MAY-2025

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MONTHLY NEWS ANALYSIS

RICE IAS

What Will You Get ?

- *Latest Judgements, Reports, Govt Schemes & Policies*
- *National Critical Mineral Mission*
- *6th BIMSTEC Summit*
- *Indus Water Treaty*

Monthly Current Affairs Magazine For UPSC CSE & Other Civil Services Exams

Preface

In India, civil service examinations are not just a pathway to prestigious careers but also a means to contribute meaningfully to society and nation-building. Exams like UPSC and State PSCs, including WBPSC (West Bengal Public Service Commission), demand a deep understanding of subjects, analytical thinking, and a commitment to excellence.

RICE IAS, a name synonymous with quality education for over 40 years in West Bengal, is now broadening its horizons to support aspirants across the country. This magazine is designed to serve as a reliable resource for those preparing for UPSC and State PSC exams, including WBPSC.

Through this magazine, we aim to provide insightful content, detailed analysis of critical topics, and expert perspectives to help aspirants build a strong foundation. Key areas such as the Indian Constitution, economic developments, environmental challenges, and social issues are covered comprehensively, catering to the dynamic demands of both national and state-level examinations.

Our vision extends beyond merely sharing knowledge—we aim to inspire, motivate, and guide you in your preparation journey. From West Bengal to every corner of India, we are dedicated to helping aspirants achieve their dreams.

Wishing you great success,
Team RICE IAS

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POLITY & GOVERNANCE

1.1. JUDICIAL ACCOUNTABILITY

Why in the News?

Recently, Rajya Sabha Chairman Jagdeep Dhankhar discussed judicial accountability in the Rajya Sabha. This discussion took place in the context of growing concerns about transparency following allegations of cash being recovered from the residence of a High Court judge.

Background of the News

The judiciary plays a crucial role in upholding constitutional values and ensuring justice. However, concerns have emerged regarding transparency and accountability within the judicial system. Allegations of misconduct, lack of transparency in judicial appointments, and the absence of a strong oversight mechanism have reignited discussions on judicial accountability.

Historical Context

Judicial accountability has been a subject of debate since India's independence. The impeachment proceedings against Justice V. Ramaswami in 1991 highlighted the challenges in holding judges accountable. The Supreme Court's striking down of the National Judicial Appointments Commission (NJAC) Act in 2015 further intensified concerns about transparency in judicial appointments. Over the years, various committees and commissions have recommended reforms to ensure greater judicial accountability.

Government Initiatives

1. **Constitutional Provisions**:
   a. **Article 124(4) and 124(5):** Provide grounds for impeachment of Supreme Court judges for proven misbehavior or incapacity.
   b. **Article 217:** Contains provisions for impeaching High Court judges.
   c. **Article 235:** Empowers High Courts to supervise and control subordinate courts.
2. **Legal Provisions**:
   a. **Judges (Inquiry) Act, 1968:** Establishes a mechanism for investigating judicial misconduct through a three-member panel.
   b. **Contempt of Courts Act, 1971:** Protects the judiciary from undue influence, ensuring its independence.
   c. **Judicial Standards and Accountability Bill (pending):** Aims to improve transparency and oversight mechanisms in the judiciary.
3. **National Judicial Appointments Commission (NJAC) Act:**
   a. The NJAC Act was introduced to reform judicial appointments by including representatives from the executive, judiciary, and civil society. However, the Supreme Court struck it down in 2015, emphasizing judicial independence. The Rajya Sabha Chairman has called for renewed discussions on judicial appointments and accountability.

Way Forward

1. **Legislative Reforms:** Urgently passing the Judicial Standards and Accountability Bill to strengthen judicial oversight mechanisms.
2. **Strengthening Internal Mechanisms:** Creating independent judicial review bodies to ensure proper conduct within the judiciary.
3. **Codifying Ethical Guidelines:** Expanding and enforcing the Restatement of Judicial Values for a clearer code of conduct.

4. **Public Scrutiny:** Encouraging transparency through the publication of judicial decisions and activities.
5. **Training and Awareness:** Conducting regular training for judges on ethical principles and constitutional values to uphold accountability.

Judicial accountability is essential to maintain public trust and uphold the rule of law. While judicial independence is crucial, it must be balanced with mechanisms to ensure responsibility and transparency. Implementing reforms such as the Judicial Standards and Accountability Bill, strengthening oversight bodies, and promoting ethical judicial practices will contribute to a more transparent and accountable judiciary in India.

> **Q.** The striking down of the NJAC by the Supreme Court was seen as a move to protect judicial independence. Critically analyze its impact on judicial accountability.
>
> *[UPSC MAINS Practice Question]*

1.2. WAQF (AMENDMENT) ACT 2025

Why in the News?

The Waqf Amendment Act, 2025 was passed to fix problems in the management and governance of Waqf properties. The aim was to make rules clearer, include more people in decision-making, and improve how Waqf assets are used.

Highlights of the Bill

- The Bill changes the composition of the Central Waqf Council and Waqf Boards to include non-Muslim members.
- The Survey Commissioner has been replaced by the Collector, granting him powers to conduct surveys of waqf properties.
- Government property identified as waqf will cease to be waqf. The collector will determine ownership of such properties.
- The finality of the Tribunal's decisions has been revoked. The Bill provides for direct appeal to the High Court.

Key Issues and Analysis

- Waqf is managed as per Muslim law. The Bill allows and mandates non-Muslim members in State Waqf Boards and Central Waqf Council. It creates room for these bodies to majorly comprise of non-Muslim members. Similar institutions governing Hindu and Sikh endowments primarily comprise of members from their respective religions.
- Removing the expert in Muslim law from Waqf Tribunals may affect redressal of waqf-related disputes.
- The Bill limits creation of waqf to only people professing Islam for at least five years. The rationale behind such criteria is unclear. This creates a distinction between persons practicing Islam for less than five years, and those doing so for more than five years.

Provisions such as inclusion of non-Muslim members in waqf bodies, removal of religious law experts from tribunals, and restrictions based on duration of religious practice raise critical concerns around community representation, legal expertise, and religious autonomy. Balancing reform with sensitivity to constitutional rights and minority protections will be key to its effective and inclusive implementation.

Waqf in India – Overview Table

Category	Details
Definition	Permanent dedication of property for religious, pious, or charitable use under Muslim law
Purposes	- Maintain mosques & graveyards - Run schools & healthcare centers - Aid to poor & disabled
Constitutional Status	Under **Concurrent List** – both Centre & States can legislate
Governing Law	**Waqf Act, 1995** (replaces Acts of 1913, 1923, 1954; repeals state laws)
Creation Methods	- Oral/written declaration - Long-term charitable use - End of family line
Key Persons	- **Wakif**: Creator - **Mutawalli**: Administrator
Total Properties (2024)	Approx. **8.7 lakh** registered immovable waqf properties
Property Types	- Graveyards: 17% - Agricultural land: 16% - Mosques: 14% - Shops: 13%
Top States by Share	- Uttar Pradesh: 27% - West Bengal: 9% - Punjab: 9%
Issues	- 7% encroached - 2% under litigation - 50% status unknown
Valuation (2006)	Market value: ₹1.2 lakh crore (Sachar Committee)
Survey Status	Incomplete in most states (as per 2014 Standing Committee)
Global Context	India has the **largest waqf holding** in the world

Q. Critically analyze the provisions of the Waqf (Amendment) Act, 2025, focusing on the inclusion of non-Muslim members, the role of the Collector, and the appeal process. Discuss the concerns regarding community representation and religious autonomy, and suggest measures to balance reform with constitutional protections for minorities.   *[UPSC MAINS Practice Question]*

1.3. ASSET DECLARATION BY SUPREME COURT JUDGES

Why in the News?

In a landmark move, all 31 Supreme Court judges will publicly declare their assets, with details to be uploaded on the Supreme Court website. This decision follows a full court meeting, amid a controversy involving cash recovery at Delhi High Court judge residence.

Legal Provision Related to Declaration of Assets by Judges

- **No statutory requirement but** based on resolutions and court rulings.
- **1997:** SC full court resolved judges must declare assets to the CJI.

- **2009:** SC decided to publish assets on website voluntarily.
- **2009 Delhi HC (Justice Ravindra Bhat):** CJI's office is a public authority under RTI; must disclose asset info.
- **2019 SC ruling:** Upheld Delhi HC view — judges' asset details not "personal info" under RTI.

Comparison with Civil Services

Aspect	Judges (SC/HC)	Civil Servants (IAS/IPS etc.)
Legal Requirement	No statutory law	Mandatory under service rules
Basis	Internal SC resolutions, court rulings	Codified in Conduct Rules
Frequency	No fixed rule; varies, often irregular	Annual declaration
Public Disclosure	Voluntary (now being revived in SC)	Usually made public (on dept. websites)
Action on Non-compliance	No clear penalty mechanism	Can face disciplinary action

Present Status

- Among the 769 judges currently serving in the 25 High Courts of India, only 95 — or a mere 12.35% — have chosen to disclose their assets and liabilities on their official websites.
- Courts like Kerala (93.18%) and Himachal Pradesh (91.66%) lead in transparency, while Madras (5 of 65) and Chhattisgarh (1 of 16) lag significantly.

Present In-House Accountability Mechanism of the Judiciary

- **Internal Process:** It is a non-statutory, internal mechanism adopted in 1999 by the Supreme Court to examine misconduct complaints against judges without involving external bodies.
- **Inquiry by Senior Judges:** Complaints are reviewed by the Chief Justice and, if found credible, a committee of senior judges conducts a confidential inquiry.
- **Limited Powers:** The mechanism can recommend measures like advising resignation, transfer, or leave — but **cannot remove a judge**. Only Parliament can do so through impeachment.
- **No Public Transparency:** The process is **confidential**, and inquiry reports are not made public, leading to criticism over lack of transparency and accountability.
- **Recent Use (2025):** Triggered in the case of Delhi High Court judge, after unaccounted cash was found at his residence — bringing renewed focus on the effectiveness of this system.

> **Q.** Discuss the significance of the Supreme Court's decision to publicly disclose the assets of all judges in 2025. Compare the transparency mechanisms for judges with those for civil servants, and critically evaluate the judiciary's in-house accountability mechanism, suggesting reforms to enhance transparency and public trust. *[UPSC MAINS Practice Question]*

1.4. PANCHAYAT ADVANCEMENT INDEX (PAI)

Why in the News?

Recently, the Ministry of Panchayati Raj has recently introduced the inaugural Panchayat Advancement Index (PAI) Baseline Report for the fiscal year 2022–23.

What is the Panchayat Advancement Index (PAI)?

The Panchayat Advancement Index is a composite index that evaluates the progress of Panchayats based on 435 distinct local indicators. These indicators include 331 mandatory factors and 104 optional ones, with a total of 566 data points distributed across 9 thematic areas related to the localization of SDGs (LSDGs).

The PAI serves as a reflection of India's commitment to achieving the 2030 SDG Agenda through participatory and bottom-up development strategies. It is designed in alignment with the National Indicator Framework (NIF), developed by the Ministry of Statistics and Programme Implementation (MoSPI). The PAI is a result of collaborative efforts involving Union Ministries, State Governments, and United Nations Agencies.

Key Themes Assessed in the PAI

The PAI evaluates Panchayats across nine key themes aligned with SDGs, which include:

Poverty Alleviation	Water Sufficiency	Social Justice
Health	Environmental Sustainability	Good Governance
Child Welfare	Infrastructure	Women's Empowerment

Key Factors Evaluated in the PAI

The PAI measures Panchayat performance across several key areas:

- **Infrastructure:** Access to basic amenities such as roads, electricity, water supply, and sanitation.
- **Health and Education:** Availability of healthcare services, educational institutions, literacy rates, and school enrollment.
- **Economic Indicators:** Income levels, employment opportunities, agricultural productivity, and economic activities.
- **Social Indicators:** Poverty levels, gender equality, social inclusion, and the overall quality of life.
- **Governance and Administration:** The efficiency and transparency of local governance, public service delivery, and citizen participation.
- **Environmental Sustainability:** Ecological balance, conservation efforts, and sustainable practices.

How Panchayats Are Categorized

The performance of Panchayats is categorized into five distinct tiers based on their scores:

- **Achiever (90+ points):** No Panchayats achieved this category in 2022–23.
- **Front Runner (75–90 points):** 699 Panchayats (0.3% of total Panchayats).
- **Performer (60–75 points):** 77,298 Panchayats (35.8% of total Panchayats).
- **Aspirant (40–60 points):** 1,32,392 Panchayats (61.2% of total Panchayats)**.**
- **Beginner (below 40 points):** 5,896 Panchayats (2.7% of total Panchayats).

Data Submission and Validation

Out of the total 2,55,699 Gram Panchayats, 2,16,285 Panchayats successfully submitted validated data through the PAI portal.

State-Level Insights

- **Top Performers:** Gujarat emerged as a leader with 346 Front Runner Panchayats, followed by Telangana with 270 such Panchayats. Other states like Maharashtra, Madhya Pradesh, and Uttar Pradesh also showcased a strong presence of Performer Panchayats.
- **Development Gaps:** States like Bihar, Chhattisgarh, and Andhra Pradesh demonstrated a higher proportion of Aspirant Panchayats, indicating a need for targeted developmental interventions.

Purpose and Impact of the PAI

The Panchayat Advancement Index plays a critical role in facilitating evidence-based planning. By fostering transparency and accountability, it helps policymakers identify gaps in development and prioritize resource allocation where needed most. Furthermore, the PAI empowers Panchayats by providing a standardized framework that enables them to create more effective, localized development plans tailored to the unique needs of their communities.

India's Commitment to SDGs

The introduction of the PAI underscores India's commitment to achieving the 2030 SDG Agenda. By focusing on bottom-up development and local participation, the PAI supports the realization of these global goals at the grassroots level.

The release of the Panchayat Advancement Index Baseline Report marks a significant step forward in the evolution of rural governance in India. It bridges global SDG aspirations with local realities, and by promoting evidence-based decision-making and healthy competition among Panchayats, the PAI holds the potential to transform rural development and empower communities across the country.

> **Q.** "The Panchayat Advancement Index (PAI) serves as a bridge between local governance and global Sustainable Development Goals (SDGs)." In this context, critically examine how the PAI promotes participatory rural development and addresses regional disparities.
>
> *[UPSC MAINS Practice Question]*

1.5. TELANGANA SETS PRECEDENT IN SC SUB-CATEGORISATION

Why in the News?

Telangana has become the **first Indian state** to officially notify the **sub-categorisation of Scheduled Castes (SCs)** after the **Supreme Court's landmark 2024 verdict** allowing such classification.

Background

The Scheduled Caste (SC) reservation policy, intended to uplift historically oppressed communities, has faced criticism for **disproportionate benefit allocation**. In Telangana, communities like the **Madigas** alleged that most benefits of SC reservations were monopolised by dominant sub-castes like **Malas** and **Adi-Andhras**.

- The **Madiga Reservation Porata Samiti (MRPS)** has long demanded **internal reservation or sub-categorisation** within the SC quota.
- The **Justice Ramachandra Raju Commission (1997)** recommended a **four-fold categorisation** of SCs to address intra-caste imbalances in reservation benefits.

Historical Context and Judicial Journey

- **2004 (E.V. Chinnaiah Case):** Supreme Court held that Scheduled Castes form a **homogeneous class** under **Article 341**, disallowing any form of sub-categorisation.
- **2024 Landmark Judgment (7-Judge Bench):** Overruled the 2004 verdict, allowing **states to create sub-categories** within SCs for **targeted reservation**, citing **substantive equality** over formal equality. This decision laid the legal foundation for Telangana's action.

Current Reservation Quota in India (as per Central Government policy)

Category	Reservation %
Scheduled Castes (SC)	15%
Scheduled Tribes (ST)	7.5%
Other Backward Classes (OBC)	27%
Economically Weaker Sections (EWS)	10%
Total Reservation	59.5% (without state-level variations)

Note: Several states (like Tamil Nadu) have higher reservation quotas due to state-specific policies and are protected under the Ninth Schedule.

With Telangana's move, the **15% SC quota will now be internally divided** among SC sub-groups based on their **socio-economic backwardness**, ensuring **inclusive growth within reserved communities**.

Telangana's Move: Highlights

- Telangana is now the **first state** to formally act on the **Supreme Court's green signal for SC categorisation**.
- The policy will **equally redistribute the 15% SC reservation** across **four SC sub-categories**, each with its own share in jobs and education.
- The state may set a precedent for others to replicate, especially where **internal caste inequities** have long been debated.

Way Forward

- **Other States:** States like Andhra Pradesh, Punjab, and Karnataka may also pursue SC sub-categorisation based on this constitutional green light.
- **Need for Data:** Proper implementation requires **disaggregated caste-wise data** and **continuous monitoring**.
- **Legal Protection:** Future state laws must be **legally robust** to withstand judicial scrutiny.
- **Balanced Equity:** While correcting internal disparities, the move must not **exclude or deprive any group** within the SC category.

Telangana's proactive move signals a **shift from formal to substantive equality** in India's reservation framework. It recognizes that **marginalised groups within marginalised communities** deserve **focused affirmative action**.

> **Q.** The sub-categorisation of Scheduled Castes is seen as a move towards equitable social justice.
>
> Critically analyse the implications of this move in the light of the recent Supreme Court judgment and Telangana's notification. *[UPSC MAINS Practice Question]*

1.6. ARTICLE 143

Why in the News?

On April 8, 2025, the Supreme Court settled the dispute between the Tamil Nadu Governor and the DMK government regarding delayed assent to state bills. The Court emphasized that the President "ought to" seek SC's opinion under Article 143 when constitutionality is in question.

Background of the News:

The Tamil Nadu Governor had delayed assent to several bills passed by the state legislature, prompting a constitutional standoff. The SC directed a time-bound approach and stressed that bills reserved for the President on grounds of unconstitutionality should ideally be referred to the Supreme Court for opinion.

Constitutional Context:

- **Article 143** allows the President to seek the advisory opinion of the Supreme Court on legal matters.
- The 1978 judgment in *In Re: Special Courts Bill* held that such references help preempt constitutional challenges.
- Recommendations by the **Sarkaria and Punchhi Commissions** had also suggested using Article 143 for such cases.

Way Forward:

- Encourage regular and prudent use of Article 143 in contentious legislative matters.

- Train Governors and legislative secretariats on constitutional obligations and SC interpretations.
- Possibly draft procedural guidelines for state and central governments on dealing with reserved bills.
- Reduce political friction by promoting legal clarity and judicial review over executive discretion.

The SC's intervention underscores the need to balance constitutional morality with institutional functioning. While the Governor and President are executive authorities, the Supreme Court has asserted its role in protecting the Constitution by guiding legislative conduct, especially where legality is questioned.

Q. Which of the following statements regarding Article 143 of the Indian Constitution is/are correct?
1. It empowers the President to seek the advisory opinion of the Supreme Court.
2. The opinion given by the Supreme Court under Article 143 is binding.
3. Article 143 can be invoked only in matters relating to international treaties.
4. It was recently highlighted in a Supreme Court judgment related to bills reserved by the Governor.

