SSDEs.

1.9. NEWS IN SHORTS

1.9.1. Inclusive Digital Access Part Of Article 21: Supreme Court

Amar Jain V Union of India and Ors. judgment held that digital access is a part of the fundamental right to life and liberty.

Key Highlights of Judgment

- **Court issued direction to revise the digital KYC norms:** ensuring facially disfigured or visually impaired persons can access services, under the **Rights of Persons with Disabilities Act, 2016**

Other supreme court judgements related to Internet Access

Sabu Mathew george vs union of india (2017): ordered blocking of prenatal sex determination of ads without restricting access or free speech

Anuradha bhasin vs union of india(2020): recognizing internet access as a funramental right under art 19

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- Invoking the 'principle of substantive equality': Digital transformation must be both inclusive and equitable.
- State's obligation: Under Articles 21, 14, 15, and 38 [State to promote Social Justice] to ensure digital infrastructure to all vulnerable populations.

Significance of inclusive digital access: Access essential governmental schemes, reducing rural-urban divide, access to online learning platforms, and financial technologies, inclusion of marginalised in development process, etc.

1.9.2. Rights of Pedestrians

The **Supreme Court (SC)** passed an **order affirming the constitutional rights of pedestrians.**

About the SC Order

- SC stated that the **Right to have unobstructed and disabled-friendly footpaths** is guaranteed under Article 21.
- The SC issued directions:
  - All public roads must have **footpaths** and must be **accessible** and usable by **persons with disabilities.**
  - Removal of encroachments from footpaths is **mandatory.**
  - States/UTs must evolve **policies** to ensure the availability and maintenance of footpaths and footways.

1.9.3. Deputy Speaker of the Lok Sabha

Long term vacancy since 2019 to the office of Deputy Speaker (DS) points to Constitutional anomaly.

About Deputy Speaker of the Lok Sabha

- The office emerged in **1921** under **Government of India Act, 1919.**
  - **Sachidananda Sinha** first held this office in the **Central Legislative Assembly.**
  - **M. A. Ayyangar,** became the **first elected DS** post-independence.

Issues with the Vacancy

- Centralisation of procedural power within the Speaker
- **Disregard for** Constitutional Mandate.
- **May sideline** the politics of Inclusivity and Consensus.

- Election (Article 93): Lok Sabha, **as soon as may be,** choose two members of the House to be **Speaker** and **DS.**
  - Long-standing convention- the post of DS has been offered to the **Opposition.**

- Speaker may resign by submitting a resignation to the DS and vice-versa (Article 94).
- Duties: As per Article 95, DS performs the duties of Speaker in case of vacancy, absence, etc.

Importance of the office of DS

- Constitutional Imperative: Places DS on an equal footing with the Speaker.
- Essential for continuity, stability, and institutional balance: DS acts as a second in command in case of emergency.
  - M.A. Ayyangar served as the acting Speaker after the sudden death of Speaker G.V. Mavalankar in 1956.
  - Legislative Responsibilities: DS chairs key sessions, leads committees, and manages sensitive debates requiring neutrality and authority.
- Conclusion

A **specific deadline** (E.g., 60 days of the first sitting of the new Lok Sabha) or a **statutory mechanism** could be introduced to ensure appointment within a **timeframe.**

1.9.4. Inaction By Speakers on Defection Petitions

Supreme Court (SC) **condemned prolonged inaction by speakers on defection petitions.**

- Question of Law: Can constitutional courts direct Speakers, acting as quasi-judicial tribunals, to decide anti-defection disqualification petitions within a specific timeframe?

Supreme Courts Observations

- The SC stated that it is not "powerless" if Speaker remains "indecisive" on disqualification petitions.
- Court's Right to Set a Reasonable Timeframe
  - E.g., as done in Keisham Meghachandra Singh v. Speaker, Manipur Legislative Assembly (2020).
- If the Speaker fails to act: The SC can invoke its extraordinary powers under Article 142.

Other SC Observations:

- Kihoto Hollohan v. Zachillhu (1992): Courts have the authority to intervene if the Speaker delays action
- Ravi S. Naik v. Union of India (1994): The Speaker should act as a neutral adjudicator rather than a political figure.
- Karnataka MLAs' disqualification case (2020): Consider transferring disqualification powers from the Speaker to an independent tribunal

Anti-Defection Law: Introduced through 52nd Amendment Act, 1985 adding Tenth Schdule.

1.9.5. Dedicated Cell For Mercy Petitions

Maharashtra has established a dedicated cell under the Additional Secretary (Home) to expedite processing of

mercy petitions for death row convicts following **Supreme Court directive (2024).**

Mercy Petition

- Mercy petition to the President or Governor is **last constitutional resort.**
- Mercy pleas and pardons are **discretionary** acts of grace, not legal rights.
- Mercy is exercised through **clemency power,** which is also known as the pardoning power.

Pardoning Power

- **President's Pardoning Power (Article 72)**
  - **Pardon:** Complete absolution from punishment.
  - **Respite:** Lesser punishment due to special circumstances like disability or pregnancy.
  - **Reprieve:** Temporary stay of execution, allowing time for appeal.
  - **Remit:** Reduces duration of sentence while keeping its nature the same.
  - **Commute:** Replace the punishment with a lesser form, e.g., death to life imprisonment.
- **President's power extends to** court-martial cases, offenses under Union law, death sentence cases etc.
- **Governor's Pardoning Power** (Article 161): Governor too has pardoning powers, but these do not extend to death sentences and court Martials.
- **President & Governor do not act independently** but on government advice (**Maru Ram case, 1980**).

1.9.6. Power of Courts to Modify Arbitral Awards

- SC in the **Gayatri Balasamy v. ISG Novasoft Technologies Limited** held that the power to **modify arbitral awards** is **limited** and can be exercised under **Arbitration and Conciliation Act, 1996** under the **following circumstances:**
- When the award is severable by **separating the invalid portion from the valid portion.**
  - Doctrine of **omne majus continet in se minus doctrine** (the greater power includes the lesser), i.e. the power to set aside an arbitral award necessarily includes the power to **set it aside in part.**
- Correct any **clerical, computation or typographical errors.**
- **Modify post-award interest** in some circumstances.
- Under **Article 142 (complete justice)** this power should be in consonance with the principles of the 1996 Act.

Arbitration in India

- **Meaning:** An **out-of-court,** consensual dispute-resolution process—part of **Alternative Dispute Resolution (alongside mediation, conciliation).**
- **Significance:** Less adversarial, Flexible, Quicker, etc.
- **Legal Framework:** The **Arbitration and Conciliation Act, 1996** modelled as per the **United Nations Commission**

on International Trade Law (UNCITRAL) Model Law on International Commercial Arbitration, 1985.
- **Section 34(1)** of the Act stipulates **'recourse'** to a court only by an application **for setting aside the award.**
- **Section 37** states **instances** where an appeal may lie against orders.

1.9.7. Rohingyas and Provisions Related to Refugees and Deportation

The Supreme Court (SC), while hearing petitions related to **Rohingya refugees,** highlighted that **they cannot claim reliefs based on the UNHCR cards.**

- **UNHCR (UN High Commissioner for Refugees)** is a global organization to protect **refugees, forcibly displaced communities,** and **stateless people.**

Statutory Provisions in India related to Refugees and Deportation

- India **has no dedicated refugee legislation** (so decision is based on case to case basis based on policy of bilateralism) and is **not a signatory to the 1951 Refugee Convention** or its **1967 Protocol.**
- Refugees are treated as **"foreigners" or "aliens"**

Other provisions related to refugee

India follows the **non refoulment** principle (Bangkok principles,1966)

Mohammad salimullah vs union of india (2021) right not to be deported is ancillary or concomitant to the right to **reside or settle under art 19**

- **Foreigners Act, 1946** vest the **Central Government** powers to **detain and deport illegal** foreign nationals
- **Passport (Entry into India) Act, 1920:** Centre may direct the **removal** of any foreigner **without passport & visa.**
  - According to **Articles 258(1) and 239(1)** of the Constitution, **States/UTs** are also entrusted with these powers.

1.9.8. Immigration and Foreigners Bill, 2025

Key Highlights of the Bill

- **Objective:** To modernize immigration laws, enhance national security, and improve coordination among immigration authorities.
- **Bills repealed:**
  - Passport Act, 1920
  - Registration of Foreigners Act, 1939
  - Foreigners Act, 1946

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➡ Immigration (Carriers' Liability) Act, 2000

- **Immigration Regulation by a Bureau of Immigration.**
- **Penalties for illegal entry** with imprisonment of up to five years, fine up to five lakh rupees, or both.
- **Police officers** not below the rank of a Head Constable can **arrest without a warrant.**

1.9.9. Standing Committee On Rural Development And Panchayati Raj Report

- The committee in its report points out that there is a nominal increase in the Budget Estimates (BE) allocation for 2025-26 compared to 2024-25.

Parameters	Observation	Recommendation
Budget Allocation	Continuous trend of BE lower than Revised Estimates	Ensure that States are able to submit their demand funds on time.
Implementation of Schemes	Lag in implementation. E.g. Revamped Rashtriya Gram Swaraj Abhiyan	Develop concrete action plan
Trained Manpower	Shortage	Introduce Digital governance initiatives.

Type of Grants	Tied grants (60% of allocation) are restricted whereas untied grants (40%).	Merge the concept of tied and untied.
Panchayat Elections	Delay	Timely conduct of elections
Revenue Generation	Heavily reliant on grants.	Empower panchayats to generate own revenues through property taxes etc.

1.9.10. 50th Anniversary of Sikkim's Statehood

About Sikkim Statehood

- Sikkim was made a **full-fledged State of the Union of India** under the **Constitution (36th Amendment) Act, 1975.**
  - ➡ Earlier, **Constitution (35th Amendment) Act, 1974** granted Sikkim the status of an **"Associate State" of the Union of India** under **Article 2A.**
    - ❖ **Article 2A was repealed** by the **Constitution (36th Amendment) Act, 1975.**
- It became **22nd State of India.**
- **Article 371F** grants certain **special provisions** to Sikkim.

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1.10. TEST YOUR LEARNING

1. **Which one of the following is false regarding the Census?**
   a) Caste data (beyond Scheduled Castes and Scheduled Tribes) was never collected in the history of India
   b) Census is constitutionally mandated unlike surveys
   c) The Registrar General and Census Commissioner (RG&CC) is authorized to design the census proforma.
   d) It is placed under union list of 7th schedule

2. **Consider the following statements regarding the private member bills.**
   1. 2 months' notice is to be given to presiding officer before its introduction
   2. 1st such bill was passed in 1970
   3. Lok Sabha allots last two-and-a-half hours every Friday for discussion.
   4. Rajya Sabha allots two and a half hours on every alternate Friday.

   Which of the above statements are incorrect?
   a) 1 and 2
   b) 2 and 3
   c) 3 and 4
   d) 4 and 1

3. **Consider the following statements regarding India's refugee and deportation policy**
   1. India is a signatory to the 1951 Refugee Convention or its 1967 Protocol
   2. Foreigners Act, 1946 vest the state Government powers to detain and deport illegal foreign nationals

   Which of the above statements are correct?
   a) 1 only
   b) 2 only
   c) Both 1 and 2
   d) Neither 1 nor 2

4. **Which of the following statements is true about Separation of Powers in India?**
   a) There is complete separation without any overlap.
   b) Each organ operates in complete isolation.
   c) India follows a rigid separation of powers.
   d) India follows a broad separation with functional overlap and checks and balances.

5. **Under which Article does the Supreme Court derive its power to pass any order for doing complete justice?**
   a) Article 32
   b) Article 142
   c) Article 136
   d) Article 226

Mains Question

Q1. (150 words)

Private Members' Bills (PMBs) reflect the spirit of participatory democracy, yet their effectiveness is increasingly constrained. Discuss the reasons for the declining space for PMBs in India's parliamentary process. Suggest measures to revitalize their relevance.

Q2. (250 words)

Discuss the doctrine of separation of powers in the Indian context. Highlight the constitutional provisions, judicial pronouncements, and practical challenges in maintaining the balance among the three organs of government.

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INTERNATIONAL RELATIONS

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2.1. INDUS WATERS TREATY

Why in the News?

- India placed **IWT in abeyance,** citing **Pakistan's support for cross-border terrorism.**

More on the News

- **Abeyance** refers to a state of temporary disuse or suspension, but it is **not a legally recognized concept** under international treaty law.
- Neither IWT nor Vienna Convention on the Law of Treaties (VCLT) (1969) allows suspension via abeyance.
- **IWT** lacks provision for **unilateral suspension.**

About the Indus Waters Treaty

- **Signed:** 1960 by **India & Pakistan,** with **World Bank** as signatory.
- **Objective:** Share **Indus river system** waters
- **Division of Water:**
  - **Eastern Rivers** (Ravi, Beas, Sutlej): Full use by **India**
  - **Western Rivers** (Indus, Jhelum, Chenab): Allocated to **Pakistan; India allowed non-consumptive use**
  - **Article III(1):** India must **let flow** western rivers to Pakistan.
  - **Exchange of Data:** Regular sharing on **river flow and usage.**
- **Dispute Resolution (3-Step):**
  - **Permanent Indus Commission (PIC)** – Two commissioners; meets **annually.**
  - **Neutral Expert** – Appointed by **World Bank, binding decision.**
  - **Court of Arbitration (CoA)** – **7-member tribunal,** decision by **majority vote.**

Indus Water Treaty Division of Rivers

| Western Rivers *Pakistan's control* | Eastern Rivers *India's control* |

Indus, Jhelum, Chenab, Pakistan, Sutlej, Beas, Ravi, India
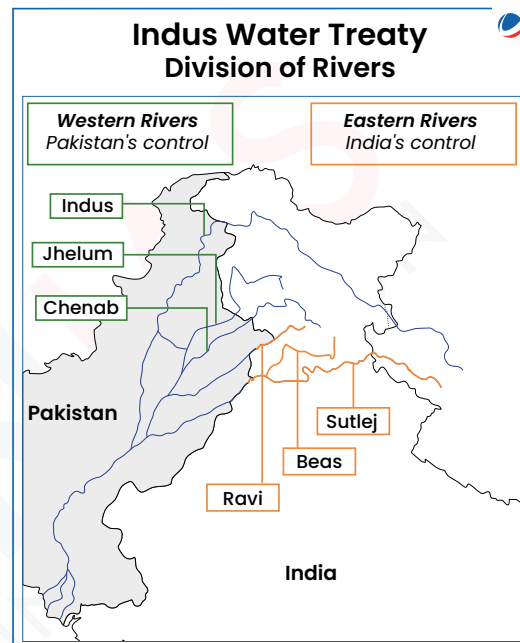
Implications of the suspension of the Indus Waters Treaty	
On India	**On Pakistan**
- **Credibility:** Unilateral action may hurt India's image as a **responsible treaty partner.** - **Weaponising water resources:** Could prompt **China** to adopt similar tactics over **Brahmaputra.**	- **Food Security: 80%** of crops depend on **Indus irrigation** (World Bank). - **Economic Impact:** Key exports (**wheat, rice, cotton**) earned **USD 4.8 billion** (2022)—depend on the Indus. - **Energy & Water Stress: 1/3rd** of power from **hydropower;** country already **water-stressed.**

Other Issues with IWT

- **Dam Objections:** Pakistan opposes **Kishanganga (Jhelum) and Ratle (Chenab)** projects.
- **Bypassing Dispute Steps:** On Kishanganga, Pakistan skipped **Neutral Expert** and went directly to **Permanent Court of Arbitration (PCA),** violating IWT procedure.
- **Biodiversity Threat: Shahpurkandi** and **Ujh (Ravi)** may impact **Indus dolphins.**
- **Terrorism Link:** Post-2016 attack, India asserted **"water and blood can't flow together"**
- **Lack of regular data sharing:** Flow data crucial to understanding river basin dynamics.

International principles on international water sharing
- **Helsinki Rules, 1966:** By **International Law Association;** governs use of **international drainage basins.** - **Helsinki Convention, 1992:** Legal framework to **prevent and control cross-border water pollution.** - **UN Watercourses Convention, 1997:** Codifies law on **non-navigational uses** of **transboundary watercourses.**   - **India, China,** and **Pakistan** are **not signatories.**

Conclusion

- India's use of **'abeyance'** is a **strategic message,** not treaty rejection—treaties must reflect **real-world politics** and require credibility from all parties to protect India's interests.

2.1.1 Shimla Agreement

Why in the News?

➤ **Pakistan suspended participation** in all bilateral agreements with India, including the **Simla Agreement.**

Shimla Agreement

➤ **Background:** Signed in **1972** after **India–Pakistan 1971 War,** which led to the creation of **Bangladesh.**
➤ **Key Provisions**
  ➡ **Normalization of Relations:** Based on **UN Charter;** resume ties, repatriate prisoners of war **(POWs)** and **civilians.**
  ➡ **Bilateral Resolution:** Settle issues through **bilateral talks or mutual agreement.**
  ➡ **Line of Control (LoC):** Formalized **1971 ceasefire line** into **LoC** in **J&K.**
  ➡ **Respect for Sovereignty:** Mutual **non-interference** and **territorial respect.**
  ➡ **Future Meetings:** Provision for **summit-level peace talks.**

Importance of the Shimla Agreement

➤ **Bilateralism Framework:** Counters **Pakistan's attempts** to internationalize **Kashmir.**
➤ **Stabilising the LoC:** Gave **international legitimacy** to the **Line of Control.**
➤ **Cooperation Prospects:** Enabled initiatives like **Kartarpur Corridor, 2012 Visa Agreement.**
➤ **Trust Building:** Promotes dialogue through **non-interference** in internal affairs.

Implications of the suspension of the Shimla Agreement

➤ **Symbolic/Diplomatic Impact:** Mostly **symbolic,** as the pact lost relevance post repeated **violations** (e.g., **Pulwama 2019**).
➤ **LoC Implications: Non-recognition** may provoke attempts to alter **status quo** (e.g., **Kargil**).
➤ **Regional Stability:** Undermines peace between **nuclear-armed neighbours.**
➤ **International Views:** May attract **criticism** and boost **India's claim of Pakistan's unreliability.**
➤ **India's Strategic Advantage:** India can pursue hard action against cross-border terrorism, revisit claims over Pakistan-Occupied Kashmir (PoK), etc.

Other important agreements between India and Pakistan

➤ **Nehru-Liaquat Pact (1950):** Protection of **minorities** in both countries.
➤ **Bilateral Protocol on Religious Pilgrimages (1974):** Facilitates **cross-border religious visits.**
➤ **Nuclear Non-Aggression Agreement (1988): Annual exchange** of nuclear facility lists (Jan 1).
➤ **Missile Test Pre-Notification (2005):** Advance notice for **ballistic missile tests.**
➤ **Kartarpur Corridor Agreement (2019): Visa-free access** to **Gurdwara Darbar Sahib** in Pakistan.
➤ **Others:** Agreement on prevention of air space violations and for permitting over flights and landings by military aircraft (1991), etc.

Conclusion

➤ The **Shimla Agreement** offers a framework for **bilateralism** and **peaceful coexistence.** Its spirit can help **reset relations,** address **historical grievances,** and build **mutual trust.**

2.2. 75 YEARS OF INDIA-CHINA RELATIONS

Why in the News?

China's President proposed **"Dragon–Elephant tango" to mark 75 years of ties.**

More on the News

➤ **Dragon-Elephant Tango"** is used to describe a vision of **peaceful and cooperative relations** between **China** and **India.**
➤ **Dragon** represents **China** and **Elephant** represents **India.**

Significance of Stable Relations

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- **Regional Peace:** Reduces **border tensions,** enables **development focus.**
- **Indo-Pacific Prosperity:** Lowers **strategic friction,** supports **regional cooperation.**
- **Trade & Investment:** E.g., China supplies **Active Pharmaceutical Ingredients (APIs),** invests in **Indian startups**
  - China is largest trade partner ($118.4 bn).
- **Access to Resources:** China dominates **rare-earths,** key for **tech & solar goals.**
- **Global Influence:** Collaboration in **BRICS, SCO,** and calls for reforms in **WTO, IMF,** and **UN.**
- **Countering Global Challenges:** Joint action on **climate, health,** and **energy issues.**

Key concerns in India-China Relations

- **Unsettled Borders:** Disputes along 3,488 km LAC led to clashes. E.g., Doklam (2017), Galwan (2020)
- **Trade Imbalance:** Trade deficit Rose to $85 bn **(2023-24)**
  - Dependence on China for Semiconductors, Pharma APIs etc.
- **China–Pakistan Nexus:** China-Pakistan Economic Corridor (CPEC) through PoK, violates sovereignty
- **Assertiveness:** String of Pearls- presence in Maldives, Sri Lanka, South China Sea
- **Water Power:** China controls rivers to northeast; built dams like **Zangmu, Jiacha,** etc.

Way Forward

- **Diplomatic Engagements: Use BRICS, SCO, G20, AIIB** for dialogue.
- **Mutual Respect:** Base ties on **respect, sensitivity, and interest.**
- **Strategic Balancing:** Defend **sovereignty** while engaging diplomatically.
- **Water resource management:** Enhancing cooperation on sharing hydrological data for Transboundary Rivers.
- **Confidence Building Measures (CBMs):** Expand to **economic and cultural ties** in border areas.

India-China Border

INDIA-CHINA BORDER
- 🔴 Western Sector
- 🟡 Middle Sector
- 🔵 Eastern Sector

The String of Pearls

- **China's Strategy:** Building **commercial and military assets** in **IOR** to secure **energy routes** and **expand influence.**
- **Key Locations: Gwadar (Pakistan), Hambantota (Sri Lanka), Chittagong (Bangladesh), Sittwe & Coco Islands (Myanmar),** and a **military base in Djibouti.**

India's Response – "Necklace of Diamonds" Strategy

- A **multi-pronged counter-strategy** that includes:
  - **Developing Naval Bases and Access:** E.g., **Chabahar (Iran), Oman, Changi Naval Base (Singapore).**
  - **Regional Partnerships:** Strengthen ties via **Act East, ASEAN, Quad,** etc.
  - **Maritime Vision: SAGAR & MAHASAGAR** for regional **security and growth**

2.3. CHINA PAKISTAN ECONOMIC CORRIDOR (CPEC)

Why in the News?

China, Pakistan, and Afghanistan agreed to extend **CPEC** to **Afghanistan.**

What is CPEC?

- **Flagship project** of China's **Belt and Road Initiative (BRI),** launched in **2015.**
- Connects the **Silk Road Economic Belt** with the **Maritime Silk Road.**
- **Focus: Energy** and **Infrastructure** projects.
- Includes **3000 km** of **roads, railways, pipelines** linking **Gwadar Port** (Pakistan) to **Kashgar** (Xinjiang, China).

> ## Belt and Road Initiative (BRI)
> - Proposed by **China** in **2013** to enhance **connectivity** and **cooperation** across continents.
> - Also known as **One Belt One Road (OBOR):**
>   - ➡ **Silk Road Economic Belt (the "Belt"):** Links **China** to **Central & South Asia**, then to **Europe**.
>   - ➡ **New Maritime Silk Road (the "Road"):** Connects **China** to **Southeast Asia, Gulf, East/North Africa,** and **Europe**.

India's Concerns over CPEC Extension to Afghanistan

- **Geo-strategic:** CPEC in Afghanistan undermines **Chabahar Port** and **International North-South Transport Corridor (INSTC),** limiting India's access to **Central Asia.**
  - ➡ **Strategic Encirclement:** China deepens presence via **String of Pearls** (e.g., **Hambantota (Sri Lanka), Gwadar (Pakistan), and Chittagong (Bangladesh));** Afghanistan extension adds pressure on India's **western front.**
- **China–Pakistan–Afghanistan Axis:** Strengthens **Pakistan's hold** over Afghanistan and sidelines India's **soft power and development influence (Zaranj-Delaram highway, etc.).**
- **Security Risks:** Taliban regime, backed by **Chinese funds** and **Pakistani intelligence,** may support terror groups like **Jaish-e-Mohammed** and **Lashkar-e-Taiba.**
- **Economic Concerns: Afghanistan's lithium and rare earths** may fall under Chinese control via CPEC, disadvantaging India.

China - Pakistan Economic corridor

Steps taken by India to counter CPEC

- **Chabahar Port:** Offers direct access to Afghanistan and Central Asia, bypassing Gwadar and CPEC.
- **INSTC:** India–Iran–Russia-led **multi-modal route** connecting **Indian Ocean to Europe via Caspian Sea.**
- **India-Middle East-Europe Economic Corridor (IMEC) (2023):** Connects **India, Middle East,** and **Europe** via **UAE, Saudi Arabia, Jordan, Israel, and EU.**
- **Quadrilateral Security Dialogue (QUAD):** Forum of **India, US, Japan, Australia** to ensure free **Indo-Pacific** and counter **China**.

Conclusion

India must advance **Chabahar**, engage with **Afghans**, and push for **transparent, inclusive,** and **sustainable** regional infrastructure to safeguard national interests.

2.4. INDIA–SRI LANKA RELATIONS

Why in the News?

PM of India received **Sri Lanka's highest civilian award, Mithra Vibhushana,** during a **state visit.**

Key Outcomes of the Visit

- **Defence Cooperation:** MoU signed; Sri Lanka assured **no anti-India** use of territory
- **Energy Collaboration:** India–Sri Lanka–UAE to co-develop **Trincomalee energy hub**
- **Grant Assistance:** Aid for **Thirukoneswaram temple** in Trincomalee, **Sita Eliya temple** in Nuwara Eliya, and **Sacred City Complex project** in Anuradhapura.

Significance of India- Sri Lanka Relations

For Both Nations

- **Global Support:** India backs **Sri Lanka's BRICS bid;** Sri Lanka supports **India's UNSC seat (2028–29).**
- **Maritime Security:** Joint focus in **Indian Ocean Region (IOR)** on traditional & non-traditional threats.
- **Energy Cooperation:** Talks on **inter-grid link, LNG, pipeline, Sampur project.**
- **Multilateral Engagement:** Active in **Commonwealth, IORA, and BIMSTEC.**
- **Military Collaboration:** Joint exercises – **SLINEX (Navy), MITRA SHAKTI (Army);** joins **MILAN**

For Sri –Lanka	For India
Financial Aid: India extended **$4 bn aid (2022–23);** supported **Kankesanthurai Port**	**Indian Ocean Security:** Sri Lanka is vital for **regional maritime stability**
IMF Bailout: India's **early assurance** enabled **$2.9 bn IMF package (2023)**	**Policy Alignment:** Central to **Neighbourhood First** and **MAHASAGAR** vision
Economic Importance: India is largest trade partner, top FDI contributor, & largest source of tourists. **Other:** Humanitarian Assistance	**Indian Origin Tamils (IOTs):** ~1.6 million IOTs in **plantations** and **Colombo's business sector**

Irritants in India–Sri Lanka Relations

- **Chinese Influence:** Strategic concerns over **Chinese projects** like **Hambantota.**
- **Fishermen Disputes:** Sri Lanka opposes **bottom trawling.** Also, there is territorial dispute over **Kachchatheevu Island.**
- **Tamil Ethnic Issue:** Delay in **13th Amendment** (linked to **1987 Indo-Lanka Accord**) sparks political friction; opposed by **Sinhala nationalists**, supported by **Tamil groups.**

Way Forward

- **Five "S" Approach:** Samman (Respect), Samvad (Dialogue), Sahyog (Cooperation), and Shanti (Peace); to create conditions for universal Samriddhi (Prosperity).
- **Constructive Engagement:** Bilateral mechanism for **fishermen;** Implement **13th Amendment** through dialogue.
- **Soft Power & Culture:** Jointly develop **Buddhist Circuit, Ramayana Trail** using tech & diaspora.
- **Multilateral Cooperation:** Use **BIMSTEC & IORA** for **security, climate,** and **integration.**

2.5. INDIA-MAURITIUS BILATERAL RELATIONS

Why in News?

India and Mauritius elevated their ties to an 'enhanced strategic partnership' during Indian Prime Minister's visit to the country.

More about news

- India announced **new vision for the Global South,** naming it **"MAHASAGAR** (Mutual and Holistic Advancement for Security and Growth Across Regions)".
- A navigational chart of **St. Brandon Island** also handed over.

Significance of Mauritius for India

India established diplomatic relations with Mauritius in 1948, before it achieved independence.

Mauritius
(capital is Port Louis)

- Physiographically it is part of the **Mascarene Islands.**
- **Volcanic island** and almost entirely surrounded by coral reefs.
- **Chagos Archipelago** is disputed territory with UK
  - Recently, US has approved the UK's plan to hand over the Chagos Islands to Mauritius.

Dimensions	Description
Strategic Location	It helps India **tackle piracy, terrorism, trafficking, and illegal fishing.**
Geopolitical Importance	Known as the **"Star and Key of the Indian Ocean,"** **China has established its base in Djibouti,** which has made Mauritius a strategic hotspot.
Security Partner	It is part of the **Colombo Security Conclave.**
Cooperation	India inaugurated a **new airstrip and jetty on the Agalega island** of Mauritius.
Gateway to Africa	Part of the **African Continental Free Trade Area (AfCFTA).** **India-Mauritius Double Taxation Avoidance Agreement (DTAA).**
Cultural Ties	Around **70% of Mauritius's population is of Indian origin.** The **legacy of the Girmitiyas** (Indentured Indian labourers) forms a deep historical bond.

Challenges in India-Mauritius Relations

- **China's Influence:** Major infrastructure funding (airport, dam, cruise terminal).
- **Ethnic Balance:** Need to engage diverse communities (Indian-origin, African, European).
- **Drug Trafficking:** Mauritius as a narcotics hub risks Indian maritime security.
- **Climate Threats:** Rising seas, cyclones, coastal erosion.

What is MAHASAGAR?

- **Evolution:** Expands SAGAR (2015) with Global South focus.
- **Focus Areas:** Trade, security, tech-sharing, financial aid.
- **New Initiatives:**
  - **IOS Sagar:** IOR maritime cooperation.
  - **AIKEYME:** Africa-India naval drills ("unity" in Sanskrit).
- **Note:**
  - MAHASAGAR was launched in 2023 by Indian Navy; aligns with SAGAR.
    - ◊ Bi-annual forum with 10 IOR nations (Mauritius, Seychelles, etc.).

2.6. INDIA-SAUDI ARABIA RELATIONS

Why in the News?

Indian Prime Minister visited **Saudi Arabia.**

Major Outcomes

- **Strategic Partnership Council (SPC):** 2nd **SPC** meeting created **Defence Cooperation** and **Tourism & Cultural Cooperation** committees.
  - India is the 4th **country** after **UK, France, and China** to have such a council with Saudi Arabia.
- **High Level Task Force on Investment (HLTF):** Fast-track **$100 bn Saudi investment** in **energy, tech,** infrastructure, etc.
  - Agreed to establish **two refineries** in India.

Significance of Bilateral Relations

For Both Countries

- **India-Saudi ties reflect India's Middle East policy shift:** From **remittances/religious diplomacy** to **investment, strategic dialogue,** and **defence cooperation.**
  - E.g., **Hydrocarbon partnership** upgraded to **comprehensive energy partnership**
- **Strengthening Bilateral Relations:** Ties established in **1947**; elevated to **Strategic Partnership** via **Riyadh Declaration (2010).**
  - **Bilateral Defence Engagements: Al Mohed Al Hindi** (Naval), **SADA TANSEEQ** (Army)
- **Partners in Regional Maritime Security and Trade Corridors:** E.g., Indian Ocean Naval Symposium (**IONS**), and Combined Maritime Forces (**CMF**)

For India

- **Energy Security:** 3rd largest source of **crude oil, petroleum, LPG (2023–24).**
- **Trade:** ~$43 bn trade (2023–24); **5th largest trading partner.**
- **Investment:** Invested around USD 10 billion. In 2019, it announced plans to invest USD 100 billion more.
- **People & Culture: 6.7%** of total **remittances (2024); Hajj quota** increased (2025).
- **Security Cooperation:** Helped in arrest of **Zabiuddin Ansari** (2008 Mumbai attack), deportation of **Abdul Salam** (fake currency racket), and **Operation Kaveri evacuation** (evacuation of Indians from conflict-hit Sudan).
- **Support for Moderate Islam: Crown Prince's reforms** help curb **radical ideologies** affecting **South Asia**, home to **400**

Saudi Arabia

million Indian Muslims.

Challenges in India–Saudi Arabia Relations

| **Labour Policies:** Saudization limits Indian job access | **Trade Deficit:** India's deficit is about $31.3 bn (FY 2022–23) | **Project Delays:** $50 bn West Coast refinery project stalled | **FTA Talks:** India–GCC FTA stalled since 2004 | **Geopolitical Divergences:** Saudi–Pakistan ties concern India | **Strategic Misalignments:** India's Iran ties vs Saudi's China tilt |

Conclusion

India–Saudi ties are deepening in **defence, energy, economy, and culture,** while sustaining their **strategic partnership** amid complex challenges.

2.7. INDIA-UAE RELATIONS

Why in the News?

Crown Prince of Dubai made his **first official visit** to India.

- **Key Announcements during the Visit**
  - **Bharat Mart & Virtual Trade Corridor (VTC):** Boosts **bilateral trade** and strengthens **India-Middle East-Europe Economic Corridor (IMEEC).**
  - **The Bharat Mart** is India's warehousing facility.
  - **Ship Repair Clusters (Kochi & Vadinar):** Expected to enhance India's maritime sector.

Significance of Bilateral Relations

For Both Countries

- **Growing Political Relationship:** Upgraded to **Comprehensive Strategic Partnership (2017)** after PM's 2015 visit.
- **Strategic Global Partnership:** Active in **BRICS, I2U2 (India-Israel-UAE-USA),** and **UFI Trilateral** (UAE–France–India).
- **Expanding Role in Regional Cooperation:** Linked via **IMEEC** and **Indian Ocean Naval Symposium (IONS)**
  - Strengthening maritime cooperation through **Naval Engagements & Joint Exercises (Desert Cyclone (India-UAE)** and trilateral Desert Knight (India-France-UAE))

For India

- **Key Energy Partner:** 4th largest crude, 2nd largest **LNG & LPG** supplier, offers **strategic oil storage.**
- **Robust Trade Relations:** Bilateral trade is about **$85 bn (2022–23);** UAE is the 3rd **largest trading partner, 2nd export destination.**
- **Economic Integration & Investment:** Only country with both **Comprehensive Economic Partnership Agreement (CEPA) (2022)** and **Bilateral Investment Treaty (BIT) (2023).**
  - UAE is 7th **largest FDI** source (2000–2024).
- **People & Culture Ties: 3.5 million Indians** in UAE; **Remittances (FY24)** accounts for 19.2% (approximately $11.7 billion) of the total.
  - **Cultural Milestone:** 'BAPS Mandir', first Hindu temple in UAE, is the largest of its kind in the Gulf region.

United Arab Emirates

India-UAE cooperation in new And emerging areas

Currency Pact
E.g. 2023 RBI–UAE Central Bank **Local Currency Settlement (LCS)** System.

Digital Payments
NPCI enables **UPI** for Indians in UAE

Food Security Corridor
Agreement signed in 2022. **$7 billion agreement Aims to triple food trade by 2025**

Civil Nuclear Cooperation
Focus on operation and maintenance of **the Barakah Nuclear Power Plant** by India

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Challenges in India-UAE relationship

- **Migration and Labor Issues:** Kafala system (sponsorship-based labor system) enables **labor exploitation.**
- **Trade Imbalances:** India's deficit with UAE is about **US$16.78 bn (FY 2022).**
- **Energy Pricing Conflicts:** UAE's **OPEC stance** may clash with India's pricing needs.
- **Air Services Agreement Disputes:** India limits **UAE flight expansion** to protect local airlines.
- **Regional Crises:** Gaza war and Red Sea attacks disrupt regional initiatives like **IMEEC.**
- **Geopolitical Friction:** India–Iran ties vs UAE–China partnership.

Conclusion

India–UAE ties are a strong **strategic partnership,** but require **careful management** of **geopolitics, energy,** and **labor issues** for sustained growth.

2.8. INDIA–TURKEY RELATIONS

Why in the News?

India–Turkey ties deteriorated after Turkey criticized India's counter-terror strikes in Pakistan post-Pahalgam attack.

More on the News

- **Turkey condemned Operation Sindoor,** calling it "provocative" and warned of escalation.
  - **Turkish-made Songar drones,** used by Pakistan, were neutralized by Indian air defense.
- **India revoked security clearance** of Turkish firm Celebi Aviation at 9 Indian airports.

Why Turkey Matters for India?

- **Strategic Location:** Turkey bridges Europe and Asia; part of **International North-South Transport Corridor (INSTC).**
- **Regional Influence:** Turkey's clout in the **Middle East and Black Sea** offers India strategic leverage.
- **Global Forums:** Both are **G20 members**; Turkey supports **India's bid for permanent UNSC seat.**

Contemporary Challenges in India–Turkey Relations

- **Military Support to Pakistan:** Turkey is **Pakistan's 2nd largest arms supplier,** aiding drones, missiles, and F-16 upgrades.
- **Kashmir Meddling:** Turkey **opposes Article 370 abrogation** and backs Pakistan's stand at the **UN.**
- **Narrative Destabilization:** Turkey-linked platforms **amplify anti-India content** on Kashmir and internal issues.
- **Turkey–Azerbaijan–Pakistan Axis:** Joint condemnation of **Operation Sindoor** reflects growing trilateral coordination.
  - Turkey and Pakistan also share historical ties through the **Baghdad Pact, Central Treaty Organization (CENTO), and RCD (Regional Cooperation for Development).**
- **Islamist Rhetoric:** Erdogan's **Pan-Islamist stance** fuels criticism of India's domestic affairs, straining ties.

Conclusion

India–Turkey ties remain **strained** due to **Turkey's pro-Pakistan tilt.** India must **counter narrative threats, leverage multilateral forums,** and **deepen ties** with Turkey's **regional rivals** to maintain **strategic balance** and explore **pragmatic re-engagement** where possible.

2.9. INDIA NEW ZEALAND RELATIONS

Why in the News?

- Prime Minister of New Zealand visited India on an official five day visit.

Key Outcomes of the Visit:

- **New Zealand joined IPOI and CDRI.**
- **FTA negotiations launched.**

Current Affairs Quarterly Revision (March 2025 to May 2025)

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Contemporary Relevance of Bilateral Relations:

- **Trade:** 1.75 billion (2023-24), India's 1.75 billion (2023-24), India's 70M surplus.
  - **NZ exports:** Wool, iron/steel, fruits, aluminum.
  - **India exports:** Pharma, machinery, textiles, gems.
- **Defense:** Joint naval ops in **Combined Task Force-150** (Indian Ocean security).
- **Multilateral Support:** Mutual UNSC reform advocacy; NZ backs India's permanent seat bid.
- **Strategic Alignment:**
  - Nuclear disarmament, rules-based Indo-Pacific.
  - NZ's 2011 **"Opening Doors to India"** policy prioritizes ties.
- **Diaspora:** India is NZ's top skilled migrant source, 2nd international student providers.
- **Green Energy:** NZ joined **International Solar Alliance (2024).**
- **Sports:** Cricket/hockey ties; **'Sporting Unity'** events in 2026 mark 100 years of athletic links.

New Zealand
- North Island
- Great Barrier Island
- Auckland
- Tasman Sea
- Wellington
- Southern Alps
- South Pacific Ocean
- South Island

Challenges in Bilateral Relations

- **Long Delayed FTA:** The India-NZ FTA, which had 10 negotiation rounds (2010-2015), stalled due to structural economic differences, especially over dairy exports and agricultural tariffs.
- **Security Concerns:** India has expressed concerns over anti-India activities in New Zealand, including protests and the Khalistan referendum organized by the 'Sikhs for Justice' group.
- **Other Concerns:** The low level of bilateral trade highlights untapped potential, while New Zealand's strong trade relationship with China also poses a challenge to deepening India-NZ economic ties.

2.10. INDIA-UK FREE TRADE AGREEMENT (FTA)

Why in the News?

- India and the **UK** concluded an **FTA** after **three years** of formal negotiations.

More on the News

- FTA will be implemented after **legal finalisation,** covering **27 chapters** (e.g., **digital trade, environment**).
- Both agreed to a **Double Contributions Convention (DCC)** – a **Social Security Agreement.**
  - **DCC** ensures employees and employers pay **social security** in only **one country** (for assignments up to **3 years**).
  - It won't affect access to **benefits** or payment of **UK immigration health surcharge.**
- **India-UK trade relation:** USD 60 billion of bilateral trade, projected to double by 2030

Key Highlights of the India-UK FTA

- **Zero-duty Market Access: ~99% of Indian exports** to UK get **zero-duty** access.
  - India to reduce tariffs on **90% of British products,** with **85% becoming tariff-free** within 10 years.
- **Mobility for Indian Professionals:** Covers **Service Suppliers, Business Visitors, Investors, Intra-Corporate Transferees** (with dependents), and Independent Professionals (e.g., yoga instructors).
- **UK Services Commitment:** Includes IT/ITeS, financial, professional, business, and educational services.
- **Government Procurement Access:** UK firms can bid for goods, services, and construction across central and state-owned entities.

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About Free Trade Agreement (FTA)

- **FTAs** are deals between countries/blocs to reduce or eliminate **tariff** and **non-tariff barriers** on substantial trade.
- Covers **goods, services,** and areas like **intellectual property rights (IPs).**
  - ➡ **Early Harvest Scheme** is a **precursor** to FTAs.
- FTAs are an **exception** to WTO's **Most Favoured Nation** principle.
- **Status**: India signed **13 FTAs** in the last five years (e.g., **Mauritius, UAE, Australia**) – SBI Report.

India's Experience with FTA's

- **Trade Imbalance: Exports** to FTA partners rose **31%,** while **imports** surged **82%** (2017–2022).
- **Low Utilisation:** FTA use in India is just **~25%** vs **70–80%** in developed countries.
- **Non-Tariff Barriers:** From 2020–24, over **26,000 trade/investment restrictions** were globally imposed (Global Trade Alert).
- **Unequal Competition:** E.g., **South Korea** & **ASEAN** outperformed India in key sectors like **electronics**.
- **Other Issues:** Include **certification complexity** and **rules of origin.**

Note: Trade balance alone doesn't reflect FTA value. There are other potential gains such as **tech transfer, value chains, investment flows,** and **diversified access** to goods/services.

How the India-UK FTA can help shape Future FTAs?

- **Swift Negotiations:** Unlike prolonged **India–EU talks** (since 2007), this FTA shows faster progress is possible.
- **Safeguard of Sensitive Sectors: Sensitive agri-products** (e.g., dairy) and **industrial goods** (e.g., plastics) kept on **exclusion list,** protecting India's interests.
- **Gradual Removal of Duties: Phased tariff cuts** give **domestic industries** time to adapt to competition.
- **Emphasis on Mutual Benefits:** E.g., **UK car makers** get **reduced tariffs** (100% ➡ 10%) under a **quota** system.

Conclusion

The **India–UK FTA** acts as a **strategic template** for future deals with developed nations—balancing **growth, modern trade issues,** and **domestic safeguards.**

2.11. IMF'S LENDING TO PAKISTAN

Why in the News?

The **International Monetary Fund (IMF)** completed the first review of **Pakistan's Extended Fund Facility (EFF)** program.

More on the News

- **IMF disbursed $1 billion (Special Drawing Rights (SDR)** 760 million) under the **Extended Fund Facility (EFF).**
  - ➡ **EFF** supports countries with **serious payment imbalances** due to **structural issues, slow growth,** or **weak balance-of-payments.**
- Also approved **$1.4 billion** (SDR 1 billion) under the **Resilience and Sustainability Facility (RSF).**
- **India abstained** from voting and **criticized the approval.**

Key Lending Instruments of IMF Funds		
General Resources Account (GRA)	Poverty Reduction and Growth Trust (PRGT)	Resilience and Sustainability Trust (RST)

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- **Lending Type:** Non-concessional (market-based interest rates) via **Financial Transactions Plan.**
- **Aim:** Address **balance of payments (BoP)** problems.
- **Lending Facilities:** Stand-by Arrangement (SBA); **Extended Fund Facility (EFF);** Rapid Financing Instrument (RFI); Flexible Credit Line (FCL); etc.

- **Lending Type: Concessional and interest-free** for **Low-Income Countries (LICs).**
- **Aim:** Resolve BoP crises in LICs with **longer duration support.**
- **Lending Facilities:** Rapid Credit Facility (RCF); Standby Credit Facility (SCF) and Extended Credit Facility (ECF).

- **Lending Type: Affordable long-term financing.**
- **Aim:** Help **low- and vulnerable middle-income countries** build **resilience to climate change** and **pandemic shocks**.
- **Lending Facilities:** Resilience and Sustainability Facility (RSF)

Concerns raised by India over IMF's Lending

- **Misuse of Funds:** Risk of use in **military** or **cross-border terrorism.**
- **Role of military:** Strong **military involvement** may reverse reforms.
- **Undermining Global Values:** Lending may **legitimize terror-linked regimes,** risking **donor credibility.**
- **Prolonged Use of IMF Resources:** Pakistan received IMF aid in **28 of 35 years,** increasing **debt burden.**
- **Undermines effectiveness of the IMF program:** Repeated support questions **IMF's monitoring** and **Pakistan's commitment.**

Other Key Challenges/Concerns associated with IMF

- **Ineffective voting process:** No option to **formally vote against loans** (e.g., India abstained).
- **Undemocratic Governance Structure:** Voting power favours **US, EU, Japan** (e.g., Greece bailout rules changed in 2010).
- **Ineffective Evaluation Process:** Independent Evaluation Office (IEO) set up by IMF lacks **true independence,** funded and governed by IMF.
- **Varied success:** IMF conditionalities may results into reduced social spending due to austerity-driven fiscal consolidation.

Conclusion

The **IMF remains essential** to global economic stability but is hindered by **imbalanced governance, opaque lending,** and **inequitable conditionalities.** To stay **relevant,** it must ensure **quota reforms, fair voting rights,** and **transparent oversight** that reflect the voice of **emerging economies.**

2.12. BILATERAL INVESTMENT TREATY (BIT)

Why in the News?

An announcement was made in the **Union Budget 2025** regarding the revision of **the model Bilateral Investment Treaty (BIT)** text to make it more **investor-friendly.**

About Bilateral Investment Treaties (BITs)

- **Definition:** Agreements protecting foreign investors while preserving host states' regulatory rights.
- **Purpose:** Enable investor-state (ISDS) or state-state dispute resolution.
- **India's Model BIT 2015:** Replaced 1993 version; guides BIT/FTA negotiations (e.g., pacts with Uzbekistan, UAE in 2024).
- **Recent countries with which BITs were signed:** Uzbekistan (2024), UAE (2024)

Key Features of Model BIT 2015

- **Enterprise-based investment:** Requires compliance with host state laws.
- **Non-discrimination** and **National Treatment:** Equal footing for foreign/domestic investors.

Enhancing Bilateral Investment Treaties for Global Economic Harmony

Domestic Arbitration Hub
Strengthening NDIAC and training specialized lawyers to enhance domestic arbitration capabilities.

Clarity in Terms
Explicitly defining treaty violations to ensure clear understanding and enforcement.

Flexible Dispute Resolution
Allowing direct arbitration to streamline and expedite conflict resolution.

Balanced MFN/FET
Adopting qualified MFN and narrow FET to balance investor rights and state sovereignty.

ICSID Accession & Tax Reforms
Permitting ISDS review of discriminatory taxes to protect investor interests.

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- **Expropriation safeguards:** Limits state takeover of assets.
- **Regulatory carve-outs:** Excludes taxation, subsidies, national security.
- **ISDS mechanism:** Mandates 5-year local remedy exhaustion.

Issues with India's BIT Architecture

- **Ambiguity:** Vague terms like "investment" spur disputes (37 notices, 8 active cases).
- **Judicial delays:** 5-year local remedy rule worsens backlog.
- **Limited ISDS scope:** Bars review of domestic court "merits."
- **Investor restrictions:** No MFN/FET clauses; tax exclusions; monetary-only awards.
- **Non-ICSID membership:** Hinders enforcement (India not part of World Bank's ICSID).

2.13. EMERGING WORLD ORDER

Why in the News?

At BIMSTEC, External Affairs Minister stated that the new world order will be **regional** and **agenda-specific.**

About World Order

- **Definition:** Arrangement of power and authority that provides the framework for the conduct of diplomacy and world politics on a global scale.

Factors behind New World Order

- **Decline of Post-War Multilateralism:** E.g., **UN's failure** in **Ukraine** and **Gaza.**
- **Rise of Polycrisis:** E.g., **War, climate, pandemic, cyber threats.**
- **Regional & Agenda-Based Geopolitics:** E.g., BRICS aims to reduce over-reliance on traditional powers and enhance **South-South cooperation.**
- **Multipolarity:** World order is no longer dominated by one (unipolar) or two (bipolar).

Opportunities for India in an Emerging World Order

- **Voice of the Global South:** Promotes **non-Western democracy.** E.g., **G20 (Vasudhaiva Kutumbakam), Voice of Global South, Vishvamitra** vision.
- **Balanced Multipolarity:** Engages with **BRICS, SCO, QUAD, G20,** etc.
- **Issue-based Cooperation:** E.g., **BIMSTEC** (connectivity, disaster management), **IPEF** (Indo-Pacific Economic Framework).
- **Digital & Tech Leadership:** Through **CoWIN, UPI, Open Network for Digital Commerce (ONDC),** etc.
- **Climate Diplomacy:** Backs **green growth, finance reform.** E.g., **International Solar Alliance (ISA)** and **Coalition for Disaster Resilient Infrastructure (CDRI)**
- **Cultural Soft Power:** E.g., **Yoga Day, diaspora, Buddhism diplomacy.**

Conclusion

- India must use the evolving world order to advance its **multipolar vision** and shape **inclusive, future-ready global norms.**

Evolution Of The Modern World Order
Key Turning Points in Global Political Architecture (1648-Present)

1648 — Westphalian System
Sovereign states become the central actors in global politics. Peace of Westphalia ends religious wars and shapes modern diplomacy.

1776-1800s — Age of Revolutions
Rise of liberal values, democracy, and legitimacy, sparked by American and French Revolutions

1919 — Post-WWI idealism
League of Nations reflects shift to cooperation and peace. Self-determination emerges as a core principle

1945 — Post-WWII & Cold War
Bipolar world: US vs USSR. Decolonization and rights movements expand international law

1991 — Post-cold War Era
US unipolarity gradually gives way to multipolarity

2.14. INWARD-LOOKING DEVELOPMENT STRATEGIES

Why in the News?

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U.S. launched **Reciprocal Tariff Plan** with **10% base import tax,** targeting **trade surplus nations.**

More on the News

- This move signals a shift to **inward-looking strategies,** away from **outward-oriented policies.**
- **Other Key Examples of Inward-Looking Development Strategies**
  - **China:** Export controls on **rare earths** like **Germanium**
  - **India: Make in India, PLI scheme,** and **Atmanirbhar Bharat**

Inward-Looking Development Strategies

- **Definition:** Focuses on **indigenous raw materials** and **domestic production,** aiming to protect **local industries** and reduce **external dependence.**
- **Genesis:**
  - **Latin America:** Adopted post **WWI & Great Depression** to counter **19th-century free trade crises.**
  - **India:** Post-**independence**, driven by **colonial exploitation** and goal of **economic autonomy,** promoted **protectionism.**

What Are the Major Objectives and Approaches for Inward-Looking Development Strategies?

Objectives	Approaches
National Security and Strategic Autonomy	- Develop **domestic supply chains** (e.g., semiconductors, pharma) to reduce dependency during crises. - E.g., **U.S. CHIPS Act** (semiconductor subsidies)
Reclaiming Economic Sovereignty	- Global institutions like **WTO** and **IMF** favor rich nations; inward strategies offer more control. - E.g., **India's Atmanirbhar Bharat** (₹20 lakh crore package), **China's dual circulation policy.**
Reviving Domestic Manufacturing Employment and Strengthening Economic Competitiveness	- Inward policies promote **import substitution** and **job creation.** - E.g., **India's 5 Positive Indigenisation Lists**
Addressing Trade Imbalances	- Use of tariff and **non-tariff barriers** for fair competition. - E.g., **India reserves 75% of defence budget** for domestic procurement.

Potential negative impacts of Inward-Looking Development Strategies

- **Higher Consumer Prices:** Tariffs/import bans raise costs, reduce competition, and limit choices.
- **Efficiency Loss: Reshoring/friendshoring** can be costly and less resilient.
- **Supply Chain Disruption: Electronics/auto sectors** face delays, cost hikes, and slower innovation.
- **Trade Tensions and Wars:** Protectionism triggers retaliatory measures.
- **Bloc Formation:** Promotes bilateralism, weakens multilateralism, excludes smaller nations.

Conclusion

Ensures **economic sovereignty,** but may hurt **efficiency** and **consumers**. Success needs **capacity-building, tech,** and **skill development;** a **selective approach** is preferable to isolation.

2.15. 6TH BIMSTEC SUMMIT

Why in the News?

Summit was held in **Bangkok** under **Thailand's chairmanship.**

Major India-Led Initiatives launched at 6th BIMSTEC Summit

- **BODHI (BIMSTEC for Organized Development of Human Resource Infrastructure) Initiative: Skilling youth** via **training** and **scholarships** for professionals, students, researchers.

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- **Digital Public Infrastructure:** India to conduct a **pilot study** on its regional feasibility.

> **Other Key Outcomes**
>
> - **BIMSTEC Bangkok Vision 2030:** First strategic vision to build **"PRO BIMSTEC"—Prosperous, Resilient, Open**—focusing on **economic integration, connectivity,** and **human security.**
> - **Maritime Transport Cooperation Agreement:** Signed to enhance **regional maritime connectivity.**

About BIMSTEC

- **Genesis:** Formed in **1997** via the **Bangkok Declaration** with original **4 Members** as **BIST-EC** (Bangladesh, India, Sri Lanka, and Thailand).
- **Secretariat:** Dhaka, Bangladesh
- **Objective:** Promote **economic development, social progress,** and **regional peace** in **Bay of Bengal** region.
- **7 Priority Areas/Pillars** (led by each Member): E.g. Security pillar is led by India

How BIMSTEC can help realize India's foreign policy objectives?

- **SAARC's Alternative:** Excludes **Pakistan**, functional amid **South Asian Association for Regional Cooperation's** deadlock.
- **Aligned with India's Foreign Policy:** Aids initiatives like **Act East, Neighbourhood First, Indo-Pacific,** and **QUAD** goals.
- **Strategic Bridge:** Connects **South** & **Southeast Asia** via **Thailand & Myanmar.**
- **Blue Economy & Maritime Security:** Supports **Bay of Bengal, anti-piracy, disaster relief,** aligned with SAGAR/MAHASAGAR.
- **South Asian Integration:** Promotes **connectivity** via **BIMSTEC Master Plan.**

Issues with BIMSTEC

- **Slow Progress:** Charter adopted after **27 years;** Just 6 summits, including the current one, have been held in the last 27 years.
- **Geopolitical Challenges:** All BIMSTEC member countries except India and Bhutan are part of BRI projects.
- **Low Intra-Regional Trade: 6–7% trade share** within BIMSTEC.
  - **BIMSTEC FTA,** initiated in 2004, remains unimplemented.
- **Infrastructural and Connectivity Gaps:** Delays in India-Myanmar-Thailand (IMT) Trilateral Highway, and Bangladesh-Bhutan-India-Nepal (BBIN) Motor Vehicles Agreement.
- **Political Instability:** E.g. Crises in **Myanmar, Nepal, Sri Lanka.**
- **Strained Member Relations:** Tensions like **Bangladesh–Myanmar (Rohingya)** and **India–Nepal border** affect **trust.**

Conclusion

BIMSTEC serves as a **practical platform** for advancing **India's regional goals** beyond **SAARC's constraints.**

2.16. INDIAN OCEAN RIM ASSOCIATION (IORA)

Why in the News?

- India will assume the chair of IORA in 2025 for the next two years.

About IORA

- **Genesis:** Founded in 1997, inspired by Nelson Mandela's 1995 India visit.
- **Objective:** Promote regional cooperation and development in Indian Ocean.
- **Secretariat:** Mauritius.
- **Members:** 23 members + 12 dialogue partners.

Significance for India

- **Economic/Geostrategic:** Indian Ocean handles 75% global trade.

Member States of IORA

Dialogue Partners (✱)
European Union is also a Dialogue Partner

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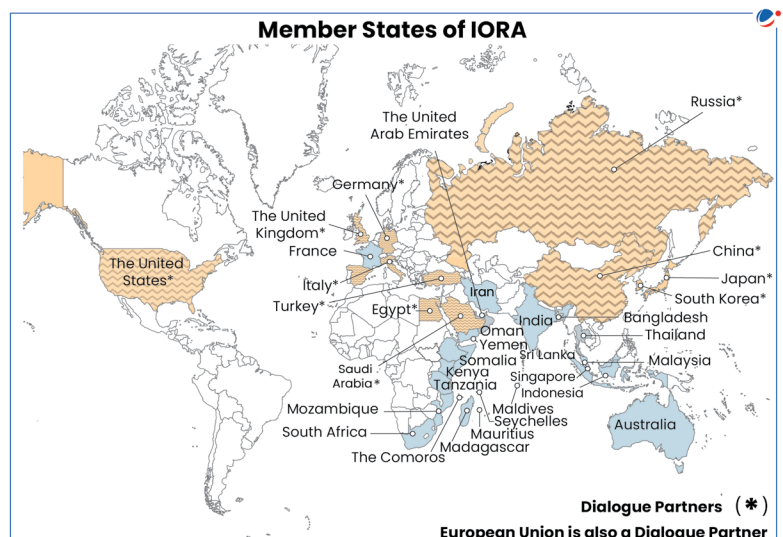
- **Alternative Platform:** Less contentious than SAARC/BIMSTEC; avoids QUAD-like rivalries.
- **Maritime Security:** Upholds UNCLOS; conducts security workshops.

Challenges

- **Funding:** Insufficient resources; competes with BIMSTEC/IONS.
- **Institutional Limits:** Weak Secretariat capacity in Mauritius.
- **Geopolitics:** India-Pakistan tensions, China's BRI influence.
- **Other Issues:** Lack of private sector role, maritime threats (piracy, Houthi attacks).

2.17. INDIAN DIASPORA

Why in the News?

Standing Committee on External Affairs (2024–25) released a report on **Indian Diaspora Overseas.**

About Indian Diaspora

- **Definition:** People of **Indian origin** settled abroad on **long-term visas** or over **generations.**
- **Indian Diaspora includes:**
  - **Persons of Indian Origin (PIOs):** A person who or whose any of ancestors was an Indian national and who is presently holding another country's citizenship/ nationality i.e. he/she is holding foreign passport.
  - **Overseas Citizens of India (OCIs):** Registered under **Section 7A, Citizenship Act, 1955**. (**PIO and OCI merged** in 2015 as **OCI**.)
  - **Non-Resident Indians (NRIs): Indian citizens** living abroad with **Indian passports.**
- **Current Status: 35.42 million** (15.85 million NRIs and 19.57 million PIOs and OCIs) (Jan 2024)
- **Geographical Distribution:** Major presence in **USA, UK, Canada, Gulf, Australia, Southeast Asia,** and **Caribbean.**

Significance and Contribution of Indian diaspora

Remittances: Top global recipient; USD 118.7 bn (2023–24)	**Trade and Investments:** Major FDI contributor, supports entrepreneurship	**Tech, Knowledge & Skills:** Skilled in IT, medicine, finance, academia	**Soft Diplomacy:** Promotes Indian culture—yoga, films, festivals, cuisine	**Significance for Host Countries:** E.g., **UK's National Health Services** has majority **Indian-origin doctors**

Key-Concerns related to Indian Diaspora highlighted by the Committee

- **Limited Voting Rights:** NRIs must be **physically present**; turnout is low.
- **Prisoner Transfers:** Only **8 prisoners** repatriated in **last 3 years** despite agreements.
- **Job Rackets:** Indians lured to **SE Asia** (e.g., **Cambodia, Myanmar**) for cybercrime.
- **Re-integration of Migrants: 5.95 lakh** returned (2019–24) due to economic disruptions, etc.; no **national reintegration policy.**
- **Safety of Indian Students: 403 deaths** abroad (2018–24); due to **accidents, illness, etc.**

Initiatives taken by India for Indian diaspora

- **Know India Programme (KIP), 2003:** For **PIO youth (21–35 yrs)** to connect with modern India.
- **Knowledge Sharing Programmes:** E.g. Visiting Advanced Joint Research (VAJRA) Faculty Scheme, Pravasi Bharatiya Academic and Scientific Sampark (PRABHASS)
- **Pravasi Bharatiya Divas (PBD), since 2003:** Observed on Jan 9 to **honour diaspora;** marks **Gandhiji's return (1915).**
- **Indian Community Welfare Fund (ICWF), 2009:** Established in 17 Emigration Clearance Required (ECR) Countries and Maldives

Other: Pravasi Bharatiya Bima Yojana (PBBY), etc.