Select the correct option: *[UPSC Pre. Practice Question]*

(a) 1 and 4 only   (b) 2 and 3 only

(c) 1, 2, and 4   (d) 1, 3, and 4

Ans. (a) 1 and 4 only

1.7. DEBATE ON SEPARATION OF POWERS

Why in the News?

Recent comments on the limits of **judicial authority** and the **supremacy of Parliament** have triggered a national debate.

Background

India follows the principle of **separation of powers**, where the **Legislature, Executive, and Judiciary** are co-equal organs, each meant to function within their constitutional domain. While Parliament is empowered to make laws, the judiciary's role in interpreting and reviewing these laws—especially through **judicial review**—has often led to friction.

Key constitutional provisions:

- **Article 50**: Advocates separation of judiciary from the executive
- **Articles 122 & 212**: Bar judicial inquiry into parliamentary proceedings
- **Article 142**: Allows the Supreme Court to pass orders for complete justice.

Historical Context

The debate on constitutional boundaries is not new. During the **Emergency (1975-77)**, the power tussle between the judiciary and executive became evident when the **Supreme Court upheld the suspension of fundamental rights** in the *ADM Jabalpur v. Shivkant Shukla* case—an infamous moment of judicial abdication.

Post-Emergency, the judiciary reasserted itself, notably in:

- **Kesavananda Bharati (1973)**: Established the **Basic Structure Doctrine**, limiting Parliament's power to amend the Constitution.
- **Indira Gandhi v. Raj Narain (1975)**: A peak in confrontation between judiciary and executive
- **Minerva Mills (1980)** and **SR Bommai (1994)**: Reinforced the judiciary's role in **checking executive overreach**.

- **Recent Examples**: Collegium debates, appointments, and PIL-driven policy interventions

Yet, the boundary has remained fluid, especially with the **expansion of PILs**, **judicial interventions in policy**, and recent rulings involving constitutional authorities.

Way Forward

- **Institutional Dialogue**: Regular and respectful dialogue among the three organs is vital to resolve constitutional ambiguities and reduce confrontational posturing.

- **Reinforce Constitutional Literacy**: Greater awareness of constitutional roles, responsibilities, and restraints among public servants and citizens alike is needed.

- **Strengthen Accountability without Overreach**: While the judiciary must remain the guardian of the Constitution, it should exercise **judicial restraint** when dealing with **purely political questions**.

- **Codification of Conventions**: Clear guidelines or legislative frameworks (like the UK's constitutional conventions) could prevent misuse or overstepping by constitutional authorities.

- **Preserve the Spirit of the Constitution**: All three organs must remember that **public welfare and constitutional fidelity** are central to governance—not institutional supremacy.

The **Constitution does not create hierarchy** among its organs—it envisions **cooperation, not confrontation**. For India to thrive as a democratic republic, a **delicate balance**, mutual respect, and an unwavering commitment to **constitutional morality** are essential.

> **Q.** *"The Constitution of India does not envisage supremacy of one organ over the other, but a harmonious functioning of all."* In the context of recent debates on judicial overreach and legislative supremacy, critically examine the constitutional boundaries between the Legislature, Executive, and Judiciary. Suggest measures to uphold the principle of separation of powers in letter and spirit.   *[UPSC MAINS Practice Question]*

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INTERNATIONAL RELATIONS

Why in the News?

The 6th Summit of the Heads of State/Government of the member States of BIMSTEC (Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation) was held in Bangkok, Thailand.

About BIMSTEC

- **BIMSTEC** is a regional **multilateral organization** that connects the **littoral and adjacent areas of the Bay of Bengal**, forming a contiguous regional unity.
- Members (7 Countries)
    - South Asia (5): Bangladesh, Bhutan, India, Nepal, Sri Lanka
    - Southeast Asia (2): Myanmar, Thailand
- **Established**: 1997, via the **Bangkok Declaration**

Purpose and Objectives

- **Promote regional cooperation** on issues of common interest
- **Enable rapid economic development** and **accelerate social progress**
- Strengthen **technical collaboration** and regional **connectivity**
- Address challenges in trade, energy, environment, disaster management, and security

Key Outcomes of the 6th BIMSTEC Summit:

- **Bangkok Vision 2030 Adopted** – A first-of-its-kind vision document setting the roadmap for a **prosperous, resilient, and open** Bay of Bengal region.
- **Summit Declaration** – Leaders outlined their **collective vision, priorities, and directives** for enhanced regional cooperation.
- **Maritime Transport Agreement Signed** – Aimed at boosting **maritime connectivity** and facilitating trade and travel among member states.
- **Strategic MoUs Signed** – Institutional partnerships formalized with **IORA** and **UNODC** to strengthen cooperation in maritime, security, and crime prevention.
- **Institutional Strengthening** – Adoption of **Rules of Procedure** and endorsement of the **Eminent Persons Group Report** for reforming and revitalizing BIMSTEC's institutional framework.
- **Disaster Response Commitment** – Joint statement issued in solidarity with **Myanmar and Thailand** post-earthquake, reaffirming regional **disaster management cooperation**.

India's key proposals at the 6th BIMSTEC Summit

- **Security Cooperation**: India to host the first BIMSTEC Home Ministers' Meeting; focus on counter-terrorism, cybercrime, and human trafficking.
- **Digital & Energy Connectivity**: Proposes linking India's **UPI** with BIMSTEC payment systems and accelerating **regional electric grid** integration.
- **Trade & Economy**: Suggests forming a **BIMSTEC Chamber of Commerce**, holding an **annual business summit**, and exploring **trade in local currencies**.
- **Maritime & Disaster Management**: To establish a **Sustainable Maritime Transport Centre** and a **Centre of Excellence for Disaster Management** in India.
- **Health, Agriculture & Space**: Proposes Centres of Excellence in **traditional medicine** and **agriculture**; plans for **nano-satellites** and remote sensing collaboration.
- **Youth & Education**: Launch of the **BODHI initiative** to train 300 youth annually, scholarships, diplomat training, and youth-focused summits and hackathons.

- **Culture & Sports**: India to host **BIMSTEC Traditional Music Festival**, **Athletics Meet (2025)**, and **BIMSTEC Games (2027)**.

The 6th BIMSTEC Summit marked a significant step towards deeper regional integration, with the adoption of the Bangkok Vision 2030 and key agreements in connectivity, security, and institutional reform. India's proactive proposals further underscored its commitment to shaping a resilient, prosperous, and interconnected Bay of Bengal region.

> **Q.** Analyze the key outcomes of the 6th BIMSTEC Summit, with a focus on the adoption of the Bangkok Vision 2030 and India's proposals for regional cooperation. Discuss how these initiatives can strengthen connectivity, security, and economic integration in the Bay of Bengal region. *[UPSC MAINS Practice Question]*

2.2. INDIA-AUSTRALIA ECONOMIC COOPERATION AND TRADE AGREEMENT

Why in the News?

The India-Australia Economic Cooperation and Trade Agreement (Ind-Aus ECTA), signed on 2nd April 2022, has completed three years, marking a significant development in India's economic diplomacy.

About the Agreement

This pact has fortified economic ties between two key Indo-Pacific democracies, opening doors for trade, business, and jobs by capitalizing on India's industrial strengths and Australia's resource abundance.

Achievements

- **Trade Expansion:** Bilateral trade reached USD 24 billion in 2023-24, with India's exports to Australia rising 14 percent from 2022-23. Between April 2024 and February 2025, exports grew 4.4 percent compared to the same period last year, signaling steady progress.
- **Sectoral Advances:** Exports in textiles, pharmaceuticals, chemicals, and agriculture have surged, while new products like Calcined Petroleum Coke, High-Capacity Diesel Generating Sets, and Air Liquefaction Machinery highlight diversifying trade.
- **Industrial Boost:** Imports of metalliferous ores, cotton, wood, and wood products from Australia have supported Indian manufacturing, improving productivity and supply chains.
- **Economic Fit:** The deal showcases how Australia's raw materials align with India's growing industrial and consumer demands, creating a win-win partnership.

Challenges

- **Trade Obstacles:** Non-tariff barriers, including strict regulations and compliance rules, hinder smooth trade flows, alongside some lingering tariff issues.
- **Services Lag:** The agreement underplays India's strengths in IT, education, and professional services, leaving significant potential untapped.
- **Process Bottlenecks:** Slow customs clearances, certification delays, and quality checks frustrate smaller exporters trying to benefit from ECTA.
- **Global Headwinds:** Supply chain disruptions, economic uncertainty, and Indo-Pacific geopolitical tensions, like China's influence, pose external risks.

Way Forward

- **Wider Agreement:** Evolving ECTA into a Comprehensive Economic Cooperation Agreement could open markets further, include services, and add frameworks for investment, digital trade, and sustainability.

- **SME Inclusion:** Streamlined procedures and targeted support can help small and medium enterprises tap into the agreement's benefits more effectively.
- **Future Sectors:** Prioritizing electronics, engineering goods, green energy, and critical minerals could spark the next phase of trade and innovation.
- **Deeper Links:** Collaboration in education, skill development, and technology exchange can strengthen people-to-people ties and long-term economic resilience.

Marking three years, ECTA has delivered notable trade gains and built a strong foundation for India-Australia ties. By addressing barriers and pursuing strategic opportunities, this partnership can grow further, contributing to a more robust global economy in the years ahead.

> **Q.** Evaluate the achievements and challenges of the India-Australia Economic Cooperation and Trade Agreement (Ind-Aus ECTA) after three years of implementation. Suggest strategies to evolve it into a Comprehensive Economic Cooperation Agreement (CECA) to enhance bilateral trade and economic integration. ***[UPSC MAINS Practice Question]***

2.3. 150TH ASSEMBLY OF INTER-PARLIAMENTARY UNION (IPU)

Why in the News?

Recently, Lok Sabha Speaker Om Birla addressed the 150th Assembly of the Inter-Parliamentary Union (IPU) in Tashkent, Uzbekistan.

Inter-Parliamentary Union (IPU)

The **Inter-Parliamentary Union (IPU)** is a global platform for parliamentary diplomacy, founded to promote peace, democracy, and human rights.

- **Established:** 1889 (Paris), the world's first multilateral political organization.
- **Headquarters:** Geneva, Switzerland.
- **Members:** 180 national parliaments and 15 associate members.
- **Motto:** "For democracy. For everyone."
- **Funding:** The IPU is primarily funded by public contributions from its member parliaments.

Core Aims:

- Promote representative democracy and strengthen parliamentary institutions.
- Facilitate dialogue and diplomacy among parliaments to resolve international conflicts.
- Advance gender equality, youth empowerment, and sustainable development.
- Defend the human rights of parliamentarians worldwide.

IPU Structure:

- **IPU Assembly:** The primary decision-making body where global political and social issues are discussed. It issues recommendations for international parliamentary actions.
- **Governing Council:** A policy-making body with 3 representatives from each member of parliament. It sets the IPU's program and budget and elects the Executive Committee.
- **Executive Committee:** A 17-member body responsible for overseeing the IPU's operations and administration.
- **Standing Committees:** Focus on key themes such as peace, democracy, development, and international cooperation.

> **Q.** What role does the Inter-Parliamentary Union (IPU) play in promoting global democratic norms and parliamentary diplomacy? ***[UPSC MAINS Practice Question]***

2.4. INDIA – SRI LANKA RELATION

Why in the News?

Recently, Prime Minister Narendra Modi visited Sri Lanka, reinforcing the island nation's important role in India's 'Neighbourhood First Policy' and 'MAHASAGAR' vision.

Historical Context

Key Highlights of the Visit:

- **Energy**: Inaugurated a 120-MW solar plant and Trincomalee energy hub with UAE collaboration.

- **Defense**: Signed agreements to enhance security cooperation.

- **Digital & Cultural**: Supported Sri Lanka's digital identity project and granted funds for cultural sites like Thirukoneswaram and Sita Eliya temples.

- **Economic Aid**: Converted $100M loans to grants, provided debt restructuring, and allocated 2.4B LKR for Eastern Province.

- **Infrastructure**: Upgraded Maho-Omanthai railway, launched new signaling system, and supported agricultural and renewable energy projects.

- **Humanitarian**: Announced training for 700 Sri Lankans annually and Lord Buddha relics exposition in 2025.

Strategic Significance:

- **Mutual Support**: India backs Sri Lanka's BRICS bid; Sri Lanka supports India's UNSC candidacy (2028–29).

- **Maritime Security**: Joint efforts in IOR for a free, open, and secure region via SLINEX, MITRA SHAKTI, and MILAN exercises.

- **Economic Ties**: India, Sri Lanka's largest trading partner, provided ~$4B aid (2022–23), co-chaired debt restructuring, and supports Kankesanthurai Port rehabilitation.

- **Cultural Bonds**: Strengthened by 1.6M Indian-Origin Tamils and restoration of cultural sites.

Challenges:

- **China's Influence**: Hambantota Port and Chinese vessels raise security concerns.

- **Fishermen Disputes**: Bottom trawling and Kachchatheevu issues persist.

- **13th Amendment**: Delayed devolution fuels tensions; India pushes for implementation.

Way Forward:

- Leverage India's Neighbourhood First and SAGAR policies to counter strategic challenges.

- Proposed fishing solutions: Shared fishing zones, regulated trawling, and leasing Kachchatheevu for traditional fishing access.

India's commitment as a trusted partner reinforces strategic convergence amid global geopolitical shifts.

Q. India–Sri Lanka bilateral ties have witnessed renewed momentum in recent years through strategic cooperation in energy, defence, and cultural diplomacy. However, challenges such as the growing Chinese footprint and unresolved issues like fishermen disputes continue to strain the relationship.

Critically analyse the evolving contours of India–Sri Lanka relations in the context of India's 'Neighbourhood First' and SAGAR vision. Suggest policy measures to strengthen mutual trust and address persistent bilateral irritants. *[UPSC MAINS Practice Question]*

Why in the News?

Recently, India has been elected unopposed to the United Nations Intergovernmental Working Group of Experts on International Standards of Accounting and Reporting (ISAR) for the 2025–2027 term.

About ISAR

The Intergovernmental Working Group of Experts on International Standards of Accounting and Reporting (ISAR) is a permanent body under the United Nations. It plays a crucial role in helping member states enhance the quality, transparency, and international comparability of both financial and non-financial reporting.

Key Functions

- **Financial Reporting:** ISAR supports the development and harmonization of accounting standards across nations.
- **Non-Financial Disclosures:** It also focuses on sustainability-related issues, including environmental performance, corporate governance, and corporate social responsibility (CSR).

Annual Meetings

ISAR holds its annual sessions in Geneva, providing a global platform for dialogue on current and emerging challenges in corporate reporting.

Membership Structure

ISAR comprises 34 formal members, each serving a three-year term. The group's composition is geographically diverse:

- **Africa:** 9 countries
- **Asia:** 7 countries
- **Latin America:** 6 countries
- **Eastern Europe:** 3 countries
- **Western Europe and Other States:** 9 countries

Q. Consider the following about the structure and functioning of ISAR (International Standards of Accounting and Reporting):

1. It conducts its sessions annually in New York.
2. It has a total of 34 formal members with representation from all global regions.
3. It provides a platform for discussing global standards on corporate reporting and sustainability.

Which of the above statements is/are correct? *[UPSC Pre. Practice Question]*

(a) 2 and 3 only   (b) 1 and 2 only

(c) 1 and 3 only   (d) 1, 2 and 3

Ans. (a) 2 and 3 only

2.6. ASEAN-INDIA TRADE IN GOODS AGREEMENT (AITIGA)

Why in the News?

8th ASEAN-India Trade in Goods Agreement Review Meeting Concludes in New Delhi

What is AITIGA?

AITIGA stands for the **ASEAN-India Trade in Goods Agreement**—a **free trade agreement (FTA)** between **India** and the **10 ASEAN member states**. It primarily focuses on facilitating trade in physical

goods by eliminating tariffs and reducing non-tariff barriers, with the broader goal of strengthening **economic integration and bilateral trade**.

Background and Origin

- **Signed**: 2009, during the **7th ASEAN-India Economic Ministers' Meeting** in **Bangkok**.
- **Implemented**: 2010; commonly referred to as the **ASEAN-India FTA**.
- In **2014**, a separate **Trade in Services Agreement** was signed to complement AITIGA.

Key Features

- **Tariff Liberalization**: Gradual reduction or elimination of import duties on **over 75% of traded goods** between India and ASEAN nations.
- **Rules of Origin**: Establishes criteria to ensure that **only goods originating from ASEAN or India** benefit from preferential tariff treatment.
- **Exclusion Lists**: Certain **sensitive sectors**, such as **agriculture** and **automobile parts**, are exempted from tariff concessions.

Impact on Trade

- **Bilateral trade** between India and ASEAN reached **$121 billion in 2023–24**.
- ASEAN accounts for **approximately 11% of India's total global trade**, highlighting the agreement's significance in India's international trade landscape.

Q. Consider the following with reference to ASEAN-India economic relations:

1. ASEAN is India's largest trading partner globally.
2. AITIGA (The ASEAN-India Trade in Goods Agreement) was signed in 2014 and implemented the same year.
3. Rules of Origin under AITIGA ensure that only goods originating in ASEAN or India benefit from tariff concessions.

Which of the statements given above is/are correct?   *[UPSC Pre. Practice Question]*

(a) 1 and 2 only   (b) 2 and 3 only

(c) 3 only   (d) 1, 2 and 3

Ans. (c) 3 only

Why in the News?

Recently, Mauritius became first African country to sign International Solar Alliance (ISA) Country Partnership Framework (CPF).

The **International Solar Alliance (ISA)** is a treaty-based intergovernmental organization, launched in 2015 by India and France, aimed at promoting solar energy as a sustainable solution for energy access and climate change, with the goal of mobilizing USD 1 trillion in solar investments by 2030.

ISA's Country Partnership Framework (CPF) – Mauritius

- The **Country Partnership Framework (CPF)** is a strategic initiative of the **International Solar Alliance (ISA)** aimed at enabling long- and medium-term cooperation with member countries in the solar energy sector.
- Under this initiative, a **Country Partnership Strategy (CPS)** will be developed specifically for **Mauritius**.

- The CPS will be tailored to:
  - Address the country's specific energy needs.
  - Explore potential opportunities for solar energy expansion.
- Key focus areas under the Mauritius CPS:
  - **Floating Solar Projects** – leveraging inland water bodies for clean energy generation.
  - **Rooftop Solar Systems** – promoting decentralized solar power for households and businesses.
  - **Solar-Powered Water Pumping Systems** – enhancing sustainable agriculture and water access.
- The initiative aligns with ISA's broader goal of accelerating the adoption of solar energy globally, especially in **solar-resource-rich but energy-poor countries**.

Mauritius becoming the first African country to sign the CPF marks a key step in strengthening solar cooperation under the ISA. It highlights India's solar diplomacy and sets a model for tailored, scalable solar solutions in other developing nations.

> **Q.** Discuss the significance of Mauritius becoming the first African country to sign the ISA's Country Partnership Framework. Analyze how the tailored Country Partnership Strategy can accelerate Mauritius's clean energy transition and set a model for other African nations, highlighting India's role in global solar diplomacy.
>
> *[UPSC MAINS Practice Question]*

2.8. INDIA-ITALY RELATIONS

Why in the News?

India and Italy have reaffirmed their strategic partnership with a focus on defence, clean energy, high technology, and the India-Middle East-Europe Economic Corridor (IMEEC), during the visit of Italian Deputy PM and Foreign Minister Antonio Tajani in 2025.

Background of the News:

Italian Deputy PM Antonio Tajani visited India for high-level talks with EAM Dr. S. Jaishankar, reviewing the Joint Strategic Action Plan (JSAP) 2025–29. The visit emphasized collaboration in trade, security, technology, and IMEEC—a major connectivity initiative linking India with Europe via the Middle East.

Historical Context:

India and Italy established diplomatic relations in 1947. Cultural ties and mutual cooperation in art, education, and heritage conservation have historically supported the relationship. In 2023, the two countries elevated their ties to a Strategic Partnership during PM Meloni's visit to India.

Government Initiative:

- **JSAP 2025–29** launched to deepen bilateral ties across sectors like AI, clean energy, cybersecurity, and education.
- **IMEEC**: India and Italy committed to advancing this multilateral corridor. Italy appointed a special envoy to fast-track implementation.
- Expansion of institutional mechanisms for regular dialogue and policy coordination.

Way Forward:

- Operationalize JSAP with concrete deliverables in innovation, youth exchange, and digital tech.
- Accelerate IMEEC's physical and policy infrastructure.
- Boost defence industrial collaboration and co-development projects.
- Strengthen multilateral alignment in Indo-Pacific, G20, and UN reforms.

The India-Italy partnership is entering a dynamic phase of strategic convergence and global engagement. Initiatives like JSAP 2025–29 and IMEEC position both nations to address emerging geopolitical realities while enhancing connectivity, technology, and sustainable growth in a multipolar world.

> **Q.** Discuss the significance of the India-Italy Joint Strategic Action Plan (2025–29) and the India-Middle East-Europe Economic Corridor (IMEEC) in the context of India's evolving foreign policy priorities and connectivity initiatives.   *[UPSC MAINS Practice Question]*

2.9. INDIA-SAUDI ARABIA RELATIONS

Why in the News?

India–Saudi Arabia ties have evolved significantly over the past two decades, transitioning from an oil-focused relationship to a comprehensive strategic partnership. The Indian PM's 2025 visit highlights ongoing efforts to strengthen cooperation in energy, defence, investment, and technology.

Historical Overview:

Formal diplomatic relations between the two countries were initiated in 1947. However, the foundation for a comprehensive partnership was laid in the 21st century.

- The **Delhi Declaration (2006)**, signed during King Abdullah's visit to India, marked the beginning of a strategic engagement.
- This was further advanced by the **Riyadh Declaration (2010)** during PM Manmohan Singh's visit, signifying an upgraded strategic partnership.

Contours of the Strategic Partnership:

- **Economic and Trade Cooperation:**
  o Saudi Arabia has emerged as India's **fifth-largest trading partner**, with bilateral trade touching nearly **USD 43 billion** in FY 2023–24.
  o Saudi Arabia's **Public Investment Fund (PIF)** has committed investments worth **USD 10 billion**, particularly in **technology, retail, renewable energy**, and **agri-business**.
- **Energy Security and Transition:**
  o Despite diversification, Saudi Arabia remains one of India's top crude oil suppliers, fulfilling over **14%** of India's requirements.
  o Collaboration is expanding to **clean and renewable energy** domains, especially under platforms like the **International Solar Alliance (ISA)**.
- **Defence and Strategic Cooperation:**
  o Defence ties have seen a qualitative leap with joint naval drills such as Al Mohed Al Hi*ndi* and the **Ex-Sada Tanseeq-I** land exercise held in 2024.
  o Dialogues on **defence manufacturing, cybersecurity**, and **intelligence sharing** have gained traction.
- **Cultural and Human Linkages:**
  o The Indian diaspora in Saudi Arabia, numbering around **7 million**, forms the cornerstone of social and economic engagement.
  o Initiatives like **MoUs on cultural cooperation**, promotion of **yoga**, and increasing participation in **sports and tourism** are building soft-power bridges.
- **Strategic Synergy:**
  o India's **'Viksit Bharat 2047'** vision and Saudi Arabia's **'Vision 2030'** offer complementarities in **infrastructure, innovation**, and **human capital development**, enabling long-term collaboration in emerging sectors.

Challenges in the Bilateral Trajectory:

Despite impressive gains, several factors challenge the full potential of the relationship:

- **Regional Instability:** Conflicts such as the **Yemen War** or evolving **Iran-Saudi dynamics** can indirectly impact India's interests.
- **China Factor:** Saudi Arabia's expanding ties with **China**, including participation in **BRICS Plus**, necessitate strategic balancing by India.
- **Energy Vulnerability:** India's heavy reliance on Saudi oil exposes it to **global oil price shocks** and **supply uncertainties**.
- **Labour Rights Concerns:** Periodic concerns over the **welfare of Indian workers** in the Gulf underline the need for robust consular mechanisms.
- **Cultural Considerations:** As Saudi Arabia modernizes, India must navigate **religious sensitivities** while promoting cultural diplomacy.

The Way Forward: Deepening the Partnership

To maximize this strategic convergence, the following measures are recommended:

- **Diversify Bilateral Engagement:** Go beyond hydrocarbons by intensifying cooperation in **digital infrastructure, fintech, space technology**, and **food security**.
- **Strengthen Defence Frameworks:** Institutionalize **joint training programs, defence production**, and **counter-terrorism operations**.
- **Expand People-to-People Contact:** Promote **higher education exchanges, medical tourism**, and collaborative **art and cultural initiatives**.
- **Leverage Vision 2030 Opportunities:** Encourage Indian firms to invest in Saudi Arabia's **mega projects like NEOM**, entertainment, and **smart city development**.
- **Enhance Multilateral Coordination:** Align positions in **G20, BRICS+, SCO, and ISA** to champion a **rules-based, multipolar global order**.

The India–Saudi Arabia partnership is no longer confined to oil diplomacy. It is now a **multidimensional relationship** rooted in mutual strategic interests, economic complementarities, and shared aspirations for global leadership. The current trajectory, driven by proactive diplomacy and visionary reforms, holds immense promise for both nations as they navigate the complexities of a rapidly evolving world order.

> **Q.** "India–Saudi Arabia relations have evolved from an oil-dependent engagement to a multifaceted strategic partnership." Discuss the key drivers of this transformation and evaluate the significance of the Indian Prime Minister's 2025 visit in advancing this evolving bilateral relationship.

2.10. INDUS WATER TREATY

Why in the News?

India has said the Indus Waters Treaty (IWT) of 1960 with Pakistan will be held 'in abeyance' with immediate effect, until Islamabad credibly and irrevocably abjures its support for cross-border terrorism.

Indus Waters Treaty (Historical Context)

The Indus river has five tributaries - Chenab, Jhelum (western rivers) and Ravi, Beas and Sutlej (eastern rivers) Another tributary - Kabul - flows through Pakistan and Afghanistan.

- **Signed in 1960**: India-Pakistan agreement, mediated by the World Bank, to manage Indus River system.
- **Partition Impact**: 1947 partition split Indus Basin, with Pakistan as lower riparian and India as upper riparian, causing disputes over irrigation facilities.

- **River Allocation**:
  - **Eastern Rivers**: Sutlej, Beas, Ravi (33 million acre feet, MAF) for India's unrestricted use.
  - **Western Rivers**: Indus, Jhelum, Chenab (135 MAF) largely for Pakistan.
- **India's Rights**: Western river use for domestic, agricultural, and hydroelectric purposes, with 3.6 MAF storage, subject to restrictions.
- **Permanent Indus Commission**: Facilitates cooperation and dispute resolution.
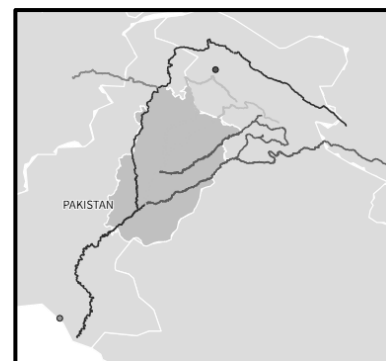
Recent Changes in the Treaty

- **Suspension (April 23, 2025)**: India declared IWT "in abeyance" due to Pakistan's alleged terrorism support, post-Pahalgam attack.
- **2024 Notice**: India sought treaty review, citing project objections and security issues.
- **Legal Basis**: Cites Vienna Convention's Article 62 for potential abrogation due to changed circumstances.
- **Key Changes**: No obligation to share flood data, follow reservoir flushing schedules, or address Pakistan's project objections.

Sir Creek is a 96-kilometer (60-mile) strip of water disputed between India and Pakistan, located in the Rann of Kutch marshlands.

Kori Creek is a tidal creek located in the Kutch region of the Indian state of Gujarat, just west of the Great Rann of Kutch. This area, which is part of India, forms a segment of the Indus River Delta, which extends across Gujarat in India and Sindh in Pakistan.

Implications of the Changes

- **Reservoir Management**: Unrestricted flushing and filling (previously August-only) could disrupt Pakistan's irrigation during sowing season.
- **Flood Data**: Stopping data sharing may hinder Pakistan's monsoon flood preparedness.
- **Hydropower Projects**:
  - No design/operational restrictions on projects (e.g., Kishanganga, Ratle).
  - Pakistan's objections irrelevant, enabling faster project development.
- **Flood Control**: Unrestricted storage on western rivers (e.g., Jhelum) aids Kashmir flood mitigation.
- **Bilateral Relations**: End to joint monitoring and Pakistani visits strains ties.
- **Regional Stability**: Pakistan faces economic/food security risks, potentially escalating tensions.

Way Forward

- **Diplomacy**: Backchannel talks or treaty revision with World Bank mediation.
- **Humanitarian Steps**: Share limited flood data to prevent loss of life in Pakistan.
- **Sustainable Projects**: Develop eco-friendly hydropower/flood control with environmental assessments.
- **International Norms**: Follow equitable utilization and no-harm principles.
- **Regional Cooperation**: Engage Afghanistan for broader water management.

The IWT suspension empowers India's water resource management but risks Pakistan's agriculture and regional stability. A balanced approach—strategic development paired with diplomacy and humanitarian measures—can ensure equitable Indus Basin use, fostering peace in South Asia.

Q. The situation today is far different to that prevalent years back when the Indus Water Treaty was signed." Highlight the complexity of the current challenges on both sides of the border in this regard. Do you think that a review of the Treaty is in India's best interests?

*****

ECONOMY

3.1. IMF REPORT ON INDIA'S ECONOMY

Why in the News?

The International Monetary Fund (IMF) has recently released a report highlighting India's financial resilience and economic growth.

Historical Context: Post-1991 liberalization, India's financial system evolved with private banks, NBFCs, and digital services. It weathered the 2008 global crisis, 2016 demonetization, and COVID-19 through effective fiscal and monetary interventions.

Key Strengths (IMF Report):

- **Diverse System**: Mix of state-owned, private banks, and NBFCs enhances shock absorption.
- **Resilience**: Banking and NBFC sectors withstand macrofinancial shocks, though PSBs and smaller NBFCs face challenges.
- **Insurance Growth**: Strong life and general insurance sectors, bolstered by digital and regulatory advancements.
- **Cybersecurity**: Advanced frameworks safeguard critical financial systems.

Areas for Improvement:

- **Capital Base**: PSBs need stronger capital reserves for lending during downturns.
- **Cybersecurity**: More crisis simulations required to counter large-scale cyber threats.

Government Initiatives:

- **Banking Reforms**: PSB recapitalization, bank mergers, and Insolvency and Bankruptcy Code for stressed assets.
- **Digital Push**: UPI, Aadhaar-enabled payments, and digital banking for financial inclusion.
- **Cybersecurity**: RBI mandates audits and stress tests for banking safety.

> **About IMF**
>
> Established in 1944 at Bretton Woods, the IMF promotes global monetary cooperation, financial stability, trade, employment, and poverty reduction. Governed by a Board of Governors, Executive Board, and Managing Director, it supports 190 member countries.

Way Forward:

- Bolster PSB capital adequacy.
- Expand cybersecurity assessments and simulations.
- Promote financial inclusion via digital literacy.
- Strengthen regulatory oversight for resilience.

India's financial system demonstrates resilience but requires ongoing efforts in PSB capital strengthening and cybersecurity to sustain economic growth.

> **Q. Which of the following statements regarding the IMF report on India's economy is correct?**
>
> *[UPSC Pre. Practice Question]*
>
> (a) The report states that India's financial system lacks diversity and is dominated by public sector banks.

3.2. ENERGY STATISTICS INDIA 2025

Why in the News?

Recently, the National Statistics Office (NSO) released *Energy Statistics India 2025*, which provides detailed insights into energy production, consumption, and import trends for FY 2023–24. This data highlights India's energy sector recovery post-COVID and aligns with the nation's vision for a *Viksit Bharat* by 2047.

Key Findings from Energy Statistics India 2025:

- **Primary Energy Supply**: Increased by 7.8%, reaching 9,03,158 KToE(Kilo Tonnes of oil Equivalent), signaling a strong recovery and resilience in the energy sector.

- **Coal Dominance**: Coal continues to be the backbone of India's energy, supplying 79% of total domestic energy and accounting for 60.21% of Total Primary Energy Supply (TPES).

- **Renewable Energy Growth**: India's renewable energy potential surged to 21,09,655 MW, with wind and solar playing a leading role.

- **Electricity from Renewables**: From 2,05,608 GWh in 2014-15, renewable electricity generation increased to 3,70,320 GWh by 2023-24, with a compound annual growth rate (CAGR) of 6.76%.

- **Per Capita Energy Consumption**: Rose by 25% over the past decade, reaching 18,410 MJ/person.

Positives Highlighted in the Report:

- **Rapid Expansion of Renewables**: The installed renewable energy capacity increased from 81,593 MW in 2015 to 1,98,213 MW in 2024, showing a remarkable CAGR of

Fig 1: Trend of Total Primary Energy Supply(TPES) in India

Fig 2: Gross Generation of Electricity from Renewable sources of Energy

Fig 3: Total Final Energy Consumption (TFEC) Per Capita (Mega Joule)
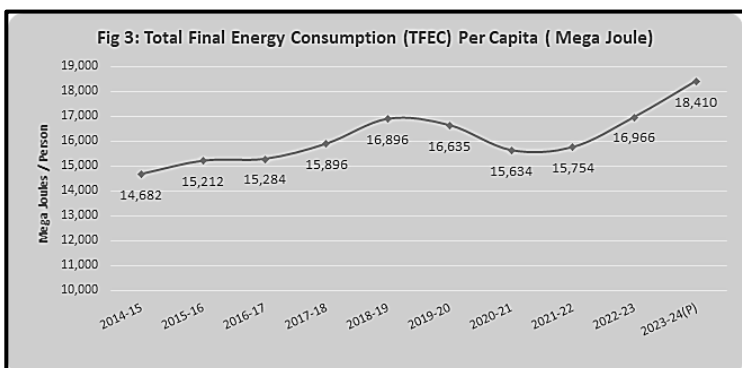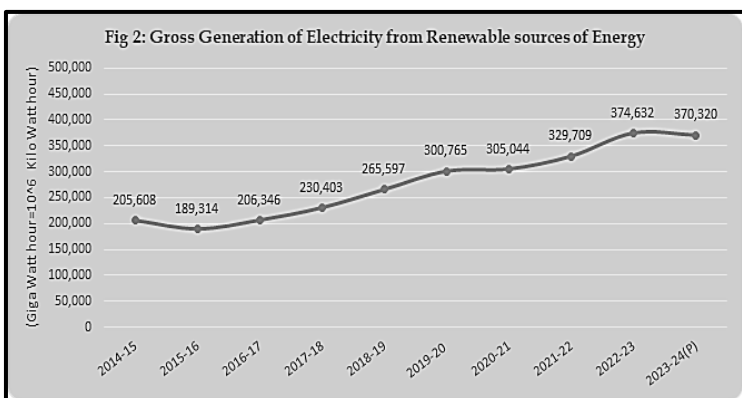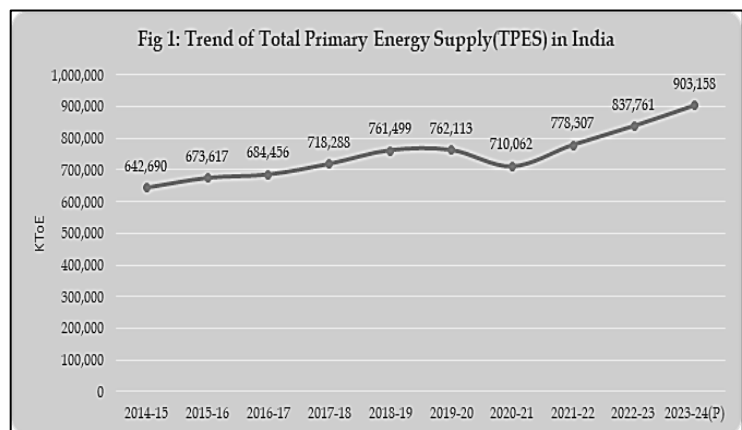
10.36%. Key states like Rajasthan, Gujarat, and Maharashtra are leading in wind and solar installations.

- **Industrial Growth Driving Energy Use**: The industrial sector saw a 13.2% rise in energy consumption, contributing to increased economic productivity. Energy use in industry jumped from 2.4 lakh KToE in 2014-15 to 3.1 lakh KToE in 2023-24.
- **Reduction in Transmission & Distribution Losses**: T&D losses dropped from 23% in 2014-15 to 17% in 2023-24, enhancing efficiency.
- **Non-Hydro Renewables Outpace Fossil Fuels**: Over the past decade, non-hydro renewables grew by more than 210%, outpacing the growth of fossil fuels.
- **Improved Energy Efficiency**: India has reduced energy consumption per unit of GDP, with energy intensity dropping to 0.2180 MJ/INR, indicating more efficient energy use as economic growth decouples from energy demand.

Challenges and Concerns:

- **Continued Coal Dependency**: Coal still dominates India's energy mix, contributing to 79% of the energy supply and 60% of TPES. Non-coking coal alone accounts for 93.3% of coal production.
- **High Import Reliance**: India remains highly dependent on imports, with 89% of crude oil, 46.6% of natural gas, and 25.86% of coal being imported.
- **Low Per Capita Electricity Consumption**: At 1,106 kWh per person, India's electricity consumption is still far below the global average of approximately 3,000 kWh.
- **Slow Integration of Renewables into Generation Mix**: Despite significant growth in renewable capacity, their share in actual energy generation remains limited.
- **Urban-Rural Disparity**: Rural areas continue to lag in both energy consumption and accessibility compared to urban industrial and residential demand.

Energy Statistics India 2025 highlights India's progress in energy security, efficiency, and renewable transition. However, challenges like coal dependency, import reliance, and slow renewable integration remain. A long-term energy policy focusing on innovation, equity, and sustainability is essential for achieving the Viksit Bharat 2047 vision.