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Way Forward: Recommendation of the Committee

- **Voting Rights to NRIs:** Enable via **Electronically Transmitted Postal Ballot System (ETPBS)** (remote voting).
- **Prisoner Transfers:** Amend existing agreements or create new ones to **facilitate smoother repatriation of prisoners**
- **Protecting Professionals:** Mandate **HRD/MEA-attested certificates;** use verified platforms (e.g., **Glassdoor, LinkedIn**).
- **Returnee Integration:** Adopt **Kerala model** for reintegration schemes.
- **Safety of Students Abroad:** Create **policy** to protect Indian students, especially in conflict-prone areas
- **Emigration Bill 2024:** Replace outdated **Emigration Act 1983.**
  - Also, need to address Student Migration in the Emigration Bill.

2.18. CHINA'S RARE EARTH ELEMENTS EXPORT CONTROL

Why in the News?

China imposed export restrictions on **7 REEs & magnets,** citing **U.S. tariff hikes**

What are Rare Earth Elements (REE)?

- **Misnomer: Abundant** in Earth's crust, but rarely in **economically viable concentrations** (**United States Geological Survey**-USGS).
- Named "rare" in **18th–19th centuries** due to rarity vs. other **earth's elements** like **lime** or **magnesia**
- **IUPAC Definition (2005): 17 elements** with high **density** & **conductivity**
  - **Includes:** cerium (Ce), dysprosium (Dy), erbium (Er), europium (Eu), gadolinium (Gd), holmium (Ho), lanthanum (La), etc.
- **Sources:** Found in **bastnasite, loparite**, and **monazite**

Global distribution of REE

China 44, Vietnam 22, Brazil 21, Russia 21, India

Leading countries' share of global mine production in 2021

Others (6.1%), Australia (8.0%), China (61%), Myanmar (9.4%), United States (15.5%)

* REO–rare-earth oxides
Source: U.S. Geological Survey
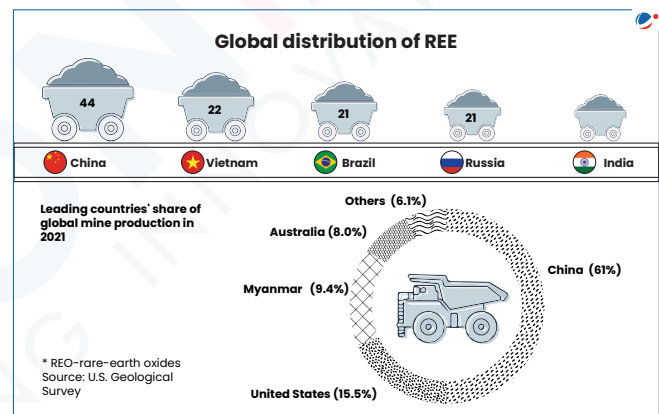
Geostrategic significance of recent export control of REE

- **Tariff War Leverage:** Counters **U.S. tariffs;** seeks strategic edge despite risks.
- **Impact on Critical Tech:** E.g., **Yttrium, Dysprosium** vital for **defence, electronics, jet engines** leads to **cost hikes & innovation delays.**
- **Supply Chain Disruption:** Affects major importers – **US, Japan, Vietnam, and Germany.**
- **Weaponisation of REEs:** E.g. In **2010** banned exports to Japan and in **2023–25** imposed export restrictions on **gallium** and **germanium.**
- **Diversification Moves:** Countries are opting for **reshoring** (bringing back the production to the home country) and **friend-shoring** (businesses source or produce goods in **countries with shared values**).
  - Alternatives to China for REE can be **Africa** (Democratic Republic of Congo, **Malawi**), **South America, Australia**

Global efforts to reduce dependence on China for REE

- **Critical Minerals Mapping Initiative (CMMI, 2019): US–Australia–Canada** initiative for **mineral mapping** incl. REEs
- **UN Panel on Critical Energy Transition Minerals:** Roadmap for managing energy transition minerals
- **Mineral Security Partnership (MSP):** Includes **India**; ensures supply of **key minerals** for **tech, defence, energy, industry**

Indian Initiatives for REE production

- **National Critical Mineral Mission (NCMM) (Budget 2024–25):** To secure **critical mineral supply chains.**
- **Mines & Minerals (Amendment) Act, 2023:** Allows **private companies** to bid for **critical mineral exploration, incl. REEs.**
- **Bilateral/Multilateral Cooperation:** E.g., **India–Australia Critical Minerals Investment Partnership** for **REE projects.**
- **Exploration Efforts: Department of Atomic Energy** found large **REE oxide deposits** in **Balotra, Rajasthan.**

Conclusion

Reducing REE dependence on China needs **strategic reserves, domestic output,** and **refining tech,** supported by **deep-sea mining, recycling, regulatory reforms,** and **private sector incentives.**

2.19. UNITED NATIONS PEACEKEEPING

Why in the News?

The **United Nations Peacekeeping Ministerial 2025** concluded in **Berlin, Germany.**

About UN Peacekeeping Ministerial 2025

- **Hosted by Germany** as a high-level forum on the future of peacekeeping.
- At the ministerial, India pledged one **Quick Reaction Force (QRF) Company**, one **women-led Police Unit,** a **SWAT Police Unit and peacekeeping training,** etc.

About United Nations Peacekeeping

- **Origin:** Began in **1948** with **UNTSO** in the Middle East.
- **Mandate:** Given by the **UN Security Council** through resolutions.
    - **Funding:** Approved by the **UN General Assembly.**
- **Core Principles:**
    - **Consent** of parties
    - **Impartiality**
    - **Non-use of force,** except in self-defense or defense of the mandate
- **Governance:** Managed by the **Department of Peace Operations (DPO)** since **1992**
- **Recognition:** Received the **Nobel Peace Prize in 1988**
- **Doctrines**
    - **Capstone Doctrine:** Defines **principles, objectives,** and **training standards** for peacekeepers.
    - **Responsibility to Protect (R2P) – 2005:** A political pledge to prevent **mass atrocities** like **genocide** and **ethnic cleansing.**

Facilitating Political Processes | Disarmament, Demobilization Reintegration (DDR)

Components of UN Peacekeeping

Election Support | Protecting Civilians | Human Rights and Rule of Law
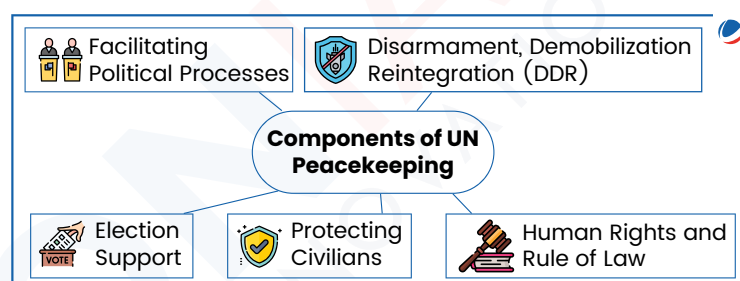
India's Key Contribution to UN Peacekeeping

- **Highest Troops Contribution:** Over **2.9 lakh peacekeepers** in **50+ missions.**
    - Currently **4th largest** after Nepal, Rwanda, Bangladesh.
- **Capacity Building:** Hosts Centre for **United Nations Peacekeeping (CUNPK)** in New Delhi for **peacekeeping training.**
- **Promoting Gender Parity: First country** to deploy **all-women Formed Police Unit** (2007, Liberia).

Key Challenges Faced by Peacekeeping

- **Targeting Peacekeepers:** E.g., **UNIFIL** personnel injured in the **Israel–Lebanon conflict.**
- **Opposition from Host Countries:** E.g., **Sudan** opposed **African Union-United Nations Hybrid Operation in Darfur (UNAMID)**
- **Credibility Issues:** E.g., UN failed to prevent **Rwanda** and **Srebrenica genocides** in the 1990s.
- **Changing Nature of Conflicts:** Rise in **intra-state conflicts, terrorist tactics,** and spread of **modern weapons.**
- **Other: Movement restrictions, delayed political solutions, ill-equipped troops,** and **limited say** of major troop contributors.

Conclusion

UN peacekeeping needs reforms per the **Brahimi Report (2000)** and **UN High-Level Independent Panel on Peace Operations (HIPPO) (2015)**—including **early action, adaptation to modern threats, gender and rights focus,** and ensuring **trained, accountable, and well-equipped forces.**

2.20. NEWS IN SHORTS

2.20.1. Transshipment Facility For Bangladesh

India revoked the 2020 agreement allowing **Bangladeshi exports** via Indian **Land Customs Stations** for third-country trade.

- **Reason for revoking agreement** is **Port/airport congestion** impacting **India's own exports.**
- This comes amid **strained ties** and **Bangladesh's remarks,** questioning India's role as **Net Security Provider** in the IOR.

India's role as Net Security Provider in IOR

- **Geo-Strategic:** India's **central IOR location**, with a **7,500-km coastline** and proximity to **key chokepoints (e.g., Strait of Malacca, Bab al-Mandab).**
- **Maritime Security:** Leads **anti-piracy, counter-trafficking**, ensures **Sea Line protection.**
- **Development & HADR: First responder—Tsunami (2004), Maldives water crisis, Sri Lanka economic aid (2022).**

2.20.2. India-Thailand Strategic Partnership

Both signed a **joint declaration** to establish a **Strategic Partnership**.

Significance of India-Thailand Strategic Partnership

- **Mutually-Beneficial Goals:** Shared interest in **Indo-Pacific** and **ASEAN Centrality.**
- **Strategic Location:** Thailand is India's **maritime neighbour** in ensuring **regional peace.**
- **Complementing Policies:** India's **Act East** aligns with Thailand's **Act West.**
- **Regional Groupings:** Thailand is a partner in **ASEAN, BIMSTEC,** etc.

Other Key Agreements Inked

- **MoUs on Sectoral Cooperation:** Collaboration on **National Maritime Heritage Complex** (NMHC) **at Lothal** and **North Eastern Region development (MDoNER).**
- **Trade Facilitation**: Exploring **local currency-based settlement mechanism.**

Overview of India-Thailand Relations

Diplomatic: Diplomatic relations dates back to **the year 1947.**

Economic: Bilateral trade reaching approximately **USD 15 billion in 2023-24.**

Defence: Exercise **MAITREE, INDO-THAI CORPAT, etc.**

2.20.3. Australia's New Roadmap For Economic Engagement With India

Australia's ambitious roadmap focuses on deepening and diversifying its trade and investment ties with India identifying **four "superhighways of growth".**

Key highlights of the Roadmap

- **Identifies nearly 50 specific opportunities** to focus.
- **Australia-India Trade and Investment Accelerator Fund.**
- **Australia-India Business Exchange (AIBX)** to accelerate B2B engagement.
- **Reinvigorated Australia-India CEO Forum.**
- **Maitri ('friendship') Grants programme.**

Evolving relationship between India and Australia

- **Trade: Economic Cooperation and Trade Agreement (ECTA) 2021.**
- **Nuclear cooperation:** Civil Nuclear Cooperation Agreement signed in 2014.
- **Defense cooperation:** Mutual Logistics Support Arrangement has been signed.
  - **AUSTRAHIND, AUSINDEX, Pitch Black** are a joint military exercise between two countries.

2.20.4. New Development Bank (NDB)

Algeria became the **9th member** of NDB.

About NDB (Hq: Shanghai, China)

- **Established: 2015** by **BRICS – Brazil, Russia, India, China, South Africa**
- **Purpose:** Mobilize funds for **infrastructure** and **sustainable development in EMDCs**

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🏛️ **Institution**	🎯 **Purpose**	👥 **Members**
Asian Development Bank (HQ: Manila, Philippines) 1966	Social and economic development, regional integration **across Asia and the Pacific.**	69 (50 from Asia-Pacific, 19 from outside the region), **including India.**
Asian Infrastructure Investment Bank (HQ: Beijing, China) 2016	Finances sustainable infrastructure and development projects, **primarily in Asia** with global reach.	110 approved (100 Full + 10 Prospective) members, **(India, a full member).**

Other Prominent Regional Financial Institutions

- **Members:** Brazil, Russia, India, China, South Africa, **Bangladesh, UAE, Egypt, Algeria**
  - ➡️ **Prospective Member: Uruguay** (awaiting formal accession)
  - ➡️ **Membership** is **open** for all **UN members** (borrowing & non-borrowing)
- **Capital: $100 billion** authorized; **$50 billion** equally shared by 5 founding members
- **Voting Power:** Founding members must hold **at least 55%**

Significance of Regional Financial Institutions

- **Sustainable Development:** India has **20+ projects** worth **$4.87 billion** via NDB (2024)
- **Bridging Gaps**: Enables **long-term infrastructure finance** and boosts **private investment**
- **Regional Integration**: Strengthens **South-South cooperation** (e.g., India's role in NDB & AIIB)

2.20.5. ASEAN-India Trade In Goods Agreement (AITIGA)

India hosts 8th Joint Committee Meeting on AITIGA.

About AITIGA

- **Genesis: Signed in 2009** and **entered into force in 2010.**
- **Mandates:** National Treatment to goods **as per GATT, 1994.**
- **Trade:** India-ASEAN trade reached **USD 121 billion** (2023–24); ASEAN forms **11%** of India's global trade.

2.20.6. Asian Productivity Organization

India has formally assumed the **Chairmanship of the Asian Productivity Organization (APO) for 2025–26.**

About Asian Productivity Organization (APO)

- **Established** in **1961** by **8 founding members; India** is one of them.
- **Objective**: Enhance **productivity** in the **Asia-Pacific** region through **mutual cooperation.**

- **Members:** Includes **21 economies** from the Asia-Pacific region.
- **Key Roles:**
  - ➡️ Conducts **research** on emerging member needs.
  - ➡️ Promotes **bilateral and multilateral alliances.**
  - ➡️ Surveys **economic and development policies and performance** of members.

2.20.8. Five Eyes Intelligence (FVEY) Alliance

Recently, intelligence officials from several countries—including representatives from the Five Eyes (FVEY) alliance—convened in Delhi.

About Five Eyes Intelligence (FVEY) Alliance

- **Origin:** Established via 1946 **BRUSA Agreement** (UK-US) for signals intelligence (SIGINT.
- **Members:** USA, UK, Canada (1948), Australia, New Zealand (1956).
- **Governance: FIORC** (2016) oversees non-political intelligence review/security.

2.20.8. Squad Alliance

Philippines urged India to Join 'Squad' Alliance.

About Squad alliance

- An informal minilateral alliance involving the US, Japan, Australia, and the Philippines.
- **Aim:** Address aggression and maintaining stability in the Indo-Pacific Ocean Region, etc.
- It is different from Quad which consists of India, USA, Japan and Australia

2.20.9. Ottawa Convention

North Atlantic Treaty Organization (NATO) members **Poland, Lithuania, Latvia** and **Estonia** plan to withdraw from the **Ottawa convention** owing to military threat from **Russia.**

About Ottawa Convention

- **Official Name:** Convention on the Prohibition of Anti-Personnel Mines (full title retained).
- **Objective:** Bans use, production, stockpiling, and transfer of anti-personnel mines.
- **Adoption & Enforcement:** Adopted Oslo 1997, signed Ottawa, enforced 1999.
- **Signatories:** 133 states (India non-signatory).

2.20.10. IAEA

The **Defence Minister of India** urged **IAEA** oversight of **Pakistan's nuclear arsenal.**

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About International Atomic Energy Agency (IAEA)

- **Established:** 1957 as an autonomous international organisation within the UN
- **Members:** 180 (including **India**)
  - **North Korea** joined in 1974, **withdrew in 1994**
- **General Conference:** Annual meeting of all member states in Vienna
- **Recognition: Nobel Peace Prize (2005)** for promoting peaceful nuclear use and global safety
- **IAEA and the Non-Proliferation Treaty (NPT)**
  - IAEA is not a party to the **NPT**, but has key **verification responsibilities** under it
  - All **non-nuclear-weapon states** under NPT must sign a **Comprehensive Safeguards Agreement (CSA)** with IAEA to verify compliance
- **HQ:** Vienna, Austria

The role of IAEA	
Global Focal Point Serves as the global focal point for nuclear cooperation	**Peaceful Applications** Assists Member States in using nuclear science for peaceful purposes
Safety Standards Develops nuclear safety standards & promotes maintenance of high safety levels	**Verification & Compliance** Verifies that States comply with commitments to use nuclear facilities only for peaceful purposes

About NPT

- A legally binding treaty to **prevent the spread of nuclear weapons and technology**
- **Came into force** in 1970; **extended indefinitely** in 1995
- **191 member countries,** including all five recognised nuclear-weapon states (China, France, Russia, UK, US)
- **India, Israel, and Pakistan** have never joined; **North Korea withdrew in 2003**

Other Treaties to Prevent Nuclear Proliferation

- **Partial Test Ban Treaty (1963):** Bans tests in the atmosphere, outer space, and underwater (**India signed and ratified**)
- **Comprehensive Nuclear Test Ban Treaty (CTBT, 1996)**: Bans all nuclear explosions (**India did not sign**)
- **Treaty on the Prohibition of Nuclear Weapons (TPNW, 2017):** Bans all nuclear weapon activities (**India did not sign**)

2.20.11. Extradition

26/11 Mumbai Terror Attack accused extradited to India from the US.

Extradition Principles

Reciprocity Encourages mutual cooperation between states for extradition	
Double Criminality Requires the act to be a crime in both jurisdictions.	
Double Jeopardy Prevents extradition for already punished crimes.	
Speciality Limits prosecution to specified offenses in extradition.	
Fair Trial Ensures just and impartial legal proceedings.	

Extradition

- Extradition means the **surrender of any person** who is **sought by the requesting State for criminal prosecution** for an extraditable offence. (**UN Office on Drugs and Crime (UNODC)**)
- **Extraditable Offence** includes
  - Offence listed in an **extradition treaty,** or
  - **Punishable with ≥ 1 year** imprisonment in **either country** (in absence of treaty)

What is the framework for Extradition?

- **In India**
  - **Extradition Act, 1962** (amended in **1993**)
    - **Ministry of External Affairs is nodal authority.**
    - India has **extradition treaties with 48 countries,** including the **USA** and **Bangladesh.**
  - Final decision made by the **Government of India;** appeal possible in **higher courts**
- **Globally: United Nations Model Treaty on Extradition** (1990), **UN Model Law on Extradition** (2004), **United Nations Convention against Transnational Organized Crime** (2000), etc.

Challenges in Extradition Law

- **Double Criminality Loophole:** Offenders flee to nations where the act isn't a crime.
- **Lengthy Process:** Delays due to heavy paperwork and red tape.
- **Limited Treaties**: Only **48 countries** have extradition pacts with India.

2.20.12. UN Security Council's (UNSC) 1267 Sanctions Committee

Indian officials briefed the **UNSC 1267 Sanctions Committee's monitoring team** on the activities of **The Resistance Front (TRF).**

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About 1267 Sanctions Committee

- Also known as the **ISIS and Al-Qaeda Sanctions Committee.**
- **Established in 1999** to combat terrorism linked to **ISIS, Al-Qaeda, and associated groups.**
- Composed of **all permanent and non-permanent members** of the UN Security Council.
- Oversees sanctions, **travel bans, asset freezes,** and **arms embargoes** under **UNSC Resolutions 1267 (1999), 1989 (2011), and 2253 (2015).**

2.20.13. India's Extended Continental Shelf Claim

Recently, India expanded its claim in the **Central Arabian Sea** by **~10,000 sq. km** as part of its **extended continental shelf,** and modified an earlier claim to avoid a **dispute with Pakistan.**

Dispute over the maritime boundary

- **Exclusive Economic Zone (EEZ):** Grants **exclusive mining and fishing rights** up to **200 nautical miles** from the coast. This entire zone forms part of the **extended continental shelf.**
- **India's Claim:**
  - Filed first claim in **2009** to **UN's Commission on the Limits of the Continental Shelf** (CLCS).
  - In **2021, Pakistan objected,** citing the **Sir Creek** dispute.
  - In **March 2023, CLCS rejected** India's claim but permitted **modified resubmissions.**

About Sir Creek

- **Disputed Area:** A **96-km-long tidal estuary** in the **Arabian Sea,** dividing **Sindh (Pakistan)** and **Kutch (Gujarat, India).**
- **India's Stand (1947):** Apply **Thalweg Principle**— boundary lies **mid-channel** of a **navigable waterway.**
- **Pakistan's Stand:** Claims **Sir Creek is not navigable,** so **Thalweg cannot apply.**

2.20.14. Heard And McDonald Island

US President announced **10% tariffs** on several US trade partners, including **Heard and McDonald Islands.**

About the Islands

- **Uninhabited subantarctic islands** in the **Southern Ocean**
- **Administered** by **Australia**
- Only **volcanically active subantarctic islands**—vital for studying **geomorphic and glacial processes**
- Listed as **UNESCO World Heritage Sites**

2.20.15. Morag Axis

Israel has completed the takeover of a new **security corridor** called the **Morag Axis.**

About Morag Axis

- **Agricultural land** between **Khan Younis** and **Rafah,** running **east–west** across the **Gaza Strip.**
- Named after **"Morag",** an **illegal Israeli settlement** (1972–2005) once.

The 'Morag Axis'

Mediterranean Sea — Gaza Strip — Israel — Khan Younis — Morag (former Israeli settlement) — Rafah — Egypt

🏠 Illegal Settlement ● City ╲ 'Morag Axis'
╲ Philadelphi Corridor ▪ Humanitarian Zone

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2.21. TEST YOUR LEARNING

1. Consider the following statements about the Five Eyes Intelligence (FVEY) Alliance:

   1. U.S.A., U.K. Canada, Australia and New Zealand are the members of alliance.
   2. Five Eyes Intelligence Oversight and Review Council created in 2016 as the "non-political intelligence oversight, review, and security entities" of the member countries.

   Which of the above statements is/are true?

   a) 1 only
   b) 2 only
   c) Both 1 and 2
   d) None of the above

2. Consider the following statements about the Ottawa convention:

   1. North Atlantic Treaty Organization (NATO) has withdrawn from the Ottawa convention owing to military threat from Russia.
   2. Convention on the Prohibition of the Use, Stockpiling, Production and Transfer of Anti-Personnel Mines and on their Destruction is called Ottawa convention.
   3. Convention puts obligations on State parties to not use, develop, and stockpile anti-personnel mines under any circumstances.
   4. India is a signatory to the convention.

   Which of the above statements is/are true?

   a) Only statement 1 is true.
   b) Statements 2 and 3 are true.
   c) Statements 1, 2, and 4 are true.
   d) All statements are true.

3. 'Belt and Road Initiative' is sometimes mentioned in the news, it is launched by

   a) United States
   b) France
   c) European Union
   d) China

4. The IMF and World Bank are collectively known as:

   a) Washington Consensus Institutions
   b) Bretton Woods Institutions
   c) G20 Financial Arms
   d) New York Accord Agencies

5. The New Development Bank was established by which grouping of countries?

   1. G7
   2. ASEAN
   3. BRICS
   4. SAARC

Mains Question

Q1. (150 words)

What are the key flagship initiatives of IORA? How do they contribute to regional cooperation?

Q2. (250 words)

Discuss the implications of extending the China–Pakistan Economic Corridor (CPEC) to Afghanistan for India's regional strategy.

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3.1. NORTHEAST AS 'FRONTRUNNER OF GROWTH'

Why in the News?

- PM inaugurates **Rising North East Summit 2025** by **DoNER.**
- More on the News
- Highlighting Northeast's strategic importance, PM outlined **EAST vision (Empower, Act, Strengthen, Transform)**
- Termed region's eight States as **'Ashta Lakshmis'.**
- Identified bio-economy, bamboo, tea, petroleum, sports, and eco-tourism as **key emerging sectors of region.**

Key highlights of focus sectors of NER in the Rising North East Summit 2025

Sectors	Highlights
Textiles, Handlooms & Handicrafts	Contributes to over 53% looms, 78.5% traditional garments, and featuring unique GI-tags.
Renewable Energy	NER holds 60 GW hydropower potential, 40% of Country.
IT & ITES	Rapid IT growth with parks, SEZs, and innovation hubs.
Infrastructure and Logistics	Bridges **(Dhola-Sadiya, Bogibeel)**, airports, and **Jogighopa IWT terminal-linked logistics park.**
Tourism and Hospitality	NER boasts UNESCO sites (Kaziranga, Manas) and Swadesh Darshan & PRASHAD schemes.
Education	High literacy, young population drives innovation and entrepreneurship.
Health	Phytopharmaceutical potential and PPP-led healthcare boost urban medical infrastructure.
Agriculture	Agro-rich region mainly grows organic and high-value crops; 70% are farmers.
Sports	**Indigenous sports** (archery, thang-ta, polo etc). Produces national/international athletes. Stadiums: Indira Gandhi Athletic (Assam), Khuman Lampak (Manipur) can become hubs with investment.

Potential of NER to become 'frontrunner of growth'

- **Geo-strategic:** Gateway to **Southeast Asia,** vital to India's **Act East Policy.**
- **Energy:** Coal, uranium, oil, natural gas, and hydropower.
- **Diverse cultural heritage:** Fosters tourism and handicrafts investment.
- **Low-cost manufacturing hub:** Low labour costs
- **India's green hub:** Rich biodiversity supports ecotourism and **agro-based industries.**

Challenges in North-Eastern Region

- **Poor connectivity:** via **Siliguri Corridor** isolates region, affecting movement and logistics.
- **Insurgency and armed conflicts:** Demands of autonomy or tribal rights, **e.g.,** NSCN-IM, Kuki –Meitei clashes.
- **Narco terrorism:** thrives near Golden Triangle, exploiting **porous borders.**
- Human Rights concerns: over AFSPA's prolonged enforcement.
- **Environmental vulnerabilities:** Floods, landslides, and earthquakes, notably Brahmaputra floods.

North East States of India

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Initiatives for Development of NER

India	International
• **NESIDS:** Develops infrastructure in water, power, connectivity, tourism, and social sector. • **PM-DevINE:** Funds developmental projects, based on States' needs. • **MOVCDNER:** Promotes certified organic value chain development. • **Peace and security initiatives:** NLFT and ATTF Peace Agreement 2024, Adivasi Peace Accord, Assam 2022, DNLA Peace agreement 2023, ULFA Peace Accord 2023 etc.	• **Regional connectivity projects:** Kaladan, India-Myanmar-Thailand Trilateral Highway, BBIM, Mekong-Ganga Cooperation. • **Act East Forum** (India and Japan): Boosts NER and Southeast Asia connectivity. • **SASEC:** Fosters regional prosperity among South Asian nations.

Way Forward

- **Diversify access routes: E.g. Hili–Mahendraganj corridor** bypassing Siliguri.
- **Reduce insurgency:** Tripura's **peace** and rehabilitation (**Bru tribals**) offer lessons.
- **Address illegal migration and border security:** With advanced Surveillance, CIBMS.
- **Improving Integration of NER with rest of India: Prevent discrimination and racial attacks** through legal measures, media campaigns, etc. **(Bezbaruah Committee).**

3.2. PRIORITY SECTOR LENDING

Why in the news?

RBI has issued new **Priority Sector Lending (PSL) guidelines,** which came into effect on April 1, 2025.

More on the News

- **Guidelines:** Issued under the **Banking Regulation Act, 1949.**
- **Applicability:** Applies to **all Commercial Banks** and **Primary (Urban) Co-operative Bank (UCB),** except Salary Earners' Bank.

About Priority Sector Lending (PSL)

- **Definition:** Development sectors prioritized by the Government and RBI for receiving credit.
- **Historical Background:**
  - **1969 – Gadgil Committee:** Proposed **Area Approach,** leading to **Lead Bank Scheme.**
  - **1972 – PSL Formalized:** Ensured credit for creditworthy sectors but lacking access.
  - **1982 – Ghosh Committee:** Suggested revising and reclassifying priority sector categories.

Categories under Priority Sector: Agriculture | Micro, Small and Medium Enterprises | Export Credit | Education | Housing | Social Infrastructure | Renewable Energy | Others
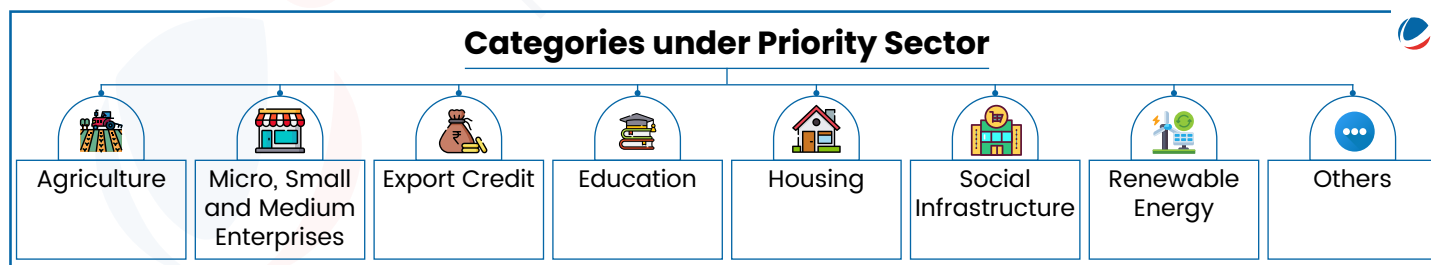
Revised Guidelines

- **Enhanced Loan Limits: Education** (up to ₹25 lakh), **Social Infrastructure** (up to ₹8 crore) and others like **Housing and agriculture loans.**
- **Expanded Renewable Energy Loans:** Up to ₹35 crore for public projects & ₹10 lakh for individual households.
- **Revised PSL Targets for Primary (Urban) Co-operative Bank (UCBs):**
  - **Total Priority Sector:** 60% (previously 40%); **Micro Enterprises:** 7.5%; **Weaker Sections:** 12%.
- **Expanded 'Weaker Sections' Category:** Including Transgender, Small and Marginal Farmers, Self-Help Group (SHG), etc.

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Targets/Sub-targets for Priority sector

Categories	Targets/ Sub-targets			
	Domestic Commercial Banks & Foreign Banks with 20 branches and above	**Foreign Banks with Less than 20 branches**	**Regional Rural Banks**	**Small Finance Banks**
Total Priority Sector	40%	40% (up to **32% for Export Credit** and at least 8% to any other priority sector)	75%	75%
Agriculture	18%	NA	18%	18%
Micro Enterprises	7.5%	NA	7.5%	7.5%
Weaker Sections	12%	NA	15%	12%

Note: Percentages are based on Adjusted Net Bank Credit (ANBC) or Credit Equivalent of Off-Balance Sheet Exposures (CEOBSE), whichever is higher.

Additional Provisions

- **Non-Banking Financial Companies (NBFCs)** & **Housing Finance Companies (HFCs) on-lending** now included under PSL.
- **Co-lending model (banks + NBFCs) recognized** for PSL eligibility.
- **Securitisation norms revised,** excluding NBFC gold-backed loans.
- **Priority Sector Lending Certificates (PSLCs) trading permitted** to meet PSL targets.
- **Inter-Bank Participation Certificates (IBPCs) & Direct Assignment norms updated** for accurate classification.

Other Recent Reforms

- **Priority Sector Lending Certificates (PSLCs):** Launched in April 2016 to boost efficiency.
  - **Banks short of PSL targets** can buy PSLCs from overachievers.
  - **Types:** PSLC-Agriculture, PSLC-MSME, PSLC-General, PSLC-Weaker Sections.
- **Co-Lending Model (CLM):** Introduced in 2020 for NBFCs and banks to co-lend in priority sectors.
  - Recently, RBI proposed a **draft framework for co-lending** across all regulated entities for all loan types.

3.3. REVAMPED PERIODIC LABOUR FORCE SURVEY (PLFS)

Why in the News?

NSO revamped PLFS from January 2025.

About PLFS

- **Conducted by:** National Statistics Office (NSO)
- **Ministry:** Ministry of Statistics and Programme Implementation (2017)
- **Objectives:**
  - Estimate **employment/ unemployment indicators quarterly** for urban areas (Now including rural also) in **'Current Weekly Status' (CWS).**
  - Estimate **annual** employment/ unemployment in **Usual Status and CWS for rural and urban areas.**
- **Key Terminologies used in PLFS**
  - **Labor Force Participation Rate (LFPR):** Percentage of population working or seeking or available for work.
  - **Worker Population Ratio (WPR):** Percentage of employed persons in population.

Significance of Changes introduced in PLFS

- Enhanced Sample Size
- Industry Decision Support
- Timely updation of India's labour market statistics
- Assist in timely Rural Labour Interventions
- District Level Planning
- Survey Improvements

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- **Unemployment Rate (UR):** Percentage unemployed within labour force.
- **Activity Status-** Determined by activities during reference period.
- **Usual Status:** Activity over last 365 days (principal and subsidiary activity).
- **Current Weekly Status (CWS):** Activity during last 7 days.
- **Current daily activity status (CDS):** Worked 1 hour or more in a day.

Key changes in PLFS Introduced:

- **Monthly estimates of key labour market indicators:** For rural and urban areas in CWS.
- **Quarterly CWS estimates:** extended to rural areas.
- **Calendar year reporting:** Annual PLFS results from 2025.
- **Enhanced sample size**
- **Improved Geographical Representation:** District made **primary geographical unit (basic stratum).** National **Sample Survey (NSS) region** elsewhere.
- **Improved social indicators data availability**

Other methodologies/Reports to compute Employment related indicators in India

- **Employment Market Information Programme:** Provide frequent update on public/ private sectors employment trends at all levels.
  - Implemented under **Employment Exchange Act, 1959.**
- **ILO reports: World Employment and Social Outlook etc.**
- **Census:** Collects data on main/ marginal workers.

Labour Bureau: Attached office of Ministry of Labour & Employment (headquartered Chandigarh). Collects labour statistics through the Annual Survey of Industries (ASI), Rural Labour Inquiry, and Rural Retail Prices for CPI, etc.

Issues with methodologies to compute Employment related indicators in India

- **Inconsistencies in data:** Due to varied sampling, timing, and questions asked.
- **Relaxed criteria:** CWS considers ≥1 hour work/ week as employed, which often undercounts unemployment.
- **Unmatching definition:** Indian employment definition does not meet international standards.
- **Restrictive nature:** Quarterly Employement Survey silent on unemployment data.
- **Inadequate sample size**
- **Time lag, Poor Quality and Poor Response**

Way forward

- **Adopt definitions of UN System of National Accounts.**
  - ILO urges India to follow 19th ICLS standards.
- **Use AI** to ensure data quality, data validation and processing
- Increase frequency of **enterprise surveys** and **Economic Census at regular intervals.**
- **Centralized government data** with uniform methods.
- **Eliminate Surveys Duplication** and **Harmonize Reports**
- **Data accessibility:** Greater public awareness and engagement with statistical insights by NSS

3.4. PRADHAN MANTRI MUDRA YOJANA (PMMY)

Why in the News?

10 years of PMMY have been completed.

About PMMY

- **Ministry: Ministry of finance**
- **Launch year:** 2015
- **How to avail:** From intermediaries (Bank, Micro Finance Institutions and NBFCs), RRB etc. Borrowers can file online application on Udyamimitra portal

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- **MUDRA (Micro Units Development and Refinance Agency Ltd)** provides refinance support to its intermediaries, and monitors PMMY.
- **Mudra Card:** overdraft facility to borrowers
- **Mudra Mitra:** Mobile phone application guidance for MUDRA loan
- **Categories of the loan:** Shishu (upto 50k), Kishor (50k-5 lakh), Tarun (5-10 lakh) and Tarun Plus (10-20 lakh).
- **Nature of Assistance:** Term Loan, Overdraft Limit, Working Capital and Composite Loan for Acquiring Capital.
- **Objective of PMMY**
  - Collateral free access to credit
  - To fund the unfunded by bringing MSMEs to the formal financial system
  - Financial inclusiveness & support to the marginalized & socio-economically neglected classes

Key features PMMY

- **Collateral free loan** guaranteed by **Credit Gurantee Fund for Micro Units.**
- **Interest rate:** Deregulated, 2% subvention on Shishu loans repayment, reduction to MFIs / NBFCs, lending to women
- **Progressive Lending** shows shift towards larger loans (Kishor, Tarun), indicating business scaling.
- It reduces **regional disparity** by focusing on underdeveloped regions
- **Promote first time entrepreneur**
- **Financial Inclusion:**
- MUDRA **aligns with initiatives** like Make in India, NRLM, NULM, etc for financial inclusion and micro-enterprise support.

Financial Inclusion Under PMMY

Social Class wise share in total PMMY accounts: OBC (28%), General (50%), ST (6%), SC (16%)

Category wise share in total PMMY accounts: New Entrepreneurs/Accounts (21%), Minority (11%), Women Entrepreneurs (68%)
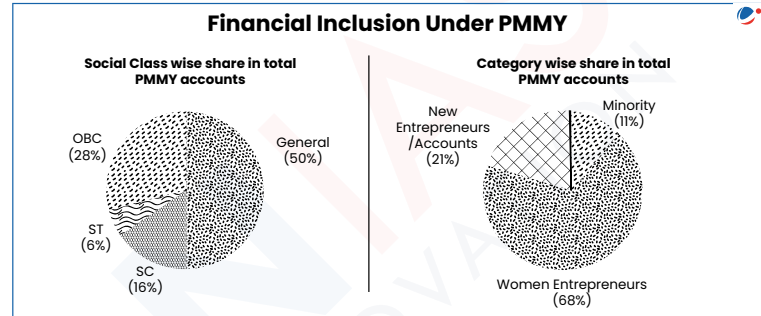
Issues associated with PMMY

- **High NPAs in MUDRA Loans:** 2.21% overall. But it is improving.
- **Scheme design issues** include a 15% CGFMU payout ceiling, high fees/rates, and no collateral risk.
- **Implementation is challenged** by borrowers' lack of documentation knowledge.
- **Lack credit discipline:** Loan diverted for personal use
- **Poor monitoring** of borrowers

Measures to be taken to improve Mudra loan

- **Increase financial awareness**
- **Enhanced Credit Guarantee Scheme (ECGS):** banks to lend more
- Raising loan limits, interest subvention, or targeted schemes for women-led enterprises
- Implementing a robust tech-driven monitoring framework to improve efficiency, reduce misuse, and build trust.

3.5. ONE STATE, ONE RRB

Why in the News?

Department of Financial Services notified **amalgamation of 26 Regional Rural Banks (RRBs).**

More on the news

- Done by Central Government under **Regional Rural Banks Act, 1976.**
- 1st **phase** (FY 2006 to 2010) based on recommendations of **Dr. Vyas Committee,** focus on merging RRBs under same sponsor bank within a state. Now 4th phase: 28 RRBs from 43.
- E.g., Baroda U.P. Bank, Aryavart Bank and Prathama U.P. Gramin Bank in UP amalgamated into single RRB – **Uttar Pradesh Gramin Bank.**

About RRB

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- **Genesis:** First 5 RRBs established in **1975** on recommendations of **Narasimham Working Group.**
- **Ownership: Government of India (50%),** concerned **State Government (15%),** and the **sponsoring commercial bank (35%).**
- RRBs **regulated** by RBI under the Banking Regulation Act, 1949 and **supervised** by NABARD.
    - For tax purposes, treated as cooperative societies under Income Tax Act, 1961.
- **Requirements:**
    - Must allocate 75% to Priority Sector Lending (PSL).
    - Must maintain a Capital to Risk-Weighted Assets Ratio (CRAR) of 9%, as per RBI norms.

Significance of One State One RRB

- **Accelerated business growth:** Total RRB business to reach ~5.2% by FY30 of India's GDP.
- RRB will have **financial benefits** like greater capital base and improved liquidity.
- Unified RRB can **centralize** compliance functions.
- **Strengthened lending capacity** to rural sectors (MSMEs and agriculture)
- **Promoting financial inclusion**
- **Enhanced competitiveness** via Pooled resources, expertise and tailored products.
- **Consolidated IT** improves capabilities like cyber security, fraud prevention, big data analytics etc.
- **Other benefits** include operational efficiency, a large talent pool, and better oversight from sponsor banks.

Challenges in Amalgamation of RRBs	
Operational	**Governance and stakeholder management**
Different operational & organizational structure of amalgamated banks **Unexpected delay** will impact customers **Operational difficulty** like maintenance of documents	**Workforce realignment and employee movement** issues **Difficulties in tracking updates** across departments
Financial	**Technological**
Inconsistencies in accounts & branch and corporate ledgers **Possibility of adverse impact** on CRAR ratio **Complications in movement** of securities, funds & investments	- Issues related to **ensuring secure migration of CBS data** **High volume of data** related to transaction histories and migrated data backups

3.6. 50 YEARS OF MICROFINANCE

Why in the News?

Self Employed Women's Association (SEWA) Bank, started in Gujarat in 1974 as a cooperative bank, marks the completion of 50 years of microfinance institution (MFI) in India.

What is Microfinance?

- **Definition:** Microfinance (microcredit) offers loans to **poor rural households and small enterprises.**
- **Services:** Credit, insurance, financial advice, etc.
- **Origin:** Nobel Laureate Muhammad Yunus **with Grameen Bank (1976) in Bangladesh.**

Evolution of Microfinance in India

(1974–1990) **Traditional Microfinance**	(1991–1999) **Economic Reforms**	(2000–2012) **Transformation Era**	(Post-2012) **Future Embrace**
Establishment of SEWA Bank and Regional Rural Banks (RRBs) to provide credit to the poorest.	Introduction of **SHG-bank linkage program** and support for women and MSMEs.	Entry of for-profit **Non-Banking Financial Companies (NBFCs)** transforming the microfinance landscape.	Establishment of **Financial Inclusion and Development Department (FIDD)** to enhance financial inclusion.

Significance of Microfinance in India

- **Poverty Alleviation: E.g., NABARD's Self Help Group Bank Linkage Programme** empowers 17.8 crore households via 144 lakh SHGs.
- **Economic Growth & Entrepreneurship: E.g.,** 46% of loans support families with monthly income below Rs. 20,000.
- **Women Empowerment: E.g.,** 88% of bank-linked SHGs (like Kerala's Kudumbashree) are women-led.
- **Financial Inclusion:** MFIs bridge gaps left by traditional banks, serving 140 million families in FY 2024.
- **Social Impact: E.g.,** Ujjivan Small Finance Bank's Chote Kadam initiative renovated Primary Health Centres (PHCs).

Challenges in Microfinance in India:

- Over-Indebtedness, High interest rates (up to 30%), Multiple regulators (RBI, State Cooperative Societies), Financial viability of MFIs, and External shocks (Natural disasters) increase risk of default.

Government Initiatives for Strengthening Microfinance

- **SHG-Bank Linkage Program:** Boosts SHG loan volumes, shifting to production-based activities.
- **Pradhan Mantri MUDRA Yojana:** Offers collateral-free microcredit up to Rs. 20 lakh.
- **RBI Policy (2014):** Allowed NBFC-MFIs to act as Business Correspondents (BCs) for banks.
- **RBI Regulatory Framework by RBI (2022):** Clarified microfinance loan definitions and repayment limits.

NABARD Refinance: Provides Long-Term Refinance to MFIs.

Way Forward

- **Limit Lenders:** Cap lenders per borrower at three and loans at Rs. 2 lakh via Microfinance Institutions Network self-regulation.
- **AI & ML Integration:** Machine Learning (ML) models predict defaulters for preemptive action.
- **Sector Classification:** Categorize MFIs into housing, climate, health, etc., for holistic development.
- **Financial Literacy:** Enhances inclusion, insurance uptake, and industry growth.
- **Best Practices:** Emulate Tamil Nadu, Karnataka, and Kerala's robust microfinance networks.

3.7. LIQUIDITY DEFICIT

Why in the News?

RBI conducted liquidity infusion in the banking system to address a 15-year high liquidity deficit.

More on the News

- RBI infused liquidity via:
  - **Open Market Operation (OMO):** purchased Government Securities worth ₹1,00,000 crore.
  - **USD/INR Buy/Sell Swap auction** of USD 10 billion for a 36-month tenor.

Aspect of Banking Liquidity	
Definition	Reserves provided by a central bank to the banking system.
Formula	Banking Liquidity = Net borrowing under LAF - Excess reserves maintained by banks
Liquidity Deficit	Banks borrow from RBI (positive system demand).

Liquidity Surplus	Banks lend to RBI (negative system demand).
Relation with Currency in Circulation (CIC)	↓ CIC = ↑ Bank Reserves = ↑ Banking Liquidity
	↑ CIC = ↓ Bank Reserves = ↓ Banking Liquidity
Current Status	Jan 2025: Deficit at ₹3.15 trillion (15-year high).

Factors Leading to Liquidity Deficit

- **Tax Outflows:** ₹3 trillion in advance taxes (Dec 2024) reduced liquidity.
- **Just-In-Time SNA-SPARSH Transition:** Limited funds in banking system.
- **Forex Market:** FII sell-offs and RBI's dollar sales to stabilize rupee.
- **Festive Withdrawals:** Increased cash demand during Diwali, Christmas, Mahakumbh 2025.

Impact of Liquidity Deficit

- Higher borrowing costs for banks, delayed monetary policy transmission, reduced credit availability, profit squeeze for banks and market volatility.

Tools available with RBI for Managing Liquidity

- Liquidity Adjustment Facility (LAF), Open Market Operations (OMOs), Market Stabilisation Scheme (MSS), Cash Reserve Ratio (CRR), Statutory Liquidity Ratio (SLR) and Forex Swaps.

3.8. INCENTIVE SCHEME FOR PROMOTION OF LOW-VALUE BHIM-UPI TRANSACTIONS

Why in the News?

Union Cabinet approved an incentive scheme for low-value BHIM-UPI (P2M) transactions.

Key Highlights

- **Coverage:** UPI Person-2-Merchant (P2M) transactions with ₹1,500 crore outlay (FY 2024-25).
- **Incentive:** 0.15% per transaction (up to ₹2,000) for small merchants.
- **Aim:** Promote BHIM-UPI, achieve 20,000 crore transactions, expand UPI in tier 3-6 cities and rural areas to enhance credit access.

About BHIM

- **UPI-based mobile app by NPCI,** launched in **2016** for cashless payments.
- **Features:** Instant transfers via mobile, Virtual Payment Address (VPA), QR codes; secure **multi-factor authentication** with **multiple payment modes (UPI-ID, Aadhar)**

About National Payments Corporation of India (NPCI)

- An **umbrella organization** managing **retail payments and settlement systems** in India.
- Initiated by **RBI and Indian Banks' Association (IBA)** under the **Payment and Settlement Systems Act, 2007.**
- Launched **RuPay, IMPS,** and other payment systems.

3.9. SELF-RELIANCE IN ELECTRONICS COMPONENT MANUFACTURING

Why in the news?

Ministry of Electronics and Information Technology (MeitY) notified **Electronics Components Manufacturing Scheme.**

About the Scheme

- **Electronics Value Chain:** Divided into 4 segments **Design, Components, Assembly,** and **Original Equipment Manufacturing.**
- **Scheme Focus: Passive/non-semiconductor Components** like resistors and capacitors.

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- **Incentives:** Provides **tailored fiscal support** for target segment products.

Component Manufacturing Ecosystem Development	
Objectives	Boost India's share in global electronic trade **by integrating domestic industry with Global Value Chains (GVCs).**
Key Strategies	**Attract global/domestic investment** to increase Domestic Value Addition (DVA).
Fiscal Incentives	**Turnover Linked Incentive:** 6 years + 1 optional gestation year **Capex Incentive:** Support for investments within 5 years **Hybrid Incentive:** Combination of turnover-linked and capex support
Key Information	**Base Year:** FY 2024-25 **Nodal Agency:** Project Management Agency
Eligibility	Open to both Greenfield (new) and Brownfield (existing) projects

India's Electronics Sector: Overview

- **Current Status:** Holds **4% of the global electronics market**, focused on assembly.
- **Domestic Production Growth:** Production rose **5x to ₹9.52 lakh crore (FY24);** 99% of smartphones sold in India are locally made.
- **Growth Drivers:** Large domestic market, skilled low-cost labor, government initiatives (Make in India, Digital India), etc.
- **Dominance:** Heavy reliance on assembly, less on innovation in design and components.

Key Initiatives to Boost Electronics Manufacturing

- **India Semiconductor Mission (ISM):** Builds semiconductor and display ecosystem.
- **Phased Manufacturing Programme:** Promotes indigenous Electric Vehicle manufacturing.
- **National Policy on Electronics 2019:** Aims to make India a global Electronics Systems Design and Manufacturing (ESDM) hub.
- **PLI Scheme 2.0 for IT Hardware:** Localizes components/sub-assemblies for Laptops, Tablets, All-in-One PCs, etc.
- **PLI Scheme for Large Scale Electronics Manufacturing (LSEM):** Boosts mobile phone manufacturing and investments in its value chain.

Why India Needs Self-Reliance in Electronic Components

- **National Security:** Foreign component reliance (56% from China/Hong Kong) risks data breaches
- **High imports** due to underdeveloped local manufacturing
- **Strategic Opportunity (China+1):** offers investment potential.
- **Competitive Advantage:** Low-cost manufacturing (46% of Thailand's minimum wage, 12x larger labor force - PWC).

Challenges for Electronic Component Manufacturers

- **High Logistics Costs:** Longer lead times, higher transport costs (**e.g.,** $0.80 to ship a smartphone from China vs. $8 from India - PWC).
- **Global Oligopoly:** Markets dominated by Japan (R&D) and Taiwan (US support).
- **Underdeveloped Supporting Industries:** E.g., Chemical industries lack high-quality raw materials for electronics.
- **Limited Critical Minerals:** Scarce minerals like gallium, germanium **(China-dominated)** increase **supply risks.**
- **Skilled Workforce Shortage:** For systems like Surface-Mount Technology (SMT) lines.

Conclusion

- **NITI Aayog** recommends **incentivizing R&D/design, rationalizing tariffs, enhancing skills, enabling technology transfers, and upgrading infrastructure** to build a self-reliant electronics component manufacturing ecosystem.

3.10. ELECTRONICS COMPONENT MANUFACTURING SCHEME

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Why in the News?

MeiTY notified the Electronics component manufacturing scheme.

About Electronics Component Manufacturing Scheme (ECMS)

- **Ministry:** Ministry of Electronics and Information Technology (MeiTY)
- **Objective:** Attract investments to build strong component manufacturing, integrating with global value chains.
- **Targeted Segments:** Targeting subassemblies (display, camera), bare components (PCBs), supply chain, and capital goods.
- **Types of Fiscal incentives offered for different segments:** Turnover-linked for sub-assemblies, capex-linked, and hybrid for select components.
- **Tenure:** Turnover linked incentive 6 years; Capex incentives 5 years
- **Eligibility:** Both **Greenfield** and **brownfield investment**
- **Implementation agency:** MeiTY through **Project Management Agency (PMA).**

Significance of Electronic Components Sector India

- **Economic Potential:** Fastest-growing sectors with **5 times** domestic growth (FY 15 to 24).
- **Export Growth:** Contributed **$29.12 billion** in **FY24** with **>20%** CAGR
- **National Security:** 1st defence semiconductor plant (India-US), will reduce foreign reliance
- **Drives Technological Innovation:** 5G enabling Remote Surgery and Autonomous Vehicles.

Challenges faced by electronic component sector in India

- **High cost of manufacturing:** Multiple tariff slabs & surcharges, high material & logistics costs etc. make India's products globally uncompetitive (eg 4%-5% disadvantage for Indian components versus China) and Scale up challenge
- **Lack of R&D and design ecosystem:** India spends less than 1% of GDP, hinders innovation
- **Lack of access** to global demand
- **Heavy imports dependence** on critical minerals causes supply chain disruptions and price volatility.
- A **weak component ecosystem** faces high capex, low turnover, and long gestation.
- Technological and skills gaps necessitate technology transfer.

Government Schemes for Electronics Boom in India

- Make in India (2014)
- PMP (2017): production of mobile devices
- PLI Scheme (2020): incentives on incremental sales
- SPECS: incentive on capex
- Semicon India (2021): Develop semiconductor and display ecosystem
- India Semiconductor Mission

Way Forward (Niti Aayog's Electronics: Powering India's Participation in Global Value Chains (GVCs)

- **Fiscal Interventions**
  - **Fiscal incentive for Components manufacturing:** Opex support for basic, Capex support for complex and Hybrid support for high-complexity ones
  - **Innovation scheme** to promote SMEs/R&D centers to invest in product design and R&D.
  - Large **clusters** with worker housing and localized regulations will be developed.
- **Non-Fiscal Interventions**
  - **Rationalize tariffs** to improve competitiveness
  - Attract **foreign talent**
  - Fostering **academia- industry** collaboration.
  - **Simplify the process** of Tech transfer

3.11. NATIONAL TECHNICAL TEXTILES MISSION (NTTM)

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Why in the News?

It has been 5 years since the launch of the **National Technical Textiles Mission.**

National Technical Textiles Mission (NTTM)

- **Aim:** Position India as a global leader in Technical Textiles with a budget of Rs. 1,480 crores until 2025-26.
- **Ministry:** Ministry of Textiles.
- **Four Components:** Research, Innovation, and Development; Promotion and Market Development; Export Promotion; Education, Training, and Skill Development.
- **Objective:** Build an ecosystem to strengthen India's global leadership in technical textiles.

Technical textiles

- **Technical textiles** are fabrics designed for specific functions, prioritizing performance over aesthetics. E.g., **medical equipment, safety gear, and building materials.**
- Market segmented into 12 categories (refer box)

12 Segments of Technical Textiles	
Indutech	Industrial brushes, computer printer ribbon, etc.
Mobitech	Seat cover, upholstery, tyre cord fabrics, etc.
Sportech	Sports nets, parachute, artificial grass and turfs, etc.
Buildtech	Floor and wall coverings, scaffolding nets, awnings & canopies, etc.
Hometech	Pillows, mattresses, blinds, etc.
Meditech	Contact lenses, baby diapers, etc.
Clothtech	Interlinings, labels, etc.
Agrotech	Bird protection nets, crop covers, etc.
Protech	Bullet-proof protective clothing, high visibility clothing, etc.
Packtech	Wrapping fabric, soft luggage, etc.
Oekotech	Waste management, environmental protection, recycling.
Geotech	Geo-composites, geo-bags, geogrids, geonets.

Significance of Technical Textiles for India

- **Diversified Applications:** Innovations like Hometech (Antiviral Mattress Protector).
- **Rising Demand:** Consumers prefer durable, high-strength technical textiles for activewear, medical apparel, and hygienic medical equipment (Meditech) due to population growth and aging.
- **Industrial Use:** Indutech supports manufacturing with products like conductive textiles and 3D textile solutions.
- **Environmental Protection:** Geotech and Oekotech aid in floor sealing, water pollution prevention, and erosion control.
- **Disaster Management:** Geotech barriers, e.g., in Austria, prevent avalanches.
- **Defense Modernization:** Protech bulletproof jackets and composites under Make in India.
- **Key Sector Support:** Enhances agriculture, healthcare, transportation, and infrastructure, e.g., geotextiles in railway tracks (National Infrastructure Pipeline) and geomembranes (Jal Jeevan Mission).

Initiatives to Promote Technical Textiles

- **PLI Scheme:** boosts domestic technical textiles, man-made fabrics, and apparel production.
- **PM MITRA Scheme:** focusing on man-made fibers (MMF) and technical textiles
- **SAMARTH Scheme:** provides demand-driven skilling for organized textile jobs.
- **New HSN Codes:** 30+ Harmonized System of Nomenclature codes added to the 207 identified in 2019.
- **Mandatory Usage:** 119 technical textile products mandated for use across 10 central ministries.

Challenges in Leveraging Technical Textiles

- **Lack of Awareness:** Limited marketing and education hinder public knowledge.
- **Import Dependence:** On China (low-cost) and US/Europe (high-tech).
- **Skilled Workforce Shortage:** as training focuses on traditional textiles.

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- **Insufficient R&D:** Commodity-focused industry with limited diversification.
- **Standardization Issues:** Unaligned HSN codes and international standards complicate trade and quality control.

Way Forward

- **Enhance R&D:** via collaborations with premier institutes.
- **Boost Export Competitiveness:** Align Indian standards with global norms for better market acceptance.
- **Promote Sustainability:** Use natural fibers and eco-friendly products like Agrotech nets.
- **Adopt Global Practices:** E.g., advanced techniques from USA (Sportech), Germany (Geotech), etc.

3.12. COAL SECTOR FOR INDIA'S DEVELOPMENT

Why in the News?

India achieved a historic milestone by surpassing **one billion tonnes (BT)** of coal production in **March 2025**, in **FY 2024-25.**

Government Initiatives Driving Coal Sector Success

- **Coal Mines (Special Provisions) Act, 2015 (CMSP Act):** Enabled auction of coal mines for commercial mining by private entities, with first auctions launched in 2020.
- **Mines and Minerals (Development and Regulation) Amendment Act, 2021 (MMDR Act):** Allowed captive mine owners to sell up to 50% of annual mineral production, including coal, in the open market.
- **Coal Logistics Plan & Policy, 2024:** to create a cost-effective and resilient coal evacuation system.
- **Transparent Auction Mechanism:** via two-stage online bidding through the **National Coal Mine Safety Report Portal** and **Mine Closure Portal.**
- **Coal Gasification Scheme, 2024:** Targets 100 million tonnes of coal gasification by 2030.
- **Mission Coking Coal:** to boost supply for the steel sector.
- **Other Measures:** National Coal Index (NCI); Single Window Clearance Portal; 100% FDI.

Significance of Coal in India's Development

- **Primary Energy Source:** E.g., Coal accounts for 46.88% of India's power generation capacity (November 2024).
- **Reduced Import Dependency:** E.g., imports dropped 8.4% in April-December 2024 compared to FY 2023-24, saving foreign exchange.
- **Rising Energy Demand:** projected to triple by 2050 (International Energy Agency, IEA)
- **Regional Development:** The coal sector contributes over ₹70,000 crore annually via GST, District Mineral Foundation (DMF) funds, etc.
- **Job Creation:** Employs around 5 lakh workers across 350+ coal mines.
- **Other Contributions:** Half of railways' **freight revenue** (**49%** in FY 2022-23), enhanced **capital expenditure & CSR contribution.**

Key Information About India's Coal Sector

- India has the **5th largest coal reserves** globally and is the **2nd largest coal consumer.**
- **Total coal reserves:** 361.41 billion tonnes (2022).
- **Top coal reserve states:** Odisha, Jharkhand, Chhattisgarh (~69% of reserves).
- **Coal Mines (Nationalization) Act, 1973:** Governs coal mining eligibility. Auctions introduced in 2014 allowed private captive mining, with commercial mining opened to private players in 2020.
- **Types of Coal: Anthracite** (Highest grade), **Bituminous** (widely used for power generation), **Subbituminous & Lignite** (Lowest grade, least carbon content).

Major Challenges for India's Coal Sector

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In Mining and Coal Production Industry	Technological obsolescence in mining techniques
	Un-seasonal and extended rainfall in coal-bearing areas
	Non-payment of commensurate coal value and huge outstanding dues by power sector consumers
	Frequent labour/industrial relation (IR) issues in coal fields
	Land acquisition issues
	High ash content of Indian coal
Environmental concerns from coal-powered thermal power plants	**Harmful gases:** sulphur dioxide (SO_2), nitrogen oxides (NOx), carbon dioxide (CO_2), particulate matter (PM)
	Pollutants: fly-ash, lead (Pb), arsenic (As), cadmium (Cd), mercury (Hg)

3.13. INDIA'S BIO-ECONOMY

Why in the News?