Q. Which of the following is a challenge highlighted in the Energy Statistics India 2025 report?
1. India has successfully reduced its dependency on coal, which now contributes to less than 50% of the energy mix.
2. The share of renewable energy in actual energy generation remains limited despite significant growth in installed capacity.
3. There is no urban-rural disparity in energy consumption, with both areas showing similar growth patterns.
4. India has reduced its reliance on imported oil, natural gas, and coal.

Select the correct answer using the code below: *[UPSC Pre. Practice Question]*

(a) 2 only   (b) 1 and 3 only

(c) 2 and 4 only   (d) All of the above

Ans. (a) 2 only

3.3. NITI NCAER STATES ECONOMIC FORUM PORTAL

Why in the News?

Recently, India's Finance Minister launched the **"NITI NCAER States Economic Forum" portal** in New Delhi. Developed through a collaborative effort between **NITI Aayog** and the **National Council of Applied Economic Research (NCAER)**, the portal aims to provide a comprehensive repository of data related to **social**, **economic**, and **fiscal parameters** across all Indian states.

Key Features:

- **Comprehensive Data**: Provides historical data on state finances, revenue, debt, and public expenditure.
- **Research & Analysis**: Includes expert commentary, research reports, and policy papers for informed decision-making.
- **State Finances Focus**: Helps states manage revenues, fiscal deficits, and public debt while benchmarking policies.
- **Data-Driven Policy**: Supports evidence-based policymaking to improve fiscal strategies and balanced growth.
- **Peer Learning**: States can compare data and adopt best practices from one another.
- **Government Support**: Facilitates effective policy interventions by offering reliable, accessible data.

The portal enhances **economic transparency**, fosters **data-driven governance**, and empowers states to make informed fiscal decisions. It strengthens **collaboration** between states and central governments, creating a lasting asset for India's **economic growth**.

> **Q.** Evaluate the significance of the "NITI NCAER States Economic Forum" portal in fostering data-driven governance at the state level. *[UPSC MAINS Practice Question]*

3.4. FISCAL HEALTH INDEX 2025

Why in the News?

The Fiscal Health Index (FHI) initiative by NITI Aayog aims to evolve an understanding of the fiscal health of states in India.

Fiscal Health Index

- The FHI analysis covered **eighteen major states** that drive the Indian economy in terms of their **contribution to India's GDP, demography, total public expenditure, revenues, and overall fiscal stability**
- As states are responsible for approximately **two-thirds of public spending** and **one-third of total revenue**, their fiscal performance is important for the country's overall economic stability.
- The composite Fiscal Health Index has been developed using data from the **Comptroller and Auditor General of India (CAG)**, covering the **Financial Year 2022-23**.

Objectives of the Fiscal Health Index

- To provide a **comparative analysis of fiscal health** across Indian states through standardized metrics.
- To **identify areas of strength and concern** in states' fiscal management practices.
- To **promote transparency, accountability, and prudent fiscal management** through empirical assessment.
- To **assist policymakers in making informed decisions** aimed at enhancing fiscal sustainability and resilience.

Key Indicators Evaluated

The Fiscal Health Index 2025 is based on a **comprehensive set of indicators** that are grouped into five broad categories:

State-wise Composite FHI Score Heatmap
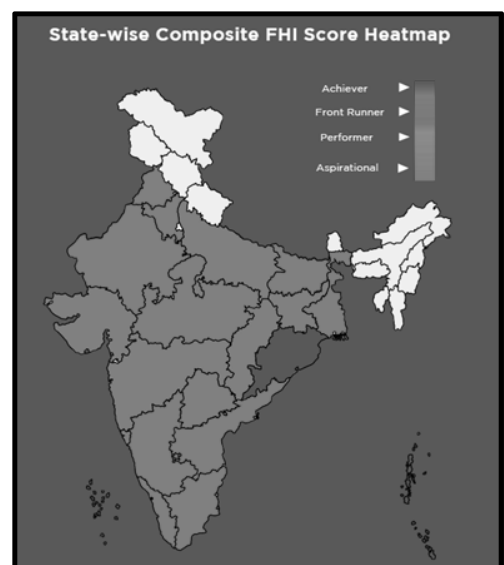
- **Revenue Generation and Mobilization:** Assessment of states' own revenue receipts, tax buoyancy, and non-tax revenue generation.
- **Expenditure Management and Prioritization:** Evaluation of efficiency in expenditure allocation, prioritization of capital expenditure, and adherence to fiscal discipline.\
- **Debt Management:** Analysis of states' debt-to-GSDP ratios, interest payment burdens, and overall sustainability of debt portfolios.
- **Fiscal Deficit Management:** Measurement of states' fiscal deficit as a percentage of Gross State Domestic Product (GSDP) and adherence to statutory limits.
- **Overall Fiscal Sustainability:** Composite analysis of revenue, expenditure, deficit, and debt indicators to gauge long-term fiscal health.

Performance of States

Achiever	Front Runner	Performer	Aspirational
Odisha (1)	Maharashtra (6)	Tamil Nadu (11)	Kerala (15)
Chhattisgarh (2)	Uttar Pradesh (7)	Rajasthan (12)	West Bengal (16)
Goa (3)	Telangana (8)	Bihar (13)	Andhra Pradesh (17)
Jharkhand (4)	Madhya Pradesh (9)	Haryana (14)	Punjab (18)
Gujarat (5)	Karnatak (10)		

The Fiscal Health Index 2025 offers a valuable tool for assessing the fiscal performance of Indian states. The FHI report will help States/UTs to help them evaluate their fiscal performance across key indicators, adopt sustainable fiscal practices suited to their economies and work towards fiscal prudence through appropriate state-level interventions

> **Q.** Discuss the objectives and key indicators of the Fiscal Health Index 2025 launched by NITI Aayog. How can this index promote fiscal sustainability and cooperative federalism among Indian states to achieve long-term economic stability? *[UPSC MAINS Practice Question]*

3.5. RBI'S REMITTANCES SURVEY 2025

Why in the News?

Recently, RBI released the latest Remittances Survey 2025. India's remittance landscape is undergoing a major shift, with **Advanced Economies (AEs)** now contributing over **50%** of remittances, surpassing the **Gulf Cooperation Council (GCC)** countries (37.9%) for the first time.

Key Findings:

- **Top Sources**: The **USA** (27.7%), **UAE** (19.2%) **UK** (10.8%), and **Singapore** (6.6%) are the leading contributors. The US alone exceeds the combined remittances from **Saudi Arabia** (6.7%) and **Kuwait** (3.9%).
- **Decline in Gulf Share**: The Gulf's contribution dropped from **46.7%** (2016-17) to **37.9%** (2023-24), due to factors like **Saudisation** and other nationalization policies.
- **Skilled Migration**: 78% of Indian migrants in the US work in higher-paying sectors, sending significantly larger remittances compared to Gulf workers.
- **Student Mobility**: Over **13.4 lakh** Indian students abroad (especially in Canada and the US) further boost remittances through education loans and post-graduation earnings.
- **Resilience**: Remittances from AEs were stable during the **COVID-19** pandemic, while Gulf flows declined.

Reasons for the Shift:

- **Economic Challenges in the Gulf**: Oil price volatility and nationalization policies have reduced low-skilled jobs.
- **Higher Wages in AEs**: Strong currencies and higher wages in countries like the US and UK make remittances more valuable.
- **Skilled Migration Surge**: Indian professionals, especially in STEM fields, are increasingly moving to AEs, earning higher salaries.
- **Education-Driven Migration**: Programs like the **UK Graduate Visa** and **Canada's PGWP** attract students who later transition to high-paying jobs.

Implications for India:

- **Economic Stability**: Remittances ($118.7B in 2023-24) support **42%** of India's trade deficit.
- **Reduced Gulf Dependence**: Lower reliance on Gulf remittances reduces exposure to oil-price volatility.
- **Brain Drain**: The migration of skilled workers raises concerns about talent loss in critical sectors.
- **Regional Variations**: States like **Kerala**, reliant on Gulf remittances, may face economic slowdowns, while **Telangana** and **Karnataka** benefit from US-based remittances.

The Way Forward:

- **Skill Alignment**: Align Indian qualifications with global standards to prevent deskilling.
- **Labor Agreements**: Expand pacts like **India-Japan SSW** to secure fair wages and working conditions.
- **Reducing Remittance Costs**: Scale initiatives like **Project Nexus** to cut transfer fees below **3%**.
- **Diversifying Destinations**: Promote migration to **East Asia** to reduce reliance on the Gulf and AEs.
- **Diaspora Bonds**: Issue **Resurgent India Bonds 2.0** to invest in infrastructure.

India's shift towards AEs highlights its growing global talent pool but requires policy adjustments to address challenges like **brain drain** and **over-reliance on the Gulf**.

Q. Which of the following is/are the primary reasons for the shift in India's remittance landscape as noted in the RBI Remittances Survey 2025?

1. Economic challenges in the Gulf countries, including oil price volatility.
2. A surge in skilled migration to Advanced Economies (AEs), particularly in STEM fields.
3. The increase in low-skilled migration to Gulf countries, leading to larger remittances.

Select the correct answer using the code below: *[UPSC Pre. Practice Question]*

(a) 1 and 2 only   (b) 1 only

(c) 2 and 3 only   (d) 1, 2 and 3

Ans. (a) 1 and 2 only

3.6. CRISES IN COTTON PRODUCTION

Why in the News?

Recently it was highlighted that the pink bollworm has brought down India's cotton production by a quarter in the last decade.

Present state of India's Cotton production

India, despite being one of the world's largest producers of cotton, is witnessing a **significant decline in cotton production**, projected to hit a 16-year low of **294 lakh bales in 2024-25**, down from a peak of **398 lakh bales in 2013-14**.

Reason for declining production

- **Resistance developed by the pink bollworm (PBW)**: A monophagous pest that exclusively feeds on cotton, PBW has evolved resistance to the *cry1Ac* and *cry2Ab* Bt toxins used in current GM cotton hybrids.

INDIA'S COTTON OUTPUT

Lakh bales of 170 kg

Values: 136, 179, 243, 241, 280, 307, 305, 290, 339, 367, 370, 398, 386, 370, 345, 332, 365, 333, 311, 336.62, 325.22, 294.25

X-axis: 2002-03, 2013-14, 2024-25

- **Stagnation in GM innovation**: India has not commercialised any new GM cotton variety since 2006, while PBW has continued to evolve.

- **Regulatory delays**: Extensive time-consuming regulatory processes and environmental opposition have prevented faster deployment of next-generation GM hybrids.

- **Yield stagnation and input distress**: Per-hectare yields have dropped from **566 kg in 2013-14** to **436-437 kg**, despite higher input costs borne by farmers.

- **Rising imports and declining exports**: Cotton exports have dipped from 117 lakh bales to 17 lakh bales, while imports have risen to 30 lakh bales, reversing India's trade position.

INDIA'S COTTON EXPORTS AND IMPORTS

Lakh bales of 170 kg — Export — Import

Values: 17.67, 0.84, 129.57, 77.59, 35.37, 30, 17

X-axis: 2002-03, 2013-14, 2024-25
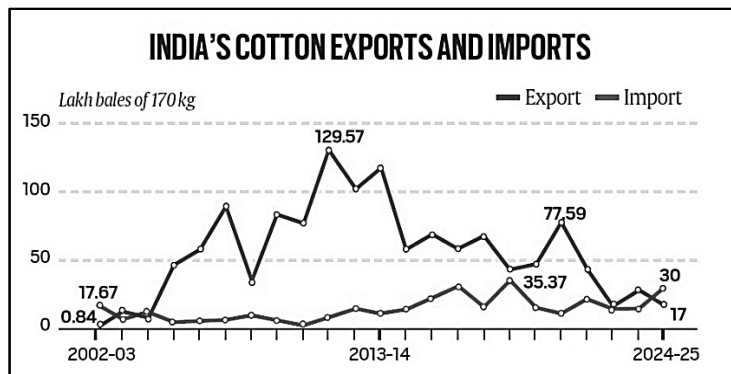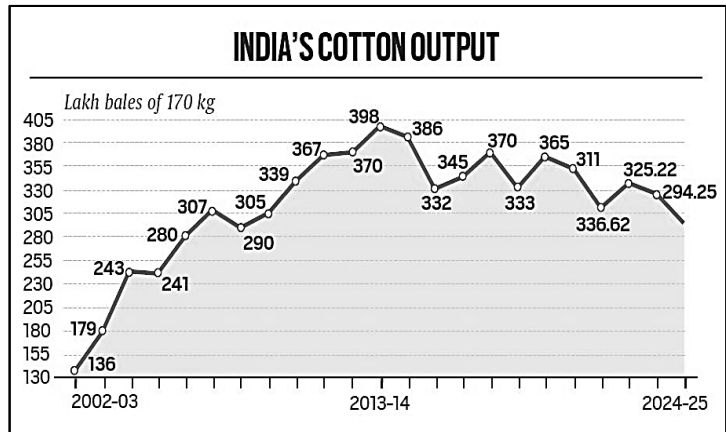
GM seed approval process in India

- **Research & Contained Trials:** Conducted in labs/greenhouses under the oversight of the **Institutional Biosafety Committee (IBSC)** and **Review Committee on Genetic Manipulation (RCGM)** for safety and gene expression.

- **Confined Field Trials (BRL-1 & BRL-2):** Carried out in controlled field conditions after RCGM approval, with **state government consent**. Data on agronomic performance, environmental safety, and toxicity is collected.

- **Regulatory Approval & Commercialisation:** The **Genetic Engineering Appraisal Committee (GEAC)** under MoEFCC reviews trial data. If satisfied, it recommends approval for **commercial release** of the GM seed.

Recent Developments

- **Bt Cotton** remains the only GM crop commercially approved in India (since 2002).

- **GM Mustard (DMH-11)** received GEAC clearance in 2022, but commercial release is yet to proceed amid court cases and protests.

- **New PBW-resistant cotton events** are under BRL-1 trials as of 2024-25, driven by urgent agronomic need.

Measures Taken by the Government

Recognising the crisis, the government has initiated the following:

- **Mission for Cotton Productivity (2025-26 Budget)**: A five-year plan aimed at boosting yields through scientific support, high-quality seeds, and extension services.
- **GEAC approvals for new GM hybrids**: Multiple private firms (Bioseed, Rasi Seeds, Ankur Seeds, Ajeet Seeds) have received or applied for approval to conduct **Biosafety Research Level (BRL-1)** trials for **new Bt genes (cry8Ea1, cry1c, chimeric genes)**.
- **Event selection and confined trials**: Encouragement for new transgenic events resistant to PBW with multi-location trials across different agro-climatic zones.
- **Streamlining field trials**: While still slow, there is evidence of the GEAC moving ahead with more field-testing approvals in light of the PBW crisis.

Way Forward

To revive India's cotton economy, a multi-pronged approach is essential:

- **Fast-track GM approvals**: Expedite BRL-1, BRL-2, and commercialisation of next-gen Bt cotton resistant to PBW, especially as cotton is a non-food crop.
- **Strengthen pest surveillance and IPM (Integrated Pest Management)**: Promote crop rotation, pheromone traps, and biocontrol agents to manage pest resistance.
- **Boost seed innovation ecosystem**: Encourage public-private partnerships and support indigenous R&D efforts like those by NBRI and Indian seed companies.
- **Enhance farmer awareness and extension**: Educate farmers on pest resistance management and safe usage of new hybrids.
- **Policy clarity on GM crops**: A robust and science-driven regulatory framework, balancing environmental concerns and agronomic realities, is essential.
- **Improve infrastructure and MSP support**: Ensure cotton procurement support and better logistics for storage and transportation to protect farmer interests.

India's cotton sector stands at a critical crossroads. What was once a poster child of the GM revolution is now in distress due to biological, technological, and policy stagnation. With the right regulatory push and scientific innovation—particularly in pest-resistant GM technology—India can reclaim its leadership in cotton production and trade. The **"Mission for Cotton Productivity"** must not remain a budgetary promise but evolve into a full-fledged, fast-tracked action plan integrating science, policy, and farmer welfare.

> **Q.** Analyze the reasons behind the decline in India's cotton production, with a focus on the pink bollworm resistance and regulatory challenges. Evaluate the government's measures, such as the Mission for Cotton Productivity, and suggest a multi-pronged strategy to revive the cotton sector for sustainable growth and global competitiveness.
>
> *[UPSC MAINS Practice Question]*

3.7. INDIA'S RENEWABLE ENERGY CAPACITY ACHIEVES HISTORIC GROWTH IN FY 2024-25

Why in the News?

Recently, the Ministry of New and Renewable Energy (MNRE) has announced a record renewable energy capacity addition of **29.52 GW** in FY 2024–25. This brings the country's total installed renewable energy capacity to **220.10 GW** as of 31st March 2025.

> **'Panchamrit' commitments announced by India at COP26**
>
> - Reaching a non-fossil fuel energy capacity of 500 GW by 2030;
> - Fulfilling at least half of its energy requirements via renewable energy by 2030;
> - Reducing CO_2 emissions by 1 billion tons by 2030;

- Reducing carbon intensity below 45 percent by 2030; and
- Pave the way for achieving a Net-Zero emission target by 2070.

Key elements driving increase in India's renewable energy capacity

- **Solar Sector Drives Renewable Surge:** India's solar capacity additions surged 38% year-on-year, from 15 GW in FY24 to 21 GW in FY25, pushing total installed solar capacity past 100 GW—a key milestone in the country's renewable energy journey.

- **Domestic Solar Manufacturing Scales New Heights:** India's push for self-reliance saw solar module manufacturing capacity grow from 38 GW to 74 GW, while solar PV cell capacity jumped from 9 GW to 25 GW in FY25. The country's first 2 GW ingot-wafer facility became operational, supported by ₹41,000 crore in PLI investments, creating around 11,650 direct jobs.

- **PM Surya Ghar Muft Bijli Yojana Sees Widespread Impact:** Over 11.01 lakh households benefited from the scheme by March 2025, with ₹5,437.20 crore disbursed as Central Financial Assistance to 6.98 lakh beneficiaries—boosting rooftop solar adoption significantly.

- **Green Hydrogen Sector Gains Momentum:** The sector advanced with ₹2,220 crore in incentives for 1,500 MW electrolyser manufacturing and ₹2,239 crore for producing 4.5 lakh TPA of Green Hydrogen. Pilot projects worth ₹662 crore were launched in the steel and transport sectors, introducing 37 hydrogen vehicles and 9 refueling stations.

- **Record Progress Under PM-KUSUM Scheme:** FY25 saw a 4.2x rise in pump installations (4.4 lakh) and a 25x increase in solarized pumps (2.6 lakh) under Components B and C respectively. Over 10 lakh solar pumps have now been deployed, with financial outlay soaring to ₹2,680 crore—a 268% annual increase.

This milestone marks significant progress toward India's target of **500 GW of non-fossil fuel capacity by 2030**, aligning with the **'Panchamrit'** commitments announced by India at COP26.

Q. Consider the following initiatives related to renewable energy in India:

1. The PM-KUSUM scheme promotes solar pumps in agriculture and saw a significant rise in installations in FY 2024–25.
2. India's solar module manufacturing capacity surpassed 100 GW in FY 2024–25.
3. The Green Hydrogen Mission includes incentives for both electrolyser manufacturing and green hydrogen production.

Which of the statements given above is/are correct?   *[UPSC Pre. Practice Question]*

(a) 1 and 3 only   (b) 2 and 3 only

(c) 1 and 2 only   (d) 1, 2 and 3

Ans. (a) 1 and 3 only

3.8. INCREASE IN PRODUCTION OF SILK IN INDIA

Why in the News?

Recently a government document highlighted an increase in the production of the silk in India.

India's Silk Production

India is the second largest producer of silk and also the largest consumer of silk in the world. In India, mulberry silk is produced mainly in the states of Karnataka, Andhra Pradesh, Tamil Nadu, Jammu & Kashmir and West Bengal, while the non-mulberry silks are produced in Jharkhand, Chattisgarh, Orissa and north-eastern states.

- **Mulberry silk** comes from silkworms that eat only mulberry leaves. It is soft, smooth, and shiny with a bright glow, making it perfect for luxury sarees and high-end fabrics. *92% of the country's total raw silk production comes from mulberry.*
- **Non-mulberry silk** (also known as Vanya silk) comes from wild silkworms that feed on leaves from trees like oak, castor and arjun. This silk has a natural, earthy feel with less shine but is strong, durable, and eco-friendly.

- India's raw silk production has experienced steady growth, **rising from 31,906 MT in 2017-18 to 38,913 MT in 2023-24.**
- This growth is supported by the expansion of **mulberry plantations.**

Government Initiatives to boost Silk production

- **Silk Samagra & Silk Samagra-2**: A central scheme to boost sericulture through R&D, training, market development, and quality certification. Silk Samagra-2 (2021–26) has a budget of ₹4,679.85 crore and has benefited over 78,000 people so far.

Growth in Mulberry Plantation & Silk Production (2017-24)

- **Supporting Schemes**:
  - **Raw Material Supply Scheme (RMSS)**: Supplies subsidized yarn to handloom weavers; 340 lakh kg distributed in FY 2023–24.
  - **National Handloom Development Programme (NHDP)**: Promotes integrated handloom development, marketing, and infrastructure support.
  - **SAMARTH**: A skill development initiative extended till 2025–26 to train 3 lakh people in textiles, including silk.
- **Impact**: These schemes enhance raw silk quality and quantity, empower rural communities, and strengthen India's silk and handloom sectors.
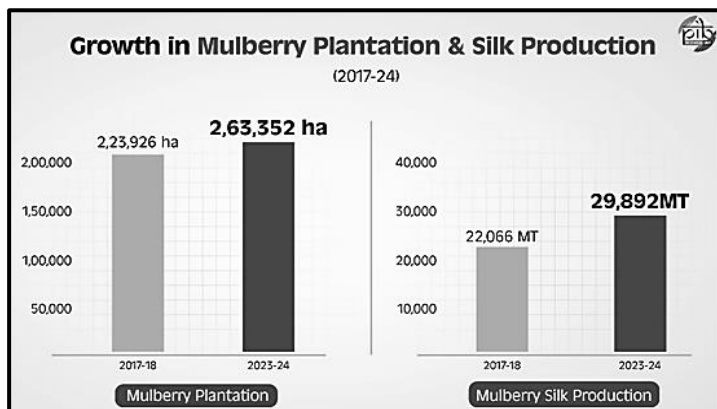
While the rise in silk production and government support through schemes like Silk Samagra is commendable, challenges remain. Issues such as fluctuating silk prices, limited market access for small sericulturists, and the need for wider adoption of modern rearing technologies hinder inclusive growth. To ensure long-term sustainability, the focus must shift toward value addition, export competitiveness, and greater support for Vanya silk-producing tribal regions.

> **Q.** Evaluate the factors contributing to the increase in India's silk production, focusing on government initiatives like Silk Samagra and supporting schemes. Discuss the challenges faced by the sericulture sector and suggest measures to enhance sustainability and export competitiveness. *[UPSC MAINS Practice Question]*

3.9. A REPORT ON "AUTOMOTIVE INDUSTRY: POWERING INDIA'S PARTICIPATION IN GLOBAL VALUE CHAINS"

Why in the News?

NITI Aayog has released an insightful **report titled "Automotive Industry: Powering India's Participation in Global Value Chains"**. The report outlines a pathway for positioning India as a key player in global automotive markets.

Key Highlights

- **India's Automotive Contribution**: The sector contributes 7.1% to India's GDP and 49% to its manufacturing GDP. India ranks as the fourth-largest vehicle producer globally, with an annual production of nearly 6 million vehicles.
- **Global Component Trade Share**: Despite a strong manufacturing base, India holds only about 3% of the global automotive component trade, approximately USD 20 billion. The report aims to increase this share to 8% by 2030.
- **Vision 2030 Goals**:
  o Scale auto component production to USD 145 billion.
  o Boost exports to USD 60 billion.
  o Generate 2–2.5 million jobs.
- **Challenges Identified**: The report acknowledges challenges such as high operational costs, infrastructural gaps, moderate integration into global value chains, and limited R&D expenditure, which hinder competitiveness.
- **Strategic Interventions**:
  o **Fiscal Measures:** Support for operational expenditures, skill development initiatives, incentives for R&D and branding, and cluster development to strengthen the supply chain.
  o **Non-Fiscal Measures:** Promotion of Industry 4.0 adoption, enhancing manufacturing standards, and encouraging digital technology integration.

The **NITI Aayog report** outlines a strategic roadmap to boost India's role in the global automotive value chain. With targeted interventions and clear **Vision 2030** goals, it aims to enhance competitiveness, scale exports, and position India as a global automotive hub.

> **Q.** Analyze the key highlights of NITI Aayog's report on the automotive industry, focusing on its Vision 2030 goals. Discuss the challenges hindering India's integration into global value chains and evaluate the proposed fiscal and non-fiscal interventions to enhance competitiveness.
>
> *[UPSC MAINS Practice Question]*

3.10. RBI UNVEILS DRAFT GUIDELINES TO OVERSEE GOLD LOANS

Why in the News?

The Reserve Bank of India (RBI) has released **draft guidelines** aimed at tightening the regulatory framework around **gold loans**, in response to a **sharp rise in disbursements and a corresponding increase in non-performing assets (NPAs)** in this segment, especially among **urban cooperative banks (UCBs)**. The new norms seek to strengthen **transparency, risk management, and customer protection**.

Historical Context:

- Gold loans are popular in India due to cultural affinity and quick disbursal.
- RBI's 2012 guidelines for NBFCs set LTV ratios and valuation standards.
- During COVID-19, LTV was raised to 90% (later reverted to 75%), increasing default risks.
- Rising NPAs highlight the need for a unified regulatory framework.

Key Proposals:

- **Collateral Restrictions**: No loans against primary gold/silver or related financial instruments (e.g., ETFs).
- **Tenure Cap**: Bullet repayment loans for personal use limited to 12 months.

- **Operational Framework**: Integrate gold loans into credit/risk management, set exposure limits, ensure due diligence, monitor fund use, and maintain documentation.

- **Uniform Valuation**: Standardize gold valuation to curb inflated lending.

- **LTV Cap**: Enforce 75% LTV ratio to reduce credit risk.

- **Documentation**: Mandate clear records of gold ownership, purity, and borrower eligibility.

- **Transparent Auctions**: Ensure fair auction processes in defaults, returning surplus to borrowers.

- **Risk Monitoring**: Implement early warning systems for defaults/frauds.

- **Customer Protection**: Disclose terms, rates, charges, and auction rights to borrowers.

Significance:

- Gold loans are critical in retail lending, especially in semi-urban/rural areas.

- Weak risk controls in UCBs/private lenders risk systemic instability.

- Rising NPAs reflect borrower stress and lender vulnerabilities.

Way Forward:

- Enhance credit appraisal with technology and training.

- Promote financial literacy to protect underserved borrowers.

- Ensure uniform regulations across banks, NBFCs, and UCBs.

- Create a centralized database to track gold loans and prevent fraud.

Gold loans serve as a **critical source of short-term credit** for millions, especially during economic distress. However, the **growing stress in this segment**, if unregulated, can lead to **asset bubbles and systemic vulnerabilities**. The RBI's proposed guidelines are a step in the right direction to **ensure financial stability, safeguard depositors' interest**, and **protect borrowers from exploitative practices**.

> **Q.** The rising incidence of Non-Performing Assets (NPAs) in the gold loan segment has raised concerns about financial stability, particularly among Urban Cooperative Banks (UCBs). In this context, critically examine the Reserve Bank of India's recent draft guidelines on gold loans. How can these guidelines address systemic risks while ensuring financial inclusion?
>
> *[UPSC MAINS Practice Question]*

3.11. INDIA BACKS FIRST-EVER GLOBAL CARBON TAX TO CUT EMISSIONS IN SHIPPING INDUSTRY

Why in the News?

India has joined 62 other countries in supporting the world's first global carbon tax on shipping emissions, passed at the International Maritime Organization (IMO) headquarters in London on April 11, 2025. The tax aims to decarbonise the maritime sector by 2030.

Background of the News:

Commercial shipping, contributing nearly 3% of global GHG emissions, had so far remained outside major climate treaties like the Paris Agreement. The IMO resolution marks a historic move to include maritime emissions in global climate policy by introducing a carbon pricing mechanism effective from 2028.

Historical Context:

The Paris Agreement (2015) excluded international shipping and aviation from national climate targets. This carbon tax initiative is the first global regulatory measure to bridge that gap.

Government Initiative:

- India, along with major economies like China, Brazil, Japan, and EU nations, voted in favour.
- The carbon tax will range from $100–$380 per tonne of CO_2 based on emission intensity.
- Expected revenue: Up to $40 billion by 2030, dedicated to maritime sector decarbonization.

Way Forward:

- The policy needs clearer mechanisms for revenue use, emissions tracking, and fairness for developing countries.
- Future negotiations may include expansion to broader climate finance.
- Developing countries seek a more equitable and transparent design aligned with 1.5°C Paris goals.

India's support reflects its growing commitment to global climate leadership. While this is a progressive step, much depends on the finalization of technical rules and future reforms to make it more ambitious, inclusive, and aligned with the needs of vulnerable nations.

Q. What is the primary objective of the global carbon tax introduced by the IMO in 2025?

    (a) To reduce air travel emissions   *[UPSC Pre. Practice Question]*

    (b) To decarbonise the international shipping sector

    (c) To regulate oil and gas production

    (d) To impose trade restrictions on non-compliant countries

    Ans. (b) To decarbonise the international shipping sector

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3.12. ROAD MAP FOR EFFICIENCY: INDIA MUST RETHINK ITS TRANSPORT STRATEGY

Why in the News?

India is making a strategic push towards integrated transport planning to reduce logistics costs and promote multimodal connectivity. This comes at a time when the logistics sector is emerging as a key pillar of India's $6 trillion economic vision by FY30.

Background

Currently, road transport dominates India's freight movement, contributing to over 66% share, while more cost-efficient and eco-friendly modes like railways, shipping, and inland waterways remain underutilised. High logistics costs—estimated at 14–18% of GDP—hinder India's manufacturing competitiveness and export growth. Recognising this, the government has launched transformative initiatives like the National Logistics Policy and PM Gati Shakti.

Historical Context

Historically, India's logistics sector evolved in silos with fragmented governance across multiple departments, resulting in poor modal integration. The over-reliance on road transport stems from under-investment in rail freight and water-based transport post-Independence. Initiatives like the Dedicated Freight Corridors were conceptualised in the early 2000s but gained traction only recently.

Govt Initiative

The National Logistics Policy (2022) and PM Gati Shakti Masterplan aim to unify planning across transport ministries and promote end-to-end multimodal logistics.

Key initiatives include the creation of 35 multi-modal logistics parks, deployment of the Unified Logistics Interface Platform (ULIP), the Sagarmala and Bharatmala schemes, and investment under the National Infrastructure Pipeline. Digital platforms like ICEGATE and E-Logs, along with policies to promote coastal shipping and ESG (Environmental, Social, and Governance) compliance, are also being aggressively pursued.

Way Forward

- **Promote Multimodal Shift**: Strengthen rail and waterways to ease road congestion.
- **Widen Digital Access**: Extend tech platforms to small and regional logistics players.
- **Cluster-Based Hubs**: Build logistics zones near manufacturing clusters to reduce lead time.
- **Skilled Workforce**: Launch a **National Logistics Workforce Mission** to address skill shortages.
- **Regulatory Reforms**: Simplify compliance and integrate **geospatial intelligence** for smart planning.

India's logistics sector stands at an inflection point with reforms unlocking long-term growth potential. With a strategic focus on integration, sustainability, and digitalisation, logistics can become a competitive advantage for India's economy. Strengthening this sector not only boosts trade and exports but also contributes significantly to achieving Sustainable Development Goals—especially SDG 9 (Infrastructure & Innovation) and SDG 11 (Sustainable Urban Systems).

Q. Which of the following correctly explains the objective of PM Gati Shakti Master Plan?

(a) Promoting organic farming across India   *[UPSC Pre. Practice Question]*

(b) Enhancing digital governance in rural areas

(c) Integrating transport and infrastructure planning for seamless logistics

(d) Subsidising export of manufactured goods

Ans. (c) Integrating transport and infrastructure planning for seamless logistics

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3.13. NEWS IN SHORT

3.13.1. ANTI-DUMPING DUTIES ON 5 CHINESE IMPORTS

Why in the News?

India has imposed **anti-dumping duties** on **five Chinese products** to counter their import at prices below normal value, harming domestic industries. These include **Soft Ferrite Cores**, **vacuum insulated flasks**, **aluminium foil**, **Trichloro Isocyanuric Acid**, and **Poly Vinyl Chloride (PVC) Paste Resin**.

Key Highlights:

- Duties imposed **for five years** on most products; **provisional six-month duty** on aluminium foil.
- Duty ranges:
  - **Soft Ferrite Cores**: up to **35%** of CIF value.
  - **Vacuum flasks**: **$1,732/tonne**.
  - **Trichloro Isocyanuric Acid**: **$276–986/tonne** (also from Japan).
  - **PVC Paste Resin**: **$89–707/tonne** (also on imports from Korea RP, Malaysia, Norway, Taiwan, and Thailand).
- Imposed following a probe by the **Directorate General of Trade Remedies (DGTR)**.

Significance:

- Enforced under WTO rules to **ensure fair trade** and **protect domestic industries**.
- India has frequently used anti-dumping measures to tackle **surging cheap imports**, particularly from China.
- Comes amid a growing trade imbalance—**India's trade deficit with China was $85 billion in 2023–24**.

Q. With reference to anti-dumping duties recently imposed by India, consider the following statements:

1. Anti-dumping duties are imposed when imports are priced above their normal value, affecting domestic consumers.

2. India recently imposed anti-dumping duties on aluminium foil and Poly Vinyl Chloride (PVC) Paste Resin imported from China.

3. These duties are inconsistent with World Trade Organization (WTO) rules.

Which of the statements given above is/are correct?   *[UPSC Pre. Practice Question]*

(a) 1 only   (b) 2 only

(c) 1 and 3 only   (d) 2 and 3 only

Ans. (b) 2 only

*****

SECURITY

4.1. IMPACT OF MAKE IN INDIA ON DEFENCE SECTOR GROWTH

Why in the News?

According to the latest data released by the Ministry of Defence, India has achieved record-breaking growth in indigenous defence production, reaching an unprecedented ₹1.27 lakh crore in the fiscal year 2023-24.

Historical context

Historically reliant on imports, India's defence manufacturing evolved with HAL and DRDO. The 2014 Make in India initiative accelerated indigenous production and private sector involvement.

Government Initiatives

Several initiatives have been implemented to strengthen indigenous defence production:

- **Innovations for Defence Excellence (iDEX):** Launched in 2018, iDEX fosters collaboration between startups, MSMEs, and research institutions to develop cutting-edge defence technologies. The ADITI scheme, an extension of iDEX, focuses on strategic technologies such as AI, quantum computing, and autonomous systems, providing grants of up to ₹25 crore for innovators.
- **SAMARTHYA:** Showcased at Aero India 2025, this platform highlighted over 33 major indigenised defence items, demonstrating India's growing defence manufacturing capabilities.
- **Liberalized FDI Policy:** In September 2020, foreign direct investment (FDI) regulations in the defence sector were relaxed to attract international investments.
- **TATA Aircraft Complex:** Inaugurated in Vadodara in October 2024, this facility manufactures C-295 aircraft, further boosting India's aeronautical capabilities.
- **Defence Testing Infrastructure Scheme (DTIS):** DTIS provides financial assistance for setting up testing and certification facilities in the aerospace and defence sector.
- **Defence Industrial Corridors (DICs):** Established in Uttar Pradesh and Tamil Nadu, these corridors attract investment and foster industry collaboration.
- **SRIJAN Initiative:** Over 14,000 items have been indigenized under this program, reducing dependency on imports.
- **Defence Acquisition Procedure (DAP)-2020:** This policy prioritizes domestic procurement, ensuring that 75% of the modernization budget (₹1,11,544 crore) is allocated to local industries.

Way Forward

To sustain and further accelerate this growth, India must:

- Strengthen research and development capabilities in defence technology.
- Enhance collaboration between public and private sector players.
- Expand export markets to achieve the ₹50,000 crore defence export target by 2029.
- Improve ease of doing business for defence manufacturers.
- Invest in skill development to create a highly trained workforce for the defence sector.

India's defence sector is on a path toward self-reliance, with substantial progress in both production and exports. The Make in India initiative, supported by strategic policies and technological innovations, is positioning the country as a global leader in defence manufacturing. With ambitious targets set for 2029, India is poised to emerge as a significant defence exporter, bolstering national security while contributing to economic growth.

4.2. PROJECT VARSHA

Why in the News?

INS Varsha, India's upcoming high-security naval base near Rambilli, Andhra Pradesh, is expected to be operational by 2026, according to recent reports. Designed under the long-term strategic **Project Varsha**, the base will serve as a crucial support hub for India's nuclear-powered submarine fleet, bolstering the country's second-strike capability.

Project Varsha Highlights:

CHINESE CHECKER

➤ India building naval base on Andhra coast, which will include **underground berths for INS Arihant and other nuke missile-armed submarines,** to counter expanding Chinese presence in Indian Ocean

➤ **Force levels being boosted in eastern seaboard,** both in Eastern Naval Command (ENC) at Vizag as well as tri-service theatre Andaman and Nicobar Command with new naval and air stations

➤ **ENC now has around 50 warships,** including amphibious warship INS Jalashwa and nuclear-powered submarine INS Chakra

*   **Strategic Purpose:** Project Varsha is aimed at creating a dedicated base for India's fleet of nuclear-powered submarines, particularly SSBNs (Ship Submersible Ballistic Nuclear or nuclear-powered ballistic missile submarines), enhancing survivability and operational readiness.