Biotechnology Industry Research Assistance Council (BIRAC) released **India Bio-Economy Report 2025** (IBER 2025) **on its 13th anniversary.**

More on the News

- **BioSaarthi Mentorship Initiative,** a global program to support biotech startups, **was also launched.**
- BIRAC, established by the **Department of Biotechnology in 2012,** is a Not-for-profit Public Sector Enterprise.
    - It facilitates industry-academia collaboration through funding, technology transfer, and IP management.
    - **Key Initiatives:** Bio-NEST Scheme, Biotechnology Ignition Grant (BIG), SEED Fund, etc.

About Bio Economy

- It involves the sustainable production, use, and conservation of biological resources to deliver products, processes, and services across economic sectors.
- India targets a $300 billion bioeconomy by 2030.

Key Sectors of Bio Economy	Key Areas	Examples
BioPharma & BioMedical	Cancer Immunotherapy, Gene Editing, Precision Medicine	CAR-T Cell Therapy, CRISPR-Cas9 Technology
BioAgri	Genetically Modified Crops, Precision Agriculture, Bio-based Products	Bt Cotton, Bacillus thuringiensis, Trichoderma
BioIndustrial	Biofuels, Bioplastics, Biogas	Ethanol Blended Petrol Program, Compressed Bio Gas (SATAT Scheme)
BioResearch & BioIT (Bio Services)	Clinical Trials, Biotech Software	Biocon, Infosys Life Sciences

Significance of Bio-economy for India

- **Economic Growth:** Bioeconomy grew from $10 billion (2014) to $165.7 billion (2024), 4.25% of India's GDP.
- **Entrepreneurship:** Biotech startups increased from 50 to over 10,000 in a decade (IBER 2025).
- **Global Medicine Hub:** India ranks 3rd in pharmaceutical by volume, 14th by value, and produces 65% of global vaccines.
- **Food Security:** Agri-productivity via GM crops, precision farming, etc.
- **Employment:** Expected to generate 35 million jobs.
- **Energy Security:** E.g.,15% ethanol blending in 2024 (target 20% by 2025), **reduced both crude oil imports and CO_2 emissions.**
- **Environmental Benefits:** E.g., promotes **circular economy** (ethanol from agricultural residue) and **pollution control** via biofertilizers, biopesticides, and bioremediation (e.g., TERI's Oilzapper).

Policies and Schemes Promoting Bioeconomy

- **BioE3 (Biotechnology for Economy, Environment and Employment) Policy 2024:** Supports bio-manufacturing, bio-foundry clusters, and bio-AI hubs.
- **National Biopharma Mission:** Led by Department of Biotechnology and BIRAC, it strengthens vaccine, biosimilar, and medical device development.
- **Biotechnology Research Innovation and Entrepreneurship Development (Bio-RIDE) Scheme 2024:** Promotes bio-entrepreneurship and industry-academia collaboration.
- **Genome India Project:** Launched in 2020 to catalog India's genetic diversity.
- **Biotech-KISAN (Biotech-Krishi Innovation Science Application Network):** Empowers farmers, especially women, through scientific agricultural innovations.
- **National Policy on Biofuels 2018:** Boosts biofuel use in energy and transport.

Hurdles in India's Bioeconomy Growth

- **Overlapping regulations** (e.g., Genetic Engineering Appraisal Committee vs Ministry of Science and Technology).
- **Bio-piracy:** E.g., turmeric patent issue in the US.
- **Low Research and Development Spending (Economic Survey 2024-25): 0.64% of GDP** (China~2%, US~3%).
- **Other Challenges:** Safety concerns with GM crops, inadequate funding, etc.

Way Forward

- **Reform Regulations:** Establish a **National Bio Economy Mission** and single-window regulatory system, etc.
- **Leverage Treaties:** E.g., use **WIPO's Treaty on Intellectual Property** to address IP issues.
- **Boost Investment:** Offer tax incentives, outcome-based funding, etc.
- **Develop Talent:** Create Centers of Excellence and specialized curricula.
- **Infrastructure:** Build a **National Biological Data Repository** and **global alliance networks.**
- **Ensure Safety:** Adopt inherently safer designs (301st Parliamentary Report).

3.14. DISTRICT MINERAL FOUNDATION (DMF)

Why in the News?

Standing Committee reported on DMF fund and PMKKKY implementation.

About District Mineral Foundation (DMF)

- **Enactment:** Created in 2015, via amendment to Mines and Minerals Act, 1957
- **Concept:** DMF is a non-profit trust for districts affected by mining operations.
- **Objective:** Benefit persons and areas impacted by mining as prescribed by states.
- **Structure:** Two-tier setup with Governing Council (policy) and Managing Committee (execution).
- **Funding of DMF:** Mining leaseholders contribute 10–30% of royalty based on lease date.
  - Funds used at district level under PMKKKY guidelines.

Mining Jurisdiction in India

- **Constitutional Framework**
  - **Entry 54 of Union List:** Parliament can regulate mines and mineral development in the public interest.
  - **Entry 23 of State List:** States can regulate mines and mineral development subject to Union List provisions.
- **Minor Mineral Authority**
  - **Central Government:** Can notify any mineral as a "minor mineral".
  - **State Government:** Can make rules for granting concessions for minor minerals within their territory.
- **MMDR (Amendment) Act, 2023**
  - **Critical and Strategic Minerals:**
    - Central Government is empowered to exclusively auction mining leases and composite licences.
    - Applies to minerals listed in Part D of the First Schedule of the MMDR Act.
- **DMF (District Mineral Foundation) Jurisdiction**

- **Central Government:** Can direct how DMF funds are composed and used.
- **State Government:** Manages implementation and daily operations.
- **Significance and status:**
  - DMF guided by Constitution Schedules, PESA 1996, FRA 2006.
  - **645 districts (23 States)** have DMFs.
  - **Over ₹1-lakh crore** collected
  - **Top states by DMF funds:** Odisha (29%); Chhattisgarh (14%); Jharkhand (13%)

Pradhan Mantri Khanij Kshetra Kalyan Yojana (PMKKKY)

- **Launch: 2015** under MMDR Act, 1957.
- State integrate PMKKKY into DMF rules.
- **Objective:** Sustainable development in mining areas; fund healthcare, education, infrastructure, water, livelihoods.
- **2024 Revisions**
  - 70% funds for priority sectors; 30% cap on others.
  - **Livelihood Focus:** Expanded, agriculture added.
- **Directly Affected Areas:** 70%
- **Endowment Fund:** 10%
- **Strengthened Planning:** 5-year based on needs assessment.

Challenges Associated with the District Mineral Foundation (DMF)

- **Governance Issues:** DMFs are dominated by district collectors, with limited mining community representation; only five states include affected people in Governing Councils.
- **Planning & Beneficiary Identification:** No district publishes five-year plan. Gram Sabha engagement is lacking.
- **Fund Utilization:** Only 40% of funds used; major states show low spending. Funds favor infrastructure over human development, contradicting PMKKKY goals.
- **Weak Grievance & Monitoring:** Complaint systems often non-functional; no public data or utilization index for transparency.
- **No Social Audits:** Effectiveness assessments absent.
- **Aspirational Districts Gap:** 106 of 112 ADP districts are DMF districts, yet mining impact mitigation remains unmet.

Reforms

- Ensure DMFs are independent, community-led with at least one-third mining-affected representation.
- Develop participatory five-year plans.
- Enforce 70% fund allocation to critical sectors under PMKKKY.
- **Mandate Social Audits & Financial Reviews** by **independent agencies**
- Support 'Just Transition' with Endowment Funds for post-mine economies.

3.15. NATIONAL WATERWAYS (CONSTRUCTION OF JETTIES/TERMINALS) REGULATIONS, 2025

Why in the news?

The **Inland Waterways Authority of India (IWAI)** issued the **National Waterways (Construction of Jetties/Terminals) Regulations, 2025.**

About Regulations

- **Formulated By: Inland Waterways Authority of India (IWAI)** under the Ministry of Ports, Shipping and Waterways (MoPSW).
- **Aim:** Attract **private investment** and promote efficient use of India's waterways.

Key Provisions of the Regulations

- **Scope:** Applies to any entity, including private, developing or operating inland waterway terminals on national waterways.

- **No-objection Certificate (NoC) required:** from IWAI to develop or operate terminals.
- **Digital Portal:** for efficient, transparent terminal applications.
- **Responsibilities:** Terminal developers and operators handle technical design and construction.

Inland Water Transport (IWT)

- **Definition:** IWT involves moving people and goods on navigable rivers, canals, lakes, and inland waters.
- **Benefits:** Fuel efficient; Cost Effective in developing, transporting & maintenance; Reduced congestion; Eco-friendly.

Status of Inland Waterways in India

- **Navigable Waterways:** India has ~14,500 km of navigable waterways (rivers, canals, etc.), moving 133.03 Million Metric Tonnes (MMT) of cargo annually via IWT.
- **Comparison:** Only 3.5% of India's trade uses waterways, vs. 47% in China, 40% in Europe, 35% in Bangladesh.

Initiatives Undertaken

- **Inland Waterways Authority of India (IWAI):** Established 1986, nodal agency under MoPSW, develops and regulates National Waterways (NWs).
- **Sagarmala Programme (2015):** Promotes coastal and inland waterways to reduce road/rail dependency.
- **National Waterways Act, 2016:** Declares 111 waterways (5 existing, 106 new) as NWs.
- **Inland Vessels Act, 2021:** Replaces 1917 Act, addresses vessel registration, classification, pollution prevention.
- **Jalvahak Scheme (2024):** Encourages cost-effective, safe, timely cargo delivery via waterways.

Major Challenges

- **Inadequate Depth:** Most rivers (~2m depth) fall short of 3m needed for heavy loads.
- **Environmental Concerns:** Navigation increases river pollution, disrupts water flow, and harms habitats.
- **Vessel Shortage:** High capital costs and financing difficulties limit vessel construction.
- **Modal Integration:** Lack of multimodal corridors, waterway mapping, and transport hubs.

Conclusion

Unlocking inland waterways' potential requires **upgrading infrastructure, encouraging private investment,** etc. Streamlined policies and regional collaboration will enhance cargo movement, making waterways a sustainable transport pillar.

3.16. VIZHINJAM INTERNATIONAL SEAPORT

Why in the News?

PM inaugurated Vizhinjam International Transhipment Deepwater Multipurpose Seaport in Kerala.

About Seaport

- India's **First Deep-Water Container Transshipment Port.**
- **Purpose:** Handles **container, multi-purpose and break-bulk cargo.**
- **Developmental model: Landlord model** with **PPP** on **DBFOT basis.**
- **Advantages**
  - **Strategic Location:** Near key international shipping route connecting Europe, Persian Gulf and Far East.
  - **Naturally Advantaged:** Deep draft supports ultra-large next-gen container ships
  - **Scalable infrastructure:** To match cargo growth and minimal siltation with capacity for **18,000+ TEU.**

Strategic location of Vizhinjam Port

What is transshipment?

- It involves **transfer of cargo** between vessels during transit to the final POD.
- **Transshipment hub integrated via:**
  - **Hub-and-spoke:** Links regional feeders with long distance (global) deep-sea lines.
  - **Intersection:** Connects large ships on major routes
  - **Relay:** Links regional routes with different port calls.
- Need to develop India as Transshipment hub
- **High Foreign Dependency:** Nearly **75%** of India's transshipped cargo handled abroad, mainly at Colombo, Singapore and Klang.
- **Trade routes proximity:** Liners prefer **minimum deviation.**
  - **Vizhinjam and Galathea Bay** lie **~6-10 NM** from the Suez route.
- **Revenue Loss:** Indian ports loses **$200-220 Million** of potential revenue each year
- **Shallow drafts:** Indian ports lack **18-meter draft.**
- **Infrastructure:** Upgrade to global standards with productivity and superstructures.

Challenges in developing India as Transshipment hub

- **High Cost:** Due to vessel related charges, in comparison to global ports.
- **Far distance to international maritime trade route:** Indian ports lie over **5 hours** from key routes, Colombo is just **0.5-1 hours** away.
- **No major tax incentive available:** For setting up transshipment **free trade zone**
- **Land scarcity:** Islands lack **minimum 25 hectares** needed for **Free Trade Zone.**
- **Complex Custom: Time-consuming** clearance processes.

Other Initiatives taken to promote Transshipment in India

- **ICTP, at Galathea Bay:** Offers proximity to Malacca Strait and Singapore
- **Kochi International Transhipment Terminal:** Handles cargo up to **one million TEUs** annually.
- **Amrit Kaal Vision 2047:** aims for **world-class ports**
- **Cabotage Law Relaxation:** To allow foreign ships to transport **EXIM** containers
- **Cabotage: Practice of imposing restrictions** for movement of **domestic cargo by foreign flagged vessels.**

Way Forward

- **Competitive Logistics:** Aim for 15–20% lower costs than Colombo via reduced port charges and service tax waiver.
- **Global Standards:** Government should share dredging costs, as done in the US and Sri Lanka.
- **Mega Ports:** Vadhavan, Paradip, and Deendayal to exceed 300 MTPA capacity.
- **Customs Reform:** Digitize processes; exempt transshipment cargo.
- **Infrastructure:** Shift to landlord model, boost private participation.

3.17. NATIONAL ROAD SAFETY BOARD

Why in the News?

Supreme Court questions Centre over delay in road safety board.

More on the News

- Motor Vehicles (Amendment) Act, 2019 mandates National Road Safety Board.
- MORTH issued constitution notification for the Board in 2021.

About National Road Safety Board (NRSB)

- **Composition:** Chaired by one person with 3–7 members, appointed by the Central Government.
- **Head Office:** Located in the NCR; may have offices across India.
- **Functions:** Promote road safety, innovation, and traffic regulation; advise governments; support Good Samaritans; crash investigations.

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Challenges of road safety in India

- **High Fatality Rate:** India had 11% of global road deaths in 2022.
- **Behavioural Issues:** Over-speeding caused 71.2% of deaths; wrong-side driving 5.4%.
- **Road Conditions:** Under 20% of national roads assessed for safety.
- **State-Level Gaps:** Most states lag in 2030 UN road safety goals.
- **Other Issues:** Poor standards, mixed vehicle fleet, bystander apathy, weak public transport.

Impact of Road Accidents

- **Economic:** Crashes cost 3–5% of India's GDP annually (World Bank).
- **Rising Inequality:** 75% of poor households report income loss after crashes.
- **Intangible Costs:** Trauma, loss of breadwinners—80% of victims are under 45.

Initiatives taken for Road safety:

- **Global**
  - **Global Plan for the Decade of Action for Road Safety 2021–2030**
    - ◊ **By: WHO** and **UN Regional Commissions** to guide road safety.
    - ◊ **Goal: 50% reduction in road deaths and injuries by 2030.**
  - **Brasilia Declaration on Road Safety (2015):** SDG 3.6- half global road traffic deaths by 2030.
- **In India**
  - **National Road Safety Policy 2010:** Emphasizes awareness, road safety, database, safe infrastructure.
  - **The Motor Vehicles Act of 1988 (MVA 1988)** and **Amendment:**
    - ◊ **Good Samaritan (section 134A):** protects helpers from legal liability
- **Cashless Treatment of Road Accident Victims Scheme, 2025 By MoRTH**
  - **Eligibility:** All road accident victims.
  - **Coverage:** 1.5 Lakhs for 7 days at designated hospitals.
  - **Nodal Agency:** State Road Safety Council.
  - **Payments:** Verified by State Health Agency, paid from Motor Vehicle Accident Fund.
- **Vehicle engineering:** Enhanced standards for Airbags, ABS, Crash test, etc.
- **Road engineering:** Safety embedded in design.
- **Bharat NCAP:** Star rating for vehicle safety.
- **Measures Required:**
  - **Improving Governance:** Standardize road assessments, conduct audits; KS Radhakrishnan panel recommended third-party audits.
  - **Technology:** Implement ATMS, explore AI solutions like Nagpur's iRASTE.
- **Safe System:** Focus on transport planning, infrastructure, vehicle safety, road use, post-crash response.
- **Emergency Care:** Build trauma and pre-hospital systems.
- **Other:** Promote safe driving, helmets, reducing alcohol/ drug use, etc.

3.18. NATIONAL PROGRAMME FOR DAIRY DEVELOPMENT (NPDD)

Why in the News?

Union Cabinet approved the Revised National Program for Dairy Development (NPDD) with an enhanced outlay for the period of 15th Finance Commission cycle **(2021-22 to 2025-26).**

Objectives of Revised National Programme for Dairy Development (NPDD)

- Establish 5,000 new Dairy Cooperative Societies.
- Enhance milk procurement and processing in the North Eastern Region (NER).
- Form 1 Milk Producer Company with dedicated grants alongside ongoing NPDD projects.

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➤ Create 1.6 lakh direct and indirect jobs, prioritizing women (70% of dairy workforce).

About National Programme for Dairy Development (NPDD)

➤ A **Central Sector Scheme** launched in 2014, restructured in 2021.

➤ **Implementing Agency:** Department of Animal Husbandry & Dairying (DAHD), Ministry of Fisheries, Animal Husbandry & Dairying.

➤ **Objectives:** Develop infrastructure for milk production, processing, and cold chain; Create training facilities for dairy farmers, etc.

➤ **Key Components:**
  ➡ **Component A:** Support Dairy Cooperative Societies (DCS) with infrastructure like chilling plants and testing labs.
  ➡ **Component B:** Dairying through Cooperatives (DTC), a **Japan International Cooperation Agency (JICA)-assisted program** for sustainable dairy cooperatives in 9 states.

Role of Cooperatives in Dairy Sector

➤ **Collective Empowerment (Sahkar Se Shakti):** provide institutional support and bargaining power for small farmers.

➤ **Economic Empowerment (Sahkar Se Samriddhi):** Ensure equitable wealth distribution, e.g., Amul, Nandini.

➤ **Cooperation among Cooperatives (Sahkar Se Sahyog):** Facilitates synergies, e.g., Primary Dairy Cooperative Societies (PDCS) transactions via Cooperative Banks.

Dairy Sector in India

➤ **Global Milk Production Share:** 24.76% (**Global Ranking:** #1)
➤ **Contribution to National Economy:** 5%
➤ **Agricultural Significance:** Single largest agricultural commodity
➤ **Growth Rate:** 5.62% CAGR in milk production (2014-24)
➤ **Employment:** Directly employs 8+ crore farmers (majority women)
➤ **Milk Availability:** 471 grams/day/capita (World average: 329 grams/day)
➤ **Major Dairy Production States:** Uttar Pradesh, Maharashtra, Himachal Pradesh, etc.

Challenges in Dairy Sector

➤ **Low Productivity:** Due to ineffective breeding, limited extension services, and low-quality feed.
➤ **Informal Sector:** Preference for informal milk supply reduces demand for packaged milk.
➤ **Quality Issues:** Adulteration, e.g., milk dilution, urea use.
➤ **Animal Health:** Limited veterinary services and vaccination awareness, e.g., Foot and Mouth Disease.
➤ **Governance:** State interventions hinder cooperative democracy.
➤ **Infrastructure:** Lack of processing, storage, and marketing facilities impacts profitability.

Other Initiatives	
Rashtriya Gokul Mission	Enhances milk output and productivity through genetic improvements.
White Revolution 2.0	Launched in 2024 by Ministry of Cooperation to promote sustainability, circularity, women empowerment, etc.
Dairy Entrepreneurship Development Scheme (DEDS)	NABARD programme to create self-employment in dairy by offering capital subsidies for bankable projects.
Livestock Health & Disease Control Programme (LHDCP)	Improves animal health through prophylactic vaccination programmes.
Animal Husbandry Infrastructure Development Fund (AHIDF)	Incentivizes investments by entrepreneurs/private companies to establish dairy processing.

Way Forward

➤ **Infrastructure:** Expand milk production, processing, and storage facilities, e.g., cold chains, testing labs.
➤ **Technology:** Promote scientific animal husbandry, e.g., artificial insemination, embryo transfer.
➤ **Cooperatives:** Increase awareness and adoption in remote areas.
➤ **Processing & Marketing:** Develop milk products like A2 Ghee, paneer, and promote exports.

Related News: Revised Rashtriya Gokul Mission (RGM)

- **Enhanced Outlay:** ₹1,000 crore added, totaling ₹3,400 crore for 2021-26.

Key Additions:

- **Heifer (Young cows) Rearing Centres:** 35% capital cost assistance for 30 facilities housing 15,000 heifers.
- **Support for High Genetic Merit (HGM) Heifers:** 3% loan interest subvention for HGM IVF heifer purchases.

Ongoing Activities:

- **Nationwide Artificial Insemination Programme** (NAIP) for semen station and AI network strengthening.
- **Bull production and breed improvement** via sex-sorted semen.
  - **Skill development,** farmer awareness, and Centres of Excellence.

3.19. FARMER PRODUCER ORGANISATIONS (FPOs)

Why in the News?

Government has achieved the target of establishing **10,000 Farmer Producer Organisations** (FPOs) under **Formation and Promotion of 10,000 Farmer Producer Organizations (FPOs) Scheme.**

About the Scheme

- A **Central Sector Scheme launched** in 2020, with ₹6,865 crore budget till 2027-28.
- **Objective:** Create a supportive ecosystem to form 10,000 new FPOs, promoting sustainable, income-oriented farming.
- **Implementing Agencies (IAs):** 9 agencies, including Small Farmers Agri-Business Consortium (SFAC), NABARD, NAFED, etc.
- **Special Focus:** Small, marginal farmers, women Self-Help Groups (SHGs), etc. for marketing, branding, and export.
- **Key Provisions:**
  - FPO formation based on **Produce Cluster Area** and specialized commodity approaches.
  - **Financial assistance:** ₹18 lakh per FPO for management costs (3 years).
  - **Equity grant:** Up to ₹2,000 per farmer member, max ₹15 lakh per FPO.
  - **Credit Guarantee:** Up to ₹2 crore project loan per FPO.
- **Achievements:** ₹254.4 crore in equity grants released to 4,761 FPOs; ₹453 crore credit guarantee issued to 1,900 FPOs.
  - ~30 lakh farmers connected (~40% women).

About FPOs

- **Definition:** FPOs are formed by farm producers (e.g., farmers, milk producers) as shareholders.
- **Aim:** Enhance living standards, income, and profitability.
- **Registration:** Under Companies Act, 2013 or Co-operative Societies Act, 1912, registered on the FPO Registry Portal with a unique Registration Identity Code (RIC).
- **Support:** Small Farmers' Agribusiness Consortium (SFAC), under the Department of Agriculture and Cooperation (Ministry of Agriculture), supports State Governments in FPO formation.

Benefit of FPOs	
Economies of Scale	Achieved through aggregation of produce and bulk transport, reducing costs per unit.
Enhanced Value Addition	Increased primary and secondary processing of agricultural produce to improve product value.
Greater Bargaining Power	Farmers gain stronger negotiation capabilities and focus on quality in production and processing.
Market Intelligence	Improved communication facilitates dissemination of information about prices and volumes.
Reduced Post-Harvest Losses	Minimized losses through joint storage and value addition facilities.

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Challenges Faced by FPOs

- **Lack of Professional Management:** Shortage of qualified CEOs to manage FPOs professionally in rural areas.
- **Post-harvest Losses:** Limited access to modern technologies, storage, and transportation infrastructure.
- **Investment and Credit Constraints:** Difficulty investing in processing, storage, or accessing collateral-free institutional credit.
- **Quality Standards and Certification:** Complex and costly process for small FPOs.
- **Climate Change and Sustainability:** Lack of resources and expertise for climate-resilient practices.
- **Market Volatility:** Single-crop focus increases risks from crop failures or market fluctuations.

Way Forward

- **Adopt Technology:** E.g., precision farming, IoT, and farm management software to boost productivity.
- **Capacity Building:** Train FPO members in modern, sustainable farming and resource management.
- **Scoring Model:** Develop a standardized scoring model for FPOs to help financial institutions for resource allocation.

3.20. INNOVATION ECOSYSTEM FOR DEEP TECH

Why in News?

Minister urged startups to focus on Deep tech innovation.

About Deep Tech

- Advanced science/tech innovations solving complex problems via novel solutions or more advanced core science/engineering technologies in startups.

Deep Tech Startup Ecosystem in India

- **Extent:** Currently 4,000 start-ups, expected 10,000 by 2030 (approx), Department for Promotion of Industry and Internal Trade.
- **Global Standing:** Despite 3rd largest pool India **ranked 6th** globally
- **Funding:** Attracted $1.6 billion in 2024, 78 % increase year-on-year.
- **Examples:** Agnikul's 3d-printed rocket engine, ImmunoAct cancer therapy, and ideaForge's advanced UAVs.

Why are Deep Tech Startups lagging in India?

- **Lagging Institutional Support:** only 1/6 public R&D support it
- **Inconsistent Funding** and favors quick returns
- **Long Gestation Period** with high risk
- **Focus on Consumer Startups**
- **Regulatory Hurdles** due to lack of universal consensus
- **Education and Research Infrastructure:** weak
- **Limited Academia-Industry Collaboration:** impede progress

Initiatives for India's Deep Tech Ecosystem

- Deep Tech Fund of Funds (Budget 2025-26)
- Draft National Deep Tech Startup Policy
- **ADITI Scheme:** Grants for developing critical and strategic defense technologies.
- Anusandhan National Research Foundation: access scientific equipment & facilities.
- Thematic Missions in AI, Blockchain and quantum
- **International Collaborations:** ICET with USA, Semiconductor with Japan, QUIN by Quad Members.

Way Forward

- **Facilitate Spinouts:** companies based on academic research owned by University
- Strengthen **innovation clusters** in key sectors and establish dedicated R&D facilities

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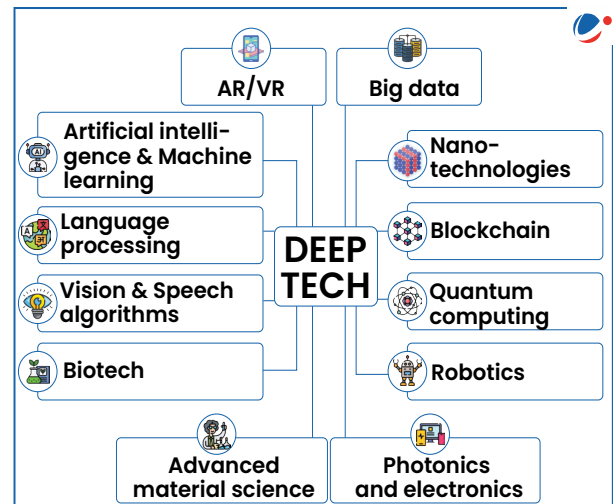
- **Foster Investment** via co-investment programs, government instruments and simplified VC regulations and bridge investor knowledge gaps.
- Offer **R&D incentives** like grants and sandboxes
- **Implementation of National DeepTech Startup Policy** with monitoring

3.21. UNIFIED PENSION SCHEME (UPS)

Why in the News?

Pension Fund Regulatory and Development Authority (Operationalisation of Unified Pension Scheme under National Pension System) Regulations, 2025 was notified to operationalize **the Unified Pension Scheme** (UPS).

Key Highlights of Regulations

- **Applicability of UPS:** Existing Central Government employees, new recruits joining on or after 1st April 2025, voluntarily retired, etc.
- **Eligibility for Benefits:** Employees superannuating (after 10 years of qualifying service), Employees retired under Central Civil Services (Classification, Control and Appeal) Rules, 1965, etc.
- **Contributions: Individual Corpus** (10% of basic pay); **Pool Corpus** (Central Government contributes ~8.5% of basic pay).
- **Fund-Based System:** Relies on regular contributions and investments for assured payouts post-superannuation/ retirement.
- **Permanent Retirement Account Number (PRAN):** Unique number **recording all transactions** via the Central Recordkeeping Agency (CRA) system.
- **Payouts:**
  - **Assured Payout:** 50% of the average basic pay of the last 12 months before superannuation/retirement (min. 25 years of service).
  - **Minimum Guaranteed Payout:** ₹10,000/month with 10 years of service.
  - **Proportionate Payout:** For 10–25 years of service.
  - **Admissible Payout:** Reduced if individual corpus is below benchmark or withdrawal exceeds 60% of corpus.

Eligibility Criteria for Assured Payout

- **Minimum 10 years of qualifying service** for payout from superannuation date.
- **Voluntary retirees** (after 25 years) receive **payout from their original superannuation age.**
- **Family Payout:** 60% of admissible payout to the legally wedded spouse for life upon subscriber's death.
- **Dearness Relief (DR):** as per Central Government declarations.
- **Intermediaries:** NPS architecture (National Pension System Trust, Pension Fund, etc.)

Challenges of UPS

- **Fiscal Burden** on Government; **Delayed Payment** (e.g., voluntary retirees receive pensions only at superannuation age); **Excludes** non-spouse family members; **Political Opposition** (from Old Pension Scheme supporters).

About Pension Fund Regulatory and Development Authority (PFRDA)

- **Genesis:** Established in 2003 via Government of India resolution; statutory body under **PFRDA Act, 2013.**
- **Objective:** Promote old-age income security by regulating pension funds to protect subscribers.
- **Ministry:** Works under Ministry of Finance.
- **HQ:** New Delhi.
- **Composition:** Chairperson and up to six members with expertise in economics, finance, or law, appointed by the Central Government.
- **Functions:** Register and regulate intermediaries (e.g., National Pension System Trust), Resolve disputes between intermediaries and subscribers.
- **Initiatives:** Implements Atal Pension Yojana (APY), National Pension System (NPS), NPS-Vatsalya.

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3.22. REMITTANCES TO INDIA

Why in the News?

RBI Survey shows **US and UK have surpassed Gulf nations** as **top sources of inward remittances** for Indians in the last four years.

Key Trends in Remittance Inflows to India

- **Remittance Inflow:** Doubled to USD 118.7 billion in 2023-24 from 2011.
- **Top Source Countries (2023-24):** US (27.7%), UAE, UK, Saudi Arabia, Singapore.
  - ➡ Gulf Cooperation Council (GCC) countries (38%) lag behind Advanced Economies (>50%).
- **Top Recipient States (2023-24):** Maharashtra (20.5%), Kerala, Tamil Nadu.

Shift in Remittance Inflows is due to changes in migration pattern resulting from

- **Low Cost of Transfer** due to **digitalisation.**
- **Strong Labor Markets** in US and Europe with **more white-collar jobs.**
  - ➡ GCC countries face decline due to **automation & nationalization** (e.g., Saudi Arabia's Nitaqat & Kafala policies).
- **Migration for education** in **Canada, UK, and Australia,** supported by policies like **India-UK Migration and Mobility Partnership** (May 2021).
  - ➡ Migration to UK tripled from to 250,000 (2023) in 3 years.

Importance of Remittances for Economy

- **Balance of Payments (BoP): E.g.,** Finances ~50% of India's merchandise trade deficit
- **Household Level:** Improving living standards. **E.g.,** contributed **36% to Kerala's state domestic product in 2021.**
- **Macro-Economic Role: E.g.,** Contributes **3-3.5% to India's GDP since 2000.**
- **Debt Sustainability:** Reduces both risk & cost of borrowing.

3.23. EQUALISATION LEVY

Why in the News?

As per the new amendments proposed in Finance Act 2016, **Equalization levy or digital tax on online advertisements will not apply on and after April 1, 2025.**

Equalization Levy

- A **direct tax** under **Finance Act, 2016,** taxing **digital transactions** with foreign e-commerce companies, including **advertising.**
- **Finance Act, 2020,** expanded its scope to **e-commerce supply and services.**

> ### Transaction subjected to Equalisation Levy
> - **Online Advertisement Services (6%):** On payments to non-residents for digital ads and related services.
> - **E-commerce Supply of Goods or Services (2%):** Levied on revenue received by non-resident e-commerce operators **(Now abolished)**
> - **Condition:** Levy **not part of Income Tax Act;** global firms cannot claim tax credit under double taxation avoidance agreements in their home country.

Reasons for Imposition:

- **Fair Competition** between domestic and international companies.
- **Bridging Tax Gaps:** Prevents tax avoidance due to lack of physical presence in India.
- **Taxing Foreign Digital Companies:** Ensures foreign e-commerce giants contribute to India's tax system.
- **Revenue Collection:** Capitalizes on the surge in digital transactions, accelerated by COVID-19.

Associated Concerns

- Trade Friction with the US; Risk of Retaliatory Tariffs; Double Taxation & Compliance Burden.

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3.24. NEWS IN SHORTS

3.24.1. PAC Calls for Review of GST

Parliamentary Committee on Public Accounts sought comprehensive review of GST Framework.

Key Issues in GST Framework

- **For MSMEs:** compliance challenges due to the complex Inverted Duty Structure and administrative burden.
- **For Exporters:** delays in Input Tax Credit (ITC) refunds, leading to cash flow issues.
- **For Steel Rolling Mills:** dual taxes as scrap dealers evade GST, hindering ITC claims
- **For Online Gaming Sector:** Tax evasion persists due to diverse business models.
  - From October 1, 2023, online gaming is **taxed at 28% GST.**
  - They must register under the **Simplified Registration Scheme** of the **Integrated Goods and Services Tax (IGST) Act.**
  - The Directorate General of GST Intelligence (DGGI) can block unregistered offshore gaming platforms violating the IGST Act.

Way Ahead:

- **Simplified GST compliance framework** tailored for MSMEs.
- Dedicated **fast-track refund system** for exporters to streamline ITC claims.
- Independent study to **analyze revenue models** of **gaming platforms** and develop **comprehensive guidelines.**

3.24.2. Making CSR, IBC & ESG Effective

10th report on 'Demands for Grants (2025-26)' of Ministry of Corporate Affairs (MCA) highlights various issues and gives recommendations thereof for making **Corporate Social Responsibility (CSR), Insolvency and Bankruptcy Code (IBC) & Environmental, Social and Governance (ESG)** Regulations effective:

Areas	Issues	Recommendations
Corporate Social Responsi-bility (CSR)	Gaps in enforcement and monitoring of CSR framework Limited analysis of CSR spending effectiveness Unspent CSR Account Mechanism lacks transparency	Develop compreh-ensive reporting and monitoring framework, e.g., publish detailed CSR project impact reports Enforce timely penalties for non-compliance
Insolvency and Bankruptcy Code (IBC)	Conflicts of interest and inconsistent provision interpretation delay resolutions Weak framework for complaints against Resolution Professionals (RPs)	Introduce direct submission system for resolution plans via central online portal Set rigorous certification and independent performance reviews for RPs Review Committee of Creditors (CoC) structure for better operational creditor representation
Environ-mental, Social and Governance (ESG) Regulations	Ongoing greenwashing risks Small businesses struggle with ESG adoption	Form dedicated ESG oversight body within ministry to enforce compliance and penalize greenwashing Amend Companies Act, 2013 to include ESG as directors' fiduciary duties Create independent ESG committees akin to audit committees

3.24.3. Parliamentary Standing Committee on Agriculture Submits Report on Fisheries Sector

The report **evaluates the government's response to recommendations** aimed at improving the fisheries sector, enhancing employment opportunities, and increasing revenue generation.

- India is **3rd largest fish-producing country (8% of global production)** with share in **agricultural GVA ~ 6.72%.**

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Key Highlights

Issues Highlighted	Recommendation
Lack of a Dedicated Research Body: E.g., lacks sector-specific focus.	Establish the **Indian Council for Fishery and Aquaculture Research (ICFAR).**
Lack of Regulation of Juvenile Fish Harvesting: Harmful practices like bull trawling deplete fish stocks.	Enforce **Minimum Legal Mesh Size (MLS) regulations** uniformly and ban destructive fishing methods.
Lack of Interest-Free Loans for Fishers: Only a few states offer 4% additional interest subvention under KCC.	**Expand interest-free KCC loans** nationwide.
Post-Harvest Losses & Infrastructure: 20-25% losses due to poor storage and processing facilities.	Strengthen **cold storage, processing, and transport** under PMMSY.
Lack of Self-Sufficiency in Shrimp Broodstock: Heavy reliance on imported L. Vannamei shrimp broodstock.	Fast-track domestic **broodstock development** via ICAR.
Fish stock washed away due to dam gate openings and heavy rainfall.	Introduce **insurance for dam fishers,** similar to PMFBY.
Sanitary and Phytosanitary (SPS) barriers and lack of proper certification and traceability hinder exports.	**Enhance export competitiveness:** Improve SPS compliance, certification, etc.

3.24.4. MOSPI Releases CAPEX (Capital Expenditure) Survey

Capex Survey by National Statistics Office (NSO) (under MOSPI), was conducted under **the Collection of Statistics Act, 2008.**

Key Findings

- Private sector CAPEX grew 66% in FY22 -25, reaching ~Rs 6.5 lakh crore.
- Manufacturing enterprises accounted for 48% of total private sector CAPEX
- Focus on core assets, with others investing in value addition, opportunistic assets, & diverse strategies.

Significance of CAPEX

- **Competitive Advantage:** Companies can enhance their **operational efficiency, innovate products or services**
- **For Asset Maintenance and Upgrades**

- **Investor Confidence:** Capex signals long-term growth and value creation.
- **Strategic Decision-Making:** Capex decisions reflect strategic priorities, indicating future growth.

Challenges hindering private sector Capital Expenditure

- Difficulty in mobilizing equity & affordable debt.
- Risk estimation and mitigation issues.
- Delays in clearances and land acquisition.

About Capital Expenditure

- It is money spent by government on development of machinery, building, health facilities, education, etc.
- **Capital expenditure includes** acquiring fixed and intangible assets; Upgrading an existing asset; & Repayment of loan

Aspect	Capital Expenditure	Revenue Expenditure
Nature	Creates assets for future	Does not create assets or reduce liabilities
Impact	Results in long-term benefits or returns	Day-to-day operational spending.
Duration	One-time or infrequent spending	Ongoing, recurring spending

3.24.5. India's External Debt

Finance Ministry's **Quarterly External Debt Report (Dec 2024)**, risen **by 10.7%** (from Dec 2023) mainly due to **Valuation Effect** (occurs due to **appreciation of US dollar** vis-à-vis Indian Rupee).

Other Key Highlights of the Report

- **External Debt to GDP ratio: 19.1%** (Dec, 2024)
- **US dollar Denominated Debt** and **Loans** constituted largest component.
- **Debt service (Principal repayments plus interest payments):** Declined by 0.1% (September – December, 2024).
- **Long Term** (marginal increase) **v Short Term** (marginal decline) debt.

About External Debt

- Money borrowed from **outside the country,** by both Central Government & Corporations (External Commercial Borrowings) in **other currencies** viz., US Dollar, SDR, etc.,
- **Sources:** Foreign commercial banks, international financial institutions like IMF, World Bank, etc., or foreign governments.

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Recommendations to manage External Debt

- **Diversifying currency transactions:** Reducing U.S. dollar reliance etc.
- **Sustainable Debt Practices:** Borrowing directed towards investment, not consumption.
- **Balancing** borrowing with economic growth: Focus on robust fiscal policies, export-led growth, etc.

Challenges with rising External Debt

- Changes in exchange rate affect its repayment burden.
- Rising Inflation increases interest rates, slowing down growth, resulting in higher external debt to GDP ratio.
- Global threat of stagflation may lower demand for India's exports affecting **debt service ratio.**

3.24.6. Payments Regulatory Board

RBI Notifies Payments Regulatory Board Regulations, 2025

- Replaces 2008 regulations under the Payment and Settlement Systems Act, 2007.

About Payments Regulatory Board:

- **Chairperson:** RBI Governor
- **Members:** Deputy Governor, 1 RBI officer, 3 government nominees (4-year fixed term, no re-nomination)
- **Experts** may be invited
- **Meets** twice a year, Quorum: 3
- **Majority decisions;** Chairperson has casting vote.

3.24.7. RBI (Digital Lending) Directions, 2025

Key **Directions to Strengthen Digital lending practices.**

- **Key Objectives:** Enhance borrower protection, ensure data transparency, and promote responsible digital lending.

Key Highlights of the RBI Directions

- **Defines digital lending** as fully digital loan processing.
- **Applies to:** Banks, NBFCs, co-operative banks, and AIFIs.
- Defines **Digital Lending Apps:** via CIMS
- Requires **due diligence on LSPs**
- Ensures clear borrower disclosures on terms, policies, and privacy.
- **Grievance redressal Officer:** Appointed by LSPs to deal with digital lending-related complaints and issues.

Need for RBI Directions on Digital Lending

- **Exorbitant interest rates & hidden charges:** Due to information asymmetry.
- **Unethical recovery practices:** Harassment & coercion by recovery agents.
- **Proliferation of unregulated & fraudulent apps:** Many apps operated without proper oversight, leading to consumer harm.
- **Mis-selling:** Borrowers are not fully aware of loan terms
- **Data privacy breaches:** Sensitive borrower data can be mishandled by third-party service providers.

3.24.8. Reinsurance

Valueattics Re has become the **first private firm** to receive IRDAI's nod to **commence reinsurance business in India.**

- Currently, public sector **General Insurance Corporation (GIC Re) is the only** reinsurance company operating in India.

About Reinsurance

- A **risk management practice** where **insurance companies transfer a portion of their risk to another insurance company (reinsurer).**
- **Regulator:** Insurance Regulatory and Development Authority of India **(IRDAI).**
- **Laws: Insurance Act, 1938 and IRDAI (Re-Insurance) Regulations, 2018.**

3.24.9. Scheme For Cooperative Sugar Mills

Recently, Union Government has notified a scheme for Cooperative Sugar Mills under **modified Ethanol Interest Subvention Scheme.**

About Scheme

- **Ministry:** Ministry of Consumer Affairs, Department of Food & Public Distribution
- **Aim:** Convert sugarcane-based ethanol plants into multi-feedstock plants using grains like Maize and Damaged Food Grains (DFG).
- Interest subvention @ 6% per annum or 50% of the interest rate charged by banks/financial institutions, whichever is lower.

3.24.10. Tobacco

India's tobacco exports have doubled over the last 4 years.

Tobacco

- **India's Status:** Second largest producer (after China) and exporter (after Brazil).
- **Major Producing States:** Gujarat (45% cultivated area, 30% production), Andhra Pradesh, Karnataka, Uttar Pradesh (UP), and Bihar.
- **Favourable Conditions:**
  - **Temperature** (20°–27°C); **Rainfall** (~500 mm to 1200 mm); **Soil** (sandy or sandy loam)
    - Cigarette-tobacco in Andhra Pradesh grown on **heavy black soil.**

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3.24.11. Coastal Shipping Bill, 2025

Aim:

- Consolidating laws related to regulation of **coastal shipping (all types of vessels:** ships, boats, sailing vessels, and mobile offshore drilling units).
- **Repeal Part XIV of the Merchant Shipping Act, 1958,** which regulates ships other than sailing vessels engaged in trade within coastal waters.

Key Provisions of Bill

- **License for Coasting Trade** issued by the Director General of Shipping (DGS) mandatory for foreign vessels while Indian vessels are exempted.
  - ➡ **Coasting trade:** carriage of goods by sea but doesn't include fishing.
- Mandates **National Coastal & Inland Shipping Strategic Plan & National Database for Coastal Shipping.**
- **Authority to DGS** to seek information, issue directions, & enforce compliance.
- **Central Government:** Provide exemptions & regulatory oversight

3.24.12. Largest InvIT Monetization In Roads Sector

National Highways Infra Trust (NHIT) completed largest INVIT monetization in roads sector.

- **NHIT** is the **Infrastructure Investment Trust (InvIT)** set up by **National Highways Authority of India (NHAI)** in **2020** to support **India's Monetization programme.**

About InvIT

- **Definition:** An investment vehicle, similar to mutual funds or Real Estate Investment Trusts (REITs).
- InvITs **allow direct investment from individual/ institutional investors** in infrastructure projects, either directly or via Special Purpose Vehicle (SPV)/Holding Company.
- **Income:** Generated through tolls, rents, interest, or dividends; taxable for unit-holders.
- **Regulation:** Governed by SEBI (Infrastructure Investment Trusts) Regulations, 2014.
  - ➡ **SEBI mandates 90% income** distribution **to investors.**
  - ➡ **Recognized as borrowers** under the **Securitization and Reconstruction of Financial Assets and Enforcement of Security Interest Act, 2002.**
- **Types:** Public InvITs, Private listed InvITs, Private unlisted InvITs.
- **Advantages:** Enables retail investment in large projects, low entry cost, and liquidity via stock exchange listing.

Structural Overview of InvIT

Sponsor	Infrastructure Company or Private Equity Firm
	Key Actions: Establish InvIT; Transfer infrastructure assets to InvIT Trust
InvIT Trust	Manages infrastructure assets
	Primary Functions: Hold infrastructure assets; Issue investment units
Investors	Receive units representing ownership stake in the InvIT

3.24.13. New Steel Policy

Ministry of Steel notified **DMI&SP Policy 2025** (Domestically Manufactured Iron & Steel Products).

- **What is DMI&SP Policy:** Gives preference to **domestically produced steel** in **government procurement.**

Key Highlights of the Revised Policy

- **Nodal Ministry:** Ministry of Steel
- **Applicability:** All government ministries, departments, PSUs, societies, trusts, & statutory bodies. Covers **procurement above ₹5 lakh.**
- **Materials covered:** Steel in **"Melt & Pour" condition** (**produced in steel-making furnace & poured** into its **first solid shape).** E.g. flat-rolled steel, bars, etc.
- No **Global Tender** Enquiries (GTE) for most iron and steel products **barring some exception.**
- **Capital goods** used in production of alloy must achieve **at least 50% DVA (Domestic value addition).**
- Bans suppliers from countries that bar Indian firms in their government steel procurement **unless Ministry allows it.**

Why Was the Policy Revised?

- **Rising Threat:** India is **net importer of finished steel.** There was surge in cheap steel imports from China, Japan, & South Korea while exports fell.
- **Stagnation in global markets:** Issue of over production, slump in global demand
- **Strategic Role of Government Procurement** i.e. 25-30% of India's finished steel for infrastructure, railways, defense.

3.24.14. India overtakes Japan to become 4th Largest Economy

Recent IMF World Economic Outlook shows India has surpassed Japan as the 4th largest economy.

Key drivers for India's Economic Leap:

- **Structural:** Urbanization, rising income, demographic dividend (median age ~29), strong domestic demand (private consumption ~70% GDP).
- **Policy:** GST, IBC, tax cuts, infrastructure pushes (NIP, PM Gati Shakti), Atmanirbhar Bharat, production-linked incentives.

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- **Technological:** Digital infrastructure (UPI, JAM), strong IT/software exports.
- **External:** Increased FDI, global supply chain shifts.

Future prospects:

India aims to be 3rd largest economy in 2.5–3 years with renewable energy growth (500 GW by 2030), global green leadership, and regulatory stability (bank reforms, RBI).

Ten Largest Economies (Based on GDP)

Country	GDP
United States	$30.507 Trillion
China	$19.231 Trillion
Germany	4.744 Trillion
India	**$4.187 Trillion**
Japan	$4.186 Trillion
United Kingdom	$3.839 Trillion
France	$3.211 Trillion
Italy	$2.422 Trillion
Canada	$2.225 Trillion
Brazil	$2.125 Trillion
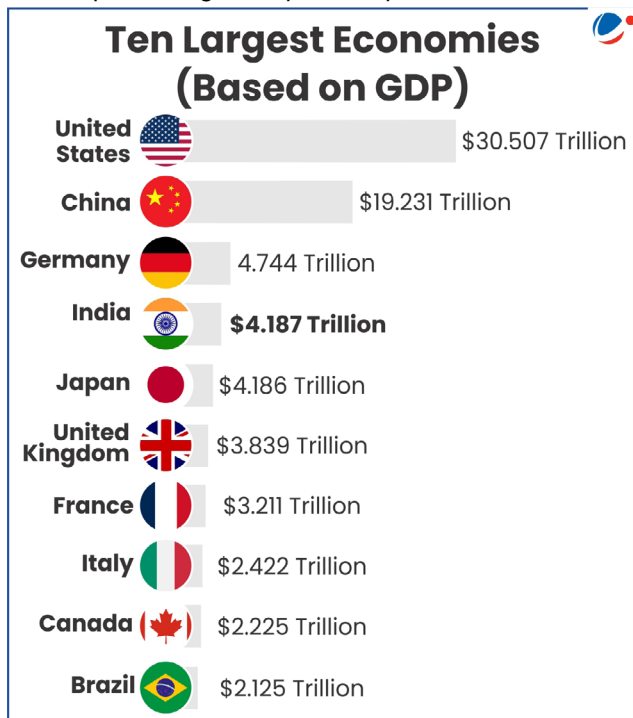
3.24.15. Bombay Stock Exchange (BSE)

About BSE

- Established as **'The Native Share & Stock Brokers' Association' in 1875,** it is **Asia's first** & **world's fastest Stock Exchange.**
  - In 2017, BSE became **1st listed stock exchange of India.**
- **Role:** Provides market for trading in **equity, currencies, debt instruments, derivatives, mutual funds.**
- **Regulated by:** Securities Exchange Board of India (SEBI), statutory body under SEBI Act, 1992.

3.24.16. Alternative Investment Funds (AIFs)

RBI Revises Investment Rules for **Alternative Investment Funds (AIFs)**

- **About AIFs:** Privately pooled investment vehicles in India for sophisticated investors, regulated by SEBI under 2012 regulations.
- **Categories:**
  - Category I: Invest in start-ups, SMEs, infra (e.g., VC, Angel funds)
  - Category II: No leverage (e.g., PE, Debt funds)
  - Category III: Use leverage (e.g., Hedge funds, PIPE).

3.24.17. IMF's Global Financial Stability Report

The semi-annual report assessed impact of geopolitical risks on global financial stability.

Geopolitical Risks

- **Multiple threats to supply chains**
- New trade alliances and investment hubs are **redefining global power dynamics.**
- **A fragmented tax environment. E.g.,** Minimum global tax, while others are withdrawing from multilateral tax policy.
- **Demographic, technological and cultural pressures on workforces: E.g.,** Aging populations, mass retirement, falling birth rates, culture wars, AI integration, etc.

Implications of geopolitical risks

- Increased military spending & economic downturns raise public-debt-to-GDP ratios, escalating **fiscal sustainability** concerns and **sovereign risk.**
- **Financial Contagion:** Geopolitical risks spill over to other economies through trade & financial linkages.
- It can lead to **economic disruptions,** such as **supply chain disruptions** and **capital flow reversals.**
- **Investor Confidence:** It generally **lowers investor confidence,** leading to **market uncertainty** & **increased volatility.**
- **E.g., The U.S.–China trade war significantly impacted stock prices in both economies.**

Key Policy Recommendations for Geopolitical Risks

- Enhance Financial Oversight
- Strengthen Capital Buffers
- Deepen Financial Markets with robust regulations
- Maintain Macroeconomic Buffers
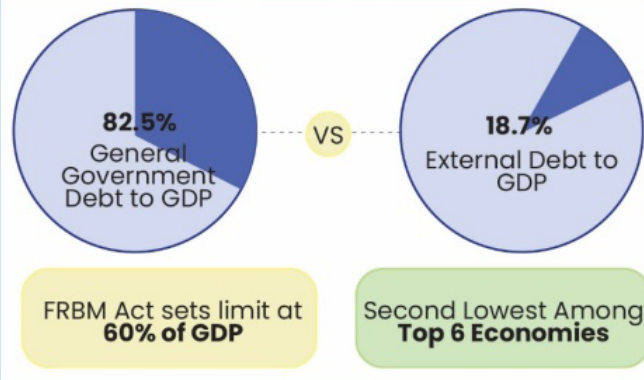- Improve Crisis Preparedness

Public Debt

What is Public Debt?
Public debt, also referred to as **sovereign debt,** is the total **financial obligation accumulated** by a government through borrowing from domestic or external sources to fund expenditures that exceed its revenue.

India's Public Debt Overview

82.5% General Government Debt to GDP **VS** **18.7%** External Debt to GDP

FRBM Act sets limit at **60% of GDP**

Second Lowest Among **Top 6 Economies**

3.24.18. UNCTAD Released 'A World of Debt Report 2024'

Public debt can drive development by funding critical expenditures, but excessive debt growth poses challenges, especially for developing nations.

- **United Nations Conference on Trade and Development (UNCTAD)**'s **2024 report** warns of rising debt risks, urging immediate global action to ensure stability.

Key Findings of the Report

- **Global Debt Surge:** Public debt hit $97 trillion in 2023 (India~$2.9 trillion).
- **Debt Servicing Strains:** 54 developing nations allocate more to interest payments than social sector spending.
- **Unequal Financial System:** Developing nations face 2–12 times higher interest rates.

Challenges Posed by Rising Global Public Debt

- **Debt Overhang:** stifles growth by reducing investment and consumption.
- **Liquidity Challenge:** Private creditors withdrew ~$50 billion from developing countries, tightening liquidity.
- **West-dominated creditor institutions** (private, multilateral, bilateral) make debt restructuring costly.

Recommendations

- Better debt restructuring mechanisms, increase in contingency financing (to avert debt crises) and boosting developing countries' participation in global financial governance.

3.24.19. Global Trade Outlook and Statistics 2025

By **World Trade Organisation (WTO).**

- Volume of world merchandise trade likely to fall by 0.2% in 2025, particularly in **North America**
- Severe downside risks exist, like **"reciprocal" tariffs and broader spillover of policy uncertainty.**
- The report contains for **1st time a forecast for services trade** (**Volume** to grow by 4.0% in 2025).

3.24.20. Uplink Initiative

UpLink initiative under **World Economic Forum's (WEF) cut carbon emissions** by 142,400 tonnes in 2023-2024.

About UpLink Initiative

- Focused on **impactful early-stage innovation.**
- Founded in **2020** by **WEF** in collaboration with **Deloitte** and **Salesforce.**
- Builds **ecosystems** that enable **purpose-driven, early-stage entrepreneurs** to scale their businesses for a **net-zero, nature-positive and equitable future.**
- **Objectives:** Accelerate impact of early-stage innovators, Enable Innovation Ecosystems and Influence perception.

3.24.21. International Standards of Accounting And Reporting (ISAR)

About ISAR

- It is a **UN global forum of policy-makers, regulators, standard-setters & lead experts** in area of enterprise accounting & reporting.
- **Mandate:** Assist in improving quality & international comparability of financial reporting and non-financial disclosure, such as **environmental issues, corporate governance and corporate social responsibility.**
- **Mission:** To facilitate investment, development and economic stability by promoting good practices in corporate transparency and accounting through policy frameworks and guiding tools.
- **Sessions:** In **Geneva to address emerging issues in enterprise accounting and reporting.**
- **Membership:** ISAR allows 34 formal members to serve 3 year terms. Include 9 African, 7 Asian, 6 Latin American, 3 Eastern European, and 9 Western European and Other States.

3.24.22. Cape Town Convention and Protocol

The Protection of Interests in Aircraft Objects Bill, 2025 aims to align with **Cape Town Convention** (Convention on International Interests in Mobile Equipment) and **Protocol on Matters Specific to Aircraft Equipment.**

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About Cape Town Convention and Protocol

- **Aim: Standardize** transactions involving **movable property,** particularly **high-value assets** like aircraft, engines, and helicopters, to ensure **creditors** can enforce their rights in case of default.
- Jointly by **International Civil Aviation Organisation (ICAO) and UNIDROIT (International Institute for the Unification of Private Law) in 2001.**
- **Parties: 65** Parties (2016) [**India** signed in 2008].

3.24.23. Saline Aquaculture Hubs

About Saline Aquaculture

- **Meaning: Use of saline-affected lands** (unsuitable for agriculture) for inland saline aquaculture.
  - Aquaculture is farming of **aquatic organisms**
- **Significance:** Generate employment & livelihood opportunities
- **Potential in India:**
  - Only 2, 608 hectares of 58,000 hectares identified saline area is being currently utilized
  - India stands as 2nd **largest producer of cultured shrimp globally,** earning **65% of its seafood export value** from shrimp alone, which can be **better realized** through Saline Aquaculture.

Key Challenges Faced by Farmers for Saline Aquaculture

- China's Expanding Influence
- Regional Instability E.g. Political turmoil in Bangladesh
- Non-Traditional Threats: Proximity to drug smuggling zones

Measures to tap the potential of Saline Aquaculture

- **Policy Reforms:** Increasing **area limit** from 2 to 5 hectares, a **National Level Committee** to prepare a roadmap for the sustainable development of saline aquaculture in North Indian states.
- Recommendations for establishment of **Integrated Aqua Park** in Sirsa to improve **marketing channels**
- States to leverage Krishi Vigyan Kendras to identify new areas for saline aquaculture, & conduct outreach-based research.

3.24.24. Opinion Trading Platforms

SEBI cautions against opinion trading platform.

About Opinion trading platforms

- **Concept:** Allow participants to earn money by predicting outcomes of events in sports, etc.
- **Legal Status:** not regulated by SEBI as predictions aren't classified as securities.
- **Economy:** Over **Rs 50,000 crore transactions and 5 crore users.**

3.24.25. India Achieves Highest Ever Exports

India's exports rise to $824.9 billion in 2024-25 despite global headwinds.

Key data

- **Merchandise: Marginally increased to US$437.4 billion**
- **Services Exports:** $387.5B (13.6% growth), led by IT, transport, and financial services.

Factors Driving Export Growth

- **Policy Push:** New Foreign Trade Policy, Trade Facilitation, Districts as Export Hubs Initiatives and MSME support.
- **Diversification of export markets:** Rising demand offsets global slowdowns.
- **Trade Agreements:** New bilateral and multilateral deals, such as **India-UAE CEPA,** opened markets and lowered barriers.
- **Supply Chain Realignment:** India becoming reliable alternative to China-plus-one strategies.

3.24.26. Repairability Index

Committee under **Bharat Khera** submits Repairability Index (RI) framework Report to DoCA.

About RI Framework:

- **OEMs** must **self-declare RI** using scoring criteria.
- **RI** to be displayed at sale points, e-commerce, and via QR codes on packaging.
- **Smartphones and tablets prioritized** initially.
- RI rated on 5 points scale across 6 core parameters: Tools, Disassembly depth, repair information, spare parts availability, fasteners, software updates.

Significance of RI:

- **Improved repair accessibility**
- **Promoting Sustainable Economy: Emphasizes on LiFE**
- **Address issue of 'planned obsolescence'**
- **Employment generation**: via third-party repairs.

Right to Repair: Ensures availability of spare parts and repair info; DoCA launched portal in 2022.

3.24.27. World Audio Visual and Entertainment Summit (WAVES), 2025

PM highlights **Creative Economy** at WAVES Summit 2025

- **Creative economy** seen as key to GDP growth, innovation, and inclusivity.
- **WAVES** targets unlocking a $50B market by 2029.
- Indian Institute of Creative Technology (IICT) launched as a **National Centre of Excellence** by I&B Ministry with FICCI and CII.

About Creative Economy:

- **Also called 'orange economy'** is an evolving concept based on contribution & potential of creative assets contributing to economic growth and development.
- Covers **Animation, Gaming, Extended Reality, etc.**

India's Creative Economy

- **Contribution: $30 billion to GDP, employing 8% of the workforce.**
- **Challenges:** Misinformation, privacy, limited rural digital access, and lack of formal financing, etc.
- **Initiatives:** Creative economy fund, All India Initiative in Creative Economy, National Creators Awards, etc.

3.24.28. Indian Institute of Creative Technology(IICT)

IICT launched by **MoI&B** with **FICCI and CII.**

About IICT:

- National **Centre of Excellence (NCoE)** for **Animation, VFX, Gaming, Comics,etc.**

- **Extended Reality (XR)** blend physical and digital worlds e.g. **VR, AR & Mixed Reality (MR).**
- Modeled on IITs/IIMs to become a global education hub.

Status of AVGC-XR sector

- **Globally** valued **over $366 billion in 2021.**
- **India: Less than 1%** of the global market. Projected to reach **$26 billion** by 2030 (**Karnataka** leading).

Emerging key growth drivers

- **Growing OTT User base:** Penetration rate of 38.4%.
- **Growth of Smartphone Users**
- **Wider Spectrum of Applications:** In Gaming, EdTech, Architecture etc.
- **Advent of New Technologies:** Investment increasing.
- **5G**

3.25. TEST YOUR LEARNING

1. **With reference to Vizhinjam International Seaport, which of the following statements is/are correct?**

   1. It is developed under the landlord model with DBFOT basis.
   2. It is India's first shallow-draft transshipment port.
   3. It lies on the main shipping route connecting Europe and the Far East.