*   **Location Advantage:** Located around 50 km south of Visakhapatnam on the eastern coast, the facility allows discreet access to the deep waters of the Bay of Bengal, reducing surveillance exposure during submarine deployment.

*   **Underground Pens & Tunnels:** The base includes fortified underground pens and tunnel systems to protect submarines from detection and preemptive counterforce strikes, thereby ensuring the resilience of India's sea-based nuclear deterrent.

*   **Harbour Infrastructure:** The inner harbour is reportedly complete, while breakwaters and jetties for the outer harbour are under construction, providing comprehensive docking and operational facilities.

*   **Support for Nuclear Triad:** INS Varsha will serve as the operational nerve centre for India's underwater nuclear strike capability — the third leg of its nuclear triad — enabling secure and sustained SSBN deployments.

*   **Future Expansion:** The base has been designed with scope for future expansion to support larger and more advanced SSBNs, as well as upcoming SSNs (nuclear-powered attack submarines).

*   **Complementary Projects:** Alongside Project Seabird on the western coast (Karwar), Project Varsha marks a significant leap in naval infrastructure, aimed at dispersed basing and long-term maritime force modernisation.
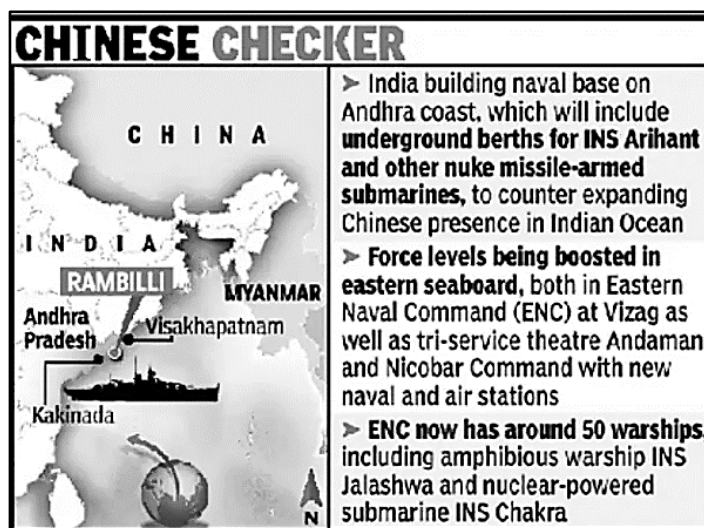
Together, these developments signify India's commitment to strategic deterrence, blue-water naval capability, and regional maritime stability.

> **Q. What is the primary strategic purpose of Project Varsha?**
>
> (a) Enhance conventional naval warfare capabilities   *[UPSC Pre. Practice Question]*
>
> (b) Support India's nuclear-powered submarine fleet
>
> (c) Establish a commercial shipbuilding hub
>
> (d) Promote maritime tourism in the Bay of Bengal
>
> **Ans. (b) Support India's nuclear-powered submarine fleet**

4.3. NAXALMUKT BHARAT ABHIYAN

Why in the News?

India has made substantial progress in tackling Left Wing Extremism, marked by a significant reduction in Naxalite activity, incidents of violence, and the number of affected districts.

Understanding the Naxalite Movement

Origin: The Naxalite movement began in 1967 in Naxalbari, West Bengal, as a radical left-wing uprising advocating for the rights of tribal, landless, and marginalized communities. Rooted in Maoist ideology, it challenged the existing socio-economic structure through armed rebellion.

CIVILIANS KILLED BY LWE — 2010: 720, 2014: 222, 2024: 121

INCIDENTS OF ATTACK ON ECONOMIC INFRASTRUCTURE — 2010: 365, 2014: 100, 2024: 25
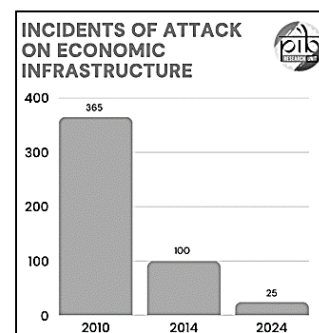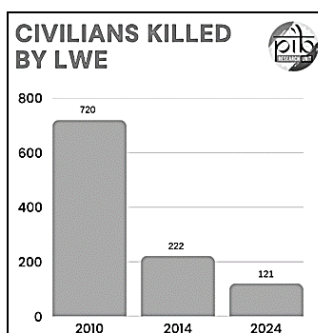
- **Geographical Spread:** Over time, the movement expanded across India's "Red Corridor," covering regions of Chhattisgarh, Jharkhand, Odisha, Maharashtra, West Bengal, Andhra Pradesh, Telangana, Madhya Pradesh, and Kerala.
- **Tactics and Methods:** Naxalites utilize guerrilla warfare, target government institutions, extort local populations, and are known to recruit children into their ranks. While claiming to fight for the oppressed, they often rely on violent and coercive means, disrupting peace and development.

Impact of Naxalism

Political:

- Undermines state authority and democratic processes.
- Creates governance vacuums, making administration and law enforcement difficult in affected areas.

Economic:

- Disrupts agriculture, infrastructure projects, and private investment.
- Increases government expenditure on security, diverting funds from developmental programs.

Social:

- Spreads fear and mistrust, especially among tribal and rural populations.
- Hampers access to education and healthcare, leading to a decline in human development indices in remote regions.

India's Progress in Combating Naxalism

- India has made remarkable strides in curbing Left-Wing Extremism (LWE):
- Districts Affected: Reduced from 126 in 2010 to just 38 in 2024.
- Violent Incidents: Dropped by 81%, from 1,936 in 2010 to 374 in 2024.

- Surrenders: Over 8,000 Naxalites have surrendered in the past decade.
- Reintegration: LWE-affected areas are witnessing improvements in governance, education, healthcare, and infrastructure.

Strategic Government Initiatives

Security and Enforcement

- **National Policy & Action Plan (2015):** Multi-pronged approach combining security, development, and community engagement.
- **SAMADHAN Strategy:** Smart operations, tech integration, action plans, and financial choke.
- **Security Related Expenditure (SRE) Scheme:** ₹3,260 crore released for training, ex-gratia, rehabilitation, etc.
- **Fortified Police Stations:** 612 built (from just 66 in 2014).
- **Special Infrastructure Scheme (SIS):** ₹1,741 crore sanctioned for strengthening state forces.
- **Assistance to Central Agencies:** ₹1,120 crore for CAPFs, IAF, helicopters.
- **Civic Action Programme (CAP):** ₹196 crore for community trust-building.

Development and Inclusion

- **Special Central Assistance (SCA):** ₹3,563 crore to bridge infrastructure gaps.
- **Aspirational District Programme:** Monitoring of **35 LWE-affected districts**.
- **Financial Inclusion:**
  - **1,007 bank branches**, **937 ATMs**, **5,731 post offices** added.
  - **37,850 banking correspondents** deployed.
- **Road Projects:**
  - **17,589 km sanctioned**, **14,618 km constructed**.
- **Telecom Connectivity:**
  - **10,505 mobile towers planned**, **7,768 commissioned**.
  - Full coverage targeted by **Dec 1, 2025**.
- **Education & Skill Development:**
  - **48 ITIs**, **61 SDCs**, **178 EMRS schools** functional.
  - **1,143 tribal youths** were recruited in security forces.

The Road Ahead

- **Community Engagement:** Build trust with tribal communities, promote local governance and empower traditional institutions.
- **Youth Empowerment:** Expand education, skill development, and employment opportunities to counter militant recruitment.
- **Technological Advancement:** Use modern surveillance, communication tools, and data analytics to enhance intelligence gathering and rapid response.

The Government of India aims to eradicate Naxalism by March 31, 2026, recognizing it as a major roadblock to the progress of tribal and remote regions. The Naxal-Mukt Bharat Abhiyan emphasizes the dual strategy of robust security measures alongside inclusive and sustained development. With strong political commitment, administrative efficiency, and local community involvement, India is steadily moving toward a future free from Left-Wing Extremism.

> **Q.** Discuss the key reasons for the persistence of Naxalism, the recent government initiatives to counter it, and the way forward to achieve a Naxal-Mukt Bharat.
>
> *[UPSC MAINS Practice Question]*

4.4. LONG-RANGE GLIDE BOMB 'GAURAV'

Why in the News?

The DRDO successfully conducted release trials of the indigenously developed Long-Range Glide Bomb (LRGB) 'Gaurav' from the Su-30 MKI aircraft. The bomb demonstrated a range of around 100 km with pinpoint accuracy.

Background of the News

The trials are part of India's ongoing efforts to enhance precision-strike capabilities with indigenously developed standoff weapons. Gaurav is one of two glide bombs developed by DRDO, aimed at boosting India's deterrence and operational readiness.

Historical Context

India's pursuit of precision-guided munitions gained momentum post the Kargil War (1999), which highlighted the need for high-accuracy, standoff weapons to neutralize enemy positions without direct engagement. The development of indigenous glide bombs aligns with the broader push for Atmanirbharta (self-reliance) in defense post-2016.

Government Initiative

- The bomb is developed by DRDO's Research Centre Imarat (RCI) and Armament Research and Development Establishment (ARDE).
- Production partners include **Adani Defence**, **Bharat Forge**, and various **MSMEs**, reflecting the **Make in India** and **Atmanirbhar Bharat** initiatives in defense manufacturing.
- Emphasis on **public-private partnerships** for rapid development and deployment of advanced weaponry.

> **Q. Which of the following statements about the Long-Range Glide Bomb (LRGB) 'Gaurav' is correct?** *[UPSC Pre. Practice Question]*
>
> (a) It is a cruise missile developed by ISRO
>
> (b) It is a short-range bomb developed by HAL
>
> (c) It is an indigenously developed glide bomb by DRDO with a range of about 100 km
>
> (d) It is an imported aerial weapon used in Rafale jets
>
> **Ans. (c) It is an indigenously developed glide bomb by DRDO with a range of about 100 km**

4.5. INDRA-2025 NAVAL EXERCISE

Why in the News?

India and Russia successfully conducted the **14th edition of their bilateral naval exercise 'INDRA-2025'** off the eastern coast of India, hosted at **Chennai** and the **Bay of Bengal**. This edition marks yet another step forward in boosting defence cooperation and joint operational readiness between the two long-standing strategic partners.

Structure of the Exercise: Two Key Phases

1. **Harbour Phase (Chennai Port):**
   a. Held onshore with **professional interactions**, **expert exchanges**, **cross-deck visits**, and **sports activities** to build camaraderie between the naval forces.
2. **Sea Phase (Bay of Bengal):**
   a. Featured complex **maritime maneuver's**, including:
   i. Tactical formation sailing
   ii. Anti-aircraft warfare simulations

    iii. Coordinated helicopter operations

    iv. Cross-deck aircraft landings

Key Participants:

- **From Russia:** Warships including Pechanga, Rezkiy, and Aldar Tsydenzhapov
- **From India:** INS Rana, INS Kuthar, and a long-range maritime surveillance aircraft P-8I Poseidon

About INDRA Exercise Series:

- **Started in 2003**, INDRA is a recurring **bilateral military exercise** (originally joint Army, Navy & Air Force; now often branch-specific).
- Focus Areas:
  - Combatting **common maritime threats**
  - Enhancing **interoperability and coordination**
  - Supporting **peaceful navigation and rule-based maritime order**

Strategic Importance of INDRA:

- Reinforces India's strong **defense partnership with Russia**.
- Enhances **operational synergy** between the two navies.
- Highlights India's increasing commitment towards **maritime diplomacy** and **Indo-Pacific security**.

Other Key Naval Exercises Involving India:

Exercise	Partner Countries
MALABAR	India, USA, Japan, Australia
VARUNA	India, France
LA PEROUSE	Multilateral: India, France, USA, Japan, Australia, UK
SEA DRAGON	India, USA, Japan, Canada, South Korea
KONKAN	India, UK
AIME/IMDEX	India & ASEAN Nations
BRIGHT STAR	India + 34 countries
SALVEX	India, USA
SLINEX	India, Sri Lanka
SAMUDRA SHAKTI	India, Indonesia
AL-MOHED AL-HINDI	India, Saudi Arabia
INDIA-FRANCE-UAE Trilateral	Naval + PASSEX
KOMODO	India + 36 countries
AUSINDEX	India, Australia
SIMBEX	India, Singapore

The successful conduct of INDRA-2025 reflects the robust military-to-military engagement between India and Russia. It not only strengthens bilateral defense ties but also boosts India's role as a responsible maritime power in the Indo-Pacific region. Exercises like INDRA are vital for promoting interoperability, readiness, and strategic trust among partners in an evolving global security environment.

4.6. EXERCISE DUSTLIK

- The **sixth edition of Exercise Dustlik**, a joint military exercise between the **Indian Army and the Armed Forces of Uzbekistan**, is being conducted from **April 16 to 28, 2025**, at the **Foreign Training Node (FTN), Aundh, Pune**. The word *Dustlik* translates to **"friendship"** in Uzbek, symbolizing the strong and growing ties between the two nations.

- This **annual exercise** is held alternately in **India and Uzbekistan**. The **2023 edition** took place at **Termez, Uzbekistan**, and **Pithoragarh, Uttarakhand**. It focuses on **counter-terrorism operations**, **urban warfare**, and **joint tactical drills**, with an emphasis on **interoperability and high-altitude training**.

- Uzbekistan holds strategic importance for India in the Central Asian region, especially under the framework of India's **Connect Central Asia policy**. Exercises like Dustlik promote not just military cooperation, but also broader **strategic trust**, **regional security**, and **counterterrorism coordination**.

- Exercise Dustlik highlights India's proactive engagement in Central Asia and reflects the importance of **defence diplomacy** in India's foreign policy.

*****

ENVIRONMENT

5.1. THAWING PERMAFROST IN THE KASHMIR HIMALAYAS

Why in the News?

A recent study has raised concerns about the accelerating thawing of permafrost in the Kashmir Himalayas, highlighting its potential to severely impact infrastructure, ecosystems, and local communities.

> **Permafrost**
>
> Permafrost, which refers to ground that remains frozen for at least two consecutive years, covers approximately 64.8% of the total geographical area of Jammu and Kashmir and Ladakh.

Historical Context

Permafrost has played a crucial role in maintaining the ecological and geological stability of the Himalayan region for thousands of years. However, climate change and rising global temperatures have led to an accelerated thawing of permafrost, a phenomenon observed in various cold regions worldwide. The impact of permafrost degradation has been documented in countries such as Canada and Russia, where infrastructure damage and environmental imbalances have occurred due to similar changes.

Government Initiatives

- **National Action Plan on Climate Change (NAPCC):** Focuses on mitigating the effects of climate change, including initiatives to monitor and address permafrost degradation.
- **State Climate Action Plans (SAPCCs):** Regional strategies developed to combat climate change effects, including permafrost monitoring and adaptation techniques.
- **Disaster Risk Reduction Programs:** Efforts to prepare communities for glacial lake outburst floods (GLOFs) and permafrost-related disasters.
- **Research and Monitoring Programs:** Collaboration between institutions like the Indian Institute of Science (IISc) and Indian Meteorological Department (IMD) to track permafrost degradation trends and devise mitigation strategies.

Way Forward

- **Enhanced Monitoring:** Establishing more research stations for continuous monitoring of permafrost conditions and their impact on ecosystems.
- **Climate-Resilient Infrastructure:** Designing and constructing roads, buildings, and hydropower projects that can withstand permafrost degradation.
- **Afforestation and Land Conservation:** Promoting vegetation growth to stabilize permafrost regions and reduce land degradation.
- **Community Awareness and Preparedness:** Educating local populations on the risks of permafrost thawing and developing emergency response mechanisms.
- **International Collaboration:** Learning from global best practices and engaging with Arctic nations to adopt permafrost management strategies.

The thawing of permafrost in the Kashmir Himalayas is a growing concern that demands urgent action. While climate change remains a significant driver, human activities exacerbate the degradation. A multi-pronged approach involving scientific research, resilient infrastructure planning, and community engagement is essential to mitigate the impact of permafrost thawing.

5.2. DISASTER MANAGEMENT (AMENDMENT) BILL, 2024

Why in the News?

Recently, Parliament passed the **Disaster Management (Amendment) Bill, 2024**, which updates the **2005 Act** to address emerging risks from climate change and urbanization, focusing on proactive measures, better governance, and local involvement in disaster management.

Key Highlights of the Disaster Management (Amendment) Bill, 2024

- **Empowerment of NDMA and SDMA**: The **National Disaster Management Authority (NDMA)** and **State Disaster Management Authorities (SDMA)** will now directly prepare disaster management plans, rather than relying on executive committees.

- **Urban Disaster Management Authorities**: States can create **Urban Disaster Management Authorities (UDMA)** in state capitals and cities with municipal corporations to address urban-specific challenges.

- **Disaster Databases**: The Bill mandates the creation of **national and state disaster databases** to centralize information on risks, preparedness, and funding for better coordination and decision-making.

- **AI-Based Real-Time Monitoring**: **AI-powered monitoring** will replace manual systems, improving forecasting, response times, and disaster tracking.

- **Proactive Risk Reduction**: Shifts from reactive responses to **proactive risk reduction**, including improved preparedness, early warning systems, and societal involvement.

- **Focus on District-Level Authority**: Emphasizes the importance of **District Disaster Management Authorities (DDMAs)**, ensuring a decentralized approach while maintaining coordination with national and state bodies.

The **Disaster Management (Amendment) Bill, 2024** strengthens India's disaster response by empowering local authorities, improving preparedness, and addressing emerging risks like extreme climate events. It focuses on proactive risk management, localized responses, and enhanced coordination across all government levels to better handle future disasters.

5.3. MICROPLASTICS AFFECTING FOOD PRODUCTION

Why in the News?

A recent study found that microplastic pollution could significantly reduce the yield of staple crops and seafood, posing a serious threat to global food security.

Findings of the Study

- Microplastic exposure reduces photosynthesis in plants and algae by 7% to 12%.
- A potential 4% to 14% reduction in staple crop yields (e.g., rice, wheat, maize) could occur in the coming decades.
- The study faced limitations such as a lack of differentiation between different types of microplastics and their specific effects, making global extrapolation challenging.

What are Microplastics?

- Microplastics are tiny plastic particles (less than 5mm) resulting from the breakdown of larger plastic products.
- They are present in soil, water, and even human bodies, with studies showing their presence in human organs and the bloodstream.
- Sources include plastic waste, industrial processes, synthetic textiles, and cosmetic products.

Impact on Food Production

- **Agricultural Crops**: Microplastics in soil interfere with water retention and nutrient absorption, leading to lower crop yields.
- **Marine and Freshwater Ecosystems**: Algae, a fundamental part of aquatic food chains, suffer from reduced photosynthesis, affecting fish populations.
- **Livestock and Human Consumption**: Microplastics can accumulate in animal tissues, potentially entering human diets through meat, seafood, and vegetables.
- **Example**: In China, studies have shown that microplastics in rice paddies decrease the efficiency of crop growth and reduce yield.

Challenges in Reducing Microplastics

- **Lack of Regulation**: Many countries lack strict policies on microplastic pollution.
- **Difficulty in Recycling Plastics**: Only a small fraction of plastic waste is effectively recycled.
- **Ubiquity of Plastics**: Plastics are essential in industries like packaging, textiles, and electronics, making complete elimination difficult.
- **High Cost of Alternatives**: Eco-friendly alternatives like biodegradable plastics are expensive and not widely available.

Case Study: Microplastic Pollution in the Oceans

- **Great Pacific Garbage Patch**: This floating mass of plastic debris in the Pacific Ocean spans 1.6 million square kilometers.
- **Impact on Marine Life**: Fish and other marine organisms ingest microplastics, leading to bioaccumulation in the food chain.
- **Economic Consequences**: Declining fish populations threaten the livelihoods of millions of fishermen worldwide, particularly in Southeast Asia and Africa.

Way Forward

- **Stronger Regulations**: Governments must implement stricter laws on plastic production and disposal.
- **Improved Waste Management**: Investment in better recycling technologies can help reduce plastic waste.

- **Public Awareness Campaigns**: Educating people about the impact of microplastics can lead to better consumer choices.
- **Research and Innovation**: Developing biodegradable plastics and alternative materials is crucial for long-term sustainability.
- **International Cooperation**: Global collaboration is necessary to tackle plastic pollution effectively.

Microplastics pose a significant threat to global food production, ecosystems, and human health. While current research highlights their detrimental effects, more studies are needed to fully understand their long-term consequences. Governments, industries, and individuals must work together to reduce plastic pollution, ensuring food security and environmental sustainability for future generations.

Q. Which of the following is a major source of microplastics in the environment?

(a) Organic waste decomposition *[UPSC Pre. Practice Question]*

(b) Synthetic textiles

(c) Natural mineral erosion

(d) Biodegradable packaging

Ans. (b) Synthetic textiles

5.4. STATE OF GLOBAL CLIMATE 2024

Why in the News?

The State of the Climate Report 2024 by the World Meteorological Organization (WMO) highlights alarming climate data.

Key Findings of the Report

- **Hottest Year on Record**: 2024 saw the highest globally averaged temperature, 1.55°C above pre-industrial levels, breaking the previous record set in 2023.
- **Greenhouse Gas Concentrations at Record Highs**: Carbon dioxide, methane, and nitrous oxide levels reached their highest in 800,000 years.
- **Oceans Warming and Rising**: Ocean heat content hit record levels, contributing to rising sea levels and increased acidification.
- **Cryosphere Melting Rapidly**: Glaciers are retreating, and Antarctic sea ice reached its second-lowest extent ever recorded.
- **Extreme Weather Intensifying**: Increasing frequency and severity of extreme weather events are causing devastating consequences worldwide.
- **Need for Stronger Early Warning Systems**: Only half of all countries have adequate multi-hazard early warning systems, highlighting the urgent need for investment in climate services.
- **Call for Global Action**: The report stresses the necessity of immediate measures to mitigate climate risks and build resilience against future climate impacts.

Q. Evaluate the key findings of the State of the Climate Report 2024 by the World Meteorological Organization. Discuss the urgent need for global action to strengthen early warning systems and mitigate climate risks to build resilience against future impacts.

[UPSC MAINS Practice Question]

5.5. ICE STUPAS – ARTIFICIAL GLACIER

Why in the News?

Ice Stupas are artificial, cone-shaped glaciers designed to store winter meltwater and release it gradually in spring, addressing Ladakh's water scarcity caused by early snowmelt and retreating glaciers. Initiated by engineer Sonam Wangchuk, they support agriculture, drinking water needs, and ecological restoration.

Their Significance

- **Support for Livelihoods and Agriculture:** The meltwater from these stupas sustains local agriculture—wheat, barley, and apricots—enhancing food security and supporting the livelihoods of farming communities in this high-altitude desert region.
- **Government and Community Collaboration:** To scale the impact, the **Ministry of Tribal Affairs**, in collaboration with **SECMOL**, has launched a **two-year action research project** to build ice stupas in **50 villages**, aiming to resolve both drinking water and irrigation challenges across Ladakh.
- **Climate Adaptation and Cultural Symbolism:** Beyond their practical use, ice stupas are symbols of grassroots climate resilience and community innovation. They also represent Ladakh's broader movement for environmental justice, cultural preservation, and constitutional recognition.

> **Q.** Discuss the significance of Ice Stupas as a climate adaptation strategy in Ladakh, highlighting their role in supporting agriculture, community livelihoods, and environmental justice. Evaluate the collaborative efforts between the government and local organizations in scaling this initiative and suggest measures to enhance its sustainability. *[UPSC MAINS Practice Question]*

5.6. UNHRC ADOPTS RESOLUTION LINKING PLASTIC POLLUTION

Why in the News?

The United Nations Human Rights Council has adopted a resolution recognising, for the first time, the critical connection between plastic pollution, ocean protection and the right to a clean, healthy and sustainable environment.

Key Highlights of the resolution

- **First of its Kind**: Recognises ocean health and plastic pollution as directly impacting human rights.
- **Builds on Previous UN Declarations**: Strengthens the 2021 UNHRC and 2022 UNGA resolutions on the right to a healthy environment.
- **Human Rights-Based Ocean Governance**: Calls for inclusive, transparent, and participatory decision-making, especially for vulnerable groups like coastal communities and island nations.
- **Influence of 2024 UN Report**: The resolution was shaped by the Special Rapporteur's report emphasising the ocean's role in supporting life and rights.
- **Precautionary Principle**: Urges states to prevent marine damage proactively.
- **Plastics Life Cycle**: Stresses action across the full life cycle — from production to disposal — and highlights the dangers of microplastics.
- **Traditional Knowledge**: Advocates for the integration of Indigenous and local knowledge in marine governance.
- **Global Relevance**: Serves as a guiding document for the upcoming **UN Ocean Conference (Nice, June 2025)** and **plastic treaty negotiations (Geneva, August 2025)**.

Right to Health & Healthy Environment in India

- **Constitutional Recognition:** The right to a clean and healthy environment is recognised as part of **Article 21 (Right to Life)** through judicial interpretation.
  - **Case Reference**: *Subhash Kumar v. State of Bihar (1991)* – Declared that access to pollution-free water and air is part of the right to life.
- **Judicial Expansion:** The Supreme Court has reaffirmed and expanded environmental rights under Article 21.

Key Cases:
  - *MC Mehta v. Union of India (1987)* – Recognised environmental protection as part of fundamental rights.
  - *Ranjit Singh v. Union of India (2024)* – Emphasised the constitutional duty to protect ecosystems, holding that environmental degradation directly violates the right to life and health. The Court directed stronger action against plastic pollution and upheld environmental justice for vulnerable communities.
- **International Commitments:** India is committed to global agreements like the **Paris Agreement**, **UN Convention on Biological Diversity**, and the **Basel Convention**, aligning domestic laws with global environmental goals.
- **Domestic Legal Framework:** Major laws and policies include:
  - **Environment Protection Act, 1986**
  - **Plastic Waste Management Rules, 2016 (amended in 2022)**
  - **Coastal Regulation Zone (CRZ) Notifications**

These aim to protect air, water, and marine ecosystems, and regulate plastic and industrial pollution.

- **Reinforcement through UNHRC Resolution (2025):** The resolution supports India's constitutional and legal framework by promoting **human rights-based environmental governance**, especially in tackling **plastic pollution** and protecting **marine ecosystems.**

The UNHRC resolution marks a **milestone in global environmental governance**, firmly placing **human rights at the heart of ocean and plastic pollution policy**. It paves the way for more **inclusive, accountable, and just environmental action**. As countries gear up for key conferences in 2025, this resolution sets the tone for embedding **human dignity and ecological sustainability** into future treaties and national actions.

Q. In India, the right to a clean and healthy environment is recognized under which constitutional article through judicial interpretation?

(a) Article 14

(b) Article 19

(c) Article 21

(d) Article 32

Ans. (c) Article 21

5.7. NATIONAL CRITICAL MINERAL MISSION

Why in the News?

In the year 2025, the **National Critical Mineral Mission (NCMM)** launched with aim to create a strong foundation for self-reliance in the critical mineral sector, which is crucial for India's economic growth and energy security.

What are Critical Minerals?

Critical minerals are essential for a country's economic development and national security, and their lack of availability or concentration in a few geographical locations can lead to supply chain vulnerabilities. These minerals, which include rare earth elements (REEs), lithium, cobalt, and nickel, are indispensable for various advanced technologies.

Aim of NCMM:

India's **National Critical Mineral Mission (NCMM)** was launched to reduce reliance on imports and establish a robust domestic ecosystem for the exploration, mining, and processing of critical minerals.

India's Effort:

Key Components of the NCMM

List of Critical Minerals In India

1. Antimony
2. Beryllium
3. Bismuth
4. Cadmium
5. Cobalt
6. Copper
7. Gallium
8. Germanium
9. Graphite
10. Hafnium
11. Indium
12. Lithium
13. Molybdenum
14. Niobium
15. Nickel
16. PGE (Platinum Group Elements)

i. Platinum ii. Palladium iii. Rhodium
iv. Ruthenium v. Iridium vi. Osmium

17. Phosphorus
18. Potash
19. REE (Rare Earth Elements)

i. Lanthanum ii. Cerium iii. Praseodymium iv.Neodymium
v. Promethium vi. Samarium vii.Europium
viii. Gadolinium ix. Terbium x.Dysprosium xi.Holmium
xii. Erbium xiii. Thulium xiv. Ytterbium xv.Lutetium
xvi. Scandium xvii. Yttrium

20. Rhenium
21. Selenium
22. Silicon
23. Strontium
24. Tantalum
25. Tellurium
26. Tin
27. Titanium
28. Tungsten
29. Vanadium
30. Zirconium

Usage of Critical Minerals

Critical minerals play a vital role in powering clean energy technologies and various industries. Their significance can be seen across several sectors:

- **Solar Energy:** Minerals like **silicon, tellurium, indium**, and **gallium** are essential for manufacturing photovoltaic (PV) cells in **solar panels**. India's current **64 GW solar capacity** relies heavily on these minerals.

- **Wind Energy: Rare earth elements** such as **dysprosium** and **neodymium** are crucial for creating **permanent magnets** in **wind turbines**. To expand its **wind energy capacity** from **42 GW to 140 GW by 2030**, India requires a reliable supply of these minerals.

- **Electric Vehicles (EVs): Lithium, nickel**, and **cobalt** are key materials for **lithium-ion batteries** used in EVs. As part of the **National Electric Mobility Mission Plan (NEMMP)**, India aims to deploy **6–7 million EVs** by 2024, significantly increasing demand for these minerals.
- **Energy Storage: Lithium-ion batteries**, used in **advanced energy storage systems**, depend on **lithium, cobalt**, and **nickel**, further increasing the need for these critical minerals.

Key International Initiatives

- **15th January 2024**: **KABIL (Khanij Bidesh India Ltd)** signed an agreement with **CAMYEN SE**, a state-owned enterprise in **Catamarca, Argentina**, for lithium exploration covering **15,703 hectares**.
- **March 2022**: KABIL signed a **Memorandum of Understanding (MoU)** with the **Critical Mineral Office (CMO)**, **Department of Industry, Science and Resources (DISER)**, **Government of Australia**.
- Ongoing **due diligence** for selecting lithium and cobalt projects in **Australia** for **strategic investments** through **off-take arrangements**.

Challenges in the Critical Mineral Sector

India faces several challenges in securing its critical mineral supply chain:

- **Geopolitical Risks**: Heavy dependence on countries like **China**, **DRC**, and **South America** for mineral imports.
- **Lack of Domestic Processing Capacity**: The country currently lacks advanced **rare earth element separation technologies**.
- **Low Private Investment**: The mining sector faces significant **regulatory and financial barriers**, hindering private sector participation.
- **Environmental Concerns**: Mining and refining activities often have detrimental impacts on **local ecosystems**.
- **Limited Recycling Infrastructure**: The **recycling ecosystem** for critical minerals remains **nascent** and lacks the scale required for effective resource recovery.

The Way Forward

To overcome these challenges and ensure long-term mineral security, India must:

- **Strengthen domestic exploration** efforts and incentivize the private sector through **Public-Private Partnerships (PPP)**.
- Build **long-term strategic partnerships** with mineral-rich countries to secure sourcing of critical minerals.
- **Boost R&D and recycling initiatives** to close the mineral loop and minimize waste.
- Focus on **capacity building and skill development** to foster technologies related to **critical minerals** and their efficient processing.

India aims to reduce emissions intensity by 45% by 2030, achieve 50% non-fossil power capacity, and reach net-zero by 2070. The **National Critical Mineral Mission (NCMM)** supports these targets by boosting domestic production, encouraging private sector participation, and ensuring a steady supply of minerals for clean energy.

> **Q.** India's clean energy transition is heavily reliant on a steady supply of critical minerals. Examine the significance of the National Critical Mineral Mission (NCMM) in addressing this challenge. Discuss the key issues in India's critical mineral value chain and suggest a roadmap for building a resilient and self-reliant ecosystem. *[UPSC MAINS Practice Question]*

5.8. MODERNIZATION OF COMMAND AREA DEVELOPMENT AND WATER MANAGEMENT

Why in the News?

The Union Cabinet approved the Modernization of Command Area Development and Water Management (M-CADWM) as a sub-scheme of Pradhan Mantri Krishi Sinchayee Yojana (PMKSY) for the period 2025-2026.

Objectives of the Scheme

- **Modernize Irrigation Networks**: Upgrade the irrigation water supply system to efficiently deliver water from existing canals or other sources to designated clusters, ensuring reliable access for farmers.
- **Develop Robust Micro-Irrigation Infrastructure**: Establish underground pressurized piped irrigation systems from water sources to farm gates (up to 1 hectare), enabling precise and efficient water delivery.
- **Leverage Advanced Technologies**: Utilize SCADA (Supervisory Control and Data Acquisition) and Internet of Things (IoT) for real-time water accounting and management, optimizing resource use.
- **Enhance Water Use Efficiency (WUE)**: Increase WUE at the farm level to minimize water wastage, supporting sustainable agriculture amid growing water scarcity.
- **Boost Agricultural Production and Productivity**: Improve crop yields through better irrigation, contributing to food security and economic growth.
- **Increase Farmers' Incomes**: Enhance productivity and efficiency to raise farmers' earnings, aligning with India's goal of doubling farmers' incomes.
- **Promote Sustainable Management**: Transfer irrigation asset management to Water User Societies (WUS) through Irrigation Management Transfer (IMT), ensuring long-term sustainability.
- **Support Water User Societies**: Provide five years of handholding support to link WUS with economic entities like Farmer Producer Organizations (FPOs) or Primary Agricultural Credit Societies (PACS) for financial and operational stability.
- **Attract Youth to Farming**: Encourage young farmers to adopt modern irrigation techniques, revitalizing interest in agriculture as a viable profession.
- **Pilot and Scale Innovations**: Implement pilot projects across agroclimatic zones to test and refine designs, informing a National Plan for Command Area Development and Water Management from April 2026.

The M-CADWM scheme under PMKSY is a transformative step toward sustainable agriculture in India, enhancing irrigation efficiency, boosting productivity, and increasing farmers' incomes. By leveraging technology and empowering communities, it ensures water security and economic growth. Its pilot projects pave the way for a robust National Plan by 2026, promising a resilient farming future.

> **Q.** Evaluate the objectives and technological innovations of the Modernization of Command Area Development and Water Management (M-CADWM) scheme under PMKSY. Discuss its potential to enhance water use efficiency, boost farmers' incomes, and promote sustainable agriculture, and suggest measures for effective implementation across agroclimatic zones.
> *[UPSC MAINS Practice Question]*

5.9. NILGIRI TAHR CENSUS

Why in the News?

Kerala and Tamil Nadu jointly carried out a Nilgiri tahr census.

About Nilgiri Tahr

- **Unique Species**: The Nilgiri Tahr (*Nilgiritragus hylocrius*) is the **only mountain ungulate** found in **southern India**, among 12 such species in the country.
- **State Animal**: It is the **state animal of Tamil Nadu**.
- **Endemic to Western Ghats**: Found only in the **Western Ghats**, particularly in **montane grasslands** at altitudes between **1,200 to 2,600 meters**.
- **Historical Range**: Once widespread across the Western Ghats, its presence is now limited to **fragmented pockets** due to habitat loss and hunting.
- **Legal and Conservation Status**:
  - Listed as **Endangered** on the **IUCN Red List**
  - Protected under **Schedule I** of the **Wildlife (Protection) Act, 1972**
- **Population Estimate**: As per **WWF India (2015)**, the wild population is estimated at **3,122 individuals**.
- **Major Habitats**:
  - Largest population (>700) found in **Eravikulam National Park**, Kerala
  - Other populations in the **Nilgiris**, **Anamalais**, **Palani Hills**, and **Agasthiyar ranges**

Key Highlights of the Census

- **Joint Survey**: Kerala and Tamil Nadu will conduct a synchronised Nilgiri Tahr census across 265 blocks (89 in Kerala, 176 in Tamil Nadu) to mark 50 years of Eravikulam National Park.
- **Scientific Methods**: The census will use **camera traps**, **pellet sample collection**, and the **bounded count method** for population estimation and genetic studies.
- **Wide Coverage & Participation**: The survey spans 20 forest divisions in Kerala and involves around **1,300 team members**.
- **Inside & Outside Protected Areas**: Census covers both **protected and non-protected** tahr habitats across the Nilgiri range.

Conserving the Nilgiri Tahr is not just about saving a species—it's about protecting the unique montane ecosystems of the Western Ghats, which support an incredible diversity of flora and fauna and are vital for regional climate and water security.

Q. Which two states jointly conducted the Nilgiri Tahr census in 2025?

(a) Karnataka and Andhra Pradesh   *[UPSC Pre. Practice Question]*

(b) Kerala and Tamil Nadu

(c) Maharashtra and Goa

(d) Odisha and West Bengal

Ans. (b) Kerala and Tamil Nadu

5.10. ONE-HORNED RHINOCEROS

Why in the News?

Recently, the Wildlife Institute of India has proposed a national action plan for the translocation of one-horned rhinoceroses to alleviate habitat pressure in Assam's Kaziranga and Pobitora by reintroducing them into new protected areas across five states.

About the One-Horned Rhinoceros

Scientific Name: Rhinoceros unicornis

IUCN Status: Vulnerable

Habitat: Terai grasslands, alluvial floodplains, swamps, and subtropical savannahs.

Key Features:

- The largest of all Asian rhino species, standing 5.75–6.5 ft tall and weighing up to 6,000 pounds.
- Distinctive for its single black horn (8–25 inches) and armour-plated skin folds.
- Solitary grazers, feeding on grasses, aquatic plants, shrubs, and fruits.