   Select the correct answer using the code below:

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

2. **Which of the following statements about Deep Tech Startups in India is/are correct?**

   1. India currently has the world's largest number of Deep Tech startups.
   2. Deep Tech startups in India attracted $1.6 billion in funding in 2024.
   3. Immuno Act is an example of a Deep Tech startup working in the aerospace sector.
   4. Regulatory hurdles and lagging institutional support are among the key challenges faced by Deep Tech startups in India.

   Select the correct answer using the code below

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

3. **Which of the following statements correctly describes the fiscal incentive structure under the Electronics Component Manufacturing Scheme (ECMS)?**

   1. Turnover-linked incentives apply to the supply chain ecosystem.
   2. Capex-linked incentives are provided for bare components.
   3. Hybrid incentives may be provided for selected bare components.
   4. Only greenfield investments are eligible for the scheme.

   Select the correct answer using the code below:

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

4. **Which of the following statements about the Pradhan Mantri MUDRA Yojana (PMMY) is/are correct?**

   1. MUDRA provides direct loans to micro-entrepreneurs.
   2. Loans under the 'Shishu' category are eligible for 2% interest subvention on prompt repayment.
   3. MUDRA loans are collateral-free and guaranteed by the Credit Guarantee Fund for Micro Units (CGFMU).

   Select the correct answer using the code below:

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

5. **Consider the following statements with respect to India's Bioeconomy performance as per the India Bio-Economy Report 2025:**

   1. Bioeconomy contributes over 4% to India's GDP.
   2. Ethanol blending in India reached 15% in 2024.
   3. India contributes less than 10% of global vaccine production.

   Which of the statements given above is/are correct?

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

Mains Question

Q1. (150 words)

Analyze the challenges and opportunities in achieving self-reliance in electronics component manufacturing in India.

Q2. (250 words)

India aims to become a major transshipment hub through ports like Vizhinjam. Analyze the opportunities and challenges associated with this goal.

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SECURITY

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4.1. INDIA'S NEW SECURITY DOCTRINE

Why in the News?

Prime Minister of India outlined India's **new security doctrine after successful Operation Sindoor,** marking a significant shift in India's counterterrorism doctrine.

Key changes in India's Security Doctrine

➤ Operation Sindoor marks a **decisive departure in India's National Security Doctrine** with three core pillars:

India's Defense Doctrine: Three Strategic Pillars for National Security

Decisive Retaliation

Details	Shift and Significance
Any terrorist attack will be met with strong response. targeting terror hubs at their roots.	Lowered response threshold to deter future attacks. increasing military and economic costs of supporting terrorism.

No Tolerance for Nuclear Blackmail

Details	Shift and Significance
India will not be intimidated by nuclear threats and will strike terrorist safe havens operating under this pretext.	Ensures nuclear threats won't deter India's self. defense, shifting from past strategic restraint

No Distinction between Terror Sponsors and Terrorists

Details	Shift and Significance
India no longer sees terrorist leaders and sheltering governments as separate entities.	Establishes state-sponsored terrorism as state-sanctioned act of war through proxy actors.

Other key aspects of Security Doctrine during Operation Sindoor

➤ **Deterrence by Punishment:** Shift from **'Deterrence by Denial' to punishment strategy.**

➤ **Economic Measures:** India placed Indus Water Treaty in **abeyance.**

➤ **Geopolitical Signalling:** Seven high-level delegations **dispatched to present India's anti-terrorism stand internationally.**

➤ **Strategic De-capacitation:** Struck eleven Pakistani airbases.

➤ **Coordinated and Tech-Driven Response:** Seamless **integration of indigenous hi-tech systems including drone warfare.**

➤ **De-escalation Strategy:** Aims to inflict punitive costs **while limiting conventional conflict, putting onus on Pakistan.**

Conclusion

Operation Sindoor represents a watershed in India's military evolution. **India's retaliation against cross-border terrorism marks a clear shift in posture, delivering a sophisticated campaign that redefines** South Asian conflict dynamics through operationalizing deterrence and neutralizing terror nodes.

4.2. INDIA'S DIPLOMATIC OUTREACH AGAINST STATE SPONSORED TERRORISM

Why in the news?

➤ India launched a global diplomatic outreach after **the Pahalgam terror attack and Operation Sindoor, targeting Pakistan-sponsored cross-border terrorism.**

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More on the News

- India dispatched high-level multi-party delegations to more than 30 countries, comprising **Members of Parliament, senior political leaders, and experienced diplomats.**
- These delegations are tasked with countering Pakistan's narrative rooted in the **'two-nation theory.' Colombia retracted its earlier statement** and reaffirmed support for India's anti-terror stance.

Key Objectives of the outreach

- **Reframe the Kashmir Issue:** Present Kashmir as an internal constitutional matter, **not a bilateral one.**
- **Expose Terror as State Policy:** Show Pakistan's use of terror as **a global threat to international anti-terror norms.**

Effectiveness of India's Global Outreach against State Sponsored Terrorism

- **Legitimizing Self-Defence:** India invoked Article 51 of the UN Charter, **justifying Operation Sindoor as lawful response to armed aggression.**
- **Support for Zero-Tolerance Policy on Terror:** India emphasized **firm approach to terrorism** and renewed calls for adoption of Comprehensive Convention on International Terrorism (CCIT) at the UN.
- **Building Global Support:** Major Powers like **USA, Russia, Saudi Arabia, Israel, and Japan** condemned the Pahalgam attack and backed India's position.
- **Winning Support from Muslim Majority Nations:** Indonesia, Egypt, and **Bahrain blocked Pakistan's anti-India move at the Organization of Islamic Cooperation (OIC).**
  - The OIC has 57-member states and is the **2nd largest organization after the UN.**

Effectiveness of India's Global Outreach Against State-Sponsored Terrorism

- **Legitimizing Self-Defence:** India invoked Article 51 of the UN Charter, justifying Operation Sindoor as a lawful response to aggression.
- **Zero-Tolerance on Terror:** Renewed calls for adoption of CCIT at the UN.
- **Global Backing:** Major Powers like the US, Russia, and Japan condemned the Pahalgam attack.
- **OIC Support:** Muslim-majority nations like Indonesia, Bahrain and Egypt blocked Pakistan's anti-India move at the 57-member OIC.

Long Term Impact Expected of Global Diplomatic Outreach

- **Strengthening India's Global Standing:** Showcased India as a responsible global power, **acting firmly against terrorism within international norms.**
- **Isolation of Pakistan:** Sends a strong deterrent message to **Pakistan sponsors of terrorism,** signaling diplomatic isolation and reputational costs.
- **Leadership in Counter-Terrorism:** Enhances India's role in setting the **agenda on counter-terrorism and international security.**

Key Hurdles in India's Diplomatic Outreach Against State-Sponsored Terrorism

- **Re-hyphenation with Pakistan:** Global discourse revives India-Pakistan parity, especially on Kashmir (e.g., Trump's ceasefire remarks).
- **Weak Global Consensus:** No unified sanctions or actions against Pakistan despite evidence of state-sponsored terrorism.
- **Pakistan's Diplomatic Gains:** Backed by China, Pakistan chairs key UNSC committees (Taliban Sanctions, Counter-Terrorism).
- **Economic Leverage Gaps:** Pakistan secures major loans (IMF, World Bank, ADB) despite Indian objections.
- **Bilateral Backing:** China and Turkey sustain support; Pakistan deploys teams to counter India's narrative.
- **Short Media Focus:** Global crises divert attention, letting Pakistan regroup diplomatically.

Conclusion

India's assertion of sovereign prerogative marks strategic maturity. **The global order respects clarity more than compromise. The contest will unfold in minds, not maps, and narrative clarity** will determine who inherits the future. India's challenge is to own the story, as the side that frames the question often controls the answer.

Current Affairs Quarterly Revision (March 2025 to May 2025)

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4.3. DEFENSE TECHNOLOGY IN OPERATION SINDOOR

Why in the News?

Operation Sindoor displayed **India's technological superiority in military operations** through its airspace capabilities.

Key Defence technologies that enabled Operation Sindoor

▶ **India's Airspace Monitoring Systems**

IN Indian Defense Systems
Advanced Integrated Command & Control Networks

IAF's IACCS

Integrated Air Command and Control System

- Automated system integrating data from all **air defence assets** including ground-based radar, airborne sensors, civilian radar
- Provides comprehensive battlefield picture. **Developed by BEL**

BMD Network's MCC

Ballistic Missile Defence Mission Control Centre

- Monitors airspace via Long-Range Tracking Radars (500+ km range) Including Swordfish Radars
- Receives data from ELM-2090 Terra systems, Netra AEW&C (200 km range), and Phalcon AWACS (400 km range)

Indian Army's Akashkeer

- Automates detection, tracking and engagement of enemy aircraft, drones and missiles
- Enables autonomous low-level airspace monitoring
- Developed by BEL

Indian Navy's TRIGUN

- Maritime domain awareness platform integrating sea-based radars, sonars, and communication nodes for real-time threat detection

NavIC Satellite Monitoring

Navigation with Indian Constellation

- ISRO developed system with 7 satellites providing Position, Velocity, and Timing service
- Uses dual-band signals with encrypted L5 for military use

India's Multi-layered Air Defense Systems

India's Air Defence System comprises of **four layers.**

India's Multi-layered Air Defense System

First Layer: Counter-drone & Manpads	→	Second Layer: Point air defence & short-range surface to air missiles	→	Third Layer: Medium-range surface-to-air missiles	→	Fourth Layer: Long-range surface-to-air missiles
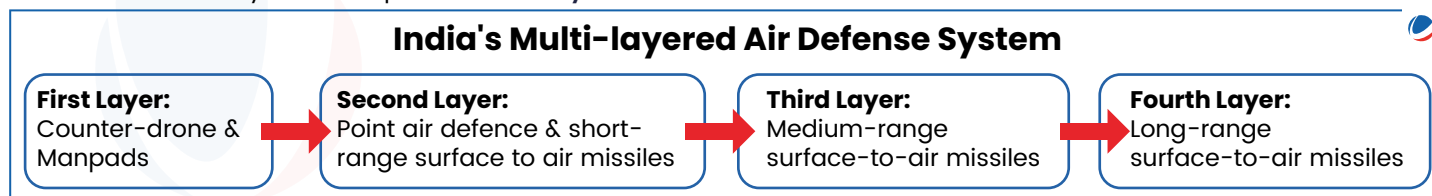
Key Component of Each Layer

First Layer (Very Short Range)

▶ **D4 anti-drone system:** DRDO-developed with dual kill mechanism (Hard Kill: Laser; Soft Kill: RF Detection & Jamming).

▶ **MANPADS:** Russian Igla-M and Igla-S surface-to-air missiles carried by individuals.

▶ **Schilka systems:** Self-propelled radar-guided anti-aircraft weapon with 360-degree coverage.

▶ **Zu-23 mm system:** Twin-barrel anti-aircraft gun with 2.5 km range for air targets.

▶ **L/70 Anti-Aircraft Gun:** 40mm Bofors gun manufactured in India, 240-330 rounds/minute, 4 km range.

Second Layer (Short Range)

- **Akash:** DRDO-developed SRSAM with 30-35 km range, can engage multiple targets simultaneously.
- **SPYDER:** Israeli low-level SAM system with Python-5 and Derby missiles, 35 km range.
- **Legacy Soviet Systems:** S-125 Pechora, 9K33 Osa-AK, and 2K12 Kub/Kvadrat.

Third Layer (Medium Range)

- **Barak-8:** India-Israel co-developed system with naval LRSAM (100 km) and MRSAM (70 km) versions.

Fourth Layer (Long Range)

- **S-400 Sudarshan Chakra:** Russian system with four missile types (40-400 km range), can engage all aerial targets up to 30 km altitude.
- **BMD Programme:** Two-tiered system with PAD (80 km altitude) and AAD (30 km altitude) for ballistic missile interception up to 2,000 km range.

Other Weapons Systems that were potentially used

Weapons	Details
BrahMos missiles	India-Russia supersonic cruise missile (2-3 Mach), **290 km range, fire-and-forget operation with pinpoint accuracy.**
Rafale Weapon Systems	French fighter jets with **SCALP cruise missiles (450 km), AASM HAMMER bombs (70 km), and METEOR air-to-air missiles.**
Drones	**Types of Drones used by India** **Surveillance and Reconnaissance Drones (ISR Drones):** These drones are primarily used for intelligence, surveillance, and reconnaissance purposes. **India currently has:** TAPAS-BH-201 (Tactical Advanced Platform for Aerial Surveillance) **Rustom** (developed by DRDO) **Heron** (Israel) **Armed/Combat Drones (UCAVs):** Unmanned combat aerial vehicles (UCAVs) are capable of launching missiles or dropping bombs. **India has:** **DRDO's Ghatak** (under development) **Heron TP** (from Israel) **Swarm Drones:** Multiple drones operate in coordination to overwhelm enemy defenses, DRDO and private firms are working on swarm drone technology **Loitering Aerial Munitions (LAM) or kamikaze drone or Suicidal drone (crashes onto target)** These drones are designed to loiter over a target area & strike when a target is identified. **India has:** **Nagastra** (made by Solar Industries and ZMotion) **Warmate** (Polish origin) **SkyStriker** (Developed in collaboration with Israel)

Conclusion

During Operation Sindoor, India's indigenous air **defence technology showcased efficiency and reliability through fusion of public-private partnerships, innovation incentives, robust public sector execution and long-term defence vision.**

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4.4. TERRORISM IN JAMMU AND KASHMIR

Why in the News?

The Resistance Front (TRF), an offshoot of the Pakistan-based terrorist organization **Lashkar-e-Taiba (LeT),** killed 26 tourists in Baisaran Valley in Pahalgam, Jammu and Kashmir.

Timeline of Kashmir Insurgency

- First Indo-Pak War (1947-48)
- Kashmir Militancy Begins (1989)
- Pahalgam Tourist Attack & Operation Sindoor (2025)
- Second Indo-Pak War (1965)
- Uri Attack & Surgical Strikes (2016)
- UN Ceasefire Line (1949)
- Line of Control Established (1972)
- Kargil War (1999)
- Puhwama Attack & Balakot Airstrikes (2019)

More on the News

- **India's:** Suspended the **Indus Waters Treaty,** closed the **Attari Integrated Check Post,** scrapped the **SAARC Visa Exemption Scheme** for Pakistanis, and halted **visa services for Pakistani nationals.**

- **Military Action:** Conducted precision airstrikes under **'Operation Sindoor'** at **9 locations** in **Pakistan** & **POJK**, targeting terror hubs of **LeT, JeM,** and other Pakistan-backed proxies involved in attacks in **J&K and other parts of India.**

Recent Trends in Kashmir Terrorism:

- **Decline in Terrorism:** As per MHA's 2023-24 report, terrorist attacks in J&K have steadily decreased since 2019, alongside growth in tourism and infrastructure, boosting stability and prosperity.

- **Expert Analysis:** Recent attacks aim to disrupt J&K's development and incite communal tensions across India.

Factors behind terrorism in Jammu and Kashmir

- **External Factors:**
  - **Pakistan's Proxy War:** State-backed support (training, arms, safe havens) to groups like LeT, JeM, HM, and TRF.
  - **International Non-Consensus:** Inconsistent global pressure; China's UNSC vetoes protect Pakistan.
  - **Global Ideological Influence:** Transnational jihadist networks (ISIS, Hamas ties) fuel radicalization.
  - **Porous Borders:** LoC's rugged terrain enables infiltration of militants and weapons.
- **Internal Factors:**
  - **Radicalization:** Youth are radicalized via online platforms (Telegram, YouTube) and local networks.
  - **Political Alienation:** Grievances over AFSPA and perceived lack of representation fuel separatist sentiments.
  - **Economic Challenges:** High unemployment makes youth high target.
  - **OGWs' Role:** They sustain militancy via funding, recruitment, and propaganda.
  - **Terror Finance:** Separatist groups (Hurriyat, JKLF) funnel Pakistani Hawala money to fuel local militancy.

Challenges in tackling terrorism in Jammu and Kashmir

- **Hybrid & Virtual Terrorist Outfits:**
  - **Hybrid Terrorists:** Unlisted, self-radicalized individuals conducting attacks while blending into society.
  - **Virtual Terror Groups:** Fronts like **Jammu Kashmir Ghaznavi Force** and **TRF** serve as proxies for LeT.
- **Porous Borders:** Difficult terrain enables infiltration and smuggling.
- **Pakistan's information warfare: E.g.,** social media used for anti-India propaganda.
- **Intelligence Gaps:** Weak inter-agency coordination (central/state/local) delays counter-terror responses.
- **Evolving Technology:** Terrorists use drones, encrypted apps, and advanced weaponry.
- **Changing Tactics:** Shift from large-scale attacks to targeted killings of soft targets like tourists.

Initiatives Taken to tackle terrorism in Jammu and Kashmir

- **Crackdown on Terrorist Groups and their Ecosystem: E.g.,** surgical strikes (2019 Pulwama, Op Sindoor 2025); Operation All-Out (2017); Banning Jamaat-e-Islami (OGW); Rehabilitation through Operation Sadbhavana, etc.
- **Developmental Steps:** HIMAYAT **(skills)** and UMEED (women's empowerment); Infrastructure projects, e.g., **Chenab Bridge & Vande Bharat trains**

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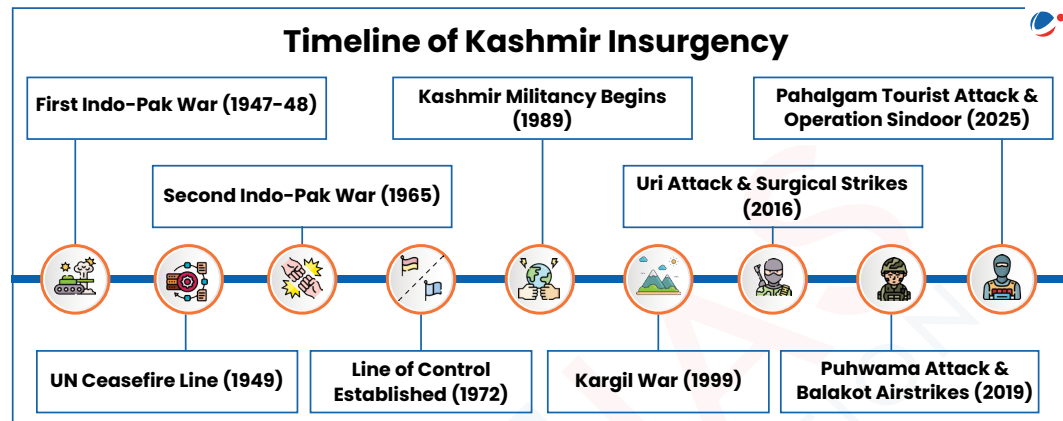
- **Diplomatic: Requesting IMF to review Pakistan** aid and FATF to place Pakistan on Grey List; **Using UNSC 1267** Committee to address Pakistan's role in terrorism.
- **Political:** Abrogation of Article 370, delimitation exercise, and local **elections for better representation.**
- **Tackling Cross-Border Militant Infiltration:** Smart border technologies, **e.g.,** laser fencing, drones, etc.

Way Forward

- **Strengthen Intelligence: Boost inter-agency coordination** and deploy **AI-driven analytics;** Augment **HUMINT** (Human Intelligence) to support **TECHINT** (Technological Intelligence).
- **Border Security:** Accelerate smart fencing, etc., along **LoC (per Madhukar Gupta Committee);** Enhance **inter-agency coordination** for seamless operations.
- **De-radicalization Programs:** Scale up local initiatives **to counter extremist narratives e.g., Education.**
- **Economic Development:** Prioritize job creation and **tourism promotion.**
- **Political Process:** Ensure inclusive governance **through free and fair elections.**
- **International Pressure:** Utilize platforms like **UNSC and FATF to pressure Pakistan.**

4.5. BRAHMOS AEROSPACE TESTING FACILITY LAUNCHED

Why in the News?

The Defence Minister recently inaugurated **the Brahmos Aerospace Testing Facility in Lucknow,** Uttar Pradesh.

More on the News

- Alongside the testing facility, **a Brahmos missile production unit was also inaugurated.**
- **These units are part of the Uttar Pradesh Defence Industrial Corridor.**

Defence Industrial Corridors

Two Defence Industrial Corridors to strengthen **defence manufacturing** and promote the sector are being established, one in Uttar Pradesh and the other in Tamil Nadu.

- **Uttar Pradesh Defence Industrial Corridor:** Agra, Aligarh, Chitrakoot, Jhansi, Kanpur and Lucknow.
- **Tamil Nadu Defence Corridor:** Chennai, Coimbatore, Hosur, Salem, and Tiruchirappalli.
- **Significance of the Defence Industrial Corridors:** Make in India and Self-reliance, Employment Generation, Domestic Manufacturing, Export Facilitation.

About Brahmos Missile

- It is a universal long-range supersonic cruise missile system **that can be launched from land, sea and air.**
- It is developed by Brahmos Aerospace, a joint venture between **DRDO, India and NPOM of Russia.**

Key Features

- **Type:** Universal supersonic cruise missile (launch-capable from land, sea, air).
  - **Supersonic:** Speed = **2-3 Mach** (1 Mach = speed of sound).
- **Developed by:** BrahMos Aerospace (DRDO-India & NPOM-Russia JV).
  - **Name:** Derived from **Brahmaputra** (India) & **Moskva** (Russia) rivers.

Features:

- **Two-stage system: Solid-fuel booster** (achieves supersonic speed) & **Liquid ramjet** (cruises at ~3 Mach).
- **Range: 290 km.**
- **Fire-and-Forget:** Autonomous guidance with multiple flight paths.
- **Variants: BrahMos-NG:** Lighter, smarter next-gen version; **BrahMos-II**: Hypersonic (>5 Mach, under development).

Significance of Brahmos Missile

- **High Speed and Precision:** High supersonic speed and **pin point accuracy.**

- **Stealth Feature:** Low radar signature and **can cruise as low as 10 meters.**
- **Defense Self Sufficiency:** Over **200 public and private Indian industries** contribute to its sub-systems.
- **Defense Export:** The Philippines became the first **country to procure Brahmos.**
- **Comparison with other Missiles**

Features	Brahmos (India-Russia)	Tomahawk (USA)	Kalibr (Russia)	Kinzhal (Russia)	Scalp (France)
Speed	Supersonic (2-3 Mach)	Subsonic (Mach 0.7–0.9)	Subsonic (boost to Mach 2.5 near target)	Hypersonic (up to Mach 10)	Subsonic (~Mach 0.8)
Range	290 km (extendable up to 800 km)	1,250–2,500 km	220-2,500 km	1,500-2,000 km	140 -550 km
Launch Platforms	Land, Sea, Air	Land, Sea, submarines	Sea, Submarine, Air	Air	Air, Ship, Submarine

Conclusion

The inauguration of the **Brahmos Aerospace Testing Facility marks a strategic step towards advancing** India's defence self-reliance and positioning the country as a key player in the **global defence export landscape.**

4.6. INDIA'S DEFENCE EXPORTS

Why in the News?

India's defence exports have surged to a record **high of ₹23,622 crore (approx. US$ 2.76 billion) in the Financial Year (FY) 2024-25.**

India's Defense Export Equipment

- **Philippines:** Brahmos Supersonic Cruise Missile.
- **Mauritius:** Advanced Light Helicopter (ALH), Dornier Do-228 Aircraft.
- **France:** Software and Electronic Equipment in Defence Sector.
- **Armenia:** Akash Air Defence Missile, Pinaka Multi-Launch Rocket System, Artillery Guns, Swathi Weapon Locating Radars.
- **USA:** Parts of Aircraft and Helicopter.

INDIA'S DEFENCE EXPORTS

₹23,622 Cr Total Exports (2024-25)	**64.5%** Private Sector Share
₹1,09,997 Cr Cumulative (2015-25)	**42.85%** DPSU Growth

2029 TARGET
₹50,000 Crore

TOP BUYERS (100+ COUNTRIES)
US USA
FR France
AM Armenia

KEY EXPORTS
Missiles
Artillery
Naval Platforms
TEJAS Aircraft

Initiatives for Improving Defence Exports

- **Innovations for Defence Excellence (iDEX):** Launched in 2018, engages MSMEs, **startups, and academia.**
- **Defence Industrial Corridors (DICs):** Established in Uttar Pradesh and Tamil Nadu.
- **Ease of Doing Business in the Defence Sector:** Simplification of industrial licensing procedure, Simplification of SOP for Export Authorisation.
- **Liberalised FDI Policy:** Liberalized in 2020, **allowing 74% through automatic route** & **higher through government route; Total FDI:** Rs 5,516.16 crore (since 2000).
- **Technology Development Fund (TDF):** DRDO-executed grants for Indian **industries including MSMEs and startups.**
- **SRIJAN Portal:** One-stop online portal for vendors to **access indigenization opportunities.**

Challenges to India's Defence Exports

- **Import reliance for critical components** for defence equipments.
- **Lack of R&D** for advanced technologies, including AI driven systems.
- Competition from established global **players, e.g., US, Russia and France.**

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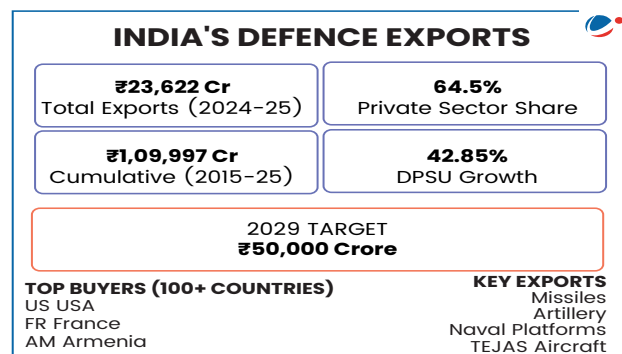
- Bureaucratic hurdles in **procurement and approvals.**

Way Forward

- **Promote export of complete defence systems to markets in** Africa, South-East Asia, and Latin America.
- **Forge partnerships with emerging defence hubs** like Australia, UAE, Saudi Arabia, and South Korea.
- **Expand presence through foreign offices** in key countries.
- Smaller manufacturers should **enhance capabilities to join global supply chains and fulfill offset obligations.**
- Focus on becoming part of global supply chains **for components and sub-systems.**

4.7. SOCIAL MEDIA INFLUENCERS' AND NATIONAL SECURITY

Why in the News?

A YouTube vlogger/influencer from Haryana, has been **arrested on charges of espionage.**

More on the News

- The Social Media influencer was booked under **Sections 3 and 5 of the Official Secrets Act and Section 152 of the Bharatiya Nyaya Sanhita (BNS).**
- Section 152 of the BNS deals with 'Act **endangering sovereignty, unity and integrity of India.'**

Salient Provisions of Official Secrets Act, 1923 (OSA)

- **Objective:** To safeguard government privacy and confidentiality for national security purposes.
- **Applicability:** OSA extends to whole of India including government departments and applies to individuals, contractors and citizens outside India.
- **Important Features of OSA, 1923**
  - OSA addresses espionage, sedition, and threats to national integrity.
  - Section 22 of RTI Act, 2005 gives it precedence over OSA and other laws.
  - Section 8(2) of RTI Act permits disclosure if public interest outweighs harm.
  - Section 8(1) lists exemptions from mandatory information disclosure.
- **Important Sections:**
  - **Section 3:** Penalties for spying activities like accessing restricted areas or sharing secret codes.
  - **Section 5:** Wrongful communication of secret official information.

Social Media Influencers as a Threat to National Security

- **Psychological Warfare:** Spread foreign-led misinformation to manipulate public opinion.
  - **Example:** China uses influencers to counter global criticism.
- **Espionage:** Some influencers leak sensitive data; **e.g.,** Jyoti Malhotra allegedly tied to Pakistan's intelligence.
- **Social Polarization:** Govt. blocked 1,093 accounts for fake news and hate speech in West Bengal.
- **Foreign Influence:** Pro-Khalistani accounts spread secessionist propaganda; India banned "Punjab Politics TV" for SFJ links.
- **Terror Propaganda:** Extremists exploit platforms like YouTube (e.g., Anwar al-Awlaki) for radicalization.

Key Terms

- **Psychological Warfare:** Planned use of propaganda and non-combat techniques to mislead and demoralize enemies.
- **Disinformation:** Intentionally false information spread to deceive recipients.
- **Misinformation:** False information spread without intention to deceive.

Steps Taken by India to Tackle Influencers' Threat to National Security

Legal Framework & Policies

- **IT Act, 2000:** Section 69A grants government power to **block online content for national security.**
- **IT Rules, 2021:** Requires platforms **to remove unlawful content** within 36 hours and trace message originators.

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- **Fact Check Unit (FCU):** Official body under **PIB to tackle fake news.**
- **Regular sensitization:** Of government **officials on OSA and conduct rules** to prevent unauthorized disclosure.

Tackling Propaganda Warfare during Operation Sandor

- MHA directed Border States **to maintain strict vigil on anti-national propaganda** on social media.
- States instructed to block social media accounts spreading fake narratives **under Section 69A.**
- Government urged **public to report fake news to PIB Fact Check.**

Conclusion

India's multi-layered approach combines OSA with modern IT regulations, creating a comprehensive framework addressing traditional espionage and contemporary digital threats through influencer networks.

4.8. BIOLOGICAL WEAPONS CONVENTION (BWC)

Why in the News?

United Nations Office for Disarmament Affairs (UNODA) celebrated 50th anniversary Biological Weapons Convention (BWC).

About Biological Weapons Convention (BWC)

- Formally known as **"The Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on their Destruction".**
- **Genesis:** Negotiated in Geneva from **1969-1971,** opened for signature in **1972 and entered into force in 1975.**
- **Membership:** 188 States Parties **(India signed and ratified in 1974) and 4 Signatory States** (Egypt, Haiti, Somalia, Syrian Arab Republic); States Parties **meet approximately every 5 years** to review its operation.

Key facts about the BWC

- **1st multilateral disarmament treaty** banning an entire category of weapons of mass destruction (WMD).
- **Prohibits development, production, acquisition, transfer, stockpiling and use** of biological weapons; Supplements the **1925 Geneva Protocol (deals with use of biological weapons).**
- **Has an Implementation Support Unit (ISU)** for the administrative support.
- **5 States Israel,** Chad, Djibouti, Eritrea and Kiribati **have neither signed nor acceded.**

Measures taken by India to implement Biological Weapons Convention (BWC)

- Manufacture, Use, Import, Export and Storage of Hazardous Microorganisms, Genetically/Engineered Organisms or Cells Rules, 1989.
- Weapons of Mass Destruction and their Delivery Systems (Prohibition of Unlawful Activities) Act, 2005.
- Special Chemicals, Organisms, Materials, Equipment and Technologies (SCOMET).
- India and France jointly proposed establishing a database to facilitate assistance under Article VII of BWC.

Challenges related to BWC

- **Lack of a Verification Mechanism:** The dual-use nature of bioscience makes it difficult to differentiate between peaceful and offensive applications.
- **Lack of legally enforceable data collecting provision:** Relies on politically binding CBMs, which suffer from low compliance (only >50% submission rate in 2022).
- **Limited Institutional support:** Implementation Support Unit (ISU) is understaffed (just 4 personnel since 2006).
- **Insufficient National Implementation:** India has a NACWC for chemical weapons but no equivalent centralized body for the BWC.

Way forward

- **Implement Modular-Incremental** Approach for Verification.
- **Expand Permanent Institutional Support** in appointment of rotating expert verification group.
- Universalize Confidence-Building Measure **Submissions by use AI advances to simplify.**
- Address Non-State Actor Threats by Integrating **UN Security Council Resolution 1540.**

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4.9. CRYPTO CURRENCY HAWALA NEXUS

Why in the News?

The Supreme Court recently observed that **Bitcoin trading** resembles a refined form of **hawala** while hearing a bail plea.

More on the News

- Supreme court highlighted the absence of a clear **regulatory framework** for virtual currencies in India.

- Earlier in 2020, the Supreme Court quashed the **RBI's 2018 circular** prohibiting banks from offering services for virtual currencies.

> **About Cryptocurrency and Hawala System**
> - It is any form of currency that exists digitally or virtually and uses **cryptography** to secure transactions.
> - **Hawala System** Hawala is an **informal funds transfer system** used for transferring funds through service providers known as **hawaladars**.
>   - It has alleged role in financing **illegal money laundering and terrorist activities.**

Cryptocurrency–Hawala Nexus

- The crypto hawala nexus refers to the convergence of traditional hawala with modern **cryptocurrency technologies,** creating a channel for **laundering illicit funds.**
- The **Enforcement Directorate** uncovered that ₹1,300 crore was routed through such **hybrid channels.**

Reasons for linking Crypto Currency and Hawala

- **Anonymity and Complexity:** The combination makes tracking financial flows difficult.
- **Bypassing Traditional Finance:** Both systems bypass formal, regulated financial institutions.
- **Facilitating Illicit Activities:** Both are attractive for **money laundering** and **terror financing.**
- **Block chain reinforces Hawala:** Adding transparency and **smart contracts** strengthens hawala's trust-based model.

Concerns of the Cryptocurrency Hawala Nexus

- **Tracking Challenges:** Cryptocurrency's **pseudo-anonymity** enables large illicit transfers.
- **Use in Illicit Finance:** Exploited for money laundering and terror financing, including terrorist groups raising millions.
- **Regulatory Challenges:** Existing regulations need adaptation for cryptocurrency transactions.
- **Tax Avoidance:** Used to transfer remittances and **black money** to tax havens.
- **Security Risks:** Digital wallets are targets for hackers leading to significant losses.

CRYPTOCURRENCY –HAWALA NEXUS

① **A transaction is requested** (Sender in Hawala)

② **A block that represents the transaction is created** (unique encryption)

③ **The block is sent to every node in the network.** (Nodes acting as Hawaladars)

④ Nodes validate the transaction.

⑤ **The block is added to the exisiting blockchain.** (Transactions recorded anonymously)

⑥ **The transaction is complete.** (Receiver in Hawala)

Way Forward

- **International Cooperation:** Global collaboration and evolving regulations are vital for tracking funds.
- **Enhanced Compliance: Blockchain technology** can be used to track fund usage and ensure proper allocation.
- **Strengthening Regulations:** Clear laws on virtual currencies with **FATF guidelines** as references.
- **Comprehensive Approach:** Involving strict regulations, combating money laundering, and utilizing **AI and machine learning.**

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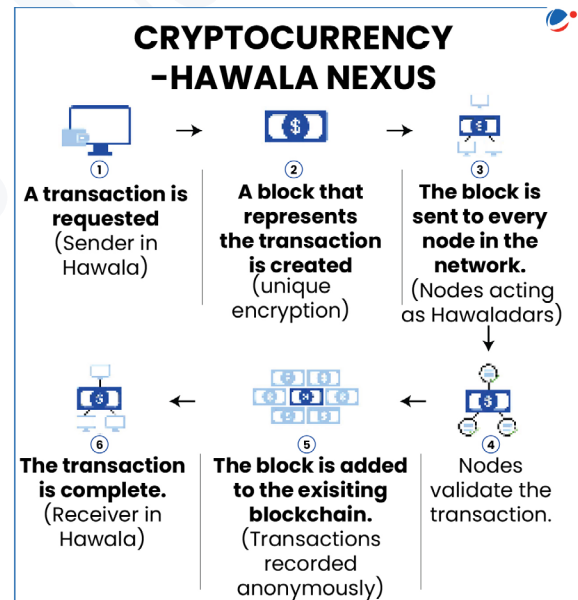
4.10. ROLE OF QUANTUM COMPUTING IN NATIONAL SECURITY

Why in the news?

NITI Aayog's Frontier Tech Hub (NITI-FTH) recently released a strategic paper on "Quantum Computing: National Security Implications & Strategic Preparedness". For further details, refer to Article 8.1 "Quantum Science and Technology" in June 2024 Monthly Current Affairs.

India's Quantum Technology Initiatives

- **National Quantum Mission**
  Promotes quantum R&D and innovation
- **Academic Research Hubs**
  Focus on quantum research in institutions
- **Other Initiatives**
  Includes quantum communication lab and QKD solutions
- **QUEST Program**
  Supports quantum labs and infrastructure
- **Private Sector Contributions**
  Develops quantum-safe networks

How Quantum Computing is Reshaping the National Security Paradigm

- **Cryptography and Cybersecurity:** Quantum computers could break current encryption algorithms, leading to the adoption of Post-Quantum Cryptography (PQC) to protect data.
  - **E.g.,** USA's National Quantum Initiative Act (2018) emphasizes PQC for cybersecurity.
- **Enhanced Intelligence Gathering:** Quantum computing can process complex datasets for better intelligence analysis and intercept communications.
  - **E.g.,** NATO's 2024 strategy includes quantum technologies for defense applications.
- **Secure Communications:** Quantum Key Distribution (QKD) enables secure transmission of encryption keys.
  - **E.g.,** China's 2,000 km QKD network between Beijing and Shanghai.
- **Military Hardware:** Quantum breakthroughs will enhance materials science and autonomous military systems.
  - **E.g.,** Quantum AI will power drones and robotic systems.
- **Economic Warfare:** Quantum computing's ability to break encryption may destabilize financial systems.
  - **E.g.,** The USA's National Quantum Initiative Act addresses economic security via quantum innovation.
- **Geopolitical Power:** Early breakthroughs in quantum technology will establish global leadership.
  - **E.g.,** China's Micius satellite (2016) enabled quantum-secured communication.

Key Challenges in Leveraging Quantum Computing for National Security

- **Workforce Shortage:** One qualified quantum candidate for every three quantum job openings (McKinsey, 2022).
- **Geopolitical Competition:** Strategic gaps due to uneven quantum R&D investments. China ($15B), U.S. ($5B), India ($0.75B).
- **Resource Disparities:** Lag in secure quantum communication for low-investment nations.
- **Technological Immaturity:** Early-stage quantum computers still struggling with stability. E.g., IBM's 433-qubit Osprey processor has high error rates.
- **Data Risk:** Threat of future decryption by hackers.

Key Recommendations

- **Continuous Monitoring:** Set up a quantum task force to track global progress.
- **Cryptographic Intelligence:** Conduct audits to identify quantum-related vulnerabilities.
- **PQC Transition Plan:** Develop a roadmap for adopting PQC and ensure cross-sector collaboration.
  - **E.g.,** Google Chrome's trial of PQC algorithms like Kyber.
- **Strengthening the Quantum Workforce:** Launch education programs and reform immigration for global talent.
- **Building a Quantum Ecosystem:** Create a vibrant quantum industry through consortia like the US Quantum Economic Development Consortium (QED-C).
- **International Collaboration:** Partner with like-minded nations for quantum technology development, e.g., India's cooperation with the EU on HPC, weather extremes, and quantum technologies.
- **Other:** Early warning systems for breakthroughs; Crypto agility frameworks to adapt to encryption changes; Flexible R&D funding.

Conclusion

Quantum computing is crucial for India's strategic resilience and aligns with the vision of Viksit Bharat @2047.

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4.11. NAXALISM

Why in the news?

Recently, security forces conducted the **largest ever anti-Naxal operation at Karreguttalu Hill** on the Chhattisgarh-Telangana border.

More in the News

- The operation was conducted in line with the goal of **achieving a Naxal-free India by March 31, 2026.**
- Naxalism in India
- **Background:** Naxalism or Left-Wing Extremism (LWE) originated from **the Naxalbari movement of 1967 in West Bengal.**
- **Ideology:** Rooted in socio-economic inequalities and driven by **Maoist principles, impacting remote, underdeveloped, and tribal-dominated regions.**
- **Aim:** The movement aims to undermine the Indian state through **armed rebellion and parallel governance structures.**
- **India's Red Corridor:** Refers to Naxalism affected states like **Chhattisgarh, Jharkhand, Odisha, Maharashtra, Kerala, West Bengal, and Madhya Pradesh.**
- **Modus Operandi:** Includes armed **violence, extortion, destruction of infrastructure, and recruitment of children and civilians.**

Reasons for the decline of Naxalism:

- India's multi-pronged counter LWE **strategy combining security, development, and community outreach has significantly reduced Naxal activity.**

Strengthened Security Architecture:

- **SAMADHAN doctrine:** Comprehensive strategy for security operations.
- **Security Related Expenditure Scheme:** Reimburses states' security costs.
- **Special Infrastructure Scheme:** Funds State Intelligence and Special Forces.
- **Intelligence and Operations:** Real-time, multi-agency coordination.
- **Financial Crackdown:** Targets funding via PMLA enforcement.

Development Interventions:

- **Special Central Assistance for most affected districts** to fill critical infrastructure gaps.
- Financial Inclusion efforts including **banking services and skill development initiatives.**
- Focus on strengthening Road connectivity, **Mobile connectivity, and Financial connectivity.**

Community Engagement:

- **Civic Action Programme** humanizes security forces and builds rapport with local people.

SAMADHAN Strategy Framework

- Smart Leadership
- Aggressive Strategy
- Motivation and Training
- Actionable Intelligence
- Dashboard Based KPIs (Key Performance Inticators) and KRAs (Key Result Areas)
- Harnessing Technology
- Action Plan for Each Theatre
- No Access to Financing

Strategic Approach
➢ No single solution exists for LWE problem
➢ Requires coordinated short-term, medium-term and long-term policies
➢ Implementation across multiple levels and operational dimensions

Persistent Challenges to Eliminating Naxalism

- **Violent Ideology:** Maoist doctrine promotes armed rebellion against the state.
- **Front Organizations:** Legal fronts aid recruitment, funding, and propaganda.
- **Difficult Terrain:** Dense forests and hills hinder security operations.
- **Trust Deficit:** Tribal alienation limits cooperation with authorities.

Way Forward

- **Addressing Trust Deficit:** Enhance local participation in administration and ensure tribal-friendly policies.
- **Countering Ideological appeal:** Promote democratic principles as countermeasure to violent Maoist ideology.
- **Security and Capacity building:** Prioritize modernization of local police forces and utilize intelligence-driven units.
- **Centre-state coordination:** Strengthen synchronized efforts to combat radicalization and facilitate development.

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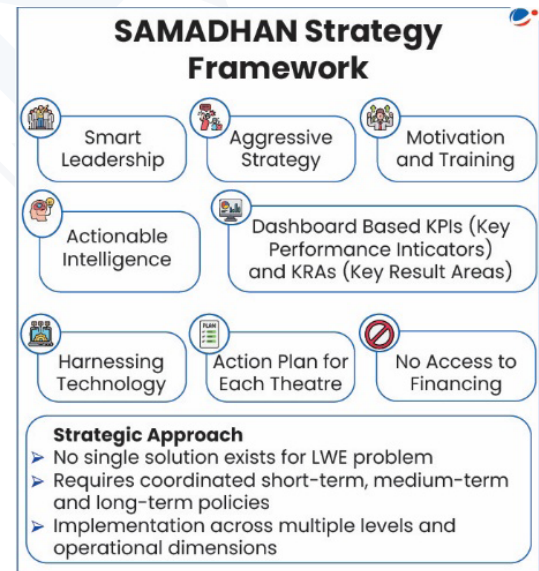
4.12. GOLDEN DOME

Why in the News?

US President has unveiled an **ambitious missile defense system named Golden Dome.**

About Golden Dome

- The Golden Dome is a **ground- and space-based missile defense system** designed to protect all of the U.S.A.
- It will be **a multi-layered defense system against hypersonic and cruise missile threats,** integrating space-based interceptors and advanced tracking technologies.
- The Dome will detect, track and stop missiles at multiple stages of flight, **potentially destroying them before takeoff or intercepting them in mid-air.**
- **Components include existing American missile defense assets:** Patriot missile batteries, THAAD, Aegis Ballistic Missile Defense, and Ground-based Midcourse Defense.

Concerns about Golden Dome

- **Weaponization of space:** China raised concerns saying it **"heightens the risk of space becoming a battlefield"** and **"fueling an arms race."**
- **Against the spirit of Outer Space Treaty:** States shall not place **nuclear weapons or other weapons of mass destruction in orbit or on celestial bodies.**

Country	System and Details
Russia	- **S-400 Triumph (SA-21 Growler):** Advanced phased-array radar with 40–400 km range
USA	- **THAAD (Terminal High Altitude Area Defense):** Hit-to-kill technology, 1,000 km detection, surveillance, target identification, and tracking, Mach 8 interceptors.
Israel	- **Iron Dome:** System includes **Tamir interceptor** with launcher, battle management and weapon control system (BMC), serves as fire control radar for **David's Sling.** - **Iron Beam:** High-energy laser (100–150 kW), unlimited magazine, complements Iron Dome.
China	- **HQ-9:** Draws from S-300 and Patriot tech, less advanced than S-400's radar.
India	- **Barak-8:** A joint Indian-Israeli surface-to-air missile defense system with 360° coverage, naval/land variants - **Akash:** Rajendra radar, mobile, 100% indigenous, surface-to-air missile, can fly at supersonic speeds, Uses Ramjet-rocket propulsion system

Conclusion

The deployment of space-based interceptors raises **legitimate concerns about adherence to international space law and the risk of triggering a new arms race.** The challenge lies in balancing national security imperatives with preserving space as a peaceful **domain for all humanity.**

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4.13. NEWS IN SHORTS

4.13.1. Vibrant Villages Programme-II (VVP-II)

Cabinet Approval & Overview

- **Continuation of VVP-I,** now as a **100% centrally funded** scheme (vs. earlier Centrally Sponsored model).
- **Coverage:** Expands to **strategic villages across 17 states/UTs** (excluding northern borders covered under VVP-I).
- **Goal:** Boost **livelihoods, infrastructure, and security integration** (2024–2029).

Key Features

- **Infrastructure:** Roads, housing, SMART classrooms, all-weather connectivity.
- **Livelihoods:** Cooperatives, SHGs, and border-specific income generation.
- **Convergence:** Leverages existing welfare schemes.
- **Soft Power:** Cultural festivals, tourism promotion, heritage awareness.
- **Implementation:** Uses **PM Gati Shakti for** efficiency.

Strategic Importance of Border Populations

- **Security:** Locals act as **"eyes and ears"** (e.g., Kargil War hero Tashi Namgyal).
- **Territorial Claims:** Settlements reinforce sovereignty (e.g., **India-China 2005 Agreement**).
- **Logistics:** Villages aid forces with shelter, labor, and intelligence.
- **Precedents:** Builds on past efforts like **Border Area Development Programme (1986),** Model Villages (2005), and Smart Villages (2015).

4.13.2. National Security Advisory Board (NSAB)

The Center has appointed a new chairman along **with 7 new members in the National Security Advisory Board (NSAB).**

About NSAB

- **Constituted in 1998 as an advisory body of experts from industry, media & civil society.**
  - Supported by National Security Council Secretariat (NSCS).
- **Functions:**
  - Provides long-term analysis on national security to the NSC.
  - Recommends policy measures on NSC-referred issues.

4.13.3. Financial Fraud Risk Indicator

The Department of Telecommunications (DoT) has introduced a **Financial Fraud Risk Indicator (FRI) to combat mobile-based cyber fraud.** The Indicator allows for **swift, targeted action against suspected frauds in telecom and financial domains.**

What is Financial Fraud Risk Indicator (FRI)?

- **Risk-based classification** system for mobile numbers (Medium/High/Very High fraud risk)
- **Data sources:**
  - National Cybercrime Reporting Portal (NCRP)
  - DoT's Chakshu facility
  - Digital Intelligence Platform (DIP)
  - Bank/financial institution intelligence
- Enables banks/NBFCs/UPI providers to take protective actions

Status of Cyber Financial Frauds in India

- ₹3,207 crore lost (2020-2024) across 5.82 lakh cases
- **Common fraud types:**
  - KYC, UPI, card frauds
  - Customer care, digital arrest scams
  - Investment frauds

Measures Against Cyber Financial Frauds in India

- **Digital Intelligence Platform (DIP):** Facilitates real-time intelligence sharing between enforcement agencies, banks, and financial institutions.
- **Chadshu on Sanchez Sachik:** Enables citizens to report fraudulent calls, SMS, or WhatsApp messages.
- **Mulehunter (2015):** AI-based tool to identify money mules; recommended for banks.
- **Citizen Financial Cyber Fraud Reporting System (2021):** Allows instant fraud reporting and prevention under the Indian Cyber Crime Coordination Centre (I4C).
- **F-Zero ITR:** Automatically converts cyber fraud complaints (above ₹2.1 lakh) into Income Tax Returns (ITRs) via helpline/portal.

4.13.4. Rafale Marine (M) Fighter Jets

Centre approved **26 Rafale Marine (M) Fighter Jets from France.**

- For the Indian Navy and deployment on INS Vikrant, **India's first indigenous aircraft carrier.**
- Indian Air Force operates **36 Rafale jets acquired earlier.**

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About Rafael aircraft

- **Manufacturer:** Dassault Aviation, French aerospace company.
- **"Omnirole" capabilities:** Able to carry out all combat missions including air defense, strikes, reconnaissance, nuclear deterrence.
- **Generation:** 4.5 generation with maximum speed 1.8 Mach.

Various Latest Generation Aircrafts

- **Fourth generation jet fighters (1970- 1980s): Switch and swing roles between air-to-air and air-to-ground. E.g.,** MiG-29, F-16, Mirage-2000.
- **Four and half generation jet fighters:** Added 'stealth', radar absorbent materials, thrust vector engines to extend fourth generation range. **E.g.,** Eurofighter Typhoon, Rafale etc.
- **Fifth generation jet fighters:** Advanced stealth technologies and advanced weapons. **E.g.,** F-22 Raptor, Chengdu J-20 etc.

U.S.-China 6th-Gen Aircraft Battle

- **USA:** Plans for next-generation fighter jet **F-47.**
- **China:** Flew two sixth-generation prototypes in December 2024: **J-36 and J-50.**
- Sixth-generation fighters **feature AI integration, Hypersonic capabilities, Unmanned capabilities.**

4.13.5. Long-Range Glide Bomb 'Gaurav'

DRDO successfully conducts **release trials of Long-Range Glide Bomb 'Gaurav'.**

Weapon Specifications

- **Type:** Long-Range Glide Bomb (LRGB).
- **Weight:** 1,000 kg class
- **Range:** 'Gaurav' achieved 100 km range with pinpoint accuracy.
- **Development:** Designed and developed indigenously

4.13.6. Mk-II(A) DEW system

DRDO successfully conducted a **trial of a Mk-II(A) LASER-Directed Energy Weapon (DEW) system** at the National Open-Air Range (NOAR) in **Kurnool (Andhra Pradesh).**

- India became the **fourth country** with advanced LASER weapon capabilities, **after the US, China, and Russia.**

About Mk-II(A) DEW system

- **Developed by:** DRDO's Centre for High Energy Systems and Sciences (CHESS), Hyderabad.
- **Potential targets:** Can disable drones, missiles, and aircrafts.
- **Mechanism:** Uses high-energy 30-kilowatt LASER Beam to cut through targets after radar/Electro Optic detection, causing structural failure.

- **Characteristics:** Lightning speed engagement, precision, and lethality delivered within seconds.

About Directed Energy Weapons

- Use concentrated energy from **electromagnetic or particle technology, rather than kinetic energy, to degrade or destroy targets.**
- **Types:** High Energy LASER (HELS), High power microwave weapons (HPMs), millimeter waves, Particle beams weapons.

Significance of DEW Systems

- **Cost-effective warfare:** Cuts expensive ammunition use, minimizes collateral damage.
- **Electronic disruption:** Disables radars, comms without physical damage.
- **Versatile use:** Air defense, missile interception, anti-satellite ops, crowd control.

4.13.7. Project Varsha

INS Varsha, under Project Varsha to be operational by 2026.

About Project Varsha

- Classified **naval project** aimed at strengthening India's **underwater nuclear capabilities.**
- **Objective:** To develop a **secure underground base** to house a fleet of over **12 nuclear-powered ballistic missile submarines (SSBNs).**
- **Location:** Coastal village Rambilli in Andhra Pradesh.
- **Similar to Project Varsha from the east,** Karwar base in Karnataka under **Project Seabird** safeguards the west coast.

4.13.8. Missile 'Gandiva'

DRDO's new air-to-air missile, "Gandiva" (Astra MK-3), has been officially designated.

- **Features:** Powered by Solid Fuel Ducted Ramjet propulsion, it can sustain supersonic speeds up to Mach 4.5 over 300-350 km.

4.13.9. Ashwini

India's Ministry of Defence has acquired Low Level Transportable Radar (LLTR) 'Ashwini' for the Air Force.

- **Features:** Indigenously developed with a 200 km range, it can track various aerial targets, including UAVs and helicopters.

4.13.10. Smuggling of Gold in India

An actor was arrested for gold smuggling.

- Gold smuggling depletes foreign exchange reserves and fuels organized crime.

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- A significant portion of illicit gold enters India from Gulf states, including UAE and Saudi Arabia.
- **Laws:** The Customs Act, 1962 and Bhartiya Nyaya Samhita, 2023, impose penalties, and the UAPA treats smuggling as a "terrorist act" if it harms India's monetary stability.

4.13.11. Convention on Cluster Munitions

Lithuania withdrew from the Convention on Cluster Munitions due to security concerns over Russia.

- **About CCM:** A treaty that bans the use, stockpiling, production, and transfer of cluster munitions, effective since 2010. India, Russia, China, and the U.S. are not signatories.

4.13.12. Victims of Terrorism Associations Network (VOTAN)

The UN Office of Counter-Terrorism (UNOCT) launched VoTAN, **a global network to support victims and survivors of terrorism.**

About VoTAN

- **Background:** The Group of Friends of Victims of Terrorism, **chaired by Spain and Iraq, was established six years ago to uphold victims' rights.**
- **Genesis:** The network is a key outcome of the 2022 **UN Global Congress on Victims of Terrorism.**
- **Goal:** To provide a safe space for victims and survivors to support each **other and engage as advocates and peacebuilders.**
- **Financial Support:** Received from Spain.

4.13.13. Bhargavastra

India has successfully test-fired an indigenously **developed anti-drone system, Bhargavastra.**

About Bhargavastra

- It is a low-cost, **'hard kill' anti-drone system** designed to neutralize **threats from drone swarms.**
- **Developed By:** Solar Defence and **Aerospace Limited (SDAL).**

Key Features:

- **Two-layer security system:** Layer 1 uses unguided micro-rockets with **20m lethal radius for swarm drones. Layer 2 uses guided micro-missiles for precision strikes.**
- **Range:** Detects drones from up to 2.5 km. **Radar detects aerial threats from 6–10 km.**
- **Terrain adaptability:** Above 5000 meters.
- **Modular design:** Allows integration of soft **kill options like jamming and spoofing.**
- **C4I-enabled command centre:** Enhances network-centric **warfare integration**

4.13.14. Multi-Influence Ground Mine (MIGM)

The Indian Navy and DRDO successfully **tested the indigenously developed MIGM.**

About MIGM

- Advanced underwater naval mine designed to enhance the **Indian Navy's capabilities against modern stealth ships and submarines.**
- **Designed and Developed by:** Naval Science and **Technological Laboratory (NSTL) under DRDO.**

Features:

- Uses multiple sensors to **detect acoustic, magnetic, and pressure signals from marine vessels.**
- Has **built-in electronics with processors to process data** and trigger actions.
- Deployable **from ships, submarines etc.**

4.13.15. Hawkeye 360 Technology

The US has recently approved sale **of HawkEye 360 technology to India to boost the country's surveillance capabilities.**

About HawkEye 360 technology

- It uses clusters of three satellites in Low Earth Orbit to detect, geolocate, and analyze radio frequency (RF) signals.

Significance for India

- **Detects** vessels switching off AIS to evade tracking in disputed zones.
- **Enhances** India's maritime domain awareness in the Indo-Pacific.
- **Enables** monitoring of illegal fishing, smuggling, and hostile surveillance.

4.13.16. Igla-S

Indian Army received new Russian **Igla-S missiles to counter drones, choppers, jets.**

About Igla-S

- It is a man-portable, shoulder-launched **surface-to-air missile (SAM) system designed for mobile ground units in high-threat environments.**
- It is an improved version of Very **Short-Range Air Defence Systems (VSHORADS).**

Key Features:

- **Uses** infrared (IR) homing to track heat signatures of aerial targets.
- **Automatically** locks onto engine heat, effective against drones and helicopters.
- **Range:** Engages targets up to 6 km away and 3.5 km in altitude.

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4.13.17. Exercises In New

Exercise	Details
Exercise Desert Flag-10	➤ **Indian Air Force participates in this premier multinational air combat exercise hosted by the UAE.**
Operation ATALANTA	➤ **European Union Naval Force (EUNAVFOR)** proposes a joint exercise with the Indian Navy. ➤ **Focus:** Maritime security, counter-piracy, anti-narcotics, and illegal fishing in the Western Indian Ocean and Red Sea regions.
Exercise 'Dustlik'	➤ Annual joint military exercise is conducted alternately between **India and Uzbekistan.**
Exercise Tiger Triumph	➤ **4th edition** of this India-US tri-service exercise commenced off the Vishakhapatnam coast. ➤ **Aim:** To enhance interoperability and develop Standard Operating Procedures (SOPs) for humanitarian assistance and disaster relief (HADR) operations.
IMDEX Asia 2025	➤ Asia's premier naval & maritime defence event (since **1997**). ➤ Organized by the **Republic of Singapore Navy.**
Nomadic Elephant	➤ **17th India-Mongolia joint military drill held in Ulaanbaatar, Mongolia..**
Exercise INDRA 2025	➤ **14th Edition held in Chennai from March 28 to April 02, 2025.** ➤ **Bilateral exercise between India and Russia since 2003.**
Exercise Prachand Prahar	➤ **Tri-service** integrated exercise by Indian Armed Forces in Arunachal Pradesh.
Varuna Exercise 2025	➤ **Bilateral naval exercise** between India and France in the Arabian Sea.
Bongosagar 2025	➤ **India-Bangladesh Naval Exercise in Bay of Bengal.** ➤ **Related:** Exercise Sampriti – annual military drill on counterterrorism & disaster response.
Exercise Khanjar 2025	➤ **India-Kyrgyzstan** Special Forces Exercise, held annually in both countries. ➤ **Aim:** Counter Terrorism & Special Forces cooperation.
TROPEX 2025	➤ **Indian Navy's flagship war exercise.** ➤ **Focus:** Operational preparedness with Army, Air Force, and Coast Guard.
Exercise Desert Hunt 2025	➤ **Tri-Service Special Forces drill with Para SF, MARCOS, and Garud units.** ➤ **Aim: Interoperability, synergy, rapid response.**
INIOCHOS-25	➤ **Multinational air** exercise hosted by Greece's Hellenic Air Force. ➤ **Indian Air Force** participated to enhance tactical skills and military cooperation.

4.13.18. Operation Hawk

Operation Hawk was launched by CBI to crack down on **global cybercrime networks involved in online child sexual exploitation.**

➤ The operation follows Operation CARBON (2021) and Operation Megh Chakra (2022) to dismantle networks with international links.

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4.14. TEST YOUR LEARNING

1. **Consider the following statements regarding India's anti-drone systems and air defense equipment:**

   1. The D4 system developed by DRDO and BEL uses a dual-layered kill mechanism, including a Laser Directed Energy Weapon for hard kill and RF jamming for soft kill.

   2. MANPADS like the Igla-S are portable air-defense systems that can engage low-altitude aerial threats but require a crew of at least three persons to operate.

   3. The Zu-23 mm system is a radar-guided, self-propelled anti-aircraft gun with a range of up to 4 km, primarily used against ground targets.

   4. The L/70 Anti-Aircraft Gun, upgraded with electro-optical sensors, is capable of auto-tracking targets and has a firing rate of over 200 rounds per minute.

   Which of the statements given above are correct?

   a) 1 and 2 only
   b) 1 and 4 only
   c) 2 and 3 only
   d) 3 and 4 only

2. **Consider the following statements regarding the BrahMos missile and Defence Industrial Corridors in India:**

   1. The BrahMos missile, developed jointly by India and Russia, is a supersonic cruise missile with a maximum speed of 3 Mach and an operational range of 290 km.

   2. The Uttar Pradesh Defence Industrial Corridor includes six nodes, with Lucknow and Jhansi being key hubs, while the Tamil Nadu Corridor is centered around Chennai and Coimbatore.

   3. The BrahMos-NG (Next Generation) is a hypersonic missile (Mach 5+) under development, while BrahMos-II will be a lighter and smaller variant of the existing missile.

   4. The Philippines is the first country to import BrahMos missiles, marking a significant milestone in India's defence exports.

   Which of the statements given above are correct?

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

3. **With reference to the role of Quantum Computing in national security, consider the following statements:**

   1. Quantum Key Distribution (QKD) enables the secure transmission of encryption keys.

   2. Quantum computing has the potential to enhance autonomous military systems.

   3. Post-Quantum Cryptography (PQC) is designed to be resistant to attacks by classical computers.

   4. China's Micius satellite was the first to demonstrate quantum-secured communication.

   Which of the statements given above are correct?

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

4. **Consider the following statements about the Vibrant Villages Programme-II (VVP-II):**

   1. VVP-II builds upon the foundation laid by VVP-I, focusing on border villages along the northern frontier.

   2. VVP-II is a Centrally Sponsored Scheme with partial funding from the central government.

   3. The objective of VVP-II is to improve living conditions, provide livelihood opportunities, and control trans-border crime.

   4. VVP-II includes investments in infrastructure like roads, housing, and SMART classrooms under the Pradhan Mantri Gram Sadak Yojana (MGSY-IV).

   Which of the above statements is/are true?

   a) Only statement 1 is true.
   b) Statements 2 and 3 are true.
   c) Statements 1, 3, and 4 are true.
   d) All statements are true.

5. **With reference to the Rafale Marine (M) Fighter Jets, consider the following statements:**

   1. The Rafale Marine (M) Fighter Jets are specifically for the Indian Navy and will be deployed on the INS Vikrant.

   2. The Indian Air Force currently operates 26 Rafale jets acquired earlier.

3. Rafale jets are classified as 4.5 generation fighters, capable of performing various combat missions, including air defense and nuclear deterrence.

4. The Rafale jets were manufactured by Dassault Aviation, a French aerospace company.

Which of the statements given above are correct?

a) 1, 3 and 4 only

b) 1, 2 and 4 only

c) 1, 3 and 2 only

d) 1, 3 and 4 only

Mains Question

Q1. (150 words)

Examine the role of social media influencers in posing threats to national security. Discuss the legal and policy measures taken by India to counter such threats."

Q2. (250 words)
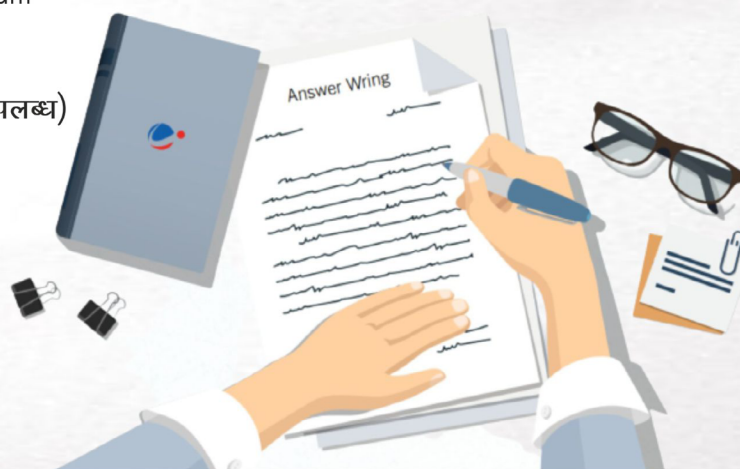
Discuss the transformative role of quantum computing in shaping national security strategies. Highlight the key challenges India faces in leveraging quantum technology and suggest a roadmap for strategic preparedness.

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ENVIRONMENT

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5.1. 2025 CONFERENCES OF THE PARTIES TO THE BASEL, ROTTERDAM, AND STOCKHOLM CONVENTION

Why in the news?

The 17th Basel, 12th Rotterdam, and 12th Stockholm Convention meetings were **recently held consecutively in Geneva.**

Key Outcomes of the Three COPs:

- **Joint Commitment:** All three COPs emphasized **enhanced collaboration with other environmental agreements.**
- **Basel Convention (BC COP-17):** Updated technical guidelines for **managing persistent organic pollutants** (POPs) wastes and adopted a new strategic framework (2025–2031).
- **Rotterdam Convention (RC COP-12):** Added two chemicals to Annex III: **Carbosulfan and Fenthion.**
- **Stockholm Convention (SC COP-12):** Added Chlorpyrifos, **Long-chain perfluorocarboxylic acids (LC-PFCAs), and Medium-chain chlorinated paraffins (MCCPs) to Annex A.**

Basel Convention

- **Overview:** Adopted on **22 March 1989 in Basel, Switzerland. India is a party to this treaty.**
- **Objective:** Protection from the **adverse effects of hazardous and other wastes.**
- **Scope:** It identifies hazardous waste by their origin, composition, or characteristics. It also includes **"other wastes"** such as household waste, plastic wastes.
- **Prior Consent Rule:** Mandates **countries' approval before hazardous waste** shipments.
- **New Focus Areas**
  - **Textile Waste:** Mislabelled as donations, **complicating regulation in Global South.**
  - **Shipbreaking:** 15,000 ships to be scrapped, **containing POPs and heavy metals.**

Rotterdam Convention

- **Genesis:** Rotterdam Convention on **Prior Informed Consent Procedures (PIC)** entered into force in 2004. India acceded to the Convention in 2006.
- **Objective:** To promote shared **responsibility in the international trade of certain hazardous chemicals.**
- **Covers:** Pesticides and industrial chemicals that have been banned or **severely restricted.**
- **Legally Binding PIC:** Exporters must disclose **banned/restricted substances** for **informed consent.**
- **Issues**
  - **Unlisted Chemicals:** Rotterdam Convention delayed **listing methyl bromide, mercury,** etc.
  - **Trade Over Science:** Producer nations blocked listings over economic fears.
  - **Treaty Overlap:** Conflicts with stricter agreements caused delays. **E.g., Montreal Protocol, Minamata, and Stockholm Conventions.**

Stockholm Convention on Persistent Organic Pollutants (POPs)

- **Genesis:** Adopted in 2001 in Stockholm, Sweden; entered into force in 2004. India ratified it in 2006.
- **Objective:** To protect from long-lasting, widespread chemicals that accumulate in humans and wildlife.
- **Issues:** Difficulty regulating complex chemicals like MCCPs, excessive exemption requests, and industry misrepresentation exposed in the UV-328 case.

Significance of the BRS Conventions

- **Key Global Frameworks:** They are **key global frameworks** for protecting **human health and the environment** from hazardous chemicals and wastes.
- **Lifecycle Regulation:** They regulate the entire chemical lifecycle—**production, use, and disposal.**
- **Role in Meeting SDGs:** They play a crucial role in achieving the **2030 Sustainable Development Goal**s by promoting safe management of chemicals and wastes, contributing to Goals 2 (**(Zero Hunger), 3 (Good Health and Well-being), 6 (Clean Water and Sanitation), 11 (Sustainable Cities),** and 12 **(Responsible Consumption and Production).**

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Conclusion

The theme **"Make visible the invisible" reminds that even small updates can keep treaties like the Rotterdam Convention relevant.** Parties must adapt and act to ensure real protection for people and the environment.

5.2. ECO-CENTRIC APPROACH

Why in the News?

The Supreme Court (SC) recently noted that India pioneered the shift from an **anthropocentric** to **an eco-centric approach** in international jurisprudence.

More on the News

- The SC directed Telangana's Wildlife Warden to protect wildlife impacted by the **destruction of 100 acres of Kancha Gachibowli's "forest" area.**
  - This followed the **Telangana Government's proposal** to auction **400 acres of forest** land near **Hyderabad University for IT parks, sparking student protests.**

About Eco-centric Approach

- It prioritizes the well-being of the entire ecosystem, valuing nature for its own sake, not just human utility. **E.g., M.C. Mehta vs. Union of India (1986)**
  - **In contrast,** the anthropocentric approach treats humans as central.
- **Aligns with the deep ecology movement** (by Arne Naess), advocating a shift from viewing nature as merely useful to humans to recognizing its inherent worth.
- **Supported by Interest Theory,** which grants rights to beings whose well-being holds intrinsic value.

Significance of Eco-centric Approach

- **Recognition** of Nature's Intrinsic Value
- **Strengthening** Wildlife and Biodiversity Protection by bridging Governance and Legislative Gaps
- **Expansion** of Environmental Jurisprudence
- **Aligns India** with Global Environmental Ethics: **E.g.,** Ecuador became the first country in the world to recognize Rights of Nature in its Constitution

Key Driver/Facilitator to the Eco-Centric Approach

- **Constitutional Mandate:** Article 21, Article 48A, Article 51A(g)
- **Judicial Activism:** Gave voice to the voiceless (**e.g.,** animals, forests.) **Also,** PILs **by** activists, etc, were instrumental.
- **Evolution of Environmental Jurisprudence: E.g.** Public Trust Doctrine & Precautionary Principle.
- **Environmental Degradation and Ecological Crises:** Such as deforestation and river pollution.
- **Cultural Ethos:** Traditional Indian wisdom viewed ecology as a living being with humans as part of it, not superior.
- **Legislative Measures:** Including **Prevention of Cruelty to Animals Act (1960), Wildlife (Protection) Act (1972).**

Important Judicial Pronouncements related to Eco-centric Approach

- **T.N. Godavarman Thirumulpad vs Union of India & Ors (1996):** Expanded the meaning of 'forest'.
- **WWF-1v. Union of India and others, Supreme Court (2013):** Invoked the 'species best interest standard'.
- **Animal Welfare Board of India v. A. Nagaraja (2014):** SC prioritised the rights of animals over human traditions (**e.g.,** Jallikattu).
- **N.R. Nair v. Union of India (2000):** SC upheld that animals are conscious beings and have the right to live with dignity.

Conclusion

India's judiciary has pioneered an **eco-centric approach that recognizes nature's inherent value, aligning with constitutional principles** of human-environment harmony.

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5.3. BIOLOGICAL DIVERSITY (ACCESS AND BENEFIT SHARING) REGULATION 2025

Why in the news?

The National Biodiversity Authority has issued new rules — **Biological Diversity (Access and Benefit Sharing) Regulation 2025.**

More on the news

- The rules regulate how benefits from **biological resources and associated knowledge are fairly shared.**
- Rules have been notified by the **NBA in accordance with the Biodiversity Act (BDA) 2002,** replacing the 2014 rules.
- The well-known ABS case involves the Kani tribal community of Kerala and the **Arogyapacha plant (Trichopus zeylanicus) used for the Jeevani drug.**

India's Legal Framework on Access and Benefit Sharing (ABS)

- **Purpose:** BD Act, 2002 aligns with CBD to conserve biodiversity.
- **Scope:** Covers all biological resources, broader than Nagoya Protocol.
- **Implementation:** Three-tier system—NBA, SBBs, and BMCs.

Key Highlights of the Rules

- **DSI Inclusion:** Covers benefit-sharing for biological resources, including Digital Sequence Information.
- **Prior Approval:** NBA permission required (exempts certain cultivated medicinal plants).
- **Slab-Based Sharing:** Benefit-sharing tiers based on annual turnover.
- **High-Value Resources:** 5-20% benefit-sharing for commercial use.
- **Research Transfer:** Monetary/non-monetary sharing for research outcomes.
- **IPR Commercialization:** Up to 1% of annual ex-factory sales for IPR-based products.
- **ABS Significance:** Ensures sovereignty, biodiversity conservation, and empowers local communities.

Challenges with Implementation

- **Transboundary Issues:** Genetic resources span borders, complicating consent/benefit-sharing.
- **Weak Capacity:** Limited resources hinder CBD/national law enforcement.
- **Customary Law Gap:** Traditional knowledge systems lack formal legal integration.
- **Documentation Hurdles:** People's Biodiversity Registers are slow and complex.
- **Research Ambiguity:** Blurred academic/commercial research lines risk misuse.
- **Poor Monitoring:** Overlapping mandates and agencies cause coordination failures.
- **Awareness Deficit:** Stakeholders lack understanding of ABS laws.

Way Ahead

- **Global Mechanism:** Adopt multilateral benefit-sharing for cross-border resources.
- **Indigenous Rights:** Legally embed customary laws into ABS frameworks.
- **Digital PBRs:** Tech-driven documentation for efficiency and transparency.
- **Research Clarity:** Define strict academic/commercial research criteria.
- **Centralized Monitoring:** Unified digital platform for NBA-SBB-BMC coordination.

5.4. THE HIMALAYAN MOUNTAIN SYSTEM ECOLOGY

Why in the News?

Union Minister for Environment, Forest and Climate Change, **represented India at the inaugural session of the Sagarmatha Sambaad in Kathmandu, Nepal.**

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More on the News

- **Sagarmatha Sambaad:** It is a multi-stakeholder dialogue forum on global, regional and national issues.
- **Theme of the Summit:** 'Climate Change, Mountains, and the Future of Humanity'.
- India outlined a **five-point call for global action to address** ecological challenges in mountainous regions.

Five-point call for global action

- Enhanced Scientific Cooperation, Building Climate Resilience, Empowering Mountain Communities, Providing Green Finance, Recognizing Mountain Perspectives

Physiography of the Himalayan Mountain System

- Youngest & highest fold mountains, **spanning 5 countries (India, Nepal, Bhutan, China, Pakistan).**
- Formed **50 million years ago by Indian-Eurasian Plate collision.**
- Key glaciers: **Gangotri, Yamunotri, Alaknanda.**
- Spreads across **13 Indian states/UTs (2,500 km).**
- Diverse vegetation: **Tropical (foothills) to alpine (summits).**

Ecological Significance

- **Biodiversity:** Two hotspots (Himalaya & Indo-Burma); 32% endemic plants, rare fauna (snow leopard, red panda).
- **Water Tower:** 3rd largest glacial reserve; feeds 10 rivers (~1.3 billion dependents).
- **Climate Role:** Monsoon regulator, stores 5.4B tonnes carbon, impacts albedo.
- **Economy: Fiber**/timber source; 240M tourists/year by 2025.

Threats to the Himalayan Ecosystem

- **Deforestation:** 1,072 sq km forest lost (2019-21), endangering species.
- **Glacial Retreat:** Gangotri glacier receded 1,700m (1935-2022), raising GLOF risks.
- **Climate Change:** 90% region faces drought risk at +3ºC; warming 2-5x faster than global average.
- **Tourism Pressure:** Unregulated tourism worsens landslides and subsidence.
- **Hydropower Impact:** 115+ large projects disrupt river ecosystems.

Initiatives to Protect the Ecosystem of the Himalayan Mountain System

- **India's Initiatives**
  - **National Mission for Sustaining the Himalayan Ecosystem (NMSHE):** Focuses on glacial monitoring, biodiversity conservation, and disaster resilience.
  - **Project Snow Leopard:** Found 718 snow leopards in India (~10-15% of global population).
  - **Centre for Cryosphere & Climate Change Studies:** Monitors Himalayan glaciers.
  - **Disaster Preparedness:** Includes GLOF risk mapping.
  - **Sustainable Tourism & Waste Management:** Swadesh Darshan Scheme and ban on single-use plastics.
- **Global Initiatives**
  - **International Year of Glaciers Preservation (2025) & Cryosphere Decade (2025–2034):** Led by UNESCO and World Meteorological Organisation.
  - **Global Snow Leopard Ecosystem Protection Program (GSLEP):** 12 range countries collaborate for conservation.
  - **International Centre for Integrated Mountain Development (ICIMOD):** Preserves the Hindu Kush–Himalaya region.
  - **SECURE Himalaya Project:** Part of Global Wildlife Program funded by GEF.
  - **International Big Cats Alliance (IBCA):** Treaty-based organization conserving seven big cat species.

Conclusion

The Indian Himalayas face threats from **habitat loss, illegal wildlife trade, forest fires, and anthropogenic** pressures, **requiring stronger conservation** efforts for this fragile biodiversity hotspot.

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5.5. SIX NEW SITES JOIN FAO'S GIAHS

Why in the news?

- Six news sites have been added **to FAO's Globally Important Agricultural Heritage Systems (GIAHS) Programme.**

More on the news

- **The recent additions include:** A traditional agroforestry system for erva-mate plant in Brazil, Specialised farming systems in China for pearl mussels, white tea, and pears, Ancestral system preserving vital food crops and biodiversity in Mexico, A distinctive farming system in Lanzarote island, Spain.

About Globally Important Agricultural Heritage Systems (GIAHS) Programme

- **Genesis:** Launched at the World Summit for Sustainable Development in 2002 as a **response to alarming global trends undermining family farmers.**
- **Purpose:** To protect family farming and traditional agricultural systems from threats **such as climate change, community displacements and biodiversity loss.**
- **Approach:** Using multistakeholder approach, GIAHS provides technical assistance **to farming communities and promotes traditional agricultural knowledge.**
- **Current Status: There are 95 GIAHS sites in 28 countries,** including Saffron Heritage of Kashmir, Koraput Traditional Agriculture (Odisha), Kuttanad Below Sea Level Farming System (Kerala).

What is GIAHS?

- They are agroecosystems **inhabited by communities that live in an intricate relationship** with their territory.
- **Characteristics:** Remarkable Agrobiodiversity, Traditional Knowledge, Invaluable Cultures, Beautiful Landscapes.

Why Protect Family Farming and Traditional Agriculture?

- **Food Security:** Provide diverse, nutritious food while preserving crop varieties.
- **Income security:** Increase resilience of 2.5 billion people whose livelihoods depend on agriculture.
- **Cultural Heritage:** Conserve diversity in global communities, cultures, histories.
- **Innovation Foundation:** Provide foundation for contemporary and future agricultural innovations.

The UN declared 2019–2028 as the UN Decade of Family Farming to recognize the critical role of traditional farming systems as younger generations increasingly migrate to cities.

5.6. BIOFUELS

Why in the News?

India has emerged as the world's **third-largest biofuel producer.**

About Biofuels

- **Biofuels are fuels produced from renewable resources** used in place of or blended with fossil fuels.
- **Types:** Categorised into four generations.
- **Key Players:** The USA is the largest producer followed by Brazil.
- Includes ethanol, biodiesel, Compressed Biogas (CBG), and Sustainable Aviation Fuels (SAF).

Significance of Biofuels

- **Environmental Benefits:** Can reduce emissions by up to 80% compared to fossil fuels and address stubble burning.
- **Energy Security:** Ethanol blending has saved over Rs. 1,13,007 crore in foreign exchange and helps mitigate oil sector volatilities.
- **Circular Economy:** Employs waste for wealth creation and delivers socioeconomic benefits.
- **Fostering Rural Economy:** Provides additional income to farmers.
- **Downstream Applications:** Produces renewable methanol and byproducts with industrial applications.

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Evolution of Biofuels

- **First Generation:** Fuels from food crops
- **Second Generation:** Organic waste derived fuels
- **Third generation:** Algae based
- **Fourth Generation:** Genetically modified microorganisms

Existing Challenges with Biofuel

- **Feedstock challenges:** Competition with other commercial applications, seasonal availability, and resistance to breakdown.
- **Infrastructure Constraint:** Lack of decentralized storage facilities.
- **Food Security vs. Fuel Dilemma:** Using food crops impacts food security.
- **Funding Requirement:** Requires USD 100-270 billion investment by 2030 to meet targets.
- **Competition from Conventional Fuel:** SAF is 2-10 times more expensive than conventional jet fuel.
- **Low Energy Efficiency:** Lower energy density than fossil fuels.

Key Initiatives/Steps which Promoted Production of Biofuels

- **Policy and Roadmap Initiatives:** National Policy on Biofuels (2018, amended 2022): Expanded feedstock base and introduced incentives.
- **Ethanol Blended Petrol Program:** Achieved 19.6% blending as of January 2025.
- Infrastructure & Production Support: Pradhan Mantri JI-VAN Yojana (2019): Promotes advancements in 2G ethanol.
- **GOBAR-Dhan Scheme:** Promotes biogas from agricultural waste and animal dung.
- **SATAT Initiative (2018):** Extracts value from bio-mass waste.
- **International Collaborations:** Global Biofuels Alliance (2023): India-led initiative for biofuel promotion.
  - Bilateral Mechanism: India-Brazil Center of Excellence on Ethanol.
- **Other:** GST rate reduction for biodiesel from 12% to 5%, Roll out of E20 fuels and ETHANOL 100.

5.7. BIO-INPUT RESOURCE CENTRES (BRCS)

Why in the News?

Union Ministry of Agriculture and Farmers' Welfare **released the guidelines for setting up of Bio-Input Resource Centres (BRCs)** under the National Mission on Natural Farming (NMNF).

About Bio-Input Resource Centres (BRCs)

- Cluster-level enterprises providing locally prepared biological inputs **for soil health, crop growth, and pest management to farmers in defined areas.**
- Budget 2023-24 announced setting up **of 10,000 BRCs under NMNF.**

Purposes served by BRCs

- **Maintaining and sale of cultures of bio-fertilizers** and **bio-pesticides** for multiplication and use by farmers.
- Preparation and sale of **ready-to-use organic inputs.**
- Training farmers on the preparations of **botanical extracts and animal-based inputs.**
- Sharing knowledge on **natural farming practices.**
- **Sale of pheromone traps,** lures, sticky traps and others.

Key-features of the Guidelines

- **Financial assistance:** Rs 1 lakh per BRC (excluding infrastructure costs)
- Convergence with other schemes like **Farmer Producer Organisation promotion, National Mission on Edible Oilseeds.**
- Bio-Inputs prepared according to **local requirements, land patterns, soil types and crop systems.**
- **Operators:** Natural Farming practitioners, FPOs, SHGs, Cooperatives, Krishi Vigyan Kendras (KVKs).

About National Mission on Natural Farming (NMNF)

- **Aim:** Promote Natural Farming for safe, nutritious food.

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- **Type:** Centrally Sponsored Scheme (90:10 for Hilly/NE States, 60:40 for others).
- **Tenure:** Till 2025-26
- **Administration:** Under Agriculture Ministry with National Steering Committee led by Agriculture Minister.
- **Key Targets:** 15,000 clusters in willing Gram Panchayats; reaching 1 crore farmers across 7.5 lakh hectares; 2,000 Model Demonstration Farms; training 30,000 Krishi Sakhis as Community Resource Persons.

5.8. NATIONAL BOARD FOR WILDLIFE (NBWL)

Why in the News?

The Prime Minister of India chaired the 7th National Board for Wildlife meeting **at Gir National Park in Gujarat.**

More on the News

- The recent meeting of NBWL took place after over 10 years **(last full-body meeting was in 2012).**
- Announced the **16th cycle of lion estimation** to be conducted in 2025.
- About the National Board for Wildlife
- **Statutory body** established in 2003 after amendment of the Wildlife (Protection) Act, 1972.
- **Genesis:** Evolved from Indian Board for Wildlife (IBWL) constituted in 1952.
- **Members:**
    - **Chairperson:** Prime Minister of India
    - **Vice-Chairperson:** Union Minister of Environment & Forests and Climate Change
    - **Includes NGO representatives** and eminent conservationists
- Standing Committee chaired by the Minister of Environment and Forests and Climate Change.
- Functions include promoting **wildlife conservation, framing policies, making recommendations on protected areas, and assessing impact of projects on wildlife.**

Concerns related to NBWL

- Approval of projects in protected **areas despite environmental concerns.**
- **Threats to endangered species** from approved projects.
- Reduced role of independent **members in decision-making.**
- **Neglect of local communities'** opinions in project clearances.
- Insufficient monitoring of **compliance after project approvals.**

Way forward

- Need for expertise through qualified **wildlife scientists and conservation NGOs.**
- **Better monitoring of compliance** through annual certificates.
- **Institutionalize local community** participation through Free, Prior, and Informed Consent.
- Balance development and environment by **encouraging eco-sensitive alternatives.**
- Leverage **scientific and technological tools** for better impact assessment.

5.9. FUNCTIONAL DE-EXTINCTION

Why in the News?

A US biotech company, **Colossal Biosciences, claims to have genetically engineered three grey wolf pups to** carry traits of the **extinct dire wolf,** calling it world's first successful **functional de-extinction.**

What is Functional De-extinction?

- Unlike true de-extinction, **functional de-extinction focuses on reviving ecological roles and traits of extinct species using gene editing and cloning techniques.**
- These organisms are not exact replicas, but are **genetically engineered to resemble extinct species.**

- Involves advanced techniques **like CRISPR gene editing, cloning, and genome mapping.**

About Dire Wolf

- **Dire wolves (Aenocyon dirus):** Large canines that dominated southern **Canada and US before extinction ~13,000 years ago.**
- **Physical Characteristics:** Up to 3.5 feet tall, over **6 feet long, weighing ~68 kg.**
- **Comparison with Grey Wolf:** Resembled modern gray wolves but were larger, **with white coats, wider heads, larger teeth, and more powerful builds.**
- **Causes of extinction:** Linked to **disappearance of large prey species and human activities.**

How Colossal Biosciences brought Back the Dire Wolf?

- Used cloning and gene-editing based on ancient DNA samples:
- **Ancient DNA Extraction:** From 13,000-year-old tooth (Ohio) and 72,000-year-old ear bone (Idaho).
- **Genome Mapping:** Sequenced dire wolf genome and compared with modern gray wolves.
- **CRISPR Gene Editing:** Edited gray wolf genes to include dire wolf gene variants.
- **Cloning & Birth:** Edited DNA implanted into enucleated ova, carried by dog surrogates, producing three pups.
  - Used **less invasive method involving endothelial progenitor cells** (EPCs) from gray wolves (the dire wolf's closest living relatives).

Significance of Functional De-extinction

- Ecosystem Restoration by introducing functional proxies to reinstate food webs, nutrient cycles, etc.
- Biodiversity Enhancement by occupying a vacant niche.
- Conservation tool to enhance disease resistance or genetic diversity.

Concerns about Functional De-extinction

- **Ecological Disruption:** "De-extinct" species may not perfectly replicate extinct species' roles, potentially disrupting ecological balances.
- **Ethical Considerations:** Concerns about animal welfare, especially with significant genetic manipulation.
- **Resource Diversion:** Resources could be better spent on conserving endangered species.
- **Lack of Regulation:** No clear global ethical or legal frameworks exist.
- **Significance of Functional De-Extinction:** Ecosystem Restoration, Biodiversity Enhancement, used as conservation tool.

Conclusion

De-extinction breakthroughs demand **balancing scientific innovation with ecological ethics and responsibility** for sustainable conservation.

5.10. PROJECT LION AND IUCN GREEN STATUS OF SPECIES

Why in the News?

Union Government approved funds for the **Project Lion to enhance conservation efforts.**

More on the News

- Government approved establishment of **National Referral Centre for Wildlife (NRC-W) in Gujarat's Junagadh district to track wildlife diseases.**
- **IUCN released First Green Status Assessment for the Lion,** placing them under "Largely depleted" category.
- **Assessment showed human impacts prevent lions from being fully ecologically functional** across their range.

IUCN Green Status of Species

- Provides **global standard for measuring species recovery** and assessing conservation impact.
- **Key features include coverage of all species except microorganisms,** eight Green Status Categories, and complementing the Red List.

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- A species is fully **recovered if it is present in all parts of its historical range,** is viable across its range, and **performs ecological functions in all parts of its range.**

About Project Lion (2020)

- **Objective:** Securing future of Asiatic lions through **comprehensive conservation efforts.**
- **Key Focus Areas:** Landscape ecology-based conservation, habitat restoration, community participation, and disease management.
- 10-year implementation by **Gujarat State Government and other stakeholders.**

About Asiatic Lion (Indian Lion)

- **Habitat:** Grasslands, savannas, dense scrub, and open woodlands.
- **Distribution:** Currently found only in Gir landscape in Gujarat.
- **Key Characteristics:** Sexual dimorphism with larger males, 16-18 year lifespan, Live in prides, Nocturnal with 100-119 day gestation, Males patrol territories
- **Ecological Role:** Apex predators controlling herbivore populations and preventing disease spread.
- **Population:** 674 in 2020 (increased from 523 in 2015).
- **Conservation Status:** Vulnerable (IUCN), Schedule I (Wildlife Protection Act), Appendix I (CITES).
- **Subspecies:** Northern lion (Panthera leo leo): North, Central, and West Africa, includes Asiatic lion, Southern lion (Panthera leo melanochaita): East and South Africa

Several other Initiatives have further consolidated the conservation of Asiatic lions

- International Big Cats Alliance (2023)
- **Asiatic Lion Conservation Project**
- **Greater Gir Concept** to develop additional suitable habitats
- Strengthened **Protection Mechanisms including Wildlife Crime Cell**
- **Other initiatives include CSS-DWH support,** habitat improvement measures, and World Lion Day observance.

5.11. RIVER DOLPHINS

Why in the News?

The first-ever comprehensive survey of river dolphins has revealed a population estimate of 6,327 dolphins mainly in the **Ganga, Brahmaputra and Indus River basins.**

More on news

- Survey conducted by **Wildlife Institute of India under Project Dolphin 2020.**
- Findings published in **'Population Status of River Dolphins in India- 2024' Report.**

Key findings of 'Population Status of River Dolphins in India – 2024' Report

- **Decline from 4,000–5,000** Ganges River dolphins at end of 20th century to about **1,800 individuals.**
- **Current total river dolphin population:** 6,327 (6,324 Gangetic and 3 Indus River Dolphins).
- Uttar Pradesh has highest population, **followed by Bihar, West Bengal, Assam, Jharkhand, Madhya Pradesh and Rajasthan.**
- Indus River Dolphin population **critically low, requiring urgent conservation.**
- **Dolphins act as umbrella species** for habitat and biodiversity conservation.

Wildlife Institute of India

- **Genesis:** 1982, WII was accorded autonomy in **April 1986.**
- **HQ:** Dehradun
- **Ministry:** Ministry of Environment Forest and Climate Change.
- **Governance:** Wildlife Institute of India's governance is **run under the Society, chaired by the Union Minister of Environment & Forests.**
- **Mission:** To nurture the development of **wildlife science and promote its application in conservation, in consonants with our cultural and socio-economic milieu.**

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- **Functions:** Training program, academic courses and **advisory in wildlife and biodiversity research and management.**
- **Important cells:** Environmental Impact Assessment cell, **National Wildlife Database, Centre on Environment Information System (ENVIS).**

Facts about Gangetic River dolphins

- Found mainly in **Ganges, Brahmaputra, Meghna and Sangu Karnaphuli River systems.**
- India hosts **90% of world's Ganges River dolphins.**
- **National aquatic animal of India,** locally known **as "susu."**
- **Apex predator** ("tiger of the ganges") and indicator species.
- Protected under CITES Appendix I, **Wildlife Protection Act Schedule I, IUCN Endangered.**
- Usually solitary, blind, **using echolocation to navigate.**

Key facts about Indus River dolphin

- Punjab's **state aquatic animal since 2019.**
- Brown/grey, blind, **navigating through echolocation.**
- Found in Indus River system in **Pakistan and Beas River in Punjab.**
- Locally known **as "Bhulan."**
- Recognized as distinct species from Gangetic dolphins in **Wild Life Protection Amendment Act, 2022.**

Threats to Gangetic River dolphins

- **Fisheries-related mortality, bycatch,** and intentional killing.
- Water infrastructure **disrupting habitat connectivity.**
- **Water pollution from mining,** agriculture, and industrial activities.
- Human disturbance from **boat traffic and noise pollution.**
- **Climate change** increasing saltwater intrusion into habitats.

Indian Initiatives to protect River Dolphins

- **Comprehensive Action Plan (2022-2047)** for protection and habitat improvement.
- Financial assistance through Development of **Wildlife habitats scheme.**
- **Establishment of protected areas** like Vikramshila Dolphin Sanctuary.
- Chambal River **Conservation Zone designation.**
- **National Dolphin Day** (October 5th) for awareness.
- **National Dolphin Research** Centre in Patna.
- First satellite-tagging of **Ganges River Dolphin in 2024.**

5.12. JUMPING SPIDERS

Why in the news?

Collaborative research has reported the discovery of **two new species of jumping spiders** from the **Shendurney Wildlife Sanctuary (Kerala) in Western Ghats.**

About New Species

- Two new species belong to the **genus Epidelaxia.**
- This marks the **first time the genus has been recorded from India,** earlier considered endemic to Sri Lanka.

About Jumping Spiders

- **Family:** Belongs to the largest family of spiders.
- **Habitat: Common in the tropics.**
- **Characteristics:**
  - Can **jump a distance thirty times the length of their body.**
  - **Larger front legs helping them grasp and hold their prey while their back legs are used for jumping.**
- Most spiders have **eight or six eyes but poor vision.**

- ➡ **Jumping spiders with 8 eyes arranged in pairs are an exception** which can see more colours than humans.
- ➡ The d**ay-hunting jumping spider can see in the red spectrum, green spectrum, and in UV light.**
- **Behaviour:**
  - ➡ Jumping spiders are **active predators** eating insects and other spiders.
  - ➡ A **jumping spider's silk is also used to build "pup tents".**

Spiders vs. Insects

- **Classification:**
  - ➡ **Spiders:** Class Arachnida
  - ➡ **Insects:** Class Insecta
- **Body Structure:**
  - ➡ **Spiders:** 2 segments (cephalothorax & abdomen), 8 legs
  - ➡ **Insects:** 3 segments (head, thorax, abdomen), 6 legs
- **Key Features:**
  - ➡ **Spiders:** No antennae, no wings, no metamorphosis
  - ➡ **Insects:** Have antennae, often have wings, undergo metamorphosis
- **Similarities:**
  - ➡ Both belong to Phylum Arthropoda
  - ➡ Both have exoskeletons and jointed legs

5.13. MARINE HEATWAVES

Why in the News?

As per a study published in Nature Climate Change the world experienced a **240 per cent increase in the average number of marine heatwave (MHW) days in the summers of 2023-24.**

Key Finding of the study

- The past two years (2023–2024) have been the warmest on **record across both land and ocean.**
- Marine heatwaves observed globally, **with 8.8% of the ocean experiencing highest-ever sea surface temperatures.**
- Record-breaking events particularly evident in the **North Atlantic, southwest Pacific, eastern Pacific and western Indian Oceans.**
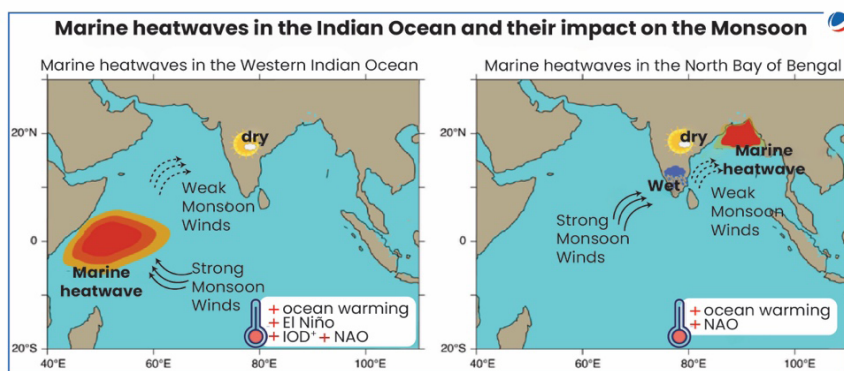
What is a marine heatwave?

- Anomalously warm and **sustained sea surface temperature extremes (3-4°C above average for at least five days).**
- No fixed temperature defines a **marine heatwave as ocean temperatures naturally vary,** most commonly detected when the water is warmer than it was.
- **Can last for days, weeks,** months or even years.
- The number of marine heatwave events has **doubled since 1982.**

Causes of marine heat wave

- **Combination of atmospheric and oceanic processes** including high pressure systems.
- Surface heat flux when atmospheric high-pressure systems **remain over water regions.**
- **Advection:** movement of warmer waters by ocean currents.
- **Human-induced global warming, with oceans absorbing** 90% of additional heat from greenhouse gases.

Marine heatwaves in the Indian Ocean and their impact on the Monsoon

Marine heatwaves in the Western Indian Ocean

Marine heatwaves in the North Bay of Bengal

Impacts of the marine heat wave

- Biological impacts including coral bleaching, **loss of ecosystems like kelp forests and coral reefs.**

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- Influenced weather patterns **creating record storms and rainfall.**
- Deoxygenating of **seawater, especially in shallow areas.**
- **Affects monsoon rainfall** patterns in regions like India.
- Accelerates **ocean acidification.**
- **Damages livelihoods through** impacts on aquaculture, tourism and fishing.
- Contributes to sea-level rise **through thermal expansion of water.**

Strategies to tackle marine heatwaves

- **Proactive interventions like relocating** corals to deeper, cooler waters.
- Reactive interventions including fisheries **closures and changing fishing practices.**
- **Ex-situ conservation** methods for endangered species.
- Geoengineering interventions **such as marine cloud brightening.**
- **Implementation of climate change** initiatives under the Paris Agreement.
- Development of marine **heatwave forecasts to enable preparation and response planning.**

5.14. URBAN FLOODS

Why in the News?

Recently, heavy pre-monsoon **thundershowers in Bengaluru led to severe Floods.**

More on the News

- Similar incidents in Hyderabad (2020-21), Chennai (2021), Bengaluru and Ahmedabad (2022), Delhi (2023), shows that **Urban Flooding has become a regular phenomenon.**

What is Urban Flooding?

- It is a type of flood, **where a city or Urban Area is inundated with water due to inability of drainage systems to handle sudden,** excessive rainfall.
- Urban flooding differs from **rural flooding** as cities have more developed land, **which can increase flood peaks by 1.8 to 8 times.**

Impact of urban flooding on infrastructure and people

Kolkata Sewage contaminates water supply during floods

Hyderabad Emergency evacuation of 50,000 people

Mumbai Financial capital shuts down completely

Gurugram Roads impassable even in moderate rain

Bangaluru Tech companies report major equipment losses

Delhi Dengue and chikungunya outbreaks

Chennai Airport closed, 1.8 million people displaced

Causes of Urban Flooding

Natural Factors

- **Meteorological Factors: Extreme precipitation events** cause sudden water accumulation, as seen in **2005 Mumbai Floods** and **2015 Chennai Floods.**
  - **Climate change** has intensified these patterns.
- **Hydrological Factors:** Flood risk arises when **surface runoff** is more than the **infiltration rate** during precipitation.
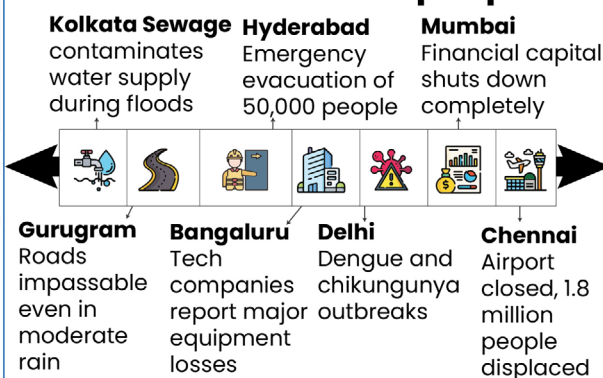 - Heavy rainfall in **Yamuna catchment area** leads to flooding in **Delhi.**

Anthropogenic factors Unplanned Urbanization:

- **Bengaluru's drains** are designed only for rainwater but forced to handle **2000 MLD of sewage** daily. Builders routinely **encroach upon drains.**
- **Lake Encroachments:** eg. **Ousteri Lake** in Puducherry, **Charkop Lake** in Maharashtra.
- **Unplanned release of water from dams:** Eg. **Chennai Floods 2015** due to **Chembarampakkam lake.**
- **Illegal mining activities:** Eg. Depletion of river bed in Cauvery River, Tamil Nadu.

Challenges in Urban Flood Management

- **Constitutional division of responsibilities: Water is a state subject** and **drainage systems** fall under **city authorities' jurisdiction.**
- **Infrastructure Challenges: Aging and undersized infrastructure** cannot handle current **rainfall intensities.**
- **Social Inequality: Low-income communities** live in **flood-prone areas** with **inadequate infrastructure.**

- **Rapid Urbanization Impacts:** It is leading to disruption of **natural drainage patterns.**
- **Lack of necessary data for drainage design:** Intensity-duration-frequency curves for the major cities in India are **not readily available from the IMD.**

Mitigation Strategies

- **NDMA guidelines:** Provide guidance for **Disaster Management (DM) plans.**
- **Flood forecasting stations: Central Water Commission** has developed network of **flood forecasting stations.**
- **Technological Interventions:** IFLOWS-Mumbai, CFLOWS-Chennai are **Web GIS based decision support systems, 39 Doppler Weather Radars** under **Mission Mausam.**
- **Groundwater Recharge Programs: Master Plan** envisions **1.42 crore rainwater harvesting structures.**
- **Water Body Development Schemes: Amrit Sarovar Mission** for rainwater harvesting.
- **Urban Infrastructure Measures: AMRUT 2.0** Scheme provides for **strengthening of drainage systems.**

Way Forward with Global Best Practices

- **Singapore's ABC Program:** Uses "green infrastructure" to make water **"Active, Beautiful and Clean".**
- **Vienna's New Danube System:** Built 21-kilometer flood relief channel **parallel to main Danube River.**
- **China's Sponge Cities:** Uses **nature-based solutions** like permeable surfaces, restored wetlands.
- **Denmark's Green Climate Screen:** Rainwater management system **using natural processes.**
- **Other possible way forwards:** Preparation of **contour maps, augmentation of the storm water drainage network, cross-drainage works, and augmentation of pumping capacity**

5.15. GEOLOGICAL SURVEY OF INDIA

Why in the news?

The Geological Survey of India (GSI), is **celebrating its 175th Foundation Day.**

About Geological Survey of India (GSI)

- Conceived by **John McClelland with David Hiraw Williams** appointed as first Geological Surveyor in 1846.
- **Thomas Oldham's appointment in 1851** marked the beginning of GSI's functioning.
- Second oldest survey body in **India after Survey of India (1767).**
- Initially established to locate coal deposits for Railways, **now a premier geoscience institution.**
- Headquarters in Kolkata **with six regional offices.**
- **Attached to Ministry of Mines.**

Functions of GSI

- Core functions include **updating national geoscientific information and mineral resource assessment.**
- Operates **under five Missions covering surveys, resource assessments,** information dissemination, research, and capacity building.

Achievements of GSI

- **Published India's first geological map in 1877** and initiated National Geoscience Data Repository.
- Currently undertakes 448 mineral exploration projects including **critical minerals like Rare Earth Elements and Lithium.**
- Operates GNSS stations and developed **Bhukosh geospatial portal.**
- **Advanced earthquake understanding through Richard Dixon** Oldham's work identifying three types of seismic waves.
- Functions as **Nodal Agency for landslide investigations** and developed prototype Early Warning System.
- Conducts Antarctic studies and declares **geo-heritage sites and national geological monuments.**
  - **Recently participated in the Future Mineral Forum 2024** (Saudi Arabia) and the 37th International Geological Congress (Korea).

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5.16. REVISED CLASSIFICATION OF INDUSTRIES

Why in the News?

Central Pollution Control Board (CPCB) has directed **State Pollution Control Boards (SPCBs) to adopt a revised classification of industries.**

More on the News

- **Revised classification** enhances transparency and Ease of Doing Business.
- **CPCB categorizes 419 sectors:** Red (125), Orange (137), Green (94), White (54), and Blue (9, this category is newly inducted).
- **Methodology** now uses **Pollution Index (PI).**
- **Incentives** for industries excelling in environmental management. **E.g., Consent to Operate (CTO)** for Red Category may be granted for the validity of max. 10 years.

Classification of Industries

- **Background:** Originated in 1989 with **the Doon Valley Notification issued by MoEFCC.** PI-based classification introduced in 2016.
- **Purpose:** Ensure industries establish **consistent with environmental objectives.** The classification is for entire industrial sectors and not for individual units.
- **Usage/Relevance:** Used for location/siting decisions, sector-specific **cluster planning, pollution control, inspection frequency, and promoting cleaner technologies.**
- **Relevance of classification:** Guides industrial location decisions; Aids sector-specific cluster planning; etc.

About Blue Category

- **Covers Essential Environmental Services (ESSs) managing domestic/industrial waste pollution. E.g., Sewage treatment plants, Municipal waste facilities (landfills).**
- Compressed Biogas Plants (using municipal/agro waste) in **'Blue category'**. Industrial-waste CBGs remain in **'Red category'.**
- **Purpose:** Promote scientific waste management.
- **Key benefit:** CTO validity: 2 years longer than other categories.

Industrial Sector Categories
Based on Pollution Index (PI) Classification

RED
PI > 80

Key Restrictions:
→ No Red category industries shall normally be permitted in ecologically fragile/protected areas
→ Highest pollution potential
→ Strictest environmental regulations
Examples:
Cement   Automobiles   Distilleries

ORANGE
55 ≤ PI < 80

Characteristics:
→ Moderate to high pollution potential
→ Requires environmental clearance
→ Regular monitoring needed
Examples:
→ Brick manufacturing
→ Dry cell battery
→ Coal washeries

GREEN
25 ≤ PI < 55

Characteristics:
→ Moderate pollution potential
→ Standard environmental compliance
→ Regular but less stringent monitoring
Examples:
→ CD/DVD manufacturing
→ Chilling plants

WHITE
PI < 25

Key Benefits:
→ Non-polluting industries
→ No Environmental Clearance (EC) required
→ No Consent needed
→ Minimal environmental impact
Examples:
→ Air coolers
→ Cardboard
→ Medical oxygen

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5.17. NEWS IN SHORTS

5.17.1. Supreme Court Strikes Down Retrospective Environmental Clearances

In **Vanashakti v. Union of India (2025),** the SC restrained the Centre from granting ex-post facto environmental clearance (EC) to mining projects or **regularising actions that contravene the 2006 EIA notification.**

- **The EIA Notification, 2006,** clearly requires 'prior environmental clearance' before a project can start.
- The court held that such **notifications were illegal, arbitrary, and violative of Articles 14 and 21** of the Constitution.
- Previously, in Common Cause v. UoI & Ors. (2017), **Supreme Court held that ex post facto environmental clearance is completely alien to environmental jurisprudence.**

Environmental Impact Assessment (EIA)

- EIA notification 2006 was designed to ensure that **developmental projects are assessed for their potential environmental impacts before approval.**

It categorised the projects in 2 categories:

- **Category A: National Level Appraisal**
  - Require prior EC from the **Central Government in the MoEFCC.**
  - Decision based on recommendations of an **Expert Appraisal Committee (EAC).**
- **Category B: State Level Appraisal**
  - Require prior EC from the State/UT **Environment Impact Assessment Authority (SEIAA).**
  - Decision based on recommendations of a State or UT **level Expert Appraisal Committee (SEAC).**

5.17.2. Command Area Development and Water Management (M-CADWM)

Union Cabinet approved modernization of Command Area Development and Water Management (M-CADWM).

- M-CADWM is a sub-scheme of **PMKSY for 2025-2026.**
- PMKSY was launched in 2015-16 to enhance **water access on farms and expand irrigated areas.**

Key Features of M-CADWM

- **Objective:** Modernize irrigation networks to deliver canal/source water to clustered farm areas.
- **Infra:** Underground pressurized pipes for micro-irrigation (up to 1 hectare).
- **Tech:** SCADA & IoT for precise water accounting/management.
- **Potential benefits:**

- **Boosts Water Use Efficiency (WUE),** crop yield, and farm productivity.
- **Sustainable farming:** Transfers irrigation management to Water User Societies (WUS) with 5-year support. Links WUS to FPOs for economic viability.
- Encourages youth through modern irrigation adoption.

About Command Area Development and Water Management (CAD&WM) Programme

- **Meeting:** Launched in 1974-75 and was renamed as Command Area Development and Water
- Management (CADWM) Programme in 2004.
- **Objective:** Enhance utilisation of irrigation potential created and improve agriculture productivity and production.
- **Implementation:** Under PMKSY – Har Khet Ko Pani from 2015-16.
- **Components:** Structural intervention (On-Farm Development (OFD) works, link drains etc.) & Non-Structural intervention (One-time Grant to Water Users' Associations (WUAs), etc.

5.17.3. 58th Tiger Reserve (TR)

Madhav National Park in Madhya Pradesh (M.P) **became India's 58th Tiger Reserve.**

- It becomes ninth tiger reserve from M.P. Other TRs from M.P includes **Ratapani, Veerangana Durgavati, Sanjay Dhubri, Satpura, Panna, Bandhavgarh, Pench** etc.

About Madhav National Park

- **Location: Shivpuri district in Chambal region** on northern fringe of Central Highlands of India (part of Upper Vindhyan Hills)
- Notified as a **National Park in 1958**
- **Lakes:** Sakhya Sagar and Madhav Sagar in southern part
- **Fauna:** Nilgai, Chinkara, Chital, Marsh Crocodile, Leopard
- **Flora:** Northern Tropical dry deciduous mixed forest with Kardhai as dominant tree species

Process of declaring tiger reserve in India

- Tiger Reserves are notified by **State Governments under Section 38V of Wildlife Protection Act (WPA), 1972**
- Proposal obtained **from State**
- **NTCA gives in-principle approval** and recommends after due diligence
- State Government makes **final notification.**

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Tiger (Panthera tigris)

- **Habitat:** Tropical forests, grasslands, mangrove swamps
- **Characteristics:** Largest Asian big cats, rely on sight/sound for hunting, solitary, nocturnal ambush predators, good swimmers
- **Conservation status:** Endangered (IUCN); Appendix I (CITES); Schedule 1 (WPA, 1972)

India's and Global Efforts to Protect Tigers

- **Project Tiger: Centrally Sponsored Scheme** of MoEFCC in provide assistance to tiger states
- **Conservation Assured Tiger Standards (CA/TS):** accreditation of TRS 23 TRa in india have received CA/TS accreditation
- **International Big Cat Alliance:** Launched by India to secure future of big cars and their landscapes
- **Global Tiger Recovery Program:** Evolved in 2010 under aegis of **Global Tiger Initiative**, launched by World Bank to enhance tiger habitats
- **Tigers Alive Initiative** WWF's effort to double number of tigers in wild.

5.17.4. Biodiversity Heritage Sites (BHS)

Kasampatty Sacred Grove is declared as **Tamil Nadu (TN)'s** second BHS, located near the **Alagarmalai Reserve Forest** in Dindigul district.

About Biodiversity Heritage Site

- **BHS are unique, ecologically fragile ecosystems** with rich biodiversity characterized by:
  - Species richness, High endemism, Presence of rare, endemic and threatened species, Keystone species.
- **Notified under Section 37(1)** of the Biological Diversity Act, 2002.
- State Governments, in consultation with local bodies, **can notify areas of biodiversity importance as BHS through official gazette publication.**

5.17.5. IUCN Green List

Four new sites have been added to **the IUCN Green List.**

About IUCN Green List

- It includes **Sharaan Nature Reserve and King Abdulaziz Royal Nature Reserve of Saudi Arabia, Aqaba Marine Reserve of Jordan and Sir Bu Nair Protected Area from UAE.**
- **Global certification programme** aiming for effective, equitable, and successful protected areas
- Focus on **highlighting best practices and setting benchmarks** for conservation management
- Objectives include increasing well-managed protected areas and **delivering conservation outcomes that contribute to SDG 15 and Aichi Target 11 of CBD**

5.17.6. Budget for Climate Action

Ahmedabad Municipal Corporation (AMC) becomes 1st Urban Local **Body to include separate Climate c AMC becomes first Urban Local Body to include a dedicated Climate chapter in its Budget.**

- AMC allocated one-third of its 2025-26 budget for **Climate Action, implementing Net-zero Climate Resilient City Action Plan aligned with India's 2070 target.**
- Unlike AMC's approach, BMC previously allocated **33% capital expenditure for climate-related projects.**

About Climate Budgeting

- Governance system mainstreaming climate **commitments into decision-making on policies, actions and budget.**
- Integrates climate targets from **city's Climate Action Plan into budgeting process with assigned implementation responsibility.**

Importance of Climate Budgeting for Cities

- Fosters climate-resilient **development while helping achieve climate targets.**
- **Helps identify climate finance gaps** and promotes innovative financial models.

Mechanisms for Local Government Climate Finance

- Green and **Sustainability-linked Bonds** (e.g., Vadodara Green Muni Bond).
- Performance-based **fiscal transfers to Local Governments** (e.g., UNCDF and LOCAL).
- Pollution and **congestion charges** (e.g., London Congestion Charge and Low-Emission Zones)

5.17.7. United Nations World Water Development Report

The report **published by UNESCO** highlights the **vital role of mountains and alpine glaciers (water towers)** in sustainability.

Mountain Ecosystem

- **Ecosystem:** Forests cover **~40% of global mountain areas**, with grasslands and alpine tundra at higher elevations.
- **Water Regulation:** About **two-thirds of global irrigated agriculture** depends on mountain runoff.
- **Carbon Storage:** Mountain permafrost **soils contain ~66 Pg of organic carbon** (4.5% of global pool).
- **Biodiversity:** Mountains host **25 of 34** global biodiversity **hotspots** with high endemic species diversity.

Vulnerabilities of Mountain Ecosystem

- **Glacier Loss:** Rapid melting in the **Andes** (30-50% since 1980s) and **Hindu Kush Himalayas** (50% projected by **2100**) threatens water security.

- **Watermelon snow effect:** Red algae blooms reduce surface albedo, accelerating snow melt.
- **Urbanization:** Disrupts hydrological cycles, leads to resource overexploitation, and amplifies disasters.
- **Atmospheric Pollution:** Long-range transport has increased black carbon in ice cores and lake sediments.

Hindu Kush Himalayas (HKH)

- It is the largest and highest alpine ecosystem globally, **averaging 4,000 m above sea level covering 5 million km².**
- **Contains 100,000 km² of glaciers, the largest ice storage** outside polar regions, feeding 12,000+ lakes and 10+ major river systems.
- HKH, Tibetan Plateau, Pamir, Hengduan, Tien Shan, **and Qilian mountains collectively form the Third Pole or Water Tower of Asia.**

5.17.8. World Air Quality Report, 2024

7th annual **World Air Quality Report 2024 released by IQAir** evaluating the global state of **air quality for the year 2024.**

Key findings of the report

- **Seven countries met the WHO annual average PM2.5 guideline of 5 μg/m³:** Australia, Bahamas, Barbados, Estonia, Grenada, Iceland, and New Zealand.
- **The five most polluted countries in 2024 were:** Chad > Bangladesh > Pakistan > Democratic Republic of Congo > India.
    - Delhi remains the most polluted capital city.
- **Byrnihat (Assam), India was the most polluted** metropolitan area of 2024.
- **Oceania** is the world's cleanest region.

5.17.9. Antarctic Circumpolar Current (ACC)

- Scientists have warned that ACC **might slow down by around 20 per cent by 2050.**

What is ACC?

- The strongest wind-driven current **on Earth, flowing clockwise around Antarctica.**
- The only current circling the entire planet, connecting Atlantic, Pacific, **and Indian Oceans.**
- Acts as a barrier preventing warm waters from reaching **Antarctica and influences heat/CO₂ uptake.**

Antarctic Circumpolar Current
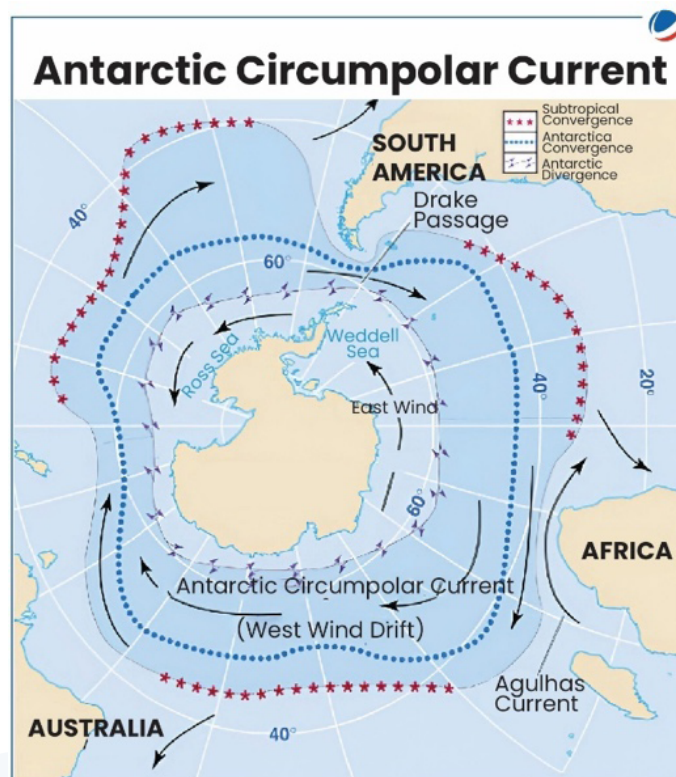
Reasons for weakening of ACC

- **Ocean Salinity Changes:** Ice shelf melting weakens Antarctic Bottom Water (AABW).
- **Wind Pattern Changes:** Climate change alters Southern Hemisphere westerly winds.
- **Positive Feedback:** Reduced sea ice creates warming cycle further weakening ACC.

Potential Impacts

- Increased climate **variability with regional extremes.**
- Accelerated **global warming as ocean carbon** sink capacity decreases.
- **Food web disruption** from invasive species reaching Antarctica.
- Global ocean current **disruption from AABW weakening.**

5.17.10. Deep-Sea Ecosystems Discovered in Antarctica

Thriving deep-sea ecosystems discovered in Antarctica after iceberg detaches from George Vi Ice Shelf.

- The discovery came from Challenger 150 initiative, **endorsed by UNESCO/Intergovernmental Oceanographic Commission (IOC) as part of the Ocean Decade Action (2021-2030).**

Key Findings

- **Flourishing Ecosystems:** At depths up to 1,300 meters (Mesopelagic Zone), ecosystems with large corals and sponges supporting diverse animals like icefish & giant sea spiders were found.

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➡ These ecosystems were **isolated under 150-meter-thick ice for centuries,** cut off from surface nutrients.

➤ **New Species Discovered:** Giant sea spiders, octopi, giant phantom jellyfish (up to 1 meter wide), and vase-shaped sponges (possibly centuries old).

About Deep-Sea Ecosystem

➤ **Definition:** Sea and seabed below 200m, the aphotic zone makes up 90% of Earth's marine environment - the planet's largest biome.

➤ **Unique Deep-Sea Habitat** and Biodiversity:
  ➡ **Abyssal Plains:** Dark seafloor where species rely on marine snow. Example: Sea cucumbers.
  ➡ **Hydrothermal Vents:** Mineral-rich towers with species relying on chemosynthetic bacteria. Examples: Tubeworms, Yeti crabs.
  ➡ **Whale Falls:** Sinking whale carcasses create temporary ecosystems for scavengers like hagfish.

An overview of Deep Sea Ecosystem

Biodiversity's Adaptation

➤ **Bioluminescence:** Species produce light to attract prey, mates, or confuse predators.

➤ **Vertical Migrations:** Zooplankton and fish migrate daily, feeding at the surface and returns to deeper levels.

➤ **Slow Metabolism:** In food-scarce areas, animals survive with minimal energy.

Significance

➤ **Climate Regulation:** Regulates Earth's temperature through thermohaline circulation (mixing warm and cold waters) which influences climate patterns.

➤ **Carbon Storage:** Abyssal plains, with carbon-rich sediments up to 5km thick, play a key role in carbon sequestration.

5.17.11. Okjökull Glacier

It is believed to be **the first glacier to be officially declared dead due to climate change.**

➤ In 2014, the Okjökull a dome shaped glacier in Iceland **was declared dead after it became so thin that it stopped moving.**

➤ **Other glaciers that disappeared** include Anderson Glacier, Clark Glacier and Glisan Glacier (USA), Baumann Glacier (New Zealand), Calderone Glacier (Italy), etc.

About Glaciers

➤ A glacier is a perennial accumulation of **snow and ice that flows over land due to its weight and gravity.**

➤ Glaciers form **where mean annual temperatures approach freezing with significant winter snow accumulation.**

Importance of Glaciers

➤ **Water Reservoirs:** Store about three-quarters of Earth's freshwater.

➤ **Food Systems:** Source of irrigation and fertility for agricultural lands.

➤ **Biodiversity:** Deliver nutrients to aquatic ecosystems, supporting phytoplankton and food chains.

Impact of Melting of Glaciers due to Climate Change

➤ **Disrupted Water Cycles:** Threaten freshwater, ecosystems, and agriculture.

➤ **Natural Disasters:** Increases risks of Glacial Lake Outburst Floods and Avalanches.

➤ **Sea Level Rise:** Causing coastal erosion, habitat loss, biodiversity loss etc.

➤ **Climate Feedback Loop:** Lower Earth's reflectivity, accelerating global warming.

Initiatives to Protect Glaciers

➤ **Global:** Designation of 2025 as the International Year of Glaciers' Preservation by UN, UNESCO Intergovernmental Hydrological Programme etc.

➤ **India:** Network Programme on the Himalayan Cryosphere, Centre for Cryosphere & Climate Change Studies, HIMANSH research station etc.

5.17.12. Narwhal

Narwhals have been studied for the first time for their tusking behaviour.

About Narwhals

➤ Known for their **long tusk, which is actually a tooth.**

➤ **Typically, males have a tusk, though** some females may have a small one, some males lack one, and some narwhals may have two tusks.

➤ **Uses of Tusks:** Sensing salinity, water temperature, **hunting, and adapting to environmental changes.**

➤ **Scientific Name:** Monodon monoceros **(meaning: whale with one tooth and one horn).**

➤ **Location:** Found in Arctic waters of Canada, Greenland, Norway, and Russia.

➤ **IUCN Status:** Least Concern.

➤ **Lifespan:** Females: ~100 years; Males: ~84 years.

➤ **Reproduction:** Gestation period: ~13 to 16 months.

5.17.13. Blue Flag

Rushikonda Beach in Visakhapatnam regained its Blue Flag tag, **previously withdrawn due to poor maintenance.**

➤ **It's the only Blue Flag beach** in Andhra Pradesh and one of 13 in India.

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About Blue Flag tag

- **Conferred upon:** Beaches, marinas, and sustainable tourism boats, with specific criteria for each.
- **Conferred by:** Foundation for Environment Education (FEE), based in Denmark.
- **Criteria:** Must meet stringent environmental, educational, safety, and accessibility standards at the time of the award.

5.17.14. CAQM Issues Direction for Paddy Stubble Burning

Commission for Air Quality Management (CAQM) gave directives **to Punjab, Haryana, and UP to prevent incidents of stubble burning as per Supreme Court order in M. C. Mehta vs. Union of India case.**

- **CAQM has been set up for Air Quality Management** in the **National Capital Region and Adjoining Areas** for better co-ordination and **resolution of air quality problems.**

Crop Residue Burning
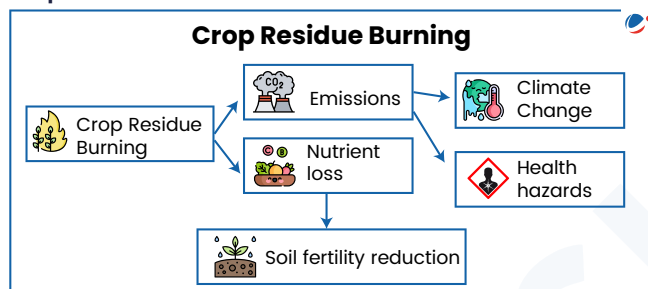
Key Directions

- **Parali Protection Force:** Police & agriculture officers to enforce stubble management.
- **Paddy straw co-firing:** Mandate pellets/briquettes in brick kilns (like thermal plants).
- **Farm mapping:** Village-wise plans for stubble disposal.
- **Straw procurement rate:** Punjab & UP to adopt Haryana's pricing model.
- **Ex-situ solutions:** Boost baler/raker use for residue management.
- **Digital monitoring:** Online portal for CRM machine tracking & data reporting.

5.17.15. National Centre of Polar and Ocean Research (NCPOR) Celebrates 25 Years

About NCPOR (HQ: Goa)

- **Genesis:** Established 1998 under MoES; autonomous.
- **Governing Body:** 13-member panel chaired by MoES Secretary.

Key Roles of NCPOR

- **Polar & Ocean Research:** Manages stations in Antarctica (Maitri/Bharati), Arctic (Himadri), and Himalayas (Himansh).
- **Deep Ocean Mission:** Explores mineral resources in Indian Ocean.
- **Policy Implementation:** Executes India's Arctic Policy (2022) & Antarctic Act (2022).
  - **Antarctic Act:** Legal framework; establishes CAG-EP.
  - **Arctic Policy:** Six pillars (Science, Climate, Economy, Connectivity, Governance, Capacity).
- **Significance:** Ice monitoring, ocean geopolitics, research facilitation.
- **Facilities:**
  - **Polar Bhavan:** India's first Polar & Ocean Museum.
  - **Sagar Bhavan:** Labs & archives for biological/ocean samples.

5.17.16. Global Methane Tracker 2025

Global Methane Tracker 2025 has been released by **the International Energy Agency (IEA).**

- Key findings
- Methane (greenhouse gas) is responsible for around **30% of the rise in global temperatures since the Industrial Revolution.**
- The three main sources of methane include **agriculture, energy and waste sectors.**
- The energy sector accounts for **more than 35% of methane emissions** from human activity.
- Methane emissions could be cut **by 50% by effectively utilising methane** in mines or by deploying flaring or oxidation technologies.
  - Gas flaring is the burning of the natural gas associated with oil extraction.

5.17.17. TSARAP CHU Conservation Reserve

State Government of Himachal Pradesh **notified Tsarap Chu Conservation Reserve (India's largest) in Spiti Valley.**

About Tsarap Chu

- It is the location for the confluence of the **Unam River and Charap Nala.**
- It is bounded **by UT of Ladakh to the north, Kibber Wildlife Sanctuary to the east, Kabjima Nala to the south and Chandratal Wildlife Sanctuary to the west.**
- It is particularly known for the snow leopard, often called the **'ghost of the mountains'.**
- **Other species:** Tibetan wolf, bharal, Himalayan ibex, kiang, Tibetan argali, and rare **bird species such as Rose Finch, Tibetan Raven.**

5.17.18. Yala Glacier Declared Dead

Glaciologists and local communities mourned the loss **of Nepal's Yala glacier after it has shrunk by 66%** since the

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1970s, making it among Nepal's first likely to be declared dead.

Glacier Funeral

- It is a symbolic ceremony held **to mark rapid disappearance of glaciers due to climate change.**
- **Other major glaciers declared dead:** Pizol Glacier, Switzerland (2019); Clark Glacier, US (2020); Ayoloco glacier, Mexico (2021).
  - The world's first funeral was held for **Okjokull glacier in Iceland in 2019.**

Consequences of Glacial Loss

- **Accelerates global warming:** Reduced Glaciers will **have less albedo effect** and increase heat absorption.
- **Accelerates sea level rise:** Melting glaciers have **caused nearly 2 cm to global sea level rise since 2001.**
- **Disrupted water cycles:** Nearly **three-quarters of Earth's freshwater is stored in glaciers.** Their rapid melting threatens **water security and endangers biodiversity.**
- **Natural disasters:** It increases risks of **Glacial Lake Outburst Floods (GLOFs) and avalanches.**

Initiatives for conservation of Glaciers

Global

- **UN Initiatives:** 2025 designated as the International Year of Glaciers' Preservation; **March 21 to be observed annually as World Day for Glaciers.**
- UNESCO Intergovernmental Hydrological Programme, **Himalayan Adaptation Network by IUCN**, Living **Himalayas Initiative by World Wide Fund for Nature.**

India's Initiatives

- **National Mission for Sustaining the Himalayan Ecosystem.**
  - **Network Programme on the Himalayan Cryosphere**
  - **Indian National Centre for Ocean Information Services (INCOIS):** It monitors glacier-related events and issues GLOF alerts.
  - **Himansh Research Station** to studies the dynamics and the rate of change of Himalayan glaciers.
  - **Missions to Arctic & Antarctic** e.g., **IndARC** (2014).

5.17.19. Solar Panel Efficiency Norms

MNRE Eases Solar Panel Efficiency Norms for Off-Grid Rural Projects

The Ministry of New and Renewable Energy (MNRE) has relaxed efficiency norms for off-grid solar modules (<200W), allowing **lower-efficiency panels** on its **Approved List of Models and Manufacturers (ALMM).**

Key Changes (May 2025 Amendment)

- **Efficiency Standards Lowered:**
  - **Earlier:** Crystalline silicon – 19%, CdTe – 18%
  - **Now:** Both technologies – 18%

- **Scope:** Applies only to **off-grid systems <200W** (e.g., lanterns, micro-grids, streetlights), not larger systems.
- **Off-grid systems:** Operate independently from the power grid using battery storage.

New DRE Category Introduced

- **Distributed Renewable Energy (DRE):** Local renewable power near the point of use.
- Supports **small manufacturers and rural electrification** efforts.

Concerns

- Lower energy output per area
- Faster panel degradation
- Risk of substandard modules without quality checks

Significance

- Improves **affordability and access**
- Promotes **local manufacturing**
- Boosts **rural energy access** without major tech compromise

5.17.20. World's First Commercial-Scale E-Methanol Plant Operationalised in Denmark

E-methanol offers a viable path **for reducing emissions in hard-to-abate sectors such as shipping and chemical manufacturing.**

What is e-methanol (or electro-methanol)?

- It is a low-carbon energy produced by **combining green hydrogen with captured carbon dioxide.**
- **E-methanol production** typically involves three key steps:
  - **Green hydrogen generation:** Renewable energy-powered water electrolysis creates the hydrogen feedstock.
  - **CO_2 capture:** Carbon dioxide is captured from industrial flue gases or directly from the air.
  - **Methanol synthesis:** The hydrogen and CO_2 are combined in a catalytic reactor under pressure, yielding methanol.
- **Benefits:** Can be used without infrastructure change; **Stable storage at room temperature; versatile fuel applications.**
- **Applications:** Apart from shipping industry, its derivatives **gasoline and kerosene provide solutions for road and air transport.**
- **Challenges:** E-methanol remains significantly **more expensive than fossil-based methanol** due to high renewable electricity costs and production inefficiencies.
- **Methanol Economy Programme (NITI Aayog)**
  - **Aim:** Cut oil imports and GHG emissions by converting coal, waste and CO_2 into methanol, a low carbon hydrogen carrier fuel.

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- **Benefits:** Generate around 5 million jobs and save 6000 crore annually by blending 20% methanol derivative in LPG.

5.17.21. RIMES

Declaration on Disaster Preparedness has been adopted at the **4th Ministerial Conference of Regional Integrated Multi-Hazard Early Warning System (RIMES),** held in Colombo, Sri Lanka.

- About **Regional Integrated Multi-Hazard Early Warning System** (RIMES), 2009
- It is an **intergovernmental body** that provides early warning services, disaster risk **reduction strategies, and capacity building to its Member States.**
- It evolved from the efforts of countries in **Africa, Asia and the Pacific, in the aftermath of the 2004 Indian Ocean tsunami.**
- **Membership:** It has 22 member states and 26 collaborating states.
- It operates from its regional early warning center located **at Asian Institute of Technology in Thailand.**

5.17.19. Similipal Tiger Reserve

Odisha notified **Similipal tiger reserve as national park.**

- **845.70 sq km of the 2,750 sq km Reserve** has been notified as National Park which **is Largest National Park in Odisha, surpassing Bhitarkanika.**
- 107th National Park in India and **second in eastern state.**

About Simlipal Forest

- Located in **Mayurbhanj District of Odisha** in Chottanagpur region.
- **Major Rivers:** Burhabalanga, Palpala Bandan, Salandi, Kahairi, and Deo
- Protected as **Wildlife Sanctuary, Tiger Reserve,** a **Biosphere Reserve** (under **UNESCO's Man and the Biosphere Programme, since 2009**), and part of Mayurbhanj Elephant Reserve.

What is a National Park?

- Area given **highest protection to conserve wildlife and environment due to ecological,** faunal, floral, geomorphological, or zoological importance.
- Human activity prohibited **except those permitted by Chief Wildlife Warden.**
- Under **Forest Right Act 2006,** certain tribal groups permitted to live inside.
- **Notified by State Governments** under Wildlife Protection Act, 1972
- Boundary alterations require **recommendation from National Board for Wildlife.**

Simlipal Biodiversity

- **Vegetation:** Moist mixed deciduous and tropical semi evergreen forests, Dry deciduous forest, grass etc.
- **Animals:** Tigers, fishing cats, barking and mouse deer.

5.17.23. Atmospheric Memory

A recent study found that the **atmospheric memory, not just sunlight, drives the onset and retreat of monsoons.**

Key Findings

- Atmosphere stores **physical information as water vapor**, controlling **monsoon onset and withdrawal.**
  - Earlier assumption was that monsoon patterns were primarily an **immediate response to solar radiation changes.**
- **The state of atmosphere depends on its seasonal history:** if it's already raining, the rain persists. But if it **has been dry, it is hard to initiate rainfall. This behaviour is called bistability.**
- Atmospheric state depends on **seasonal history:** existing rain persists while dry conditions resist rainfall initiation. This is called **bistability.**
- At identical solar radiation levels, atmosphere can be **either dry or rainy** based on previous conditions.

5.17.24. Green Municipal Bonds

Ghaziabad Nagar Nigam pioneered India's first certified **Green Municipal Bonds.**

- Issued under Swachh Bharat Mission-Urban, raising ₹150 crore for a **Tertiary Sewage Treatment Plant (TSTP).**
- TSTP ensures **treated water meets highest standards** for industrial reuse.
- Developed **under Public-Private Hybrid Annuity Model (PPP-HAM)** with 40% municipal funding.

Green Municipal Bond (GMB)

- Municipal bonds **are non-convertible debt securities issued by municipal bodies under Article 243W** of Indian Constitution
- Green bonds **specifically raise funds for climate mitigation, adaptation** and environment-friendly projects.

Significance of GMB

- **Sustainable development:** Investors increasingly focus on **Environment, Social and Governance (ESG) factors.**
- **Low cost, long term capital:** Cost-competitive with other **bonds and cheaper than commercial bank loans.**
- **Broaden investor base:** Supplements traditional financing **sources like domestic bank loans.**

Challenges of raising GMB: Poor fiscal health, Lack of internal capacity, inadequate financial discipline etc.

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5.17.25. International Big Cat Alliance

India And IBCA Signed the Headquarters Agreement

- Agreement allows India to host **the International Big Cat Alliance (IBCA) Headquarters and Secretariat.**
- Helps IBCA **efficiently discharge** its official functions.

More on the Agreement

- Covers **visas, privileges and immunities for IBCA** Secretariat, personnel, and premises.
- India to provide budgetary support of 150 crore rupees to IBCA for corpus creation, infrastructure, **and recurring expenses for 5 years (2023-24 to 2028-29).**

International Big Cat Alliance

- **HO:** India
- **Genesis:** Launched by India in 2023 to **commemorate 50 years of Project Tiger.**
- **Entity Type:** Full-fledged treaty based **inter-governmental international organization and international legal entity.**
- **Members:** 7 countries (Nicaragua, Eswatini, India, Somalia, Liberia, Guinea, Cambodia) have formally signed its Framework Agreement.
- **Aim:** Conservation of **7 big cats namely Tiger, Lion, Leopard, Snow Leopard, Cheetah, Jaguar and Puma.** Out of these, **5 big cats viz., Tiger, Lion, Leopard, Snow Leopard and Cheetah are found in India.**

Other Efforts for Conservation of Big Cats

- **St. Petersburg Declaration on Tiger Conservation (2010):** Members of **13 tiger range countries** agreed to the **Tx2 goal** (double the world's wild tigers by 2022).
- **India: Project Tiger (1973); Project Lion (2020)** for conserving Asiatic Lions, etc.

5.17.26. Global Geoparks Network (GGN)

During the 10th Anniversary of UNESCO Global Geoparks, **16 new sites across 11 countries were added to the Global Geoparks Network (GGN).**

About GGN:

- Non-profit under UNESCO, setting ethical standards for geoparks.

Notable New Geoparks added to GGN

- **Kanbula (China):** Qinghai-Tibet Plateau site with ancient volcanoes & Yellow River landscapes.
- **Mt Paektu (NK):** Location of the massive 1000 CE "Millennium Eruption".
- **North Riyadh (Saudi):** Obaitharan Valley with ancient coral reefs & critical water reserves.

UGGP Key Facts:

- Created in **2015** under UNESCO's Geosciences Programme.

- Defined as unified areas with **international geological significance,** managed for conservation, education & sustainability.
- Require **4-year reassessments** and mandatory GGN membership.

5.17.24. Particulate Emission Trading Market in Gujarat

A new study has revealed that the **Surat Emission Trading Scheme (ETS) launched** in **2019** has been successful in controlling particulate matter emissions cutting Pollutants By 20-30%.

Working of Emission Trading Scheme
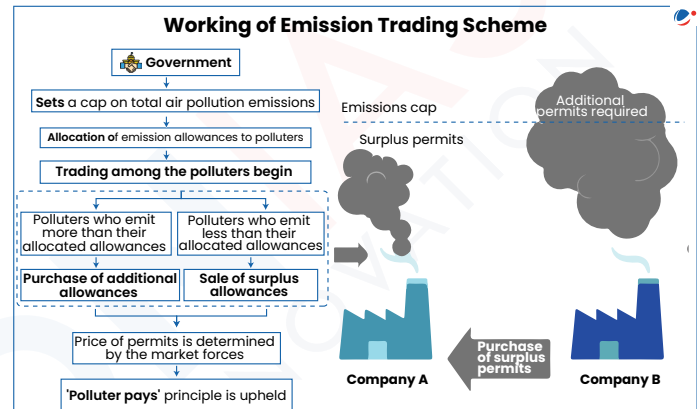
- **Pollution abatement costs also** dropped by over 10 %, and compliance with **environmental laws rose among participating plants.**

About Surat Emissions Trading Scheme (ETS)

- **First-of-its-kind: World's 1st particulate matter trading market** & India's 1st pollution trading scheme (inspired by US's sulfur dioxide ETS).
- **Goal:** Reduce air pollution via '**polluter pays**' principle.
- **Mechanism: Cap-and-trade** system (used in EU/China), with permits traded on NeML's platform.
- **Compliance:** Industries deposit **'Environmental Damage Compensation',** scaled by size.

5.17.25. Net Zero Framework for Global Shipping

The International Maritime Organization (IMO) **approved the world's first net zero framework combining mandatory emissions limits** and GHG pricing across an entire industry sector.

- Shipping accounts for almost **3% of global greenhouse gas emissions.**

Key Features:

- Added to **MARPOL Annex VI** (ship air pollution rules).
- **Target:** Net-zero by ~2050; enforced from 2027 (adopted Oct 2025).
- **Applies to ships >5,000 GT** (covers 85% of shipping emissions).

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- Requires compliance with **Global Fuel Standard + Global Economic Measure.**
- **Net-Zero Fund:** Collects emissions pricing contributions.

About MARPOL:

- 1973 treaty under **IMO (UN agency)** to prevent ship pollution.
- **Six annexes addressing different pollution** types (e.g., oil, chemicals).

5.17.29. Aim4nature Initiative

The Food and Agriculture Organization launched **Accelerating Innovative Monitoring for Nature Restoration (AIM4NatuRe) on Earth Day (April 22).**

About AIM4NatuRe Initiative

- AIM4NatuRe stands for **Accelerating Innovative Monitoring for Nature Restoration.**
- **Aims to improve monitoring and reporting of global ecosystem** restoration efforts using **advanced technology, standardized data frameworks, and capacity development** to restore 30% of degraded ecosystems by 2030 (Target 2 of GBF).
- Part of FAO's AIM4Forests Programme, **expanding beyond forests for holistic nature restoration monitoring.**

5.17.30. Vulture Conservation And Breeding Centre (VCBC)

34 critically endangered vultures were transferred from the **Vulture Conservation Breeding Centre (VCBC)** in **Pinjore (Haryana) to Maharashtra.**

About VCBC, Pinjore

- **Genesis:** Established in **2001 with UK Government's 'Darwin Initiative for the Survival of Species'** fund.
- **Partners:** Haryana Forest Department and **Bombay Natural History Society (BNHS).**
- **Aim:** To save **White-backed, Long-billed and Slender-billed vulture species.**
- **Location:** Edge of **Bir Shikargaha Wildlife Sanctuary, Haryana.**
- **Achievement:** Confirmed diclofenac **(non-steroidal anti-inflammatory drug) as main cause of vulture mortality.**

5.17.31. Small Hive Beetle (SHB)

- Alien or non-native, **Small Hive Beetle (Aethinatumida),** was recorded for the first time in India in West Bengal.
- About SHB
- **Native:** Sub-Saharan Africa, where it rarely **causes harm, though it creates havoc in other regions.**
- **Characteristics:** Oval-shaped, reddish-brown, 5-7 mm long, **with life cycle progressing through eggs, larva, pupa and adult.**
- **Damage:** Female SHBs enter beehives **through cracks to lay eggs.**

Aral Sea

- Hatched larvae feed voraciously on stored pollen, honey, and bee eggs, **while defecating in honeycombs, rendering them unfit for human consumption.**

5.17.32. Aral Sea

- Research indicates signs **of geological changes (elevation of the dried basin land) since water disappeared from the Aral Sea.**
- About Aral Sea
- Once a large saltwater lake in Central Asia.
- **Location:** Boundary between **Kazakhstan (North) and Uzbekistan (South), fed by Amu Darya and Syr Darya rivers.**
- Cause of Disappearance: Diversion of **Amu Darya and Syr Darya rivers during Soviet era.**
- The dried-up sea became **the hazardous Aralkum Desert, a major global dust source.**

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5.18. TEST YOUR LEARNING

1. With reference to the 'Population Status of River Dolphins in India – 2024' Report, consider the following statements:
   1. The survey was conducted by the Wildlife Institute of India under Project Dolphin 2020.
   2. Uttar Pradesh has the highest population of Gangetic River dolphins, followed by Bihar.
   3. The Indus River dolphin population is critically low, requiring urgent conservation measures.

   Which of the statements given above is/are correct?
   a) 1 only
   b) 1 and 2 only
   c) 2 and 3 only
   d) 1, 2, and 3

2. With reference to the conservation of Asiatic lions in India, consider the following statements:
   1. The IUCN Green Status Assessment classifies Asiatic lions as "Largely depleted" due to their limited ecological functionality across their historical range.
   2. The National Referral Centre for Wildlife (NRC-W), approved under Project Lion, is established in Gujarat to monitor wildlife diseases and enhance conservation efforts.
   3. The Gir landscape, the only current habitat of Asiatic lions, is characterized by tropical rainforests and hosts the Maldhari tribal community.
   4. The Northern lion subspecies (Panthera leo leo), which includes the Asiatic lion, is also found in North and Central Africa.

   Which of the statements given above are correct?
   a) 1 and 2 only
   b) 1, 2, and 4 only
   c) 2 and 3 only
   d) 1 and 4 only

3. With reference to the 2030 Global Forest Vision (GFV) released by the Forest Declaration Assessment, consider the following statements:
   1. The Forest Declaration Assessment was originally established as the New York Declaration on Forests (NYDF) Progress Assessment in 2015.
   2. The NYDF is a legally binding agreement endorsed by India at the 2014 Climate Summit.
   3. One of the priority actions of the 2030 GFV includes securing land rights of Indigenous Peoples and Local Communities.

   How many of the above statements is/are correct?
   a) only One
   b) only Two
   c) only Three
   d) None

4. Consider the following statements about the Rotterdam Convention:
   1. India acceded to the Convention in 2006.
   2. It entered into force in 2004.
   3. It creates legally binding obligations for Prior Informed Consent (PIC) procedure.
   4. Which of the statements given above are correct?
   a) 1, 2 and 3 only
   b) 2 and 3 only
   c) 1 and 3 only
   d) 1 and 2 only

5. With reference to the Asiatic Lion (Panthera leo persica), consider the following statements:
   1. They are concentrated in Gir National Park and Wildlife Sanctuary (Gujarat).
   2. It is listed in Schedule I of the Wildlife (Protection) Act, 1972 and Appendix II of CITES.
   3. The species exhibits a distinctive longitudinal skin fold along its belly.
   4. Barda Wildlife Sanctuary has been identified as an additional habitat for its conservation.

   Which of the statements given above are correct?
   a) 1 and 2 only
   b) 1, 3 and 4 only
   c) 2, 3 and 4 only
   d) 1, 2, 3 and 4

Mains Question

Q1. (150 words)

Examine the causes and impacts of the recent surge in marine heatwaves. Discuss the strategies that can be adopted to mitigate their adverse effects on marine ecosystems, livelihoods, and regional climate patterns like the Indian monsoon.

Q2. (250 words)

Critically analyze India's transition from an anthropocentric to an eco-centric approach in environmental jurisprudence. Discuss the philosophical, legal foundations, and the role of judicial activism in promoting environmental rights, with examples from recent judicial interventions.

SOCIAL ISSUES

Table of Content

6.1. WOMEN-LED DEVELOPMENT

Why in the News?

Recently, on the 30th anniversary of the **Beijing Declaration and Platform for Action,** governments adopted a **declaration** on the **empowerment of women and girls** reaffirms the priciple of **Women-Led Development.**

Beijing Declaration and Platform for Action (BPfA)

- It was originally adopted in **1995** at the **Fourth World Conference on Women,** stressing on upholding all **human rights** and **fundamental freedoms** for **every** woman and girl, without exception.
- On its 30th anniversary, **Beijing + 30 Action Agenda,** with **6 priority actions** were released.
  - **Digital Revolution:** Access to new skills, bridging Digital Gender Gap, etc.
  - **Freedom from Poverty: Social protection and high-quality public services** for health, education and care.
  - **Zero Violence: Comprehensive national action plans** involving **community-led** organizations.
  - **Full and Equal Decision-making Power:** In both private and public domains.
  - **Peace and Security:** Gender-responsive humanitarian actions
  - **Climate Justice:** Prioritising rights of women from **Indigenous communities, promoting green jobs, etc.**

Women's Development vs. Women-led Development

Women's Development	Women-led Development
Involves **programmes designed to help women,** without necessarily involving them.	Women are seen not just as beneficiaries, but as **leaders, decision-makers, and innovators.**
Under this women are seen as passive recipients.	Recognizes that **women often have unique insights.**
Top-down approach.	**Bottoms-up approach.**

Why Women-Led development is important for Society?

- **Women as Agents of Empowerment.**
- **Gender Equality:** Global Gender Gap Index 2024: India ranked 129th out of 146 countries.
- **Economic Empowerment:** Bridging gender gap in employment could lead to a 30% increase in the country's GDP.
- **Rural Development and Poverty Alleviation: Deendayal Antyodaya Yojana - National Rural Livelihood Mission (NRLM)** mobilization of women result in household incomes increase by 22%.
- **Inclusive growth and Sustainability:** The Deccan Development Society collaborates with nearly 5,000 Dalit and Indigenous women small farmers.

Obstacles on the Path to Women-Led Development

- **Patriarchal Social Norms:** NFHS-5 (2019-21) states only 3% of women make decisions independently.
- **Education:** Average female literacy rate throughout world is 79.9%, while India lags behind at 62.3%
- **Workplace Discrimination:** Women earn 20% less than men for equal work (WEF Gender gap report, 2023).
- **Gender digital divide:** Only 15% of women in India have access to internet (Mobile Gender Gap 2021 Report).
- **Early Marriage and Motherhood Penalty:** NFHS-5 states 23% of women aged 20-24 were married before 18.
- **Women safety:** NCRB (2022) reported 4.5 lakh crimes against women.

Government Initiatives: From Women Empowerment to Women-Led Development

- **Gender Budgeting:** Budget increases to 8.86% in FY 2025-26 from 6.8% in 2024-25.
- **Asset Ownership:** 72% women ownership under PM Awas Yojana Gramin.
- **Political Empowerment:** Nari Shakti Adhiniyam passed giving 33% reservation to women.
- **Education and STEM:** 43% Science, Technology, Engineering and Mathematics graduates are women.
- **Entrepreneurship and Skill Development:** Start up and Stand up India.
- **Economic Empowerment:** Mudra yojna, Lakhpati Didi.

6.2. CINEMA AND SOCIETY

Why in the News?

The Kerala High Court emphasized violent content having significant social impact, but any measures taken must uphold the fundamental right to free speech.

About Cinema

- Cinema, a **popular form of mass media** is regarded as the **"seventh art".**
  - Painting, Sculpture, Architecture, Literature, Theatre and Music are the remaining 6 forms of art.
- By blending diverse artistic and cultural elements, Indian cinema **reflects both individual and societal narratives.**

Evolution of Indian Cinema (1950s-2025)

- **1950s-60s: Nationalism, Social realism**
- **1970s: Social Injustice, Parallel Cinema and social satire**
- **1990s: Globalization, Materialism and Identity, Patriarchy and Reform, Relationships and Individuality**
- **Early 2000s: Realism, Globalization and Identity, Social issues**
- **Post 2020: OTT Cinema and Regional cinema**

How does the Cinema Shape the Society?

Positive Impact of Cinema on Indian Society

- **Global Recognition of Indian Culture**
- **Reflection of Cultural Diversity:** Films like **Dedh Ishqiya** highlight Lucknow's Nawabi culture.
- **Reflection of Evolving Family values**
- **Women Empowerment:** Films like **Durga Sohay**
- **Awareness on Educations**
- **Strong Tool For Societal Change:** Raising Awareness, Changing Social Attitudes, Shaping Nationalistic Views

Negative Impact of Cinema on Indian Society

- **Gender Stereotypes and Toxic Masculinity**
- **Promoting Unrealistic Body Standards:** It also **encourages body shaming.**
- **Questioning Institution of Family:** Cinema frequently depicts love marriages and live-in relationships.
- **Shift in Cultural Preferences:** Cinema's growing focus on Western dance styles in place of classical.
- **Poor Representation of the Vulnerable Community**
- **Glorification of Substance Use**
- **Deepening Divide:** Propaganda-driven movies are increasingly promoting specific political ideologies.

Regulation of Content in Cinema

- **Bharatiya Nyaya Sanhita (BNS), 2023:** Criminalizes obscene acts, with penalties including fines and imprisonment.
- **Indecent Representation of Women (Prohibition) Act, 1986:** Prohibits the indecent portrayal of women.
- **Cable Television Networks (Regulation) Act, 1995:** Ensures telecasted programmes meet societal decency standards.
- **Cinematograph Act, 1952:** Mandates certification of films by the Central Board of Film Certification (CBFC).
- **Advertising Standards Council of India (ASCI):** ASCI (self-regulatory body) aims to regulate advertisements.

6.3. SOCIAL MEDIA AND ADOLESCENTS

Why in the News?

A recently released **web series named 'Adolescence'** has sparked debates worldwide on **online radicalization and digital safety of adolescents**- the issues faced by children due to unregulated exposure to internet and related social influences.

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More on the News

- The **UK** is planning to stream the **series in schools** accompanied by discussion guides for teachers and parents.
- **In 2024, Australia** banned social media use for children less than **16 years of age.**

Harmful Impact of Online Spaces/Social Media on Adolescents

- **Negative Social Conditioning:** E.g. **Pornography, misogynistic hate content** encourages **anger and hatred; beauty standards** related content may **induce self-doubt** etc.
- **Online radicalization:** For example, **forums and chat rooms** promoting idea of **'manosphere'**-justifying **misogyny and toxic masculinity** as a counter to **feminist ideology.**
- **Social Media Addiction and Alienation:** Prolonged use of online spaces **disconnect** children from **real-world.**
- **Mental health issues: Anxiety, depression, and body image insecurity.**
- **Lack of empathy & Cyber-Bullying: E.g. "Bois Locker Room" incident in Delhi (2020):** obscene images were shared on a schoolboys' group.

How various Stakeholders shape Personality Formation of Adolescents?

- **Peers:** Values, Behaviour
- **Social:** Family, Society
- **Institutional:** Internet, Social Media, Schools, Governments

What are the Challenges in curbing negative impacts of social media on Adolescents?

- **Outdated policy approach: Rapid pace of changes** in digital realm outpaces **policy changes.**
- **Lack of Digital Literacy**
- **Content moderation versus free speech: Regulation** of social media platforms has been **contentious** due to the argument **against regulation** due to the **democratic principle of free speech.**
- **Loopholes in content moderation: Age-based content restriction** is bypassed by access to **dark web, piracy** etc.
- **Intergenerational Digital Divide:** Adolescents adopt new technologies quickly, while older may resist or misunderstand.
- **Lack of awareness**

Way Forward

- **Promoting Digital Citizenship among adolescents:** When you use internet in a **legal, safe, respectful way.**
- **Digital Ethics of Care: Digital responsibility, digital empathy, digital care and kindness, and digital respect.**
- **Promoting Digital Literacy**
- **Parental Oversight**
- **Reforms in School system:** E.g. including **Relationship, Sex and Health Education (RSHE)** curriculum, as in the UK.
- **Policy Reforms:** Adopting a **multi-faceted approach, Education policies, juvenile justice laws.**
- **Accountability for Tech Companies**

6.4. CHANGING INSTITUTION OF FAMILY

Why in the News?

Recently, Supreme Court remarked that **family values are eroding,** with parents and children litigating against each other over property and maintenance, resulting in a **"One Person, One Family" model,** in contrast to the **'Vasudhaiv Kutumbakam'.**

Changing Institution of Family in India

Aspect	Traditional Family	New Trends
Structure	**Joint family system** with multiple generations including grandparents, uncles, aunts, nieces, and nephews living together in the same household.	Predominantly **nuclear families,** often consisting of parents and non-adult children only.

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Decision-Making	**Patriarchal hierarchy** with decisions made **collectively by elders.**	**Increasingly more egalitarian approach** with **shared decision-making** between men and women.
Marriage Practices	**Arranged marriages** often negotiated by elders; emphasis on lineage and family unity.	Increased acceptance of **love marriages, live-in relationships,** and non-traditional unions like **same-sex partnerships.**
Values	Collectivism emphasizing family loyalty, unity, and interdependence over individualism.	Growing **individualism** with focus on **privacy, independence, and personal aspirations.**

Factors behind the changes in Indian family institution

- **Economic factors:** Urbanization, expanding labour market demand etc.
- **Changing gender role:** Improved women's access to education and formal employment.
- **Westernization:** Emphasis on values like **individualism.**
- **Globalization: E.g., Multi Nation Corporations' (MNCs) work cultures** often favour smaller and flexible family units.
- **Role of Technology:** Enhanced communication through modern tools (e.g., Skype, WhatsApp) affecting the depth of relationships and emotional bonding.

Impact of Changing Family Institution

Positive Impacts

- **Active parenting:** Fathers are increasingly involved in their children's upbringing.
- **Strong parent child bond**
- **Reduced familial conflict**
- **Greater autonomy:** Individuals, especially women, can lead independent lives.

Negative Impacts

- **Inter-Generational conflicts**
- **Loss of traditional values**
- **Loneliness: In Children, parents**
- **Pressure on social infrastructure:** Greater demand for institutional elder care, child care, and public health support.

Way Forward

- **Strengthen community-based support systems:** Build robust **neighbourhood-based elder care,** crèche, and mental wellness centers.Example: **Kerala's Kudumbashree network** integrates community and care economy.
- **Education and social awareness**
- **Promote intergenerational living through urban planning**
- **Redefining the concept of family:** States policies and governance framework need to move beyond traditional definition.
- **Policy Interventions:** Effective implementation of **Maintenance and Welfare of Parents and Senior Citizens Act, 2007.** Also, **free legal aid for elderly.**

6.5. WORKPLACE AUTOMATION

Why in the News?

Major tech firms are rapidly adopting AI including generative AI, enhancing customer interactions and workplace efficiency, but concerns about its impact on workers persist.

About Workplace Automation

- **Meaning:** It is the **use of technology** such as AI, Machine Learning, Augmented Reality, etc., to **perform tasks** and **processes** with minimal **human intervention.**
- **India and Automation:** India's Industrial Automation Market Growth is expected to reach **$29.43 bn by FY2029.**
  - **Key drivers:** Accelerating digitalisation and technological Innovation, changing customer expectation, enhanced competition, rising labour costs, Ageing population, etc.

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What are the social benefits associated with the Workplace Automation?

- **Bridging Skill Gaps & Boosting Productivity:** AI assigns tasks based on skills, identifies upskilling needs, and enhances overall efficiency.
- **Promoting Equity & Diversity:** Automation reduces bias in hiring and evaluations.
- **Safer Work Environments:** Machines handle hazardous and strenuous tasks.
- **Better Work-Life Balance:** Reduces routine work, easing fatigue and enabling more meaningful roles.
- **Enhanced Customer Service:** Ensures faster, consistent, and more accessible support.

What Are the Social Challenges Associated with Workplace Automation?

- **Rising Income Inequality**
  - **Wage Polarization and job losses:** High-skilled workers benefit more from automation, while low-skilled workers face job losses or stagnant wages.
  - **Barriers to Reskilling:** Due to unequal access to digital literacy and training.
  - **Gender Disparities in Employment:** Automation tends to replace low skilled jobs like clerical and secretarial roles where female works have higher representation.
  - **Gig Workers and Job Insecurity:** Automation may encourage short-term contracts and reduce job stability, especially in platform-based gig economies.
- **Mental Health and Well-being:** Algorithmic monitoring and constant connectivity increase stress, reduce autonomy, and harm work-life balance, contributing to digital fatigue.
- **Reduced Human Oversight:** Overreliance on automation may lead to errors and safety risks, especially in critical fields like healthcare, where human judgment remains vital.

Way Ahead to Ensure Inclusive, Safe, and Equitable Workplace Automation

- **Ensuring Income Equity**
  - **Universal Social Security:** Recognize job loss due to automation under labour laws. Extend social security to informal, gig, and contract workers.
    - ❖ **Code on Social Security, 2020** aims to **extend social security benefits to all workers** both in the organised and unorganised sectors.
    - ❖ **Industrial Relations Code, 2020** has a provision for **worker reskilling fund.**
  - **Foster Equitable Automation:** Bridge the **Gender Automation Gap** through inclusive policies and targeted up-skilling.
- **Strengthen Legal and Policy Frameworks: Update Occupational Safety and Health (OSH) Laws. Also** align the law with the **ILO Convention No. 155** (OSH Convention) and **No. 187** (Promotional Framework for OSH).
- **Promote Regulate Robotics:** Define safety norms for human-robot collaboration.
- **Right to Disconnect:** Safeguard workers from overwork and digital fatigue.
- **Human-Centric Algorithmic Management**
  - Ensure transparency, human oversight, and worker grievance mechanisms.
  - Integrate worker feedback to reduce stress and build trust.
- **Raise Awareness:** Promote digital rights and mental health literacy through campaigns.
- **Green Automation:** Encourage environmentally sustainable automation practices.

Conclusion

A collaborative, worker-focused approach can ensure automation enhances safety, equity, and well-being, creating more inclusive and sustainable workplaces.

6.6. HUMAN DEVELOPMENT REPORT 2025: WIDENING INEQUALITY

Why in the News?

The **United Nations Development Programme** released its **Human Development Report 2025** which appreciated **India** for its **progress** but also warned about **rising inequality**, particularly **income and gender disparities.**

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Key Findings of the Report

- **Human Development Index (HDI)**
  - Gap between low- and very high-HDI countries widened for the 4th year.
  - Top 3: Iceland, Norway, Switzerland.
  - India: Rank improved to 130/193; HDI rose to 0.685.
- **Inequality Adjusted HDI**
  - India **loses 30.7%** of human development due to inequality.
  - **Income distribution:** poorest 40% hold 20.2% while richest 10% hold 25.5%.
- **Multidimensional Poverty Index (MPI)**
  - **16.4% of Indians are multidimensionally poor; 4.2% in severe poverty.**
  - **An additional 18.7% are vulnerable to poverty.**
- **Gender Inequality Index (GII)**
  - India ranked **102 /193** countries
  - India's **female** (aged 15+) **Labour Force Participation Rate (LFPR)** is **35.1% vs male LFPR** is **76.4%.**

Inequality and its Measurement

- **Inequality** Lack of equality in status, rights, and opportunities..
- **Types of inequalities:- Income inequality, social inequality, inequality of opportunities, etc**
- **Measurement of Inequality:**
  - **Gini-Coefficient** Measures income/consumption inequality(degree of concentration) (0 = perfect equality, 1 = complete inequality).
  - Based on the Lorenz curve: the more it bows away from the diagonal, the greater the inequality.
  - **Palma ratio:** the ratio of total hourly wages of the top 10% to those of the bottom 40%.
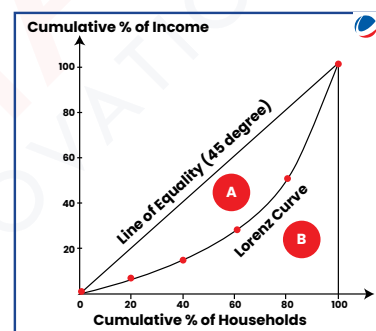
Reasons for persisting Inequality in India

- **Socio-cultural disparities:** based on **caste, gender etc**
  - **Gender Pay Gap:** women earn just **18% of the labour income** (World Inequality Report 2022).
  - **Lack of quality Education and Healthcare** perpetuates **intergenerational poverty:** E.g. High **out-of-pocket-expenditure on health.**
- **Nature of economic development: Jobless growth, problem of 'missing middle'(low number of small and medium-sized enterprises)** in Indian economy, **sectorial imbalances** (agri accounts for 15% of gdp and 42% of employment)
  - **Rural-Urban divides:** Average Monthly Per Capita **Consumption Expenditure** - Rs. 4,122 (rural) vs Rs. 6,996 (urban). (Household Consumption Expenditure Survey 2023-24).
- **Labour policies:** Reduced worker bargaining power.
- **Tax Bias:** Lower rates on long-term capital gains favor capital over wages.
- **Other factors: Technological divide,** conflicts, climate shocks, sovereign debt crisis, COVID-19, **governance issues** (corruption, resistance to reforms etc.).

Way Forward

- **Policy making: eg. National Inequality Reduction Plans (NIRPs), progressive taxation** focus locally at village/block levels etc.
- **Inclusive Wealth approach:** Expand wealth definitions to include natural, human, and social capital; address caste and gender barriers eg via gender budgeting.
- Others **Gender equity, access to Education and Healthcare,** aligning **vocational training with market demand.**
- **Strengthening Social Security Measures etc.**

Conclusion

- A **whole-of-society** approach—uniting **government policies, civil society,** and **private-sector responsibility**—must embed **equity** into the **design, delivery,** and **evaluation** of every development initiative.

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6.7. SAMPLE REGISTRATION SYSTEM (SRS) REPORT 2021

Why in the News?

The **Sample Registration System (SRS) Report 2021** was released by the **Registrar General of India (RGI)**

About SRS

- **A demographic survey** providing estimates of **birth rate, death rate and other fertility and mortality indicators** at the National and Sub-National levels.
- The **SRS sample** is **revised every ten years** based on the latest census frame.

Key Findings of the SRS Report 2021

Parameters and Definitions	Trends highlighted by SRS Report 2021
Crude Birth Rate (CBR) CBR = (Number of live births during the year/ Mid-year population) X 100	- **DECLINED** to **19.3 in 2021** - **States: Maximum:** Bihar (25.6); **Minimum:** Kerala (12.9)
Population Composition (percentage of total population)	- **Age group 0-14: DECLINED** to **24.8%** (2021) - **Economically active population (15-59 years): INCREASED** to **66.2%** (2021)) - **Elderly population: INCREASED** (60+ years- **9%;** 65+ years- 5.9%) - **Mean age at effective marriage for Females: INCREASED to 22.5 years in 2021**
Maternal Mortality Ratio (MMR) Number of maternal deaths during a given period per 100,000 live births during the same period.	- **DECLINED to 93 in 2019–21.** [SDG target of MMR (<=70 by 2030)]
Child Mortality **Neonatal Mortality Rate (NMR):** Number of neonatal deaths that from birth to 29 days per 1,000 live births. **Infant Mortality Rate (IMR):** Number of infants deaths from birth to the 1 year old per 1,000 live births. **Under-five Mortality Rate(U5MR):** Number of deaths of children under 5 years of age per 1,000 live births.	- **Neonatal Mortality Rate (NMR)** - **DECLINED** to **19 in 2021.** [SDG target of NMR (<=12 by 2030)] - **States: Lowest:** Kerala; **Highest**: Madhya Pradesh - **Infant Mortality Rate (IMR)** - **DECLINED** to **27 in 2021.** - **States: Lowest:** Kerala (6); **Highest**: Madhya Pradesh (41) - Still, **one in every 37 infants** at the National level **die within one year of life.** - **Under-five Mortality Rate(U5MR)** - **DECLINED 31 in 2021.** [SDG target of U5MR (<=25 by 2030)] - **States: Lowest:** Kerala; **Highest:** Madhya Pradesh
Sex Ratio at Birth Number of females per 1000 males at birth.	- **INCREASED to 913 in 2019-21.** - **States: Highest:** Kerala (962); **Lowest:** Uttarakhand (852) - **Rural** (2019-21): 912; **Urban** (2019-21): 918
Total Fertility Rate (TFR) Average number of children a woman would have at the end of their reproductive period.	- **Total Fertility Rate (TFR)= 2.0** - **DECLINED** during 2016-2021 at the National level. - **States: Highest:** Bihar (3.0); **Lowest:** Delhi and West Bengal (1.4) - **Replacement level TFR,** viz. **2.1,** has been attained at the **National** level along with **16 States/UTs.** - **Rural:** 2.2; **Urban**: 1.6

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Life-expectancy at birth	➤ **69.8 years** (for period 2017-21), registering a **decline of 0.2 years** from 2016-20.
	➤ Life expectancy for males - **68.2 years** and that for females, at **71.6 years.**
Institutional Deliveries	➤ In 2021, ~91.1% (both govt and private hospital)
	➤ **Urban** areas: **95.5%; Rural** areas: **89.7%**

Conclusion

➤ Improving maternal and child health ensures India's future demographic dividend. Strengthening schemes, awareness, infrastructure, and service quality is essential for lasting impact.

6.8. URBAN POVERTY

Why in the News?

Odisha government launched a initiative **'SAHAYOG'** to facilitate **access to government welfare schemes for the urban poor to** improve their living standards.

About SAHAYOG initiative

➤ **Aim:** Improve living standards of the economically backward via government schemes.

➤ **Objective:** Identify and link urban poor to schemes through awareness and doorstep services.

Current Status of Urbanization and Urban Poverty in India

➤ Urban population rose to 31.16% (2011); over 50% projected by 2050.

➤ Extreme urban poverty fell from 10.7% to 1.1%.

➤ Broader poverty declined to 17.2%.

➤ Gini index improved to 25.5.

➤ Urban unemployment dropped to 6.6%.

Difference between urban and rural poverty

➤ **Basic amenities:** Urban poor lack adequate housing and sanitation; rural poor struggle with land tenure security.

➤ **Living conditions:** Urban areas face overcrowding, hygiene problems, disease and crime risk; rural areas lack pucca homes and face caste discrimination.

➤ **Psychological impact:** Urban poverty is more visible—leading **to relative deprivation,** segregation, loneliness (e.g. **Dharavi** beside skyscrapers); rural poverty is culturally institutionalized, tied to **caste/gender norms.**

➤ **Economic context:** Rural economies rely on agriculture; urban economies are diverse, offering more opportunities but making urban poverty more complex and multifaceted.

Reasons for persistence of Urban Poverty

➤ **Lack of Planned Urban Development: eg** Haphazard urbanization, lack of affordable housing projects etc

➤ **Regional disparity in urbanization: Insufficient development of Tier II and Tier III cities**

➤ **Inaccessibility to social security eg** exclusion from govt welfare schemes due to lack of proof of residency.

➤ **Vicious cycle of poverty:** Poverty limits access to **opportunities** for **socio-economic mobility**

Government Initiatives for eliminating Urban Poverty

➤ **One Nation One Ration Card:** Aadhaar-based portable ration cards (includes internal migrants).

➤ **Swatch Bharat Mission-U 2.0:** building household latrines.

➤ **PM Awas Yojna-U:** Provides housing for EWS/LIG/MIG and slum dwellers.

➤ DAY-**NULM (Deen Dyal Yojna – National Urban Livelihood mission)& PM SVANidhi:** for livelihoods and affordable micro-credit.

➤ Others: **AMRUT 2.0** and **Smart Cities Mission.**

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Way Forward

- **Inclusive urbanization:** Decentralize planning with community input; promote mixed-use zoning and role of women SHG (e.g., **Kudumbashree** (women shg) in slum redevelopment-(kerela)).
- **Tier II/III city growth:** For balanced regional development, improve rural infrastructure to curb megacity migration.
- **Sustainability:** eg Indore's cleanliness drives under SBM.
- **others – urban poor empowerment, targeted social security etc**

Conclusion

- By 2050, Indian cities could contribute over **75% of GDP** and about **60% of GHG emissions,** making urban poverty reduction essential for sustainable development, "Viksit Bharat," and $5 trillion economy target.

6.9. MIZORAM ACHIEVES FULL FUNCTIONAL LITERACY

Why in the News

- SRecently, the CM of Mizoram declared Mizoram a fully literate state (98.2% literacy -PLFS survey 2023 -24), making it the first state in India to achieve full functional literacy.

More on the News:

- Earlier **Ladakh became the first fully functional literate UT**
- Goa was **second such state.**
- According to **Ministry of Education** above **95% literacy** rate is Full literacy.
- These developments are due to **ULLAS - Nav Bharat Saaksharta Karyakram**

Note* Kerala's **full literacy in 1991** was based on the National Literacy Mission (>90% literacy rate).

Literacy Vs Functional Literacy

- **Literacy:** A person aged 7+ who can **read and write with understanding** in any language (office of registrar general of ind).
- **Functional literacy:** The ability to **read, write, comprehend, and use written information**—like basic instructions to function effectively daily (eg filling forms , use of technology etc).

Literacy in India according to Periodic Labour Force Survey (PLFS) 2023–24.

- **Overall literacy rate (age 7+):** 80.9%.
- **Urban 88.9% vs Rural 77.5%.**
- **Male 87.2% vs female 74.6%.**
- **Top 5 states – Mizoram , Lakshadweep , Nagaland , Kerela, Meghalaya.**
- **Bottom 5 states -Andhra pradesh (72.6%) ,Bihar , MP , Rajasthan , Jharkhand.**

About ULLAS - Nav Bharat Saaksharta Karyakram or New India Literacy Programme (NILP)

- **Defined literates:** Learners who can read, write, do basic math, and have digital and financial literacy (not just sign or write their names).
- **Type: Centrally Sponsored Scheme** aligning with NEP **2020.**
- **Target:** 5 five crore learners, (1 crore/year) using **"Online Teaching, Learning and Assessment System (OTLAS)-** computer application (web/mobile app) under ULLAS developed by the **National Informatics Centre (NIC)**
- **Duration:** FY2022- 23 to 2026-27.
- **Ministry:** Ministry of Education.
- **Target Group: Adults aged 15 and above** who missed formal schooling.
- **Components:** Foundational Literacy and Numeracy, Critical Life Skills, Basic Education, Vocational Skills, and Continuing Education.
- **Implementation:** Through volunteerism, promoting sense of duty or 'Kartavya Bodh'.
  - **Samajik Chetna Kendras** are established in schools, community halls, etc., with schools acting as the unit of implementation.

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- **Regional Languages: in DIKSHA Portal and the ULLAS Mobile App/Portal.**
- **Assessment & Certification: FLNAT (Foundational Literacy and Numeracy Assessment Test)** is conducted twice a year—or on demand—at local schools.

Other initiatives for Literacy:
- **National Literacy Mission (NLM) 1988**
- **Saakshar Bharat Mission:** target- 80% national literacy level and reducing the gender gap of literacy to 10 %.
- **NIPUN Bharat Mission (Under NEP 2020):** To achieve universal foundational literacy and numeracy in primary school by 2025.

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6.10. NEWS IN SHORTS

6.10.1. New SDG Indicator On Minimum Dietary Diversity (MDD) Adopted By UN Statistical Commission

FAO and UNICEF jointly manage this new indicator, addressing absence of an SDG measure for healthy diets.

- This indicator captures a crucial aspect previously lacking in tracking progress toward ending malnutrition and **achieving SDG 2 (Zero Hunger)** and broader 2030 Agenda.

About MDD

- According to WHO, MDD is achieved when a diet includes **five or more of following eight food groups:** breast milk, grains, legumes, dairy products, flesh foods, eggs, fruits, and vegetables.

Significance of MDD Indicator

- **Improved Nutritional Assessment:** specifically women (MDD-W) and children (MDD-C).
- **Tracking Global Health Targets:** Supports SDG **2,** aimed at eliminating hunger and improving nutrition.
- **Policy Tool:** Aids policymakers in developing strategies
- **Evaluating Program Impact:** Helps evaluate nutrition programs.

Status of MDDF (minimum dietary diversity failure) in India (For Year 2019-21):

- **Regional Disparities:** Uttar Pradesh, Rajasthan, Gujarat, Maharashtra, and Madhya Pradesh, has over 80% of children with MDDF.
- **Age Impact on MDDF:** 77% children in India aged 6-23 months lacking minimum dietary diversity.
- **Vulnerable Sections:** Children from Other Backward Classes have the highest MDDF (79%), followed by Scheduled Castes (77.2%) and Scheduled Tribes (76%).

6.10.2. World Happiness Report

World Happiness Report 2025 was published by **Wellbeing Research Centre** at the University of Oxford, in partnership with **Gallup, the UN Sustainable Development Solutions Network** and an independent editorial board.

About the Report

- Global Happiness Ranking is based on single question derived from the **Cantril Self-Anchoring Striving Scale (Cantril Ladder).**
  - Top of the ladder represents best possible life while at the bottom represents worst possible life.
- **Parameters:** GDP per capita, social support, healthy life expectancy at birth, freedom to make life choices, etc.

- Finland ranks first, followed by Denmark and Iceland while **India is ranked 118th** out of 147 countries.

6.10.3. MoSPI Released "Women and Men in India 2024: Selected Indicators And Data"

Key Highlights from Report

- **Sex Ratio at Birth:** Urban areas (910) surpassed rural (907) between 2014–16 and 2018–20.
- **Health:** MMR declined from 122 (2015–17) to 97 (2018–20).
- **Education:** 2017 literacy rates – males: 84.7%, females: 70.3%.
  - Kerala had the smallest, Rajasthan the largest gender literacy gap.
- **Economic Participation:**
  - FLPR rose from 23.3% (2017–18) to 41.7% (2023–24).
  - Women own 39.2% of bank accounts, hold 39.7% of deposits.
  - Women on boards increased from 26.7% (FY20) to 28.7% (FY25).
- **Political Participation:** Female voter turnout was 67.2% (2019), dipped to 65.8% (2024).
- **Violence Against Women:** 31.9% of married women (18–49) face spousal violence; highest in Karnataka (48.4%), Bihar (42.5%), Manipur (41.6%).

6.10.4. Global Network of Age-Friendly Cities and Communities (GNAFCC)

Kozhikode city has been honoured with a membership in the **WHO's GNAFCC.**

About GNAFCC

- **Established:** 2010
- **Members:** 1300 members from 51 countries.
- **Aim:** To connect cities, communities and organizations worldwide with the common vision of making **their communities great places to grow older in.**

6.10.5. PM-Yuva 3.0

Ministry Of Education Launches PM Scheme For Mentoring Young Authors (PM-YUVA 3.0).

About PM-YUVA 3.0

- **Aim:** Aims to train young authors below 30 years of age to promote reading, writing, and book culture.
- **Selection and Training Process:** 50 authors will be selected through an All India Contest.

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- **Implementation:** National Book Trust, India is an implementing agency ensuring structured mentorship.
- **Significance:** Strengthens Ek Bharat Shreshtha Bharat by promoting cultural and literary exchange.

6.10.6. Swavalambini

Ministry of Skill Development and Entrepreneurship in collaboration with **NITI Aayog** have launched Swavalambini— Women Entrepreneurship Programme.

About Swavalambini – Women Entrepreneurship Programme

- It is a movement towards **women-led multi-staged entrepreneurship.**
- **Objective:** Empower female students in **Higher Education Institutions** with entrepreneurial **skills, resources, and mentorship.**
- **Structure:** Includes **Entrepreneurship Awareness Programme,** Women Entrepreneurship Development Programme, mentorship, and faculty training.
- **Implementation:** By **National Institute for Entrepreneurship and Small Business Development.**
- **Impact:** Aims for minimum **10% of trained participants to establish enterprises,** fostering women-led growth.

6.10.7. International Olympic Committee (IOC)

Zimbabwean former swimmer **Kirsty Coventry becomes** the first female president of the IOC.

- IOC is a **not-for-profit independent** body **overseeing the Olympic movement.**

About IOC

- **Headquarters:** Lausanne (the Olympic Capital), Switzerland.
- **Genesis:** Founded at the first Olympic Congress in Paris (1894).
- **Vision:** To Build a Better World through Sport
- **Funding:** Entirely **privately funded** and **distributes 90%of its revenues** for the development of sports and athletes.
- **Function:**
  - Decides **Olympic sport inclusions** and **host city** selections.
  - Facilitates **collaboration** among Olympic stakeholders, including athletes, National Olympic Committees (NOCs), and sports federations.
    - **Indian Olympic Association (IOA)** serves as India's NOC.

6.10.8. Global Report on Internal Displacement (GRID) 2025

Released by the **Internal Displacement Monitoring Centre (IDMC).**

- **Internal Displacement (ID)** refers to the **forced movement** of people (**internally displaced people**) within their country .

Key Findings

- **Internally displaced people (IDPs) at the end of 2024: 83.4million** (73.5 million due to conflict and violence and 9.8 million due to disasters).

India: Internal displacements by **conflict and violence (1,700)** and **Internal displacements by disasters (5.4 millions).**

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6.11. TEST YOUR LEARNING

1. **Which of the following is NOT a focus area under the Beijing + 30 Action Agenda for the empowerment of women and girls?**

   a) Digital Revolution and bridging the Digital Gender Gap

   b) Freedom from Poverty through enhanced social protection

   c) Zero Violence through community-led national action plans

   d) Increasing military spending to support women's security

2. **With reference to recent government initiatives, consider the following statements:**

   1. Swavalambini programme aims to promote women entrepreneurship through mentorship, skill development, and enterprise creation among female students.

   2. PM-YUVA 3.0 is implemented by the Ministry of Skill Development and Entrepreneurship to promote literary culture among young authors below 30 years of age.

   3. National Institute for Entrepreneurship and Small Business Development (NIESBUD) is responsible for implementing the PM-YUVA 3.0 programme.

   Which of the statements given above is/are correct?

   a) 1 only

   b) 1 and 2 only

   c) 2 and 3 only

   d) 1, 2 and 3

3. **The term "Silver Economy", as highlighted in the recent IMF report, refers to:**

   a) Economies heavily dependent on silver mining

   b) Economic opportunities related to the aging population

   c) Economies with high digital penetration among youth

   d) Industrial sectors using AI and robotics

4. **Which of the following is NOT an indicator used in calculating the Human Development Index (HDI)?**

   a) Life expectancy at birth

   b) Expected years of schooling

   c) Gross National Income (GNI) per capita (PPP)

   d) Infant mortality rate

5. **Recently sample registration survey was released consisting key demographic details. Which of the following is incorrect according to the survey?**

   a) Maternal Mortality Ration has declined to achieve the SDG target

   b) Infant Mortality Ration also registered a decline

   c) Institutional deliveries crossed 90% mark

   d) Total fertility Rate was below the replacement level fertility rate.

Mains Question

Q1. (150 words)

Cinema is both a mirror and a moulder of society. Critically examine the impact of cinema on Indian society. Also, discuss the role of regulatory mechanisms in addressing the challenges posed by cinema.

Q2. (250 words)

How is workplace automation reshaping the nature of employment in India? Discuss its implications for the workforce and suggest policy measures to ensure inclusive and equitable growth in the era of automation.

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SCIENCE & TECHNOLOGY

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7.1. SATELLITE INTERNET SERVICES

Why in the News?

Airtel and Jio signed a deal with SpaceX to bring Starlink's satellite internet to India.

About Satellite Internet

- **Definition:** A wireless internet connection provided via communication satellites orbiting Earth.
- **Difference:** Unlike fiber, cable, or DSL, it transmits data without wires.
- **Infrastructure:** Comprises three segments:
  - **Space Segment:** A constellation of satellites that transmit signals and provide coverage, placed in various orbits as needed.
  - **Ground Segment:** Includes control networks and gateways connecting satellites to ground networks.
  - **User Segment:** Communication terminals used by end users.

Various Types of Orbits and Satellite Internet services

		Geostationary Earth orbit (GEO)	Medium Earth orbit (MEO)	Low Earth orbit (LEO)
	Distance from Earth	~35,786km	~2,000km–35,786km	~160km–2,000km
	Latency	Medium latency	Low latency	Very low latency
	Deployment cost	Very high cost setup	Mid-high cost setup	Comparatively low cost setup
	Earth coverage	Very large	Large	Small
	Applications	Weather data, broadcast TV, imagery, low-speed data communication	Communications, defense industry applications, navigation systems such as GPS	Remote sensing, human space flight, data communication
	Players using this orbit	Jio Space Technology Limited (will use a combination of GEO and MEO satellite constellations)		Starlink, OneWeb, Project Kuiper, Telesat

Various prominent Satellite Internet projects in the world

- **Project Kuiper: Amazon's** initiative to launch over **3,200 LEO satellites** for affordable, high-speed global broadband.
- **Starlink:** Launched by **SpaceX.**
- **OneWeb:** Operated by **Eutelsat** (France); has the **second-largest satellite constellation** after SpaceX.
- **Qianfan Constellation: China's** planned **LEO satellite mega constellation** by **Shanghai Spacecom Satellite Technology (SSST).**

Significance of Satellite Internet services

- **Digital Inclusion:** Connects **remote and rural areas; ~40% of Indians** lack internet access.
- **Disaster Connectivity:** Useful at **emergency sites** and on **moving platforms** like planes and ships.
- **Digital Economy:** Aids **e-commerce, platforms,** and **digital infrastructure.**
- **Strategic Autonomy:** Less affected by **network cuts** or **geopolitical risks.**
- **Military Use:** E.g., **Starlink services** in the **Russia–Ukraine conflict.**

Issues about Satellite Internet Services

- **Concerns for internal security:** NIA suspects use of **satellite phones** in **Pahalgam attack** for contact with **Pakistan**.
- **Lack of effective control: Private players** and **borderless network** challenge **regulatory ecosystem.**
- **Monopolistic Tendencies: SpaceX** may lead to a **monopolistic market structure.**
- **Satellite Latency:** Higher than wired; **LEO systems** like Starlink aim for **25–50 ms.**
- **Atmospheric changes: Alumina** from **aluminum burn-up** may cause **ozone depletion** and affect **heat reflection.**

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- **Licensing and Spectrum Pricing:** Needs **VSAT license, Ku/Ka band** pricing under negotiation.
- **Other Issues:** Impact of **weather, high cost, space junk, astronomical interference.**

Way forward

- **Pilot programs:** In **remote areas** (e.g., **oil fields, desert communities**) to build confidence.
- **Comprehensive regulatory frameworks:** Clear rules for **licensing, data governance, spectrum allocation.**
- **Collaborating with private operators:** Offer **tax breaks, grants** to align with **security** and **economic goals.**
- **Hybrid models:** Use both **satellite** and **terrestrial networks.**
- **Other way forwards:** Focus on **rural integration, regional** and **diplomatic initiatives.**

7.2. HUMAN ENHANCEMENT

Why in the News?

The human enhancement industry was worth **$125 billion in 2024** and is projected to grow to **$348.5 billion by 2033** (IMARC Report).

What is Human Enhancement?

- Refers to **natural, artificial, or technological alterations** aimed at improving **cognitive and physical functions.**
- Methods include **drugs, hormones, implants, genetic engineering, dietary supplements, and cosmetic surgeries.**
  - Unlike medicine which cures illness, enhancement seeks to **go beyond normal human limits.**
  - For example, technologies offer **resistance to diseases** like **malaria, TB, and Lyme.**
- **Key Views**
  - **Transhumanists:** Support tech to **radically enhance abilities and extend life.**
  - **Bioconservatives:** Emphasize **preserving the natural human state,** fearing harm to human essence.
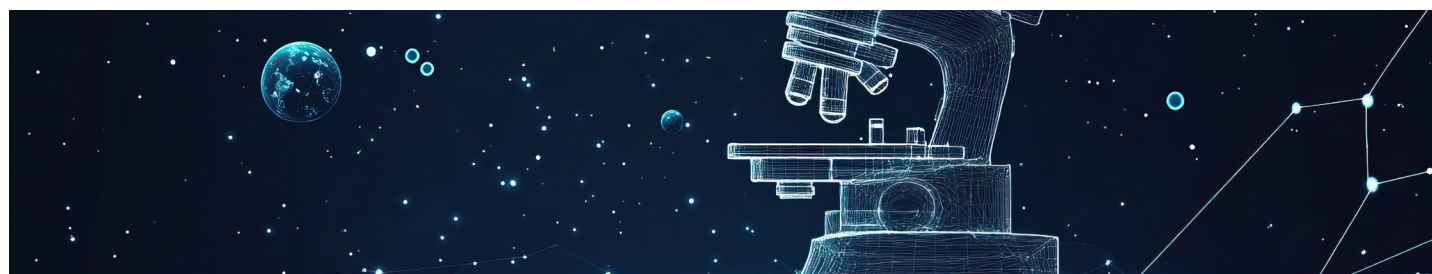
Concerns Associated with Human Enhancement

- **Equity:** Limited access may **widen social inequality.**
- **Identity:** Altering core traits may **threaten human identity.**
- **Consent: Non-consensual use** undermines individual freedom.
- **Social Pressure:** May lead to **discrimination against unenhanced individuals.**
- **Health Risks: Long-term effects** of enhancements remain uncertain.
- **Environment: Extended lifespans** may stress resources and ecosystems.
- **Genetic Diversity:** Engineering may **reduce diversity**, increasing disease risk.
- **Regulation:** Requires **strong oversight** for safety, fairness, and ethics.

Types of Human Enhancements

Phenotypic	Somatic (Non-Heritable)	Germline (Heritable)
Improves body without changing genes	Changes body cells Not heritable	Alters embryo genes Affects future generations
Examples:	**Examples:**	**Examples:**
⊙ Bionic limbs	⊙ Gene therapy for diseases	⊙ Embryo gene editing
⊙ Special glasses	⊙ Somatic cell modifications	⊙ Heritable modifications
⊙ Exoskeletons	⊙ Targeted cell treatments	⊙ Designer babies
Widely Accepted	**Mostly Acceptable**	**Major Ethical Concerns**

Conclusion

While human enhancement can extend life and boost abilities, it must be guided by **ethical regulation, equity,** and **awareness of long-term impacts** to safeguard human values.

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7.3. GREEN HYDROGEN CERTIFICATION SCHEME OF INDIA

Why in the News?

Recently, Union Minister for New and Renewable Energy launched Green Hydrogen Certification Scheme of India (GHCI).

About GHCI

- **Launched** under the **National Green Hydrogen Mission (NGHM).**
- **Objective:** Certify **Green Hydrogen (GH)** with **transparency, traceability,** and **credibility.**
- **Ministry: Ministry of New and Renewable Energy (MNRE).**
- **Eligible Pathways:** Electrolysis and biomass conversion.
- **Verification:** Annual audit by **Accredited Carbon Verification (ACV)** agency.
- **Green Certification Criteria:** Emission ≤ **2 kg CO_2 eq/kg H2** (non-biogenic).
  - Certificates are **non-transferable,** not valid for **carbon credits.**

What is Green Hydrogen (GH2)?

- Produced via **electrolysis** using **renewable energy** (e.g., solar) or **biomass gasification**
- **Process:** Splits $H_2O \rightarrow H_2 + O_2$ using green electricity
- **Applications: FCEVs** (Fuel Cell Electric Vehicles); **Industry** (Fertilizer, Refinery); **Transport** (Road, Rail), etc.

Other Types of Hydrogen

Colour							
Type	Black/Brown Hydrogen	Grey Hydrogen	Blue Hydrogen	Turquise Hydrogen	Pink Hydrogen	Yellow Hydrogen	White Hydrogen
Process	Coal Gasification	Methane Reformation	Coal Gasification & Methane Reformation with CCUS	Pyrolysis	Electrolysis	Electrolysis	Naturally occur
Source	Coal	Natural Gas	Fossil Fuel	Methane	Nuclear Energy	Solar Power	Found in underground deposits

About National Green Hydrogen Mission (NGHM), 2023

- **Objective:** Make India a **global hub** for **Green Hydrogen** production, use, and export.
- **Duration: Phase I:** 2022–23 to 2025–26; **Phase II:** 2026–27 to 2029–30.
- **Key components:**
  - **Demand Creation:** For **exports** and **domestic use.**
  - **Strategic Interventions for Green Hydrogen Transition (SIGHT) Programme:** Incentives for **electrolyser manufacturing** and GH production.
  - **Pilot Projects:** In **steel, mobility, shipping, biomass, hydrogen storage,** etc.
  - **GH Hubs:** Develop regional **Green Hydrogen Hubs.**
  - **Regulations & Standards:** Establish a **robust framework**
  - **R&D Programme.**
- **Expected Outcome:** GH production capacity will reach at least 5MMT per annum, Averting 50 MMT per annum of CO_2 emissions, etc.

Conclusion

Unlocking Green Hydrogen's potential in India needs a **multi-pronged approach**—lowering **production costs,** incentivizing **electrolyser manufacturing,** boosting **R&D,** and promoting **PPP models.**

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7.4. STRATEGIC CRYPTO RESERVE

Why in the News?

The U.S. President signed an executive order to establish a **Strategic Bitcoin Reserve (SBR)** and a **U.S. Digital Asset Stockpile** as part of a **Strategic Crypto Reserve (SCR).**

More on the News

- This move seeks to address the **crypto management gap** and position the U.S. as a **global leader in digital asset strategy.**

What is Cryptocurrency?

- A **digital or virtual currency** using **cryptography for security,** based on **decentralized blockchain technology.**
- Unlike traditional fiat currencies, not controlled by governments or central banks.
- **Key Features of Cryptocurrencies**
  - **Decentralization:** Uses a **distributed ledger,** reducing dependence on intermediaries.
  - **Limited Supply:** Many, like **Bitcoin (max 21 million),** have a **fixed supply.**
  - **Transparency: Blockchain** makes transactions **open and verifiable.**
  - **Security: Cryptographic encryption** protects against **fraud and counterfeiting.**
  - **Borderless Transactions:** Allows **fast, low-cost global transfers** without borders.

About Strategic Crypto Reserve (SCR)

- **Definition:** SCR is a **government-held crypto stockpile** included in national reserves to boost **economic resilience, financial sovereignty,** and hedge against uncertainty.
- Acts as a **digital counterpart to forex** and **gold reserves.**
- Operational framework is still evolving.
  - Similar in concept to the **Strategic Petroleum Reserve,** meant to cushion against external disruptions.

Should India Have an SCR?

Arguments in Favour	Arguments Against
Diversification: Low correlation with gold, bonds, equities—**reduces risk.**	**Volatility: High price swings** (e.g., Bitcoin's **80% drop in 2022**) pose risks to reserve stability.
Hedging Tool: Shields against **USD volatility** and **geopolitical risks** (e.g., sanctions, trade wars).	**RBI's Stance:** RBI warns of **financial instability;** prefers **Central Bank Digital Currency (CBDC)** over decentralized crypto.
Remittance Efficiency: Could cut fees from **6.4% to <1%,** saving billions.	**Regulatory Issues:** Crypto conflicts with **existing financial laws** and faces uncertain regulation.
Tech Leadership: Taps into India's **blockchain and DeFi (Decentralized Finance) innovation potential.**	**Security Threats:** Prone to **cyberattacks.**
High Returns: Cryptos offer **asymmetric gains;** e.g., **Bitcoin grew 200X,** outperforming **NVIDIA (50X)** and **Apple (10X).**	**Environmental Concerns:** Energy-intensive mining (e.g., Bitcoin)
Financial Sovereignty: Reduces dependence on **external systems** like SWIFT.	**Adoption Barriers:** Public **scepticism,** lack of **institutional trust,** and **liquidity issues.**

Way Forward

- **Start Small:** Allocate **1–2% of forex reserves ($6–12B)** for pilot deployment.
- **Regulatory Framework:** Follow **Singapore and Japan's models** for balanced regulation and innovation.
- **Tech Expertise:** Use India's talent to build **secure custody** and **blockchain infrastructure.**
- **Utility-Driven Approach:** Focus on **use cases** like **remittances and DeFi.**
- **Global Alignment:** Monitor and align with **global standards** (e.g., **US Bitcoin ETFs,**).

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7.5. LIGHT SUPERSOLID

Why in the News?

For the first time, scientists from **Italy's National Research Council** have created a **supersolid state from light.**

About Supersolid

- **Definition:** A rare state of matter that shows both **solid-like structure** and **frictionless flow.**
- **Initial Research:** First predicted in the **1960s;** demonstrated in **2017** using **ultracold Bose–Einstein Condensates (BECs).**
  - Requires **extremely low temperatures** near **absolute zero (0 K or -273.15°C)** where **quantum effects** become visible.
  - At this point, atoms have minimal energy, forming the **fifth state of matter (BECs).**
- **Current Research:** Uses a new mechanism based on **polariton systems.**
  - **Polaritons** are formed by coupling **light with quasiparticles** like **excitons** via strong electromagnetic interaction.
  - **Quasiparticles** are mathematical constructs representing **excitations** in solids (e.g., spin waves), not made of real matter.

What is the Significance of Converting Light into Supersolid?

- **Quantum Computing:** Supersolid light could help build **more stable qubits.**
- **Optical & Photonic Devices:** Enables breakthroughs in **optical devices, photonic circuits,** and **quantum mechanics research.**
- **Material Science & Energy:** Allows deeper exploration in **material science** and may lead to innovations in **energy use and understanding.**

About Light

- Light is the **fastest physical entity,** traveling at **299,792.458 km/s.**
- It exhibits **wave-particle duality**—acting as both a **localized particle** and a **spread-out wave.**
- According to **quantum mechanics,** light can behave **simultaneously as a wave and a particle.**

7.6. ANTI-RETROVIRAL THERAPY (ART) DRUGS

Why in the News?

The **Supreme Court** directed all States to respond on **systemic issues in Anti-Retroviral Therapy (ART) drug supply** for **People Living with HIV/AIDS (PLHIV).**

About Anti-Retroviral Therapy (ART) drugs

- ART treats **HIV infection** using **anti-HIV drugs,** aiming to lower **viral load** to undetectable levels—**"Undetectable = Untransmittable (U=U)".**
- Involves a **combination of 2–4 drugs,** called **Highly Active Antiretroviral Therapy (HAART).**
- ART is **not a cure,** but helps HIV patients live **long, healthy lives.**
- In India, ART is managed by **National AIDS Control Organisation (NACO)** under the **National AIDS Control Programme (NACP).**

About HIV/AIDS

- **HIV (Human Immunodeficiency Virus):** Attacks the **immune system,** specifically **CD4 (T) cells,** weakening the body's ability to fight infections.
- **AIDS (Acquired Immunodeficiency Syndrome):** The **final stage of HIV** when the immune system becomes too weak to resist **life-threatening infections.**
- With proper treatment, **not all HIV cases progress to AIDS.**
- **Transmission:** Spreads through **unprotected sex, blood-to-blood contact,** and **mother-to-child transmission.**
- **Status in India:** Over **2.5 million** people living with HIV (India HIV Estimations 2023).

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Measures Taken

- **Global Efforts**
  - **UNAIDS 95-95-95 Goal (by 2030),** aims for 95% of people with HIV to know their status, 95% of those diagnosed to receive ART, and 95% of those on ART to achieve viral suppression.
  - **The Global Fund to Fight AIDS, Tuberculosis and Malaria**
- **India**
  - **National AIDS Control Programme (NACP):** Launched in **1992**, now in **Phase V (2021–2026).**
  - **Free ART Access:** Provided at **700+ ART centres** nationwide.
  - **Legal Protection: HIV/AIDS Act, 2017** mandates **free ART** for all HIV-positive individuals.

7.7. GENE EDITING

Why in the News?

- A **US research team** developed and delivered a **personalized gene editing therapy** for an infant with a rare **genetic disease.**

More on the News

- The infant had **carbamoyl phosphate synthetase 1 (CPS-1) deficiency,** a **genetic metabolic disorder.**
  - **CPS1 deficiency** leads to toxic **ammonia buildup,** harming the **brain** and **liver**.
- Researchers used **CRISPR** to correct the **gene mutation.**

About Gene Editing

- **Gene editing** modifies **DNA sequences** by **inserting, deleting,** or **changing** bases or adding new genes.
- **Steps: Insertion, deletion,** and **modification** of the gene of interest.
- **Types of Gene Editing:**
  - **Somatic genome editing:** Alters **non-reproductive cells** (e.g., **skin, liver, kidney**) and **is not heritable.**
  - **Germline genome editing:** Alters **reproductive cells** (e.g., **germ cells, embryos**) and **can be inherited.**

Techniques used for Gene Editing			
Feature	ZFNs (Zinc Finger Nucleases)	TALENs (Transcription Activator-Like Effector Nucleases)	CRISPR-Cas9
Components	Zinc finger proteins (targeting) + FokI enzyme (cutting)	TALE proteins (targeting) + FokI enzyme (cutting)	Guiding RNA molecules + Cas9 enzyme (cutting)
Function	Zinc finger proteins bind specific DNA sequences; FokI cuts DNA	TALE proteins bind specific DNA sequences; FokI cuts DNA	RNA guides Cas9 to cut specific DNA locations
Key Feature	First of the "genome editing" nucleases	Easier to design and program than ZFNs	Faster, cheaper, more accurate, easier to use

Gene Editing Revolution
Transforming Medicine Agriculture Materials Environment

💊 Medical

HIV Treatment
ZFN immune modification for HIV resistance
`ZFN`

Cancer Therapy
Altered immune cells attack 3 cancer types
`CRISPA`

Sickle Cell
Corrects oxygen transport mutations
`CRISPR`

Drug Discovery
Speeds up development process
`CRISPR`

🌱 Agriculture

Drought Rice
Pusa DST1 variety with drought tolerance
`DST`

Vitamin A Banana
Bananas with enriched nutrition
`Gene Edit`

Hornless Cattle
Eliminates de-horning pain
`TALENs`

Flu-Resistant Chickens
Decoy' molecules prevent bird flu
`Gene Edit.`

High-Oleic Groundnut
Groundnut with enhanced oil quality varieties
`Gene Edit.`

🧱 Materials

Spider Silk Production
Modified silkworms create steel-stronger silk
`CRISPR`

Sustainable Biofuels
Engineered algae produce fuel lipids
`Genetic Eng`

Drug Delivery
Algae-derived particles for targeted medicine
`Bioeng`

🌍 Environment

Better Biofuel Production
ZFN immune modification for HIV resistance
`ZFN`

Cancer Therapy
Altered immune cells attack 3 cancer types
`CRISPA`

Sickle Cell
Corrects axygen transport mutations
`CRISPR`

Drug Discovery
Speeds up development process
`CRISPR`

Challenges Associated with Gene-Editing

- **Ethical Concerns**
  - **Embryo Research Ethics:** Using **human embryos** research involves **manipulation**, etc., seen by many as ethically or morally wrong.
  - **Informed Consent:** In **germline therapy,** the patients affected are embryos and future generations who cannot consent for themselves.
  - **Justice and Equity:** Risk that **gene editing** benefits only the **wealthy**, widening **healthcare disparities.**
- **Safety concerns**
  - **Safety Issues:** Risks include **off-target effects** and **mosaicism**. Hence, **germline editing** is not yet safe for clinical reproductive use.
  - **Regulatory Inconsistency:** Uneven **global regulations** may lead to misuse, like **designer babies.**

Conclusion

Gene editing holds promise for treating **genetic diseases,** enhancing **agriculture**, and solving **environmental issues.** But progress must balance **safety, equity,** and **consent**, especially in **germline editing.**

7.8. DEEPFAKES

Why in the News?

The US passed the **"Take It Down Act"** to tackle harmful **deepfakes** online.

What are Deepfakes?

- **About: Video, photo, or audio** manipulated using **AI,** blurring reality and fiction.
- **Technology:** Created using **deep learning,** a subset of **machine learning** and **AI.**
  - Involves **face replacement, expression manipulation, speech synthesis,** and actions not actually done.

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Technologies Involved in Deepfake

Autoencoder: An Artificial Neural Network trained to reconstruct input from a simpler representation.

Generative Adversarial Networks (GANs): Utilizes **two machine learning networks,** namely, **Generator** and **Adversary.**

Input Data → **Generator** Trained model that creates **new examples** of data exhibiting original data. → **Adversary** **Detects flaws or fakes, determining those** that do not exhibit some characteristics of the original data.

Feds the **fakes** back to the first network to **improve** the process of creating new data.

Regulation

- **India:** No specific **deepfake law,** but existing provisions offer **civil/criminal relief.**
- **Global:**
  - **EU: AI Act** for trustworthy AI.
  - **Italy: Constitution** and **Civil Code** ban unauthorized use of likeness.
  - **USA: 23 states** passed deepfake-related laws (as of Sept 2024).

Potential Applications

Entertainment: E.g., in movies for creative effects.

E-commerce: Virtual clothing trials using customer likeness.

Communication: Speech synthesis for multilingual conversations.

Concerns associated with Deepfakes

- **National Security Risk:** May **spark violence, hinder investigations,** create **false alibis.**
- **Erodes Trust in Democracy: Fake political content** misleads the public.
- **Victimising Women: 90–95%** of deepfakes involve **non-consensual pornography.**
- **Cyberbullying:** Spreads **rumours,** harms **reputation.**
- **Identity Theft:** Enables **fake IDs,** access to **secure systems.**
- **Costly Computation:** Needs **high investment** for **video detection.**

Initiatives that tackle Deepfakes in India

- **Legal Framework**
  - **Information Technology Act (IT Act), 2000: Covers AI-generated information.**
  - **IT Rules, 2021: Tackle cyber issues; provide Grievance Appellate Committees for appeals.**
- **Institutional**
  - **CERT-In: Issued deepfake advisory; runs Cyber Swachhta Kendra and leads CSIRT-Fin.**
  - **Indian Cyber Crime Coordination Centre (I4C):** Handles cyber-crimes in a coordinated way.
  - **National Cyber Crime Reporting Portal:** Offers Helpline 1930 for reporting.

Way Forward on dealing with the issues of Deepfakes

- **Enhanced Regulation:** Proactive **legal framework** focused on **real-world harms.**
- **Build Strong Institutions:** Set up **agencies** with clear **safety standards.**
- **Technological Advancements:** Use **algorithms**, **metadata**, and tools like **MIT's Detect Fakes.**
- **Stakeholders' Collaboration:** Clear **guidelines** and **penalties** by incorporating suggestions from all stakeholders.
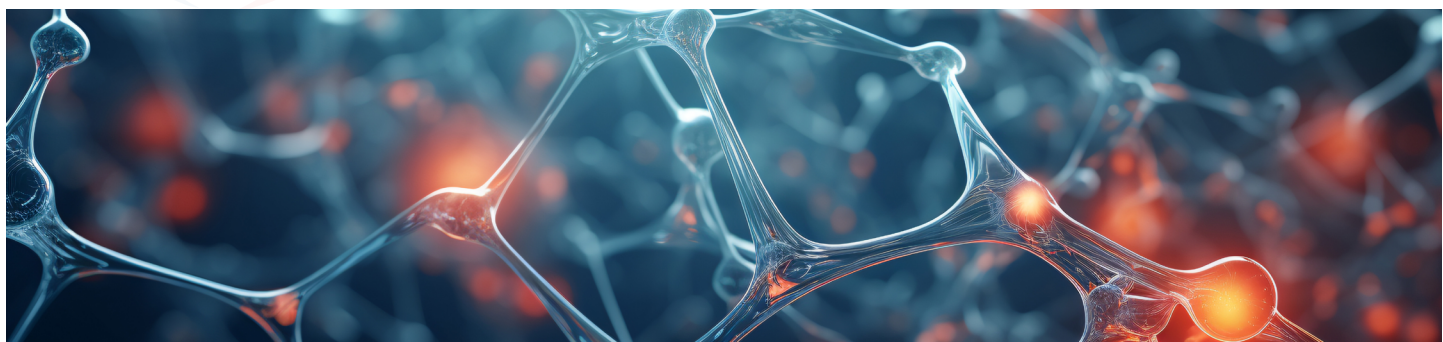
7.9. NEWS IN SHORTS

7.9.1. Obesity

Recently PM highlighted that in **2022, 1 in 8 people globally** lived with obesity; **cases in children (5–19 yrs) have quadrupled.**

➤ He called for a **10% reduction in edible oil consumption** to combat obesity.

About Obesity

➤ Defined by **WHO** as **excessive fat accumulation** posing health risks.

➤ **BMI** is the measure:
  ➡ **BMI ≥ 25:** Overweight
  ➡ **BMI ≥ 30:** Obese

➤ **Health Risks:** Includes **cardiovascular diseases, diabetes, cancers, neurological and respiratory disorders.**

Status in India (NFHS-5, 2019–21)

➤ **24% women** and **23% men** are overweight/obese.

➤ **Child (under 5)** overweight rates rose from **2.1% to 3.4% between 2015-16 and 2019-21.**

Factors Driving Obesity in India

➤ **High-Calorie, Low-Nutrient Diets:** Rising intake of **refined carbs, saturated fats,** and **processed foods.**

➤ **Sedentary Lifestyles:** Prolonged **sitting, screen time,** and **low physical activity.**

➤ **Genetically Modified Crops:** Changes in **food composition** affecting **metabolism and weight gain.**

India's Strategic Framework for Obesity Prevention

🥗 **POSHAN Abhiyaan**

🤸 **Fit India Movement**

💗 **National Programme for Prevention and Control of NCDs**

🧑 **Eat Right India**

🛢 **RUCO (Repurpose Used Cooking Oil) Initiative**

7.9.2. National Gene Bank

India to set up a **second National Gene Bank (NGB)** to conserve **10 lakh crop germplasm** for **future food and nutritional security.**
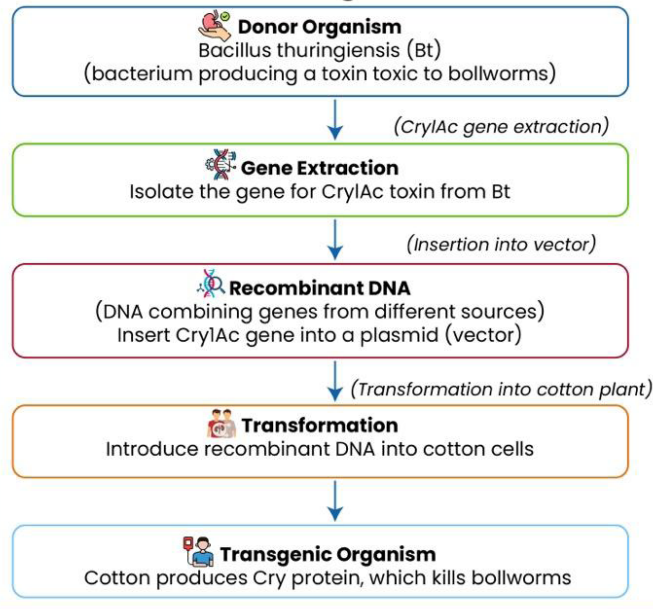
About Gene Banks

➤ Gene banks are **biorepositories** that store **genetic material** of **plants, animals, and microbes** to preserve **biodiversity** and ensure **food security.**

➤ Types:
  ➡ **Seed Banks** (e.g., Svalbard Vault, Norway)
  ➡ **Field Gene Banks** (live plant conservation)
  ➡ **Cryo-preservation Banks** (tissues, embryos)
  ➡ **Pollen and DNA Banks**

➤ Other Gene Banks in India
  ➡ **Animal Gene Bank:** ICAR-NBAGR, **Haryana**
  ➡ **Microbial Gene Bank:** ICAR-NBAIM, **Uttar Pradesh**

7.9.3. Transgenic Organism

Transgenic mice is in spotlight following the US President misstatement on 'transgender mice' funding.

Bt Cotton Transgenic Process

🧫 **Donor Organism**
Bacillus thuringiensis (Bt)
(bacterium producing a toxin toxic to bollworms)

(Cry1Ac gene extraction)

🧬 **Gene Extraction**
Isolate the gene for Cry1Ac toxin from Bt

(Insertion into vector)

🧬 **Recombinant DNA**
(DNA combining genes from different sources)
Insert Cry1Ac gene into a plasmid (vector)

(Transformation into cotton plant)

👥 **Transformation**
Introduce recombinant DNA into cotton cells

👨‍🔬 **Transgenic Organism**
Cotton produces Cry protein, which kills bollworms

About Transgenic Organisms

➤ **Concept:** Express **new traits or proteins** not native to the species; 'trans' means **from one to another,** and 'genetic' refers to **genes.**

➤ **Transgenic Mouse:** Used to study **biological processes** due to **genomic and physiological similarity** with humans.

➤ Purpose & Applications
  ➡ **Understanding Normal Physiological Processes:** E.g., Transgenic mice for studying **metabolism** and **blood cell production.**
  ➡ **Modeling Human Diseases:** E.g., Transgenic pigs for **Alzheimer's research.**

- **Developing New Treatments:** E.g., Transgenic **zebrafish** for **drug testing.**
- **Production of Therapeutic Proteins:** E.g., Transgenic **goats producing human antithrombin.**
- **Disease Resistance Crops:** E.g., **Bt Cotton** modified for **bollworm resistance.**
- **Challenges**
  - **Ethical Concerns:** Issues around **animal welfare** and **unintended consequences.**
  - **Environmental Risks:** Potential for disrupting **ecosystems.**
- **Regulation in India**
  - Governed by **'Rules, 1989'** under the **Environment (Protection) Act, 1986;** regulated by the **Genetic Engineering Appraisal Committee (GEAC).**

7.9.4. Aryabhata Satellite

- **India's first satellite,** Aryabhata, completed **50 years.**

About Aryabhata Satellite

- **India's first satellite,** built by **ISRO**
- **Launched: 1975** by **Soviet Kosmos-3M** from **Volgograd (Russia)**
- **Orbit:** Low Earth Orbit.
- **Purpose:** Experiments in **X-ray astronomy, aeronomics, solar physics**
- **Named after:** Ancient Indian **mathematician & astronomer Aryabhata**

7.9.5. ISRO's 101st Mission fails as PSLV Rocket Suffers Malfunction

PSLV-C61/EOS-09 failed during **third stage** due to **technical malfunction.**

- This was **ISRO's 63rd PSLV mission;** PSLV has failed only **twice** before—**1993** and **2017.**

About PSLV-C61/EOS-09 Mission

- **PSLV-C61** aimed to place **EOS-09** in **Sun-Synchronous Polar Orbit (SSPO).**
  - Launched from **Satish Dhawan Space Centre,** Sriharikota.
- **EOS-09:** Earth observation satellite with **C-band Synthetic Aperture Radar (SAR).**
  - **Objective:** Provide **all-weather, day-night, high-resolution remote sensing data.**

About PSLV

- **India's third-generation launch vehicle,** developed by **ISRO.**
- **Four-stage** rocket; first to use **liquid stages.**
- Earned the title "the workhorse of ISRO" for its consistent performance.
- Capable to launch satellites to **LEO, Geosynchronous,** and **Geostationary orbits.**

- Enabled key missions such as **Chandrayaan-1 (2008),** and **Mars Orbiter (2013).**

7.9.6. NASA's Astronauts Return To Earth After Being Stuck In Space For 286 Days

NASA astronauts, **Sunita Williams and Butch Wilmore,** had travelled to the **International Space Station (ISS)** on **Boeing's CST-100 Starliner.**

Opportunities from Extended Stay

- **Medical Research:** Studies effects of **long-term space exposure.**
- **Technology Testing:** Evaluates systems under **extended mission conditions.**
- **Deep-Space Prep:** Informs future **Mars and Moon missions.**

Health Challenges in Space

- **Radiation:** Raises **cancer risk.**
- **Microgravity:** Causes **muscle and bone loss;** affects **balance** post-return.
  - **Bone loss** is about 1–1.5% per month.
- **Isolation:** Affects **mental health** and **team cohesion.**

7.9.7. AI Washing

Venture capitalists are concerned about **AI washing** by startups to attract funding.

About AI Washing

- AI washing refers to **misrepresenting or exaggerating AI usage** in products, services, or strategies.
- The term is inspired by **greenwashing**—making false environmental claims.
- **E.g.** Calling **automation tools AI**

7.9.8. National Innovation Challenge For Drone Application And Research (NIDAR)

The Ministry of Electronics and Information Technology **(MeitY),** in partnership with **Drone Federation of India (DFI),** launched **NIDAR** under the **SwaYaan initiative.**

- **NIDAR aims** to engage **students and researchers** in developing **collaborative autonomous drones** for **Disaster Management** and **Precision Agriculture.**

About SwaYaan

- Approved by **MeitY in 2022.**
- It focuses on **capacity building** in **Unmanned Aircraft Systems (UAS)** including **drones and related technologies.**

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7.9.9. North India's First Nuclear Power Project

North India's **first nuclear power project** will be set up in **Gorakhpur, Haryana.**

➤ The project includes **two twin units** with **Pressurized Heavy Water Reactors (PHWRs),** totaling **2800 MW** capacity.

About PHWR

➤ Uses **Heavy Water (D$_2$O)** as **coolant and moderator,** and **natural uranium** as fuel.
  ➡ Heavy water contains **deuterium,** which **slows neutrons** and has **low neutron absorption.**
➤ **India's PHWR Development**
  ➡ Originated via **Indo-Canadian collaboration** in the 1960s.
  ➡ First **220 MW** PHWR at **Rajasthan Atomic Power Station (RAPS-1).**
  ➡ Post **Pokhran-1 (1974),** Canada withdrew; India **indigenously developed** and **standardized** PHWR technology.
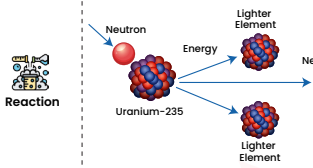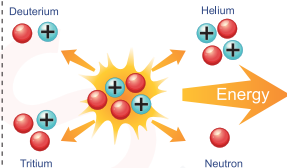
Recent Developments in Nuclear Energy in India

➤ **Nuclear Energy Mission** targets **100 GWe** by **2047;** current capacity: **8.1 GW.**
➤ New **uranium deposit** discovered in **Jaduguda Mines, Jharkhand.**
➤ **Kakrapar Units 3 & 4 (700 MWe PHWR), Gujarat** began commercial operation in **FY 2023–24.**
➤ **Country's first Prototype Fast Breeder Reactor (PFBR 500 Mwe)** achieved key milestones in 2024.
➤ **ASHVINI JV (NPCIL & NTPC)** to build **Mahi-Banswara 4×700 MWe PHWR** in Rajasthan.

7.9.10. Non-Nuclear Hydrogen Bomb

China recently detonated a **non-nuclear hydrogen bomb**

Key Features of the Non-Nuclear Hydrogen Bomb

➤ **Chemical Reaction:** Explosion via **Magnesium Hydride,** no nuclear materials.
➤ **Mechanism:** Releases **hydrogen,** ignites with air to create **self-sustaining combustion.**
➤ **Damage Scale:** Generates only about 40% of Trinitrotoluene's blast force, but causes **higher thermal damage,** melts **aluminium alloys.**
➤ **Ignition & Radiation:** Needs **low ignition energy,** emits **no radiation.**

Atomic Vs Hydrogen Bombs

7.9.11. Global Astrometric Interferometer For Astrophysics (GAIA)

European Space Agency (ESA) has **shut down** its **GAIA space observatory mission.**

About GAIA

➤ Aimed to create a **3D map of the Milky Way Galaxy.**
➤ Located at **Lagrange Point 2 (L2),** about **1.5 million km from Earth,** opposite the Sun.
  ➡ **Lagrangian Points** are positions where **gravitational forces and orbital motion** are balanced.
➤ **Objective:** Conduct **astrometry**—precise tracking of **stellar positions and movements.**

7.9.12. Mission Fram2

Mission titled **"Fram2" has been launched using** Dragon spacecraft of SpaceX.

➤ The experiment to be carried by it includes **first X-ray in space** and **mushroom cultivation in microgravity.**
➤ It is first human spaceflight to **cruise over Earth's Polar Regions.**

About Earth's polar orbit

➤ **Definition:** Satellite passes over **North & South Poles;** up to **10° deviation** allowed
➤ **Altitude:** Type of **Low Earth Orbit (200–1000 km)**
➤ **Significance:** Enables **global observation;** ideal for **weather, mapping, spy satellites**
➤ **Challenge:** Requires **more fuel** as rockets can't use **Earth's rotation** for lift-off

Satellite Orbit	Application	Key Details
Low Earth orbit (LEO)	Satellite imaging, communication, Earth observation, navigation and scientific research **E.g.,** RISAT-2B	➤ **Height:** Under 2000 km ➤ International Space Station (ISS) is placed in this orbit only.
Sun-synchro-nous orbit (SSO)	Studying land-use changes, ice melting, and weather **E.g.,** HysIS for earth observation	➤ **Height:** 600 to 800 km ➤ Particular kind of polar orbit in which satellites are in sync with Sun.
Medium Earth orbit (MEO)	Navigation satellites and telephone communications E.g., European Galileo system	➤ **Height:** 2,000 to 36,000 km ➤ Satellites in MEO do not need to follow specific paths around Earth
Geostatio-nary orbit (GEO)	Telecomm-unication, weather satellites, GPS etc. E.g., Indian National Satellite System (INSAT)	➤ **Height:** 35,786 km ➤ Fly above Earth's equator, moving from west to east, exactly matching Earth's rotation.

7.9.13. Desalination Technologies

IIT Bombay scientists developed **lotus leaf-like solar evaporators** using new **hydrophobic Graphene-based material** for **saltwater treatment.**

➤ It enables efficient **water desalination;** potential solution for **global freshwater crisis.**

Desalination Technologies and Processes

Thermal Technology

➤ **Concept:** Heats **saline water,** collects **condensed vapor** for pure water

➤ **Usage:** Mainly for **seawater**

➤ **E.g.,** Low Temperature Thermal Desalination (LTTD) plants in Lakshadweep (Kavaratti, Minicoy, Agatti)

Membrane Technology

➤ **Concept:** Filters **brackish water** using **semi-permeable membranes**

➤ **Usage:** Brackish water desalination

➤ **Method used:** Electrodialysis/Electrodialysis Reversal (ED/EDR) and Reverse Osmosis (RO)

➤ **E.g.,** Nemmeli Seawater Desalination Plant, Tamil Nadu – largest in South Asia.

7.9.14. World Health Assembly (WHA) Adopted World's First Pandemic Agreement

It is second international agreement under **Article 19** of **WHO Constitution** after **Framework Convention on Tobacco Control, 2003.**

➤ **Article 19** empowers **WHA** to adopt conventions with **two-thirds vote.**

Key Highlights of the Agreement

➤ **Pandemic Prevention & Surveillance:** In line with **International Health Regulations (IHR), 2005** to prevent and respond to disease spread.

➤ **Global Supply Chain and Logistics Network:** Ensures access to **health products** during **public health emergencies.**

➤ **Sustainable Financing:** A **Coordinating Financial Mechanism** under **IHR** to support implementation.

➤ **Pathogen Access and Benefit Sharing (PABS):**
  ➡ Drafting through **Intergovernmental Working Group (IGWG).**
  ➡ Covers rapid sharing of **pathogen data.**
  ➡ Manufacturers to give **WHO 20% real-time production** of **vaccines, therapeutics,** and **diagnostics.**

➤ **Enforcement:** Open for **signature and ratification;** enforced after **60 ratifications.**

Significance of the Agreement

➤ **Global Solidarity:** Fills **gaps** and **inequities** in **pandemic response.**

➤ **One Health Approach:** Links **human, animal,** and **environmental health.**

➤ **Whole-of-Government & Society:** Includes **Indigenous** and **local community** coordination.

7.9.15. The 1st State of the World's Animal Health Report

Released by **World Organization for Animal Health (WOAH),** Paris-based, founded in **1924.**

➤ Report offers first global overview of **animal health** in a changing world.

Key Findings

➤ **Shifting Disease Patterns:** Infectious diseases expanding geographically; **47% are zoonotic.** E.g., **Peste des Petits Ruminants** re-emerging in **Europe.**

➤ **Rising Disease Intensity:** Diseases like **African swine fever, avian influenza,** and **FMD** growing in impact.

➤ **Drivers of Spread: Climate change** and **global trade.**

➤ **Antimicrobial Resistance (AMR):** By **2050,** risks **food security** for **2 billion people,** may cause **$100 trillion loss.**

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Recommendations

- Ensure **equitable access** to **vaccines,** hygiene, and **biosecurity.**
- Invest in **Veterinary Services, coordination,** and **surveillance systems.**

7.9.16. Trachoma

India received **WHO Certificate** for eliminating **Trachoma** as a **Public Health Problem** in **2024.**

- 3rd country in **Southeast Asia** after **Nepal** and **Myanmar** to eliminate Trachoma.

About Trachoma

- **Cause:** Eye disease by **Chlamydia trachomatis;** a **Neglected Tropical Disease.**
- **Impact:** Leads to **irreversible blindness** due to **corneal damage.**
- **Spread:** Through **personal contact** or **flies.**

7.9.17. Liquid Carbon

Scientists studied **liquid carbon structure** for the first time using **in situ X-ray diffraction.**

About Liquid Carbon

- Difficult to study as it forms only at **~4,500ºC** under **high pressure,** bypassing the **liquid state** at normal pressure.
- **No container** can withstand such conditions; found in **planetary interiors.**

Holds potential in **future technologies,** including **nuclear fusion.**

7.9.18. Abel Prize

Japanese mathematician Masaki Kashiwara (78) won the **Abel Prize,** often dubbed the **"Nobel of Mathematics",** for contributions to **algebraic analysis, representation theory, D-modules, and crystal bases.**

About the Abel Prize

- Annual award for **outstanding mathematicians,** named after **Niels Henrik Abel (1802–29).**
  - Abel proved the **quintic equation** cannot be solved using radicals and contributed to **elliptic (Abelian) functions.**
- Established in **2002** by the **Norwegian Government,** administered by the **Norwegian Academy of Science and Letters.**

Note: The **International Mathematical Union,** with **UNESCO,** declared **2000 as World Mathematical Year.**

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7.10. TEST YOUR LEARNING

1. **Consider the following statements regarding cryptocurrencies:**

    1. Cryptocurrencies are centrally issued digital tokens managed by national banks.

    2. Cryptocurrencies like Bitcoin use blockchain technology and offer decentralized, borderless transactions.

    Which of the statements given above is/are correct?

    a) 1 only

    b) 2 only

    c) Both 1 and 2

    d) Neither 1 nor 2

2. **In the context of space science, what best describes Lagrangian Points?**

    a) Regions near the Sun where high-energy solar flares originate

    b) Locations in Earth's orbit with the strongest magnetic interference

    c) Points where gravity and orbital motion balance for stable positioning

    d) Zones ideal for launching interplanetary missions due to high velocity

3. **Consider the following statements regarding HIV and AIDS:**

    1. HIV can be transmitted through sharing of needles and unprotected sexual contact.

    2. Antiretroviral therapy (ART) helps in managing HIV infection and delaying its progression to AIDS.

    Which of the statements given above is/are correct?

    a) 1 only

    b) 2 only

    c) Both 1 and 2

    d) Neither 1 nor 2

4. **What is Cas9 protein that is often mentioned in news?**

    a) A molecular scissors used in targeted gene editing

    b) A biosensor used in the accurate detection of pathogens in patients

    c) A gene that makes plants pest-resistant

    d) A herbicidal substance synthesized in genetically modified crops

5. **Consider the following statements about the capabilities of PSLV:**

    1. PSLV can launch satellites only into Low Earth Orbit (LEO).

    2. It has been used in interplanetary missions like the Mars Orbiter Mission.

    Which of the above statements is/are correct?

    a) 1 Only

    b) 2 only

    c) Both 1 and 2

    d) Neither 1 nor 2

Mains Question

Q1. (150 words)

Discuss the potential of satellite internet in enhancing digital connectivity in India. What are the key concerns associated with its widespread deployment?

Q2. (250 words)

Green Hydrogen is seen as a key pillar in India's decarbonisation strategy. Examine how the National Green Hydrogen Mission and its certification framework aim to realise this potential.

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CULTURE

Table of Content

8.1. UNESCO WORLD HERITAGE SITES

Why in the News?

Six sites were added to India's UNESCO Tentative List in 2025, marking potential World Heritage Sites.
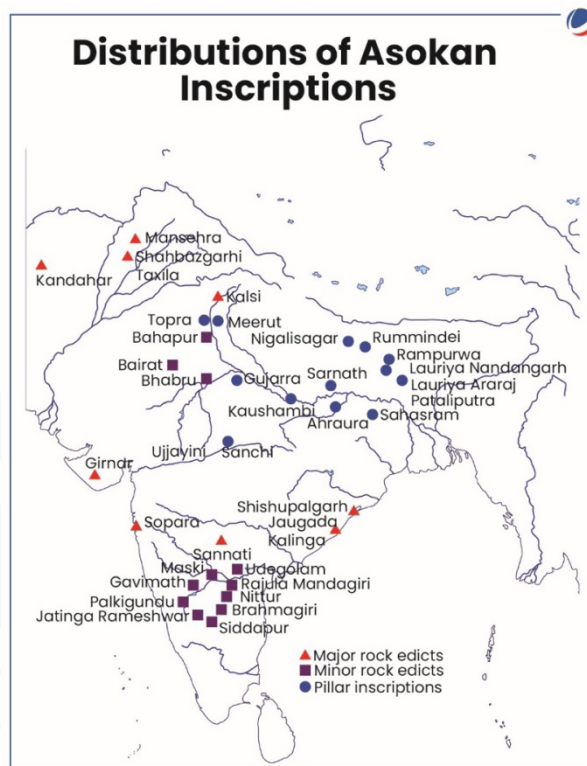
More on the News

- A Tentative List inventories property a **country deems worthy of World Heritage status.**
- **Process:** Post-inclusion, a nomination document is prepared for UNESCO World Heritage Committee review, involving the Indian National Commission for Co-operation with UNESCO (INCCU) and Archaeological Survey of India (ASI).
- India has **62 sites on the Tentative List.**
- **The 6 new sites:** Mudumal Menhirs (Telangana), Kanger Valley National Park (Chhattisgarh), Ashokan Edict Sites (multiple states), Chausath Yogini Temples (Madhya Pradesh, Odisha), Gupta Temples (multiple states), Palace-Fortresses of the Bundelas (Madhya Pradesh, Uttar Pradesh).

What are UNESCO World Heritage Sites (WHS)?

- **WHS are locations recognized** by UNESCO for their "outstanding universal value" under the World Heritage Convention.
- **Categories:** Cultural, Natural, and Mixed heritage.

Criteria for selection

- **Sites must meet at least one criterion,** such as representing human creative genius, **cultural/historical significance, architectural/ecological importance, or exceptional natural beauty/biodiversity.**
- **Other factors:** Protection, management, authenticity, and integrity.

Distributions of Asokan Inscriptions

▲ Major rock edicts
■ Minor rock edicts
● Pillar inscriptions

World Heritage Convention (Adopted in 1972 by General Conference of UNESCO)

- Effective since 1975, **it defines criteria for World Heritage List inscription.**
- **Established the World Heritage Committee,** List of World Heritage in Danger, and World Heritage Fund.
- India ratified the **Convention in 1977.**

Key Developments under World Heritage Convention

- **Budapest Declaration on World Heritage (2002):** Highlighted Strategic Objectives- "4 Cs" namely, Credibility, Conservation, Capacity-building and Communication.
  - This was modified to **"5 Cs" by adding Community to Strategic Objectives.**
- **Warsaw Recommendation on Recovery and Reconstruction of Cultural Heritage (2018):** Provide universal guidelines to recover and reconstruct WHSs following armed conflicts, disasters and natural hazards.
- **The World Heritage Partners Initiative (PACT) (1992):** To encourage public-private partnerships (PPP) and develop a framework for inclusion of various institutions and individuals in conservation of WHSs.

UNESCO World Heritage Committee (Intergovernmental Committee for Protection of the Cultural and Natural Heritage of Outstanding Universal Value)

- **Comprises members from 196 States Parties, including India, with a 6-year term (often voluntarily 4 years).**
- **Functions:** Annual meetings to manage WHS list, audits, listing threatened sites as World Heritage in Danger, or removing sites with lost value.
- **India hosted the 46th meeting in July 2024 in New Delhi, organized by ASI, where 'Moidams'** (Ahom Dynasty burial system) became India's 43rd WHS.
- **World Heritage Fund,** established in 1977, supports conservation via contributions from States Parties and voluntary donations.

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8.1.1. Ashokan Edict Sites

Period: Collection of over **30 inscriptions on rocks, pillars, boulders, and cave walls, made by Emperor Ashoka of Mauryan Empire during his reign (268-232 BCE).**

- These are the first written inscriptions in India after the decline of Harappan civilization, comprising **14 Major Rock Edicts, seven Pillar Edicts and some Minor Rock Inscriptions.**
- **Purpose:** Royal decrees, mostly in his own words, **addressing social, cultural and administrative matters to nobility, officials or general populace.**
- **Language:** Primarily Prakrit, **with Aramaic and Greek in northwestern region.**
- **Script:** Brahmi (Main Script), **Kharoshti (Gandharan Region), Greek and Aramaic.**
- **Materials:** Pillars made **from buff-colored hard sandstone from Chunar and spotted red and white sandstone from Mathura.**
- **Other Features of edicts:**
  - **Locations of his edicts (Dhamma-lipis)**, mainly inscribed to advertise his policy of Dhamma, indicate the vast territorial spread of his empire.
  - Ashoka uses his name "Devanampiya" **(Beloved of the Gods) in four places: Maski, Brahmagiri (Karnataka), Gujjara (MP), and Nettur (AP).**
  - Kanganahalli Inscription found on a stupa in **Karnataka identifies Ashoka as "Ranyo Asoka" (King Ashoka).**

Major Edict	Key Idea
I	Bans animal slaughter & festive killings; Ashoka stops hunting.
II	Medical care for all; mentions **Chola, Pandya, Keralaputra, Satyaputra,** and **Antiochus II.**
III	12 years post-coronation; promotes **generosity** & instructs officers to spread **Dhamma**.
IV	Prefers **Dhammaghosha** (peace) over **Bherighosa** (war); promotes ethical governance.
V	"Every human is my child"; appoints **Dhamma Mahamatras**; addresses **slavery**.
VI	Focus on **welfare**, communication with people.
VII	Promotes **religious tolerance and respect.**
VIII	Records **first Dhamma Yatra** to Bodh Gaya.
IX	Opposes **extravagant rituals**; favors simplicity.
X	Critiques **glory & fame;** values **Dhamma.**
XI	Declares **Dhamma as state policy;** stresses ethics, kindness to slaves.
XII	Encourages **religious harmony;** Kandahar edict highlights **Greek contacts.**
XIII	Longest edict; remorse over **Kalinga War;** diplomacy with **Greek & South Indian rulers.**
XIV	Notes **widespread dissemination** of inscriptions.

8.1.2. Gupta Temples

Gupta Empire (c. 320–550 CE) is considered the **"Golden Age" of classical India, marking a transformative era in temple architecture.**

- **Architectural Style:** Combines Nagara (North Indian) and Dravida (South Indian).
  - Transitioned from **modest flat-roofed shrines to structured complexes with garbhagrihas, mandapas, mukhmandapa, and sikharas.**
- **Patronage: Royal patronage for temples dedicated to** Vishnu, Shiva, and Shakti came from Gupta rulers like Chandragupta I, Samudragupta, and Chandragupta II.
- **Key Features of Gupta Temples**
  - Early developmental stage **influenced by both Buddhist and Hindu traditions.**
  - **Structural Permanence: Shift from perishable materials to stone** while continuing to use brick.
  - **Five key temple typologies emerged:** flat-roofed, covered ambulatory, barrel-vaulted, curvilinear śikhara, and circular/octagonal temples.

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- Pillars featured **"vase capital"** or "purnakalsa" replacing Mauryan inverted lotus or bell capitals.
- **Other Features:** Terraced platforms, **intricate decorations, and religious symbolism.**
- **Socio-economic Significance:** Temples functioned as economic hubs through **land grants (Devadana), agrarian management, and trade networks that attracted merchants along routes like** uttarāpatha, fostering urbanization and specialized labor guilds.

Gupta Temples

- **Dashavatara Temple, Deogarh (UP):** Early 6th century temple on Betwa River, dedicated to Vishnu's 10 avatars. First to feature **Shikhara** symbolizing Mt. Meru. Follows **Panchayatana** style with central shrine and 4 corners.
- **Bhitargaon Temple, Kanpur (UP):** 5th century east-facing **brick temple,** known for sacred geometric design and structures like ardhamandapa, antarala, and garbhagriha.
- **Nachna Temple, Panna (MP):** 5th–6th century **Shiva/Parvati** temple combining **Nagara & Dravida** styles.
- **Mahabodhi Temple, Bodhgaya (Bihar):** Originally by Ashoka (3rd BCE); current 5th–6th century brick temple is among the **oldest standing Buddhist brick structures** in India.

Other Notable Gupta Temples

- **Madhya Pradesh:** Vamana (Deori), Udayagiri Cave 1, Temple 17 (Sanchi), Gupta Temple (Sanchi)
- **Bihar:** Terraced temple (Lauriya-Nandangarh), Nalanda Mahavihara temples, Mundeshwari (Ramgarh) with **octagonal plan**
- **Uttar Pradesh:** Bhitari temple
- **Rajasthan:** Bhim-ki-chauri (Dara)

8.1.3. Mudumal Menhirs of Telangana

One of India's most expansive and well-preserved megalithic astronomical observatory sites, approximately **3500-4000 years old, located near the Krishna River in Telangana.**

- **Key Features**
  - **Largest megalithic burial** site in South India
  - **Depiction of Night Sky:** Only South Asian site featuring tangible representations of Ursa Major, Leo constellations, etc.
  - **Ancient Observatory:** Menhirs (upright stones) aligned with celestial events like solstices and equinoxes
  - **Cultural Significance:** Menhirs considered sacred locally as "Niluralla Thimmappa" (Thimmappa of the Standing Stones), with one menhir worshipped as Goddess Yellamma.

What are Megaliths sites?

- Large stone structures used as burial sites or **commemorative memorials (e.g., Menhirs, Dolmen) dating from Neolithic through Iron Age.**

Megalithic Culture in India (~1000 BC to ~1st century AD)

- **Full-fledged Iron Age** culture in South India.
- Associated with **burial sites and Black and Red ware (BRW) pottery.**
- Earliest megalithic burials with iron objects found at **Piklihal and Hallur at Brahmagiri in Karnataka.**
- **Types:** Polylithic (Dolmen, Cairn, Cromlekh, Cist) and **Monolithic (Menhir).**
- **Distribution:** Maharashtra, Karnataka, Tamil Nadu, Kerala, Andhra Pradesh, and Telangana, with over **1400 sites in Indian subcontinent (1116 in Peninsular India).**
- **Subsistence:** Early Iron Age communities combined agriculture, hunting, and fishing, suggesting sedentary living.
- **Pottery Types:** Black and Red Ware (BRW), Red Ware, **and Burnished Black Ware.**

Megalithic Sites
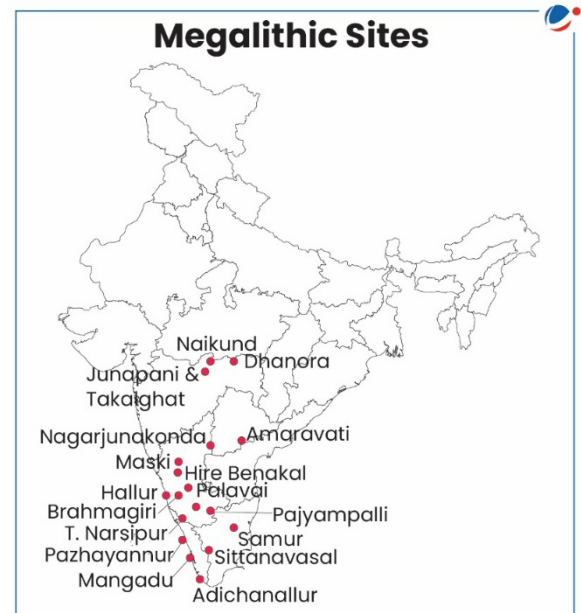
8.1.4. Chausath Yogini Temples in Madhya Pradesh and Odisha

Yogini Temples are temples featuring 64 images of Yoginis in chambers lining the circumference.

Chausath Yogini Temple, Morena

- "Yogini" refers to female yoga practitioners, and **"chausath" means 64 in Hindi.**
- They have open central courtyards with shrines dedicated to Shiva/Shakti visible from each chamber, **likely used for dance performances.**
- **Key Features**
  - Typically, circular, **built on elevated ground/pedestals, and open to sky.**
  - Exceptions in Khajuraho, **Badoh and Rikhiyan are rectangular.**
  - Circular plans symbolize time cycle, **cosmic order and energy flow.**
  - Simple stone load-bearing structures with **modest architectural carvings but intricate sculptures.**
  - Associated with **tantric and yogic practices celebrating feminine power, sensuality and fertility.**
- **Chausath Yogini Temples in India**
  - **Madhya Pradesh:** Khajuraho, Mitaoli (Morena), Dudhai, Jabalpur, Badoh, Hinglajgarh, Shahdol, Naresar
  - **Uttar Pradesh:** Lakheri, Rikhiyan
  - **Tamil Nadu:** Kanchipuram
  - **Odisha:** Hirapur, Ranipur
- **Chausath Yogini Temple, Morena (Ekattarso Mahadeva Temple):** Circular temple built by Maharaja Devapala (Kachchhapaghata dynasty) in 1323 AD using local sandstone.
  - Its circular design allegedly inspired the old Indian Parliament and represents **Sri Yantra, symbolizing cosmos and Shakti.**
- **Chausath Yogini Temple, Khajuraho:** Built in 9th century under Chandela dynasty, most primitive of all Yogini temples **with unique rectangular form, constructed entirely of local coarse granite unlike other Khajuraho sandstone temples.**
- **Chausath Yogini Temple, Badoh (Gadarmal Temple):** Features rectangular shrine with massive shikhara and small front

8.1.5. Palace-Fortresses of the Bundelas in Madhya Pradesh and Uttar Pradesh

Palace-Fortresses of the Bundelas consists of significant components in the Bundelkhand Region

Garhkundar Fort

- **Garhkundar Fort:** Located in Garhkundar, **early capital of Bundela Rajputs.**
- **Raja Mahal (Orchha):** Commissioned during Madhukar Shah's reign. **Capital shifted to Orchha in 16th century.**
- **Jahangir Mahal (Orchha):** Commissioned during Madhukar Shah's reign with major construction during **Bir Singh Deo's rule.**
- **Datia Palace:** Known as Bir Singh Deo Palace, **a five-storied structure built in 1620.**
- **Jhansi Fort: Built by Bir Singh Deo in early 17th** century.
- **Dhubela Palace:** Built by Maharaja **Chhatrasal in 17th century near Dhubela Lake.**

Key Features of Bundela Palace-Fortresses

- **Synthesis of Bundela Rajput and Mughal style:** Incorporating Mughal elements while retaining traditional Rajput features.
- **Local reinterpretation of Mughal motifs, murals:** Inspired by Mughal and symbolic **themes like ragamala and raslila.**
- **Integration of Defence and aesthetics:** Combines fortification strategies **with decorative elements.**
- **Architecture**: Mandala form of symmetrical planning with central, **open-to-sky courtyard.**

Raja Mahal Orchha

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About Bundelas

- Belonged to Gaharwar tribe of Rajputs. Raja Pancham founded Bundela **Kingdom (last quarter of 12th century A.D).**
- Made Garhkundar their capital **during the decline of Chandela power.**

8.1.6. Kanger Valley National Park (NP) (Bastar, Chhattisgarh)

- **Location:** Part of Deccan peninsula - Eastern Highlands
- **Established:** Designated as NP in 1982 under Wildlife Protection Act, 1972
- **Key Features**
  - **Major River:** Kanger River.
  - **Located on:** Banks of Kholaba River (Godavari tributary).
  - **Diverse topography:** Flatlands, slopes, plateaus, **gorges, valleys, and streams.**
  - **Vegetation:** Supports Tropical Moist Deciduous, Dry Deciduous and Semi-Evergreen Forests
    - ❖ Natural transition zone (ecotone) **between Sal and teak forests in Peninsular India.**
  - **Geomorphological features:** Karst Topography with underground limestone **caves and Speleothems.**
  - **Three exceptional caves:** Kutumbasar, Kailash and Dandak **with Stalactites and stalagmites.**
  - **Other attractions:** Tirathgarh waterfall, Kanger Dhara waterfall (formed by tectonic event)
  - **Major fauna:** Panthers, hyenas, Dholes, Eastern Hill Myna (State Bird of Chhattisgarh), giant squirrel.
    - ❖ High endemism with 5 **unique spider species found only in this park's limestone caves.**

8.2. MANUSCRIPTS OF BHAGAVAD GITA AND NATYASHASTRA

Why in the News?

UNESCO added the Bhagavad-Gita and Natyashastra Manuscript Collections to its Memory of the World Register.

About UNESCO Memory of the World (MoW) Programme, 1992.

- **Objectives:** Facilitating preservation (especially in disaster/conflict areas), universal access, and global awareness of documentary heritage's significance.
- **The International Advisory Committee (IAC):** UNESCO's main advisory body for the program comprises 14 members appointed by the Director-General.
- **Current Status:** Since 1995, the International Register has 570 inscriptions, with 74 new items.
- In addition, **4 regional registers** and **National "Memory of the World" Committees.**

About Bhagavad-Gita

- By **Sage Vyas, 700 verses in 18 chapters,** within **Bhīṣmaparva** (adhyāya 23-40) of **Mahabharata.**
- It is a **central text** synthesizing **Vedic, Buddhist, Jain and Cārvāka** thought.
- It's a dialogue between **Krisna and Arjuna** before war, urging selfless action (niskama karma) and free Arjuna of dejection (viṣāda).
- The Gita proposes Karma, Jnana, and Bhakti as spiritual paths.
- Contains the idea of Bhakti, inspiring Shankaradeva's Vaishnavism in Assam.

About Natyashastra (Science of Dramaturgy)

- By **Bharatamuni of 2nd century B.C.**
- **Epitome of Nāṭyaveda** (performing art in 36,000 verses, Gāndharvaveda).
- Natyotpatti, story describes its creation by extracting text (Rigveda), music (Samaveda), performance (Yajurveda), and emotions (Atharvaveda), making it "Fifth Veda.
- It **comprehensivively** defines **nāṭya, abhinaya, rasa, bhāva, saṅgīta,** etc.
- To create Rasa through detailed instructions for stage personnel.
- **First text** available on **classification of India instruments.**

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**Other Important Indian Entries in UNESCO Memory of the World Register:**

- 2023: 1st Meeting of Non-Aligned Movement Archives and Abhinavagupta's work (940-1015 CE)
- 2017: Maitreyayvarakarana & Gilgit Manuscript.
- 2013: Shāntinātha Charitra.
- 2011: Laghukālacakratantrarājatikā (Vimalaprabhā); Tarikh-E-Khandan-E-Timuriyah.
- 2007: Rigveda.
- 2005: Saiva Manuscript in Pondicherry.
- 2003: Archives of the Dutch East India Company.
- 1997: The I.A.S. Tamil Medical Manuscript Collection.

8.3. AGRICULTURE IN INDUS VALLEY CIVILIZATION

Why in the News: Revised age of Mehrgarh, South Asia's oldest Neolithic farming settlement in Pakistan, from 8000 BCE to 5200 BCE.

More on the News

IVC's Major Agricultural Sites

- Previously used burnt wood.
- Now carbon from enamel, more accurate.
- Start of agriculture timeline pushed forward in IVC.
- **Agriculture in IVC:** Hunter-gatherer's seasonal movement transitioned to settled agriculture with animal domestication. Excavations reveal evidence of this through granaries, pottery, figurines, and artifacts.
- **Crops Cultivated:**
  - **Wheat (Harappa, Mohenjo-Daro) and barley (Shortugai):** Rabi crops
  - **Mustard, sesamum, cotton, dates, and leguminous plants:** kharif crops
  - Rice evidence limited to Gujarat (Lothal, Rangpur)
  - **Pulses** like Green, black and horse gram and peas grown
  - Brassicas (Chanhu-daro, Surkotada) were used for oil, feed or medicine.
  - IVC world's first cotton (**Sindhu and Sindon**) producer (Mohenjo-Daro finds cloth).
  - **Fruits** like Jujube (Mehrgarh), dates, Walnuts and Peepal
- **Agricultural Techniques and Tools:**
  - **Plough:** Harappans learned plough technology from **Sumerians** (**Wooden plough**, terracotta model)
  - **Wheeled bullock carts** (bronze models at Harappa, Chanhu-daro; cart-ruts at Harappa) transported goods. Animal power and wheel technology.
  - Excavations at Kalibangan revealed **furrowed field with grid pattern, mixed cropping**
  - **Saddle-Quern:** For grinding grains
  - **Crop Protection** by Terracotta sling balls (Harappan)
  - **Land and Irrigation Practices:** Fields were near rivers, using seasonal flooding for irrigation. Rabi crops were post-flood, kharif with flood onset. Advanced irrigation (gabarbands, canals, wells) enabled year-round farming.
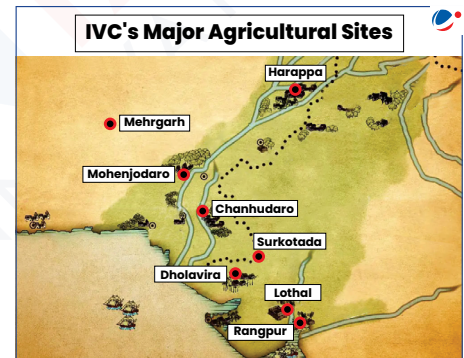
Conclusion: IVC thrived for centuries because of its strong agricultural foundation. Their farming skills supported advanced cities, beautiful art, and wide-reaching trade networks.

Sushruta and Charaka

Why in the News

- Vice-President unveiled Sushruta, Charaka statues, emphasizing their legacy.

About Sushruta:

- Flourished around **600 BCE in ancient Kashi.**
- Disciple of **Divodasa, Gurukul of Dhanwantri.**

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Significant Contributions

- **Author of Sushruta Samhita:** Divided into **pūrvārdha** and **uttaratantra**; part of **Ayurvedic Great Trilogy.**
- **Known as "The Father of Surgery":** Described **eight surgical procedures** in detail.
- **First to study human anatomy** using cadavers.
- **"Father of Plastic Surgery":** Innovated early reconstructive techniques.
- **Medical Ethics:** Framed original code at Benares University.

About Charaka

- Lived **2nd BCE–2nd CE in North West India.**
- **Kushan royal physician, "father of Indian medicine."**

Significant Contributions

- **Author of Charaka Samhita**
  - Based on Agnivesha Tantra
  - Divided into eight sthanas
  - Foundational Ayurvedic text detailing medicinal plants and therapies.
- **Impact on modern medicine**
  - Introduced Tridosha theory
  - Discussed Ayurvedic medicines still in use
  - Emphasized yog for physical and spiritual well-being.

8.4. VAIKOM SATYAGRAHA

- **Why in the News:** This year marks the centenary of the official withdrawal **of Vaikom satyagraha on November 30, 1925.**
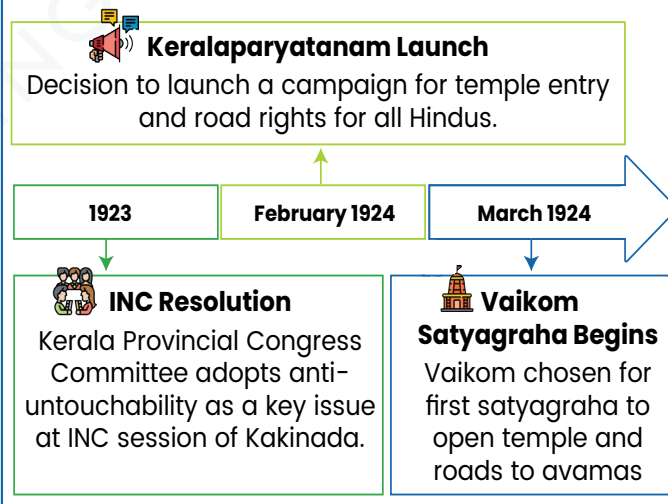
About Vaikom Satyagrah

- It was **non-violent civil rights movement** in Travancore, Kerala **against Hindu caste discrimination,** especially untouchablility.
- Protested prohibition on **avarnas from using public roads** surrounding Shiva temple at Vaikom.
- **The Satyagraha:** Three volunteers daily on road, in khadi. **Govinda Panikkar, a Nair, Bahuleyan, an Ezhava and Kunjappu, a Pulaya.**
  - Used peaceful protest methods: blocking roads, quiet demonstrations, and holding gatherings.
  - Satyagraha Ashram housed volunteers of all castes, gaining national support.
- Withdrawn after talks between Gandhi and W.H. Pitt, then police commissioner of Travancore.

Background of Vaikom Satyagraha

Keralaparyatanam Launch
Decision to launch a campaign for temple entry and road rights for all Hindus.

1923	February 1924	March 1924

INC Resolution
Kerala Provincial Congress Committee adopts anti-untouchability as a key issue at INC session of Kakinada.

Vaikom Satyagraha Begins
Vaikom chosen for first satyagraha to open temple and roads to avamas

Key Leadership:

- Issue 1st rose **by T K Madhavan (Ezhava leader)** in editorial in his paper, **Deshabhimani, 1917.**
  - This led to formation of **Anti-Untouchability Committee (AUC)** in 1924, along with **KP Kesava Menon and K Kelappan (Kerala Gandhi).**
  - These three, **pioneers** of this movement.
- George Joseph and E. V. Ramasamy Naicker **(Periyar or Vaikom Veerar)** lead the satyagraha.
- **Gandhi's** 1925 visit to Vaikom and debated Nambudiri priest, emphasizing the fight against untouchability as critical as Swaraj.
- **Women participants:** Nagammai (wife of Periyar), S.R. Kannamma and Bhagyam Stanumalaya Perumal, Kayyalakkal Narayani (wife of T.K.Madhavan)

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- **Supporters:** C. Rajagopalchari, Sree Narayana Guru, Chatampi Swamikal etc

Challenges faced by Satyagrahis

- **Orthodox Resistance:** Upper-caste Hindus and temple authorities resisted,
- **Funding and Morale:** Frequent **arrests and fund shortages.**
- **Temporary rift** between Gandhi and Narayana Guru over Satyagraha's methods
- **Flood:** Satyagrahis protest in waist-deep water.

Significance of Vaikom satyagraha

- **Partial Success:** Three roads **opened to all,** 4th only for Brahmins
- **Enacted Temple Entry Act, 1936 allowing** access to all in temples
- Nationally Significant, **Ambedkar** hailed it as crucial for untouchables, raising awareness.
- It fostered **Communal Harmony** and demonstrated people's solidarity.
- **Gandhian Principles:** Proved **Satyagraha's effectiveness as non-violent tool** for social reform.

8.5. PERSONALITY IN FOCUS: SIR CHETTUR SANKARAN NAIR (1857-1934)

Introduction: PM hailed Sir Nair, lawyer/judge/statesman, for his role in India's freedom struggle. He fought legal battle against the British, especially Michael O'Dwyer, for 1919 Jallianwala Bagh massacre.

Background and Life

- **Birth:** Palakkad, Kerala, 1857
- **Education:** Studied Arts in Presidency College, Madras, 1877 and Law in Madras Law College, 1879.
- **Career**
  - Youngest **President of the Indian National Congress** (Amraoti, 1897)
  - **Member of the Madras Legislative Council**
  - **Advocate-General** to the Government
  - **Permanent Judge** at Madras High Court
  - **Viceroy's Executive Council** member (1915), holding Education portfolio
  - **Councillor to the Secretary of State for India** in London (1920–21).
  - **Indian Council of State** member (from 1925).
  - **President of Indian Central Committee for Simon Commission cooperation (1928).**
- **Accolades:**
  - Awarded the title **'Commander of the Indian Empire'** by the King - Emperor in **1904.**
  - Received **knighthood** in **1912.**
- **Literary Contributions:**
  - **Minutes of Dissent** in the **Despatches on Indian Constitutional Reforms** (1919)
  - **Gandhi and Anarchy** (1922)
  - Founded **Madras Review** and the **Madras Law Journal**
- **Death: 1934** in **Madras.**

Key Contributions

- **Landmark Judgment:** Budasna V. Fatima (1914), he upheld **conversion to Hinduism** and ruled such converts not outcasts.
- **Justice for Jallianwala Bagh:** Clear stand against Michael O'Dwyer's role in 1919 massacre.
- **Social Reforms:** Condemned inequality as racial inferiority and **national abasement.**
- **National Vision:** Earlier support for **Dominion Status** but later **complete independence**
- **Liberal and Moderate Politics:** Criticized Gandhi Movements; supported peaceful constitutional reform and States linguistic reorganization
- **Stood for Women's Rights:** Participated in 1920 Indian deputation to **Southborough Committee** with Herabai Tata and Mithan Lam for **female suffrage** in India.

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Key Values

- **Courage:** Resigned from Viceroy's Council over Jallianwala Bagh.
- **Righteousness:** Refused apology in defamation case.
- **Patriotism:** Nationalist who admired British democratic institutions yet exposed its harmful economic effects.
- **Commitment:** Resigned politics after Dominion Status announcement by Irwin.
- **Visionary:** Supported inter-caste/religious marriages early.

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8.6. NEWS IN SHORTS

8.6.1. Vikramshila University

After Rajgir, work is on to revive another ancient centre of learning in Bihar i.e. Vikramshila.

About Vikramshila University

- **Founded:** By Pala king Dharmapala (8th-9th Century AD), thrived alongside Nalanda.
  - ➡ He also founded Somapur Mahavihara in modern Bangladesh.
- **Known for Vajrayana/Tantrayana Buddhism,** occult studies, and theological disciplines.
- Scholars from Tibet studied here, with manuscripts written in **Sanskrit and translated into Tibetan.**
- Atisha Dipankar (980-1054), **a Buddhist in the Pala kingdom,** was an adhyaksha (head of the university).
- **Destroyed in late 12th century by Bakhtiyar Khalji,** a military commander of Qutubuddin Aibak.

8.6.2. Geet Gawai

The Indian Prime Minister was welcomed with a traditional Bihari cultural performance **Geet Gawai.**

About Geet Gawai

- **A pre-wedding ceremony** combining rituals, prayer, songs, music and dance.
- Inscribed on UNESCO's Representative List of the Intangible Cultural Heritage of Humanity (2016)
- Performed mainly by **Bhojpuri-speaking communities of Indian descent in Mauritius.**
  - ➡ **Participants: Female family members and neighbors.**
- **Main Musical Instrument:** Dholak (a two-headed drum).
- Now extends to **public performances with men also participating.**

8.6.3. India's Traditional New Year Festivals

Traditional New Year festivals celebrated across India.

- **Chaitra:** Marks the beginning of the Hindu New Year, **based on the lunar calendar.**
- **Sukladi:** The Vikram Samvat calendar used in North India also begins from Chaitra Sukladi.
- **Ugadi:** Celebrated in Andhra Pradesh, **Telangana, and Karnataka as the Telugu New Year.**
  - ➡ **The word "Yugadi" comes from "Yug" (age) and "Adi" (beginning).**

- **Gudi Padwa:** Primarily observed in Maharashtra, Goa etc.
- **Cheti Chand:** Marks the beginning of the New Year for Sindhi **community, It Iso known as Jhulelal Jayanti, is a religious festival celebrated by Sindhi.**
- **Sajibu Cheiraoba:** Sajibu Nongma Panba Cheiraoba marks the Meitei New Year, celebrated in Manipur.
  - ➡ **Falling on the first lunar day of march/ April.**

8.6.4. Banarsi Shehnai And Tabla

- Geographical Indication (GI) certificates awarded

Banarasi Shehnai

- Indian **wind instrument**
- Associated with **temple music**
- Considered auspicious to play Shehnai in **weddings.**
- **Global recognition** through **Ustad Bismillah Khan.**

Banarasi Tabla

- Benares tabla gharana eveloped by **Pandit Ram Sahai.**
- One of the six principal **tabla gharanas in Indian classical music.**
- Personality associated: **Padma Vibhushan Pandit Kishan Maharaj**

8.6.5.Kannadippaya Tribal Craft

First tribal handicraft from Kerala to receive GI tag

- Also called **"mirror mat"** due to its unique reflective pattern.
- Made from soft inner layers of **reed bamboo**
- **Uniqueness:** providing warmth during winter and cooling effect in summer.

8.6.6.Harvest Festivals

They mark **1st day of New Year** and **thanksgiving for abundant harvest** at the coming of **spring.**

Traditional harvest festivals in India

- **Baisakhi (Punjab):** Marks beginning of harvesting of Rabi crops. **Bhangra and Gidda** dances performed.
- **Vishu (Kerala and Tamil Nadu):** Marks traditional **spring equinox** when day and night are equal.
- **Poila Boishakh (West Bengal): Traders** begin **new financial year** by opening fresh account books, called **Haal Khaata.**
- **Others:** Bohag or Rongali Bihu (Assam), Puthandu (Tamil Nadu), Makar Sakranti (Maharashtra, Karnataka,

Andhra Pradesh, Telangana), Lohri (Punjab, Haryana, Himachal Pradesh, J&K), Pongal (Tamil Nadu)

8.6.7. Karni Mata Temple

Prime Minister visits Karni Mata temple in Rajasthan.

About Karni Mata Temple

- Located in **Bikaner district, Rajasthan.**
- Dedicated to **Karni Mata, incarnation of Goddess Durga.**
- Built by **Rao Jaitasi** after **victory of Bikaner King over the Mughal King Kumaran.**
- Belongs to **Shakta Sampradaya.**
- Unique for **thousands of** freely roaming rats, yet plague – free.

8.6.8. Padma Awards

Presented by President of India

- Among the **highest civilian honours**
- **Announced annually** on the eve of **Republic Day.**
- **Three categories:**
  - **Padma Vibhushan:** Exceptional and distinguished service
  - **Padma Bhushan:** Distinguished service of a higher order
  - **Padma Shri:** Distinguished service
- Recognizes achievements in all fields where public services are involved.
- **History and Suspension:** Instituted in 1954; not awarded during **1978–79** and **1993–97.**
- **Selection Process:**
  - **Padma Awards Committee,** constituted by PM every year gives recommendations.
  - Public nominations allowed, including self-nominations.
- **Not a title:** Cannot be used as a **prefix or suffix** to the awardee's name.

8.6.9. Gallantry Awards

President conferred **Kirti Chakras and Shaurya Chakras** to the personnel of the Armed Forces, CAPF and State/UT Police.

About Gallantry Awards

- **Wartime: Param Vir, Maha Vir, and Vir Chakra** (est. **1950**).
- **Peacetime: Ashoka, Kirti, Shaurya Chakra**
- **Announced twice yearly**
- Can be awarded **posthumously.**

8.6.10. Jnanpith Award

- **Vinod Kumar Shukla is selected for 59th Jnanpith** Award, the highest literary award in India.

About Jnanpith Award

- Presented annually by Bharatiya Jnanpith since **1965 for outstanding contributions to Indian literature.**
- Established in 1944, is one of the **premier literary organizations.**
- Considered the highest literary award in India, given for the best creative literary output in any of the **22 languages recognized by the Constitution of India.**
- From 2013, works **in English language were also considered.**
- Eligibility restricted **to Indian citizens.**

8.6.11. Major Dhyan Chand Khel Ratna Award

Satwiksairaj Rankireddy & Chirag Shetty received the Major Dhyan Chand Khel Ratna award for achieving World No. 1 ranking and winning Asian Games gold in 2023.

About Award

- **Nodal Ministry:** Ministry of Youth Affairs and Sports
- India's **highest sporting honour.**
- Established in 1991–92, renamed in 2021
- **Recognizes top international performances** over 4 years.
- Includes ₹**25 lakh, Medal** and **certificate.**

8.6.12. Pulitzer Prize

The New York Times won four Pulitzer Prizes and The New Yorker three for journalism in 2024.

About Pulitzer Prize

- Prestigious annual awards by **Columbia University** since 1917.
- Founded by journalist **Joseph Pulitzer.**
- Honors excellence in **journalism, letters,** and **music.**

8.6.13. Metre Convention

The Department of Consumer Affairs celebrated **World Metrology Day 2025,** marking **150th** year **of the Metre Convention.**

About Metre Convention

- **Genesis:** Signed in 1875, amended in 1921.
- **Purpose:** Ensuring global metric system unification.
- **Established:** BIPM for universal measurements.

Promotes: International metrology collaboration among its 64 Members, 37 Associate States (**India included**).

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8.7. TEST YOUR LEARNING

1. **With reference to megalithic sites in India, consider the following statements:**

   1. Mudumal megalithic site is known for astronomical alignments and depictions of constellations like Ursa Major.

   2. The earliest megalithic burials with iron objects were found in Telangana.

   3. Black and Red Ware (BRW) pottery is commonly associated with megalithic cultures in India.

   4. Megalithic structures like menhirs were exclusively used for burial purposes.

   Which of the statements given above are correct?

   a) 1 and 3 only

   b) 2 and 4 only

   c) 1, 2 and 3 only

   d) 1, 3 and 4 only

2. **With reference to the Jnanpith Award, consider the following statements:**

   1. It was first presented in 1965 though the Bharatiya Jnanpith organization was established in 1944.

   2. The award recognizes outstanding contributions to literature only in languages listed in the Eighth Schedule of the Constitution of India.

   3. Work in English language became eligible for consideration from 2013.

   4. Only Indian citizens are eligible to receive this award.

   Which of the statements given above are correct?

   a) 1, 2 and 4 only

   b) 1, 3 and 4 only

   c) 2 and 3 only

   d) 1, 2, 3 and 4

3. **With reference to Sushruta, consider the following statements:**

   1. He is considered the Father of Plastic Surgery.

   2. He was the royal physician during the Mauryan dynasty.

   3. His text SUSHRUTA SAMHITA is part of the Ayurvedic Great Trilogy.

   4. He studied human anatomy by observing live surgeries.

   Which of the above are correct?

   a) 1 and 2 only

   b) 1 and 3 only

   c) 1, 3 and 4 only

   d) 2, 3 and 4 only

4. **The term "Tridosha" in Ayurvedic philosophy is most closely associated with:**

   1. Sushruta Samhita

   2. Ashtanga Hridaya

   3. Charaka Samhita

   4. Bhava Prakasha

5. **Which of the following crops is exclusively associated with sites like Lothal and Rangpur in the Indus Valley Civilization?**

   a) Barley

   d) Wheat

   c) Rice

   d) Mustard

Mains Question

Q1. (150 words)

"Ancient Indian scientific thought contributed deeply to global knowledge systems." Evaluate in context of Sushruta and Charaka.

Q2. (250 words)

Ashokan Edicts represent one of the earliest and most significant epigraphical sources in Indian history. Critically examine their geographical distribution, linguistic diversity, and content to assess their importance as primary sources for understanding the political ideology, administrative vision, and cultural ethos of the Mauryan Empire.

ETHICS

ETHICS

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9.1. PERSUASION

Introduction

➤ With the rise of **social media, AI,** and **smartphone penetration,** societies face a **disinformation crisis.** Persuasion offers a proactive tool to influence **beliefs, attitudes, and behavior** to counter false narratives.

About Persuasion

➤ It is a **deliberate effort** to influence others using **argument, emotion,** or **trust,** distinct from **coercion or manipulation.**

➤ **Features: Intentional,** often **explicit and verbal,** relying on **perceived similarity** and shared interests.

Modes of Persuasion

Ethos (Appeal to credibility)

E.g., Researchers citing their qualifications and previous work before presenting new findings.

Pathos (Appeal to emotions)

E.g., Researchers citing their qualifications and previous work before presenting new findings.

Logos (Appeal to logic)

E.g., Researchers citing their qualifications and previous work before presenting new findings.

➤ **Factors Affecting Persuasion**
  ➥ **Source:** Credibility and authority of speaker. E.g., Dr. Randeep Guleria on COVID-19 communication
  ➥ **Message Content:** Clarity, relevance, and simplicity. E.g., Swachh Bharat Abhiyan's messaging on health and dignity
  ➥ **Audience Characteristics:** Beliefs, background, demographics. E.g., Financial literacy tailored to rural vs. urban groups
  ➥ **Reciprocity:** Providing value before asking. E.g., 'Give It Up' LPG campaign followed by PM Ujjwala Yojana
  ➥ **Social Proof:** Highlighting adoption by others. E.g., Aadarsh Gram Yojana model villages
  ➥ **Timing and Context:** Delivery environment and current issues. E.g., 'Vocal for Local' during pandemic-led economic concerns

Risk of Disinformation

Conflict
Potential for violence and unrest due to false information.

Political Manipulation
Use of disinformation to influence political outcomes.

Environmental Non-Action
Inaction on environmental issues fueled by misinformation.

Economic Mismanagement
Poor economic decisions based on false data.

Social Harmony
Erosion of trust and community cohesion due to lies.

How Persuasion Can Work Against Disinformation?

➤ **Building Trust and Reducing Resistance:** Uses **credible messengers,** shared values, and **empathy** to make audiences more **receptive to correction.**

➤ **Use of Narratives to Counter Narratives:** Relies on **stories, visuals, and emotional appeals** instead of just data.

➤ **Promotes Critical Thinking Without Confrontation:** Encourages **reflection through dialogue,** not debate, using **Socratic questioning** and alternative explanations.
  ➥ E.g. Deradicalization through open-ended questioning of extremist beliefs.

➤ **Sustained Engagement over Time:** Long-term **respectful messaging** builds **trust,** eroding false beliefs more effectively than one-time fact-checks.

9.2. HAPPINESS

Introduction

"**Happiness is a choice that requires effort at times**" **– Aeschylus.** The quote gains relevance as **India ranks 118th out of 147** in the **World Happiness Report 2025,** behind neighbours like **Nepal and Pakistan.**

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Happiness

> Defined as the **subjective enjoyment of life,** reflecting how favourably an individual views their life.

The Pursuit of Happiness: A Philosophical Quest through Eastern and Western Wisdom

Indian Perspectives	Western Perspective
Cārvāka Ethics: Kāma is the highest aim; artha is the means.	**Epicureanism (Moderate Hedonism):** Seeks **freedom from pain and anxiety** through **moderate pleasures.**
Bhagavad Gita (Nishkama Karma): Perform duty without expecting results.	**Kant (Deontology): Moral duty** is the path to true happiness.
Buddhism (Middle Path): Happiness lies in **living mindfully,** not in arrival.	**John Locke: Pursuit of happiness** drives **moral and civil progress.**
Bhakti Tradition: Happiness through **devotion,** offerings, and **divine love.**	**Utilitarianism:** Maximize **pleasure for the greatest number.** J.S. Mill called for **qualitative distinction** between **higher (intellectual, moral) pleasures** and **lower (sensory, bodily) pleasures,** unlike Bentham.
Guru Nanak (Santokh): Contentment is eternal happiness.	**Stoicism:** Focus only on what's **within your control.**
Transcendental Perspective: True bliss (Ananda) arises from transcending worldly ties.	**Christian Theology (St. Augustine):** True happiness is **union with God** via **faith and grace.**

Obstacles to Happiness in Contemporary Life

> **External Factors**
>> **Negative Social Comparisons:** Unrealistic standards (e.g. body, beauty) reduce **self-worth.**
>> **Lack of Social Support: 19% of young adults** report having **no support** (2023).
>> **Financial Stress:** Poverty acts as a cognitive tax.
>> **Harmful Substances: Drug abuse** impacts **mental health.**

> **Internal Factors**
>> **Self-Doubt & Low Self-Esteem:** Leads to **anxiety, depression, lack of gratitude.**
>> **Not Living in the Present: Pessimism, overthinking,** and **unresolved trauma.**
>> **Excessive Screen Time:** Reducing **free play,** causing an **"Anxious Generation"** (Economic Survey 2023–24).

How Civil Servants Can Promote Happiness Among Citizens

> **People-Centric Governance:** Efficient delivery via **Gram Panchayat Development Plans.**
> **Transparency & Accountability:** Through **e-governance, RTI, and social audits.**
> **Mental & Emotional Well-Being:** Support via **Tele-MANAS,** flexible work hours.
> **Social Harmony:** Encourage **interfaith dialogues** to reduce tensions.
> **Policy Integration:** Include happiness in governance—e.g., **Gross National Happiness (Bhutan), Happiness Minister.**

Conclusion

> Though happiness may seem elusive, it can be nurtured through **intentional practices** aligned with **hedonic and eudaimonic well-being,** both at **personal and policy levels.**

9.3. PHILANTHROPY: A MORAL IMPERATIVE FOR SOCIAL GOOD

Introduction

Service to others is the rent you pay for your room here on earth. – Muhammad Ali. This quote is reflected in India's growing **philanthropic landscape,** with rising contributions from **corporate social responsibility (CSR), ultra-high-**

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net-worth individuals (UHNIs), and middle-class donors (India Philanthropy Report 2025). Philanthropy has spanned cultures—from ancient to modern times.

Philanthropy in Modern Context

- Literally means 'love of mankind'; involves voluntary donations to institutions for social welfare, education, science, etc.
- Unlike **charity's short-term relief,** philanthropy focuses on **long-term, large-scale social transformation.**

Philosophical Basis of Philanthropy

- **Indian Perspective**
  - **Chanakya's Arthashastra:** 1/6th of revenue for **public welfare**
  - **Vivekananda:** Serving the poor is **serving God**
  - **Gandhiji's Trusteeship:** Wealth should be **used for society's good**
  - **Religious Traditions: Hinduism** (Daana and Dakshina), **Islam** (Zakaat and Sadaqaat), **Buddhism** (Bhiksha) and **Sikhism** (Langar)
- **Western Perspective**
  - **Consequentialist View (Virtue ethics):** Philanthropy reflects **generosity and compassion**
  - **Kantian Ethics (Moral Obligation): Moral duty** to benefit others
  - **Rawl's Theory (Justice as fairness): Justice** for the most disadvantaged
  - **Utilitarianism:** Maximize **overall well-being**
  - **Libertarianism:** Philanthropy preferred over **state welfare**

Significance of Philanthropy as a Development Tool

- **Bridging Funding Gaps:** Supplements **government budgets** in critical sectors.
- **Addressing Development Gaps:** Tackles **poverty, education,** and **healthcare.** E.g., Azim Premji Foundation's rural education work.
- **Catalyzing Innovation:** Drives **tech-based solutions** in development. E.g., Gates Foundation's sanitation innovations align with Swachh Bharat.

Ethical Challenges in Philanthropy

- **Elite Capture:** Large donors may **influence policy** and use philanthropy for **tax evasion or laundering.**
- **Corporate Dilemma:** Seen as diverting from **profit goals** and shareholder interests.
- **Welfare Replacement:** Risks **shifting responsibility** from government to private actors.
- **Regional and Geographical Inequality: Urban-centric donations** (Maharashtra & Karnataka get maximum CSR funds, whereas Bihar & Odisha lag far behind)
- **Cultural/Religious Bias:** Donations may align with **personal beliefs,** ignoring broader needs.
- **Transparency Deficit:** Few NGOs file returns; **FCRA restrictions** spark debate on **sovereignty vs. development.**

Conclusion

- Philanthropy must be rooted in **ethics, equity, and justice,** reaching areas where **state and markets fail.**
- The future lies in **conviction-led giving, broad-based participation,** and using philanthropy to drive **systemic reform and effective altruism,** not just **temporary relief.**

9.4. ETHICS OF CAPITAL PUNISHMENT

Introduction

Historically penalty/capital punishment has been used to deter heinous crimes. Since the mid-20th century ~170 countries have abolished or stopped it. **Amnesty International's 2024 report** notes a **32% rise in executions,** especially in **China, Iran, Saudi Arabia, and Singapore etc.,** making capital punishment a highly contentious issue in modern criminal justice and ethics.

Capital Punishment and the Philosophy behind it?

- **Definition:** Legal **execution of an offender** after conviction
- **Philosophy:** Based on **retributive justice**—punishment must match the **severity of the crime.**

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Evolution of death penalty in India

- **Ancient India**
  - Death penalty existed in various forms under Hindu Laws, guided by texts like **Manusmriti** and **Arthashastra**.
- **Medieval India**
  - **Mughal rule:** Death penalty under **Sharia** for **rebellion, murder, and theft.**
  - **Hindu kingdoms:** Continued **customary laws** with regional variation
- **Modern India**
  - **Colonial Period:** IPC (1860) formalized **death penalty** for **murder, treason, dacoity with murder.**
  - **Post-Independence:** Continued under **IPC** for violent crimes; protected by **Article 21** ensuring **due process.**

Arguments for the death penalty

- **Deterrence:** Based on **utilitarian ethics (Consequentialist Ethics)**—prevents future crimes and protects society.
- **Retributive Justice:** Punishment should match the **severity of the crime** ("eye for an eye").
- **Prevention of Re-offending:** Executed offenders cannot commit further crimes.
- **Closure for Victims:** Offers **emotional relief** and **vindication** to victims' families.
- **Financial Burden:** Avoids long-term cost of maintaining **high-risk prisoners.**

Stakeholders and their Concerns	
Stakeholders	**Interests and Concerns**
Condemned Individuals	Right to Life, Fair Trial and Due Process, Discrimination, etc.
Victims' Families	**Retribution** (Punishment) and **Restorative** (Reconciliation) justice, Prolonged Legal Process etc.
Society at Large	Public safety, Justice, Collective conscience and Moral standards
Legal and Judicial Systems	Ensuring **fair trials,** Upholding constitutional values, Balancing deterrence with human rights, Irreversibility of Error
Human Rights Organizations	Reform over Retribution, Human Dignity, **right to life** and the potential for judicial errors.
Governments and Policymakers	Navigating **public opinion, International obligations, Effectiveness** of capital punishment as a deterrent.

Arguments against the death penalty

- **Human Rights Violation: Deontological Ethics (Kantian Perspective)** opposes taking life, regardless of outcome.
- **Irreversible Errors:** Risk of **wrongful conviction** with no remedy after execution.
- **Lack of Deterrence:** Studies show **no proven advantage** over life imprisonment.
- **Counterproductive Outcomes:** In some cases, criminals kill victims to avoid testimony and **evade death sentence.**

Death Penalty in India

- **Legal Framework: Bharatiya Nyaya Sanhita (BNS)** prescribes death for **terrorism, rape, murder of public officials, etc.**
- **Judicial Doctrine: Bachan Singh v. State of Punjab (1980)** introduced **"rarest of rare"** doctrine and stated that capital punishment should be reserved for heinous crimes.
- **Pardoning Power:** After all appeals, **mercy petitions** can be submitted to the **President** or **Governor**
- **Recent Trends:**
- Over **500 on death row,** but executions are **rare**
- Most sentences are **commuted to life imprisonment**

Conclusion

Since Universal Declaration of Human Rights (UNDHR) (1948), global momentum has favored **abolition**, yet death penalty persists amid **unfair trials** and use for **non-violent crimes.** A shift to **humane, evidence-based alternatives** is vital to uphold **justice and respect for life.**

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9.5. RIGHT TO DIE WITH DIGNITY

Introduction

A **3-year-old Jain girl** died due to **Santhara** (fasting unto death), raising concerns about **informed decision-making.** Also, France recently, passed a bill allowing **assisted dying** for those with **incurable illnesses—**highlighting the principle of **Right to Die with Dignity.**

About the Right

- **Meaning:** Terminally ill individuals can choose **end-of-life decisions** to avoid prolonged **pain and suffering.**
- **Euthanasia** (means **"good death"**) is a mean to realise this right for a terminally ill person.
    - **Active:** Using lethal drugs—**illegal** in India.
    - **Passive:** Withholding life support—**allowed**.
- **Status in India**
    - **2011 – Aruna Shanbaug case: Passive euthanasia** allowed.
    - **2018 – Common Cause case: Article 21** includes **Right to Die with Dignity;** legalised passive euthanasia and **living wills.**

Key Stakeholders and Associated Ethical Issues	
Terminally Ill Patients and Their Families	**Patients:** Endure **severe pain,** emotional and **financial distress.** **Families**: Struggle with **grief** and desire to **ease suffering.**
Healthcare Providers (Doctors, Nurses, Palliative Care Professionals)	Bound by **Hippocratic Oath to alleviate suffering,** but face **moral dilemmas** between **autonomy** and preserving life.
Legislators and Policymakers	Must **protect rights** and **prevent misuse** of the **Right to Die with Dignity.**
Society at large	Balances **sanctity of life** with growing emphasis on **personal autonomy** and **dignity**.

Ethical Dilemmas

- Quality vs Sanctity of Life: Is life meaningful amid extreme pain or loss of dignity?
- Autonomy vs Constitutional Morality: Can personal choice override legal or moral limits?
- Palliative Care vs Justice: Should we allow dignified death where care fails?
- Non-maleficence vs Double Effect: Can doctors relieve pain even if it shortens life?

Arguments in Favour	Arguments Against

- **Quality of Life:** Goes beyond survival—includes **well-being** and **relationships**.
 - **Respect for Autonomy:** Individuals should decide their **end-of-life** choices.
     - E.g., **Bhishma's Iksha Mrityu, Socrates' choice of death.**
 - **Principle of Double Effect:** Doctor many time prescribe drugs with the intention to **relieve pain,** despite knowing that the drugs will shorten the patient's life.
 - **Justice:** When care fails, continued treatment may be **harmful** and **burdensome.**
	- **Sanctity of Life:** Life is of **intrinsic value.**
	     - E.g., **Ahimsa in Buddhism.**
	 - **Constitutional Morality: Religious freedom** is limited by **Article 25.**
	 - **Palliative Care:** Evolving medicine can manage **suffering** without euthanasia.
	 - **Non-maleficence:** Doctors must **"do no harm"** (Hippocratic Oath).
	 - **Kantian View:** Ending life violates **moral duty.**
	 - **Potential Misuse:** Autonomy may be **abused** for minors or under pressure.

Way Forward

- **Interpretative Dialogues:** Continuous patient-centered communication.

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- **Effective Regulation:** Limit practice to **hospital settings,** with **2-doctor certification** and full documentation.
- **Prevent Misuse:** Include **psychological evaluation, wait period,** and **counselling.**
- **Care Ethics Approach:** Emphasize **empathy** for minors and mentally vulnerable.

Conclusion

Modern medicine may **extend life** but not always **relieve suffering.** The **Right to Die with Dignity** calls for a **compassionate** and **well-regulated** approach.
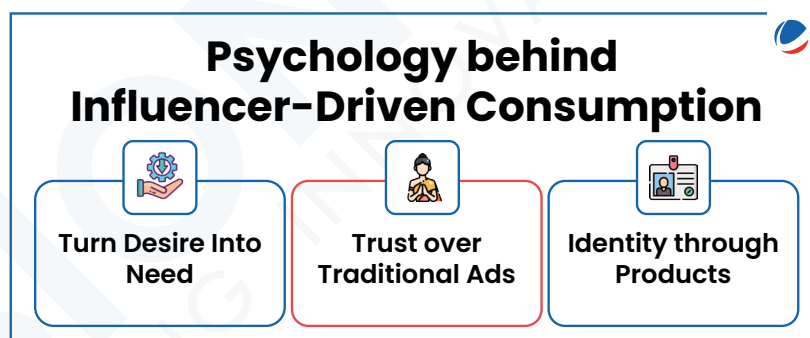
9.6. SOCIAL MEDIA INFLUENCER AND CONSUMER BEHAVIOUR

Introduction

The **digital age** has reshaped how people form **identities** and make **choices**, with platforms like **Instagram** and **Facebook** turning casual content into tools of **aspiration** and **consumerism**. India's **influencer marketing industry,** set to reach **₹3,375 crore by 2026** (E&Y), shows the rising power of **digital creators.**

Positive Role Played by Social Media Influencer to influence consumer behavior

- **Promoting Social Change:** Raised awareness on **mental health, body positivity, and women's rights.**
  - → E.g., **#MeToo India** exposed workplace harassment
- **Conscious Consumerism:** Rise of **"de-influencing"** promotes **mindful spending.**
- **Inclusivity & Diversity:** Challenges **gender norms**, gives voice to **marginalized groups.**
- **Access to Information:** Used to spread **government updates, career tips,** and **public schemes.**

Psychology behind Influencer-Driven Consumption

Turn Desire Into Need	Trust over Traditional Ads	Identity through Products

Ethical Issues in Influencer Culture

- **Mindless Consumption:** Promotes **materialism**, contradicts **Gandhian ethics.**
- **Psychological Manipulation:** Triggers **FOMO** (fear of missing out), **social comparison,** encourages **impulse buying**
- **Lack of Accountability:** No regulatory checks, **leading to consumer misinformation and fraud.**
- **Dishonesty:** E.g. Plagiarizing content or failing to credit creators disrespects intellectual
- **Privacy Violations:** Mishandling **user data** without safeguards.
- **Mental Health Harm:** Idealized lives promote **anxiety, low self-worth,** affecting **collective well-being.**

India's Regulatory Framework for Influencer Accountability

- **Central Consumer Protection Authority (CCPA):** Regulates **consumer rights, misleading ads,** and **unfair trade practices**
- **Securities and Exchange Board of India (SEBI):** Banned partnerships between **regulated financial firms** and **unregistered influencers**
- **Advertising Standards Council of India (ASCI):** Issued guidelines mandating **clear labeling** of **paid promotions**

Code of Standards for Influencers

Paid Partnerships: Influencers must disclose any material partnership with brands.

AI Influencers: Must follow the same rules as human influencers, with a disclaimer about their non-human nature.

Brand Relations: Influencers can't endorse products they don't genuinely support or work with competing brands simultaneously.

Defluence: Honest criticism of brands is allowed but must be truthful and responsible

Child-Safe Content: Content must be safe, positive, and appropriate for children.

Complaint Forum: A consumer complaint forum is established under the IIGC.

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- **Department of Consumer Affairs:** Released **'Endorsement Know-hows'** for ethical promotions
- **India Influencer Governing Council (IIGC):** A **Self-regulatory body.** It introduced **Code of Standards** and **weekly influencer ratings**

9.7. ETHICS OF BUSINESS DOWNSIZING

Introduction

Companies like **Microsoft, Google, Amazon,** and **IBM** have laid off around **60,000 employees,** driven by **AI reorganisation, automation,** and **management restructuring.** While aimed at **productivity** and **competitiveness**, such **downsizing** raises serious **ethical concerns** for employees and society.

About Business Ethics

- **Meaning:** Guides **individuals, firms,** and **corporate culture** in ethical conduct.
- **Features:** Based on **trust, integrity, equity, legality,** and **governance**.
- **Nature:** Beyond legal compliance; rooted in **moral values** and **societal welfare.**
  - **Virtue Ethics:** Focuses on **positive traits** like **honesty** and **responsibility**.
  - E.g., **Infosys** promotes a **Code of Conduct** for ethical decision-making.

Responsibility of a Business towards various stakeholders	
Employees	Builds **moral values** and a strong **ethical culture.** E.g., **Hilton** ranked top in **Great Place to Work (2024)** for ethical practices.
Consumers	Prevents **unjust** or **deceptive practices.** E.g., **Apple's Advanced Data Protection (ADP)** ensures **end-to-end encryption.**
Society	Promotes **equitable** and **honest competition.** E.g., **Ratan Tata:** Business must serve **communities**, not just profits.

Ethical Dilemmas involved in Business Downsizing

- **Utilitarianism vs Kantian Capitalism:** Downsizing benefits the majority (**utilitarian**), but **Kant** rejects using employees as a means to an end.
- **Individualism vs CSR: Profit maximization** justifies layoffs (individualist view), but conflicts with **CSR**, which values employee welfare.
- **Deontological vs Teleological: Duty-based ethics** prioritize moral responsibility, while **consequentialism** focuses only on outcomes.
- **Ethical Relativism vs Justice: Relativism** allows varying norms, but **justice** requires **fairness for all.**

Way Forward

- **Last Resort:** Consider alternatives before layoffs—cut costs, freeze hiring, assess wider impacts.
- **Voluntary Layoffs:** Offer **severance** or **career transition** support.
- **Business Ethics:** Follow codes promoting **integrity, transparency,** and **compassion**. E.g., **Starbucks** offered health insurance to part-time workers (1988).
- **Agile Talent Strategy:** Invest in **upskilling** and **career growth.** E.g., **Amazon's Education Benefit Programme.**
- **Support Displaced Workers:** Help find new jobs via **networks** and **reskilling**. E.g., **Nokia's Bridge Programme** helped 60% laid-off staff (2014).

Conclusion

- Downsizing must be the **last option**, preceded by **upskilling** and **ethical workforce management**. Promote a culture of **good business conduct** through constant **engagement** and **socialisation.**

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9.8. ETHICAL DIMENSIONS OF BODY SHAMING

Introduction

Body shaming involves **criticizing individuals based on their physical appearance** and can affect anyone. In a commercialized beauty culture, body image is often misused—e.g., a **Thai café offering discounts to thin customers.**

Socio-Cultural Factors Driving Body Image Shaming

- **Unrealistic Beauty Standards:** Media and ads promote **fair skin** and **slim bodies**, leading to **disordered eating.**
- **Social Media Pressure:** Filters and edits create **perfect body illusions.**
  - E.g., **Kerala teen's death** after extreme fasting influenced by online trends
- **Cultural & Family Bias:** Women judged by looks; men by **height/muscles.**
  - E.g., pressure to **lose weight/fairness for marriage prospects**
- **Peer Conditioning:** Early **teasing and bullying** normalize appearance-based judgment.

Ethical Frameworks and Violations

- **Kantian Ethics:** Body shaming **violates human dignity**, treats people as tool.
- **Utilitarianism:** Causes **long-term harm**, outweighs any short-term benefits.
- **Virtue Ethics:** Encourages **vanity and exclusion**, not **compassion or inclusivity.**
- **Justice as Fairness (Rawls):** Discrimination by body type **undermines fairness and equality.**

Key stakeholders involved	
Stakeholders	Role/Interest
Society at Large	Foster empathy, inclusivity, and respect for diversity in appearance
Media & Influencers	Ethical responsibility, avoid promoting toxic beauty standards, etc.
Businesses/Marketers	Ethical advertising, long-term brand reputation over harmful short-term gains, etc.
Health Professionals	Provide support for body image issues, eating disorders, and psychological impacts
Government	Regulate harmful content, promote mental health, ensure ethical advertising standards

Conclusion

Ending body shaming needs **collective action** to shift focus from **appearance to acceptance,** fostering a culture of **respect, dignity, and inclusivity.**

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9.9. TEST YOUR LEARNING

Mains Question

Q1. (150 words)

"The pursuit of happiness is both a personal and societal quest." Drawing on Eastern and Western philosophical perspectives, discuss how civil servants can help create conditions that promote happiness among citizens.

Q2. (250 words)

Legal recognition of the Right to Die with Dignity raises questions about autonomy, compassion, and the sanctity of life. Critically examine.

10. SCHEMES IN NEWS

10.1. Atal Pension Yojana

Why in the News?

APY completed 10 years.

Features

- **Ministry:** Ministry of Finance
- **Launched in:** 2015
- **Implementing Agency:** PFRDA under National Pension System (NPS)
- **Type:** Central Sector Scheme
- **Eligibility:** Bank account holders aged 18–40, not income tax payers; all eligible family members can join
- **Objectives:** Promote voluntary retirement savings and provide financial security in old age especially for poor and unorganized sector workers.
- **Benefits:** Guaranteed monthly pension of ₹1,000–₹5,000 from age 60; family pension to spouse/nominee in case of death
- **Payment:** Contributions monthly/quarterly/half-yearly based on age and pension amount
- **Exit:** At 60 (full pension); before 60 (only in death/illness); voluntary exit with limited benefits
- **Co-contribution:** Govt. co-contributed for early joiners (2015–2016)
- **Achievements:** 7.66+ crore subscribers by April 2025; ~47% are women

10.2. Pradhan Mantri Jeevan Jyoti Bima Yojana

Why in the News?

PMJJBY completed 10 years.

Features

- **Ministry:** Ministry of Finance
- **Type:** Central Sector Scheme
- **Nature:** Annual Term life insurance (cover up to age 55)
- **Objectives:** Providing coverage for death due to any cause.
- **Premium:** ₹436/year, auto-debited in one instalment
- **Conditions:** Bank/post office account, consent for auto-debit; only one account per person
- **Eligibility:** Open to all 18–50 yrs age group, including NRIs
- No medical exam required
- Covers all causes of death (accidents covered from day one)

- Pro-rata premiums for mid-year enrolment
- **Coverage:** ₹2 lakh, renewable annually
- **Implementing Agency:** LIC and partnered insurers
- **Impact:** 23+ crore enrolled; 9 lakh claims; 53% women, 74% rural beneficiaries

10.3. Pradhan Mantri Suraksha Bima Yojana

Why in the News?

Completed 10 years.

Features

- **Ministry:** Ministry of Finance
- **Type:** Central Sector Scheme
- **Objectives:** An accident insurance scheme providing coverage for accidental death and disability.
- **Eligibility:** Citizens (including NRIs) aged 18–70 years
- **Premium:** ₹20/year, auto-debited
- **Enrolment Period:** 1st June to 31st May (1-year cover)
- **Implementing Agency:** Public Sector General Insurance Companies and others via participating banks
- **Conditions:** Bank/post office account and auto-debit consent
- **Coverage:** ₹2 lakh for accidental death/total disability; ₹1 lakh for partial disability
- **Features:** Covers natural calamities; rejoining allowed; digital enrolment via Jan Suraksha Portal
- **Impact:** 44+ crore enrolled; 50.16% women, 72.24% rural beneficiaries

10.4. Credit Guarantee Scheme for Startups (CGSS)

Why in the News?

- DPIIT has expanded the Credit Guarantee Scheme for Startups (CGSS) to boost capital mobilization for startups.

Key Features

- **Nodal Ministry:** Ministry of Commerce & Industry
- **Objectives:**
  - Provides credit guarantee by Member Institutions (MIs) to eligible Startups.
  - Enables collateral-free debt funding for Startups
- **Purpose:** Provide credit guarantees for loans to eligible startups
- **Process:** NCGTC guarantees Member Institutions that lend to startups, not startups directly

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- **Guarantee Ceiling:** Max ₹20 crore per borrower; no overlap with other guarantee schemes; covers unsecured portion of partially secured loans
- **Instruments:** Venture debt, working capital, subordinated/mezzanine debt, debentures, convertible debt, and other debt obligations

Eligibility Criteria

(S) Startup Eligibility

- ✅ **DPIIT Recognized** Department for Promotion of Industry and Internal Trade
- ✅ **Not in Default** No NPA classification
- ✅ **MI Certified** Member Institution certification

(L) Lending Member Institutions (MIs)

- **(B) Scheduled Commercial Banks** & Financial Institutions
- **(N) NBFCs (Non-Banking Financial Companies)**
  - ⊕ **Rating:** BBB & above (RBI accredited agencies)
  - ⊕ **Minimum networth:** 100 crores
- **(A) Alternative Investment Funds** SEBI registered

10.5. SHAKTI (Scheme for Harnessing and Allocating Koyala Transparently in India) Policy

Why in the News?

Cabinet Committee on Economic Affairs approved Revised **SHAKTI Policy**

Features of Shakti Policy:

- **Introduced in:** 2017
- **Ministry:** Ministry of Coal
- **Implemented by:** CIL & SCCL
- **Replaces** the 2007 NCDP coal linkage system under Fuel Supply Agreements (FSA).
- **Transitions** from LoA-based to auction/tariff-based bidding mechanisms.
- **Objectives**
  - → Ensure coal availability to thermal power plants through a fair, transparent mechanism
  - → Lower generation costs by providing cheaper domestic coal
  - → Benefits to end consumers
  - → Reduce reliance on imports and strengthen the domestic coal industry
- **Simplified Framework:** Consolidates 8 earlier categories into 2:
  - → WINDOW-I: Linkages at notified prices for government-owned power plants.
  - → WINDOW-II: Auction-based allocation for all thermal power producers
- **No Mandatory PPAs:** Offers flexibility in power sales under Window-II.

- **Demand-Based Procurement:** Coal allocation for 1 to 25 years based on need.
- **Pithead Plant Promotion:** Encourages plants near coal sources.
- **Import Substitution & Linkage Rationalization:** Reduces coal costs and rail load.
- **Sale of Surplus Power & FSA Flexibility:** Enhances efficiency and market access.
- **Key Beneficiaries:** Power firms, consumers, coal sector, banks, states, and railways.

10.6. Rashtriya Gokul Mission

Why in the news?

The Union Cabinet, has approved the Revised Rashtriya Gokul Mission (RGM) to boost growth in livestock sector, with an additional outlay of Rs.1000 crore during 15th Finance Commission cycle from 2021-22 to 2025-26.

About RGM

- **Launched:** 2014 under National Bovine Breeding Programme.
- **Ministry:** Fisheries, Animal Husbandry & Dairying.
- **Implementation:** Dept. of Animal Husbandry & Dairying.
- **Funding:** 100% central grant (with few exceptions).
- **Objectives: Productivity & Milk Yield, Genetic Improvement,** Strengthen network for doorstep artificial insemination, Conserve native cattle via scientific methods.

New Components

- **Heifer Rearing Centers:** 35% subsidy for 30 facilities (15,000 heifers capacity).
- **IVF Support:** 3% interest subvention for high-genetic-merit heifers.

Existing Components

- **Genetic Improvement:** Progeny testing, IVF tech, AI network expansion (MAITRIs).
- **Indigenous Breeds:** Support to Gaushalas, Gokul Grams, National Kamdhenu Centres.
- **Digital Integration:** e-Pashu Haat portal, National Digital Livestock Mission.
- **Capacity Building:** Farmer training, Gopal/Kamdhenu awards.

Impact

- **Milk Production:** Increase of 63.55% (2014-24); per capita availability increased from 307g to 471g/day
- **Productivity:** Increased 26.34% in decade.

10.7. PM SHRI Schools (PM ScHools for Rising India)

Why in the News

Some states have opposed the implementation of PM SHRI School Scheme.

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Features

- **Ministry:** Ministry of Education
- **Type:** Centrally Sponsored Scheme
- **Beneficiaries:** Direct benefit to over 20 Lakh students
- **Tenure:** 5 years (2022-23 to 2026-27).
- **Objectives:** Establish over 14,500 national model schools.
  - → Equitable, inclusive, and joyful learning, developing well-rounded individuals.
- **Selection Method of Schools:** Transparent challenge mode. 3 stages:
  - → **MoU Signing:** State/UTs with Centre
  - → **Eligibility Pool:** Eligible schools identified based on minimum benchmark
  - → **Challenge method:** for fulfilling certain criteria
- **Implementation Strategy:** Implemented via existing Samagra Shiksha, KVS, and NVS structures.
- **Green Schools:** Solar panels, water conservation, waste management, and being plastic-free.
- **Enhanced Infrastructure:** Smart classrooms, digital libraries, vocational and science labs, playgrounds, and grade-specific furniture/learning tools like Jadui Pitara.
- **Skill Development:** Integrates vocational training, internships, and entrepreneurship, with local industries and Sector Skill Councils.
- **Mentoring and Leadership:** Mentor nearby schools to spread quality education, creating ripple effect.
- **Inclusive Education:** Safe infrastructure for girls and Children with special needs, and promotes mother tongue as the medium of instruction.
- **Monitoring and Quality Assurance:** Regular evaluations using School Quality Assessment Framework and schools are geo-tagged for monitoring.
- **Convergence and Community Participation:** Supports infrastructure and resource pooling.

10.8. National Scheme for Upgradation of Industrial Training Institutes (ITIs)

Why in the News?

Union Cabinet approved Centrally Sponsored Scheme to upgrade ITIs and establish five National Centres of Excellence for Skilling.

Features

- **Ministry:** Ministry of Skill Development and Entrepreneurship
- **Type:** Centrally Sponsored Scheme
- **Objectives:** Meet rising skilled workforce demand
- **Funding:** ₹60,000 crore over five years (Central: ₹30,000 cr, State: ₹20,000 cr, Industry: ₹10,000 cr); 50% of Central share co-financed by ADB and World Bank
- **Revamp ITIs:** Upgrade 1,000 Government ITIs under a hub-and-spoke model and five NSTIs (Bhubaneswar, Chennai, Hyderabad, Kanpur, Ludhiana) to serve as National Centres of Excellence.
- **Industry Collaboration:** Industry-led SPV model for curriculum, infrastructure, and management.
- **Financial Flexibility:** Need-based investment for trade-specific and infrastructure needs.
- **Skill-Industry Alignment:** Bridge gaps between local workforce supply and industry demand, benefiting MSMEs.
- **Trainer Focus:** Enhance quality through ToT programs in upgraded NSTIs.
- **Vision Alignment:** Supports Viksit Bharat 2047 for inclusive growth and global competitiveness.

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10.9. TEST YOUR LEARNING

1. **Which is implementing ministry for the Rashtriya Gokul Mission?**

   a) Ministry of Fisheries, Animal Husbandry and Dairying.

   b) Ministry of Agriculture and Farmers Welfare.

   c) Ministry of Rural Development.

   d) Ministry of Environment, Forest and Climate Change.

2. **Which of the following statements about the PM SHRI School Scheme is incorrect?**

   a) It is a Centrally Sponsored Scheme aimed at developing model schools based on NEP 2020.

   b) The scheme includes features like smart classrooms, digital libraries, and green infrastructure.

   c) It exclusively targets private schools in urban areas for transformation.

   d) It is implemented through Samagra Shiksha, KVS, and NVS.

3. **With reference to the Atal Pension Yojana (APY), consider the following statements:**

   1. It is implemented by the Pension Fund Regulatory and Development Authority (PFRDA).

   2. It is open only to income tax payers.

   3. Subscribers receive a guaranteed monthly pension starting at age 60.

Which of the statements given above is/are correct?

a) 1 and 2 only

b) 2 and 3 only

c) 1 and 3 only

d) 1, 2 and 3

4. **With reference to the Pradhan Mantri Suraksha Bima Yojana (PMSBY), consider the following statements:**

   1. The annual premium is auto-debited from the subscriber's bank or post office account.

   2. It provides coverage only for accidental death, not for disability.

   3. Citizens between 18 and 70 years of age are eligible to join.

Which of the statements given above is/are correct?

a) 1 and 2 only

b) 1 and 3 only

c) 2 and 3 only

d) 1, 2 and 3

5. **The SHAKTI Policy, recently revised, is related to which of the following sectors?**

   a) Renewable energy

   b) Coal allocation for thermal power plants

   c) Urban housing

   d) Telecom spectrum allocation

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ANSWER KEY

Polity

1	2	3	4	5
Answer: A	Answer: A	Answer: D	Answer: D	Answer: B

International Relations

1	2	3	4	5
Answer: C	Answer: B	Answer: D	Answer: B	Answer: C

Economy

1	2	3	4	5
Answer: C	Answer: B	Answer: B	Answer: C	Answer: A

Security

1	2	3	4	5
Answer: B	Answer: A	Answer: D	Answer: C	Answer: A

Environment

1	2	3	4	5
Answer: D	Answer: A	Answer: B	Answer: A	Answer: B

Social Issue

1	2	3	4	5
Answer: D	Answer: A	Answer: B	Answer: D	Answer: A

Science and Technology

1	2	3	4	5
Answer: C	Answer: C	Answer: C	Answer: C	Answer: C

Culture

1	2	3	4	5
Answer: B	Answer: C	Answer: C	Answer: B	Answer: B

Schemes in News

1	2	3	4	5
Answer: A	Answer: B	Answer: B	Answer: C	Answer: C

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10 in **TOP 10** Selections in **CSE 2024** from various programs of **Vision IAS**

1 AIR Shakti Dubey
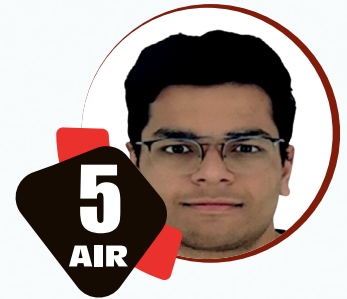
2 AIR Harshita Goyal

3 AIR Dongre Archit Parag

4 AIR Shah Margi Chirag

5 AIR Aakash Garg

6 AIR Komal Punia

7 AIR Aayushi Bansal

8 AIR Raj Krishna Jha

9 AIR Aditya Vikram Agarwal

10 AIR Mayank Tripathi

79 Selections in **TOP 100** in **CSE 2023**

1 AIR Aditya Srivastava

2 AIR Animesh Pradhan

5 AIR Ruhani

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