Key Protected Areas for One-Horned Rhinos in India

- Kaziranga National Park (Assam) – Home to the largest population
- Pobitora Wildlife Sanctuary (Assam) – Highest rhino density (107 rhinos in 16 sq. km).
- Jaldapara National Park (West Bengal)
- Gorumara National Park (West Bengal)
- Dudhwa National Park (Uttar Pradesh)

Proposed Translocation Sites under the New Action Plan

State:	Location:
Assam	Dibru-Saikhowa National Park – Plan to reintroduce 5 rhinos over 13 years.
West Bengal	Gorumara & Jaldapara National Parks – Exchange and introduce 5 rhinos every 3 years from Kaziranga and Pobitora.
Arunachal Pradesh	D'Ering Memorial Wildlife Sanctuary – Suitable for the long-term reintroduction of 5 rhinos.
Bihar	Valmiki Tiger Reserve
Uttarakhand	Surai Range

This action plan is aimed at strengthening rhino populations across multiple states and ensuring their long-term conservation.

> **Q.** India's efforts in conserving the One-Horned Rhinoceros have seen notable success, yet habitat pressure remains a challenge. Discuss the rationale and potential impact of the National Action Plan for Rhino Translocation and suggest measures to ensure its success.
>
> *[UPSC MAINS Practice Question]*

5.11. INDIAN STAR TORTOISE

Why in the News?

340 Indian Star Tortoises were released in Jogapur Reserve Forest under the Turtle Rehabilitation Project to combat illegal wildlife trade.

Indian Star Tortoise

The **Indian Star Tortoise** (*Geochelone elegans*) is a distinctively patterned reptile known for the star-shaped markings on its shell. It inhabits dry and semi-dry regions across **northwestern and southern India**, as well as parts of **Sri Lanka**. Its preferred environments include **thorn scrublands, dry grasslands**, and **open deciduous forests**.

Ecological Role & Lifestyle

This tortoise plays an important role in its ecosystem as a **seed disperser** due to its plant-based diet, which consists mainly of **grasses, leaves, flowers**, and fruits. It is mostly **active during twilight hours**, a behavior known as being **crepuscular**, which helps it avoid extreme daytime heat.

Conservation Concerns

The Indian Star Tortoise is highly threatened by the **illegal wildlife trade**, primarily driven by demand in the exotic pet market. It is often smuggled due to its ornamental value.

Protection Status:

- **IUCN Red List:** *Vulnerable*
- **CITES:** *Listed in Appendix I* (ban on international trade except under strict permits)
- **India's Wildlife (Protection) Act, 1972:** *Schedule I* (offers the highest level of legal protection)

Turtle Rehabilitation Project (TRP): Safeguarding Native Tortoise Populations

To address the alarming rise in poaching and illegal captivity, the **Turtle Rehabilitation Project (TRP)** was launched in **late 2024** in Maharashtra. It is a **state-level conservation initiative** that focuses on the **rescue, medical care, and successful reintegration** of confiscated tortoises and turtles back into the wild.

Organizations Involved:

- RESQ Charitable Trust
- Maharashtra Forest Department

Key Goals of TRP:

- Provide **specialized veterinary care** and recovery for rescued tortoises
- Gradually prepare animals for the wild through **habitat conditioning and monitoring**
- Use **biometric identification** for post-release tracking to ensure survival
- Raise **community involvement and awareness** through educational outreach and school-based programs

Major Success: Mass Release in April 2025

As a part of this ongoing effort, **340 Indian Star Tortoises** were successfully released in the **Jogapur Reserve Forest, Chandrapur**, in April 2025. This release not only symbolizes a win for conservation but also highlights the importance of long-term rehabilitation strategies over simple rescue operations. Such initiatives are critical to restoring ecological balance, deterring illegal wildlife trade, and ensuring that vulnerable species like the Indian Star Tortoise continue to thrive in their natural habitats.

> **Q. Consider the following statements regarding the Indian Star Tortoise and its conservation:**
> 1. The Indian Star Tortoise is classified as "Vulnerable" by the IUCN Red List and is listed in Appendix I of CITES.
> 2. The Turtle Rehabilitation Project (TRP) aims to address issues related to the illegal trade and poaching of tortoises in India, with a specific focus on the rehabilitation of the Indian Star Tortoise.
> 3. The Indian Star Tortoise is native to Southeast Asia and is found in a wide range of tropical forest ecosystems.
>
> Which of the above statements is/are correct?   *[UPSC Pre. Practice Question]*
> (a) 1 and 2 only   (b) 1 and 3 only
> (c) 2 and 3 only   (d) 1, 2, and 3
> **Ans. (a) 1 and 2 only**

5.12. BLUE WASHING

Why in the News?

Recently, the Central Pollution Control Board (CPCB) has carved a new category of industries called the 'blue category' industries based on the Essential Environmental Services (EES) for managing the pollution due to anthropogenic activities. Concise.

What is Blue Washing?

Blue washing is a deceptive marketing tactic where companies overstate their dedication to ethical and socially responsible practices. Unlike greenwashing, which centers on environmental claims, blue washing focuses more on economic and community-related aspects.

The Union Ministry of Environment, Forest and Climate Change (**MoEFCC**) introduced industry categorization to guide decisions on industrial location, inspection norms, pollution control, and health impacts. To standardize this process, a **Pollution Index (PI)** ranging from 0 to 100 was developed, based on emissions, effluents, hazardous waste, and resource consumption.

Industries are classified as:

- **White (0–20):** Least polluting
- **Green (21–40)**
- **Orange (41–59)**
- **Red (60–100):** Most polluting

> **Q. What is "Blue washing" often used to describe?**   *[UPSC Pre. Practice Question]*
>   (a) A government scheme promoting water-efficient technologies in industries.
>   (b) Misleading promotion of a company's commitment to ethical and social responsibility.
>   (c) A pollution control measure under the Blue category industries.
>   (d) A method of wastewater treatment in blue economy sectors.
>   **Ans. (b) Misleading promotion of a company's commitment to ethical and social responsibility.**

5.13. RARE EARTHS: STRATEGIC MINERALS IN THE AGE OF TECHNOLOGY AND TENSIONS

Why in the News?

China has recently imposed **export restrictions on seven Rare Earth Elements (REEs)** in response to tariff measures imposed by the United States. This move, seen as a **geopolitical countermeasure**, has renewed global attention on the **strategic importance** of rare earths in critical technologies, supply chain vulnerabilities, and global power dynamics.

What are Rare Earth Elements (REEs)?

Rare Earth Elements refer to a group of **17 chemically similar metallic elements** in the periodic table, including:

- **Lanthanides (15 elements)**: e.g. Neodymium, Europium, Cerium
- **Scandium and Yttrium**, which are found in the same ore deposits

Despite the name, most REEs are **not geologically rare**, but they are **rarely found in concentrated, economically viable deposits**, making their extraction and processing challenging and environmentally taxing.

Applications of REEs

REEs are critical to the modern digital and defense economies, being used in over **200 high-tech applications**, including:

- Smartphones, laptops, and flat-screen TVs
- Electric vehicles and wind turbines
- Semiconductors and battery technologies
- **Defense equipment**: jet engines, drones, laser systems, and space shuttles

Their unique **magnetic, luminescent, and electrochemical properties** make them indispensable to next-generation technologies.

Historical Context

China began dominating the global rare earths market in the **1990s**, leveraging its abundant reserves and low environmental standards. By the early 2000s, **over 80% of global REE production** came from China.

Previous instances of **export restrictions**, notably in 2010 during a dispute with Japan, and now again in 2025, demonstrate how REEs are used as a **geostrategic tool**. This underlines the global risk of **over-dependence on a single supplier**.

India's Context and Opportunities

India has **significant REE reserves**, particularly monazite-rich beach sands found in **Kerala, Tamil Nadu, and Odisha**. The Indian Rare Earths Limited (IREL) and Bhabha Atomic Research Centre (BARC) are engaged in extraction and research. However, India currently lacks large-scale **processing and value-addition infrastructure**.

Way Forward

1. **Diversification of Supply Chains**: Nations must explore and invest in alternative REE sources such as Australia, the USA, and India.

2. **Strategic Stockpiles**: Establish national inventories of critical minerals.

3. **Boost Domestic Capabilities**: India should develop **processing technologies**, attract private players, and invest in **rare earth metallurgy**.

4. **International Collaborations**: Collaborate with **Quad nations** and other democracies to reduce China-dependence.

5. **Environmental Oversight**: REE extraction is highly polluting; strict **environmental norms** and **sustainable mining practices** are essential.

Rare Earth Elements lie at the heart of the **21st-century technological revolution**. The current geopolitical tussle between China and the US highlights the urgency for **strategic mineral independence**. For India, this presents a vital opportunity to position itself as a **reliable player** in the global REE supply chain, thereby supporting **Atmanirbhar Bharat**, strengthening its **national security**, and fuelling **green technology innovation**.

> **Q.** Rare Earth Elements (REEs) have emerged as critical enablers of technological progress and instruments of geopolitical leverage. In this context, examine the strategic importance of REEs for India. What steps should India take to reduce its import dependence and become a key player in the global REE supply chain? *[UPSC MAINS Practice Question]*

5.14. RISING TOXICITY OF RICE DUE TO CLIMATE CHANGE

Why in the News?

A new study in *The Lancet Planetary Health* warns that rising CO_2 levels and temperatures are increasing arsenic levels in rice, posing significant health risks across Asia.

Background of the News:

Rice is cultivated in water-logged conditions, which enhances arsenic uptake from soil. Inorganic arsenic, the more toxic form, accumulates in rice due to the anaerobic nature of paddy fields. Climate change is worsening this situation.

Historical Context:

Previous studies linked arsenic in groundwater to health crises in South Asia. However, this is the first long-term study (6 years) analyzing climate-induced changes in rice arsenic content using simulated future climate conditions.

Government Initiatives:

- **India:** Promotion of climate-resilient agriculture under **National Mission for Sustainable Agriculture (NMSA)**.
- **ICAR** has begun researching arsenic-resistant rice varieties and safe irrigation practices.
- Some states (e.g., West Bengal, Bihar) have initiated awareness drives on arsenic-safe water and rice cooking methods.

Way Forward:

- **Technological interventions**: Breeding of arsenic-resistant rice strains using biotechnology.
- **Change in irrigation practices**: Promote AWD (Alternate Wetting and Drying) techniques.
- **Public awareness**: Educate on cooking methods (rinsing, parboiling) to lower arsenic content.
- **Policy interventions**: Establish global standards for arsenic in rice, strengthen food safety monitoring.

As climate change silently transforms crop chemistry, even staple foods like rice can become toxic. Proactive mitigation combining science, policy, and public action is vital to ensure health and food security in a warming world.

Q. Which of the following strategies can help reduce arsenic levels in rice grains in the context of climate change?

1. Developing arsenic-absorbing rice varieties
2. Using alternate wetting and drying irrigation methods
3. Promoting the use of nitrogen-based fertilizers
4. Increasing CO_2 exposure to accelerate photosynthesis

Select the correct option: *[UPSC Pre. Practice Question]*

(a) 1 and 2 only   (b) 2 and 3 only

(c) 1, 2 and 3 only   (d) 1, 2, 3 and 4

Ans. (a) 1 and 2 only

5.15. NEWS IN SHORT

5.15.1. UNITED NATIONS WORLD WATER DEVELOPMENT REPORT

Why in the News?

On March 21, 2025, the United Nations observed the inaugural **World Day for Glaciers**, coinciding with a stark warning issued in the **United Nations World Water Development Report** regarding the accelerating loss of glaciers.

- **Theme: Mountains and glaciers - Water towers**
- The report says that "**all mountain ranges**" have shown **evidence of warming since the early 20th century.**

Key Highlights of the Report:

- **Rising Temperatures**: Global warming causes more precipitation in mountain regions to fall as rain rather than snow, leading to thinner snowpacks that melt earlier in the year.
- **Impact on River Flows**: Accelerated snowmelt increases river flows in glacier-fed basins initially, but once the snowpack melts beyond a certain threshold, the flow begins to decline—this is known as **"peak water."**

- **Global Evidence**: The **"peak water"** point has already been reached in the **tropical Andes**, **western Canada**, and the **Swiss Alps**.
- **Glacier Loss**: Many glaciers are disappearing. For example, **Colombia** has lost **90%** of its glacial area since the mid-19th century.
- **Future Projections**: A temperature rise of **1.5-4°C** by 2100 could cause glaciers to lose **26-41%** of their 2015 mass.

Impacts:

- **Reduced Water Supplies**: Dwindling glaciers affect drinking water and agriculture.
- **Ecosystem Stress**: Local ecosystems face increased strain due to the loss of glacier-fed water sources.
- **Increased Risk of GLOFs**: The retreat of glaciers accelerated the risk of **Glacial Lake Outburst Floods (GLOFs)**.
- **Global Impact**: **2 billion people** could face food and water security threats due to glacier retreat.
- **Agriculture**: **Two-thirds** of global irrigated agriculture will be affected by receding glaciers and reduced snowfall in mountain regions, driven by climate change.

About World Glaciers Day:

- **World Glaciers Day** was observed for the first time on **March 21, 2025**, to raise awareness about the **critical state of glaciers** and the **risks posed by their loss** due to **climate change**.
- The day was declared by the **United Nations** through its resolution **A/RES/77/158**, alongside the **International Year of Glaciers 2025**.

Key Calls to Action:

o The observance encourages **governments**, **organizations**, and **individuals** to take urgent actions by reducing **greenhouse gas emissions** and adopting **sustainable water management** practices to mitigate the effects of climate change.

> **Q.** Discuss the implications of accelerating glacier loss on global water resources and the environment.   *[UPSC MAINS Practice Question]*

5.15.2. KASAMPATTY SACRED GROVE

Why in the News?

Recently, Kasampatty Sacred Grove in Dindigul district, Tamil Nadu, was designated as the state's second Biodiversity Heritage Site (BHS), alongside Arittapatti in Madurai.

What is a Biodiversity Heritage Site (BHS)?

A Biodiversity Heritage Site (BHS) is an area recognized for its exceptional biological diversity, including rare species, and its ecological, cultural, and community value. Designated under the Biological Diversity Act of 2002, BHS sites receive legal protection to conserve ecosystems and support local livelihoods.

Criteria for BHS Selection: To be designated a BHS, a site must meet several criteria:

- **Ecological Significance:** Unique and diverse ecosystems supporting rare species.
- **Cultural Importance:** Areas of religious or traditional value.
- **Genetic Diversity:** Significant variation within plant and animal species.
- **Endemism:** Richness in endemic species or evolutionary importance.
- **Community Involvement:** Local support for conservation efforts.

Features of Kasampatty Sacred Grove:

- It is 4.97 hectares near the Alagarmalai Reserve Forest.
- Acts as an ecological corridor, surrounded by mango plantations.
- Regulates the local climate and sustains diverse flora and fauna.

Biodiversity of Kasampatty:

- Hosts 48 plant species, including 22 shrubs, 21 lianas, and 29 herbs.
- Provides shelter to over 12 bird species, small mammals, reptiles, and insects.
- Many species found are rare or threatened, contributing to ecological balance.

Kasampatty Sacred Grove's recognition as a BHS highlights the importance of preserving both our natural and cultural heritage. As a sanctuary for biodiversity and a symbol of the relationship between nature and humanity, the grove's protection ensures its legacy for future generations.

> **Q.** Discuss the significance of the recent designation of Kasampatty Sacred Grove as a Biodiversity Heritage Site. What are the ecological and cultural benefits of such sites, and how can they contribute to the conservation of biodiversity in India?   *[UPSC MAINS Practice Question]*

5.15.3. GLOBAL WARMING OF MORE THAN 3°C THIS CENTURY

Why in the News?

A new analysis reveals that global warming of more than 3°C this century may wipe 40% off the world's economy.

Major Findings of the Report

- **Underestimation of Economic Damage**: Previous economic models have significantly underestimated the damage climate change will inflict on global GDP due to their failure to account for international economic interdependencies.
- **Global Repercussions of Extreme Weather**: The study incorporated the worldwide impacts of extreme weather events, revealing that climate change-induced economic harm is much greater than previously estimated.
- **Simultaneous Weather Shocks**: Future climate change will increase the likelihood of simultaneous weather-related shocks across multiple countries, disrupting supply chains, trade, and economic stability.
- **Severe Economic Decline**: If global temperatures exceed 3°C by the end of the century, global GDP per capita could drop by 40%, a far worse scenario than earlier projections of an 11% decline.
- **Universal Economic Impact**: Unlike previous models suggesting some colder regions might benefit from warming, the new research finds that all countries will suffer significant economic consequences.
- **Re-evaluating Emissions Reduction Targets**: The optimal balance between short-term economic costs and long-term climate benefits suggests a target of 1.7°C warming, aligning with the Paris Agreement's most ambitious goals.
- **Urgency for Action**: The findings highlight the necessity for immediate and more aggressive emission reduction strategies to prevent severe economic and humanitarian crises.

> **Q.** Analyze the economic implications of global warming exceeding 3°C by the end of the century, as highlighted in recent studies. Discuss the need for re-evaluating emission reduction targets and suggest strategies for mitigating the economic and humanitarian impacts of climate change.
> *[UPSC MAINS Practice Question]*

5.15.4. PASTE FILL TECHNOLOGY

Why in the News?

South Eastern Coalfields Limited (SECL), a subsidiary of Coal India Limited, is set to become the **first coal PSU in India** to adopt **paste fill technology** for underground coal mining.

What is Paste Fill Technology?

It Involves filling mine voids with a paste made of:

- Fly ash (thermal power plant byproduct)
- Crushed overburden (opencast mine waste)
- Cement, water, and binding chemicals

Key Benefits

- Prevents land subsidence and ensures mine stability.
- Protects surface infrastructure (villages, roads, power lines).
- Promotes waste utilization (fly ash, overburden).
- Supports sustainable mining and circular economy.
- Aligns with SDG 12 (Responsible Consumption) and SDG 13 (Climate Action).

Way Forward

- **Wider Adoption**: Successful implementation in Singhali can serve as a model for **replicating this technology** in other underground mines facing similar challenges.
- **Policy Integration**: The Ministry of Coal and the Ministry of Environment can work to **institutionalize paste fill technology** as a recommended standard for underground mining projects.
- **Skill Development**: Training personnel in this new technology can create **green jobs** and **technical expertise** in sustainable mining.
- **Public Awareness**: Highlighting such technologies can shift public perception and attract more investment into **eco-conscious mining**.

The adoption of paste fill technology by SECL signifies a **paradigm shift in Indian mining**, moving toward a **sustainable, safe, and technologically advanced future**. As environmental concerns continue to dominate global policy agendas, such innovations could serve as crucial tools in **balancing development with conservation**.

Q. Discuss the significance of paste fill technology in addressing the environmental and social challenges of underground mining in India. Also, examine its potential in achieving the Sustainable Development Goals (SDGs). *[UPSC MAINS Practice Question]*

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SCIENCE & TECHNOLOGY

Why in the News?

Every year, 24 March is observed as World TB Day to amplify the urgency of ending tuberculosis (TB), the world's deadliest infectious disease. India's **100-day Intensified TB Mukt Bharat Abhiyaan**, launched on **December 7, 2024**, has gained global recognition for its **innovative technology** and **community involvement**.

Type of TB	Description	Key Challenges
Pulmonary TB	Affects the lungs; most common form.	Highly contagious; requires early detection and treatment.
Extrapulmonary TB	Affects organs outside the lungs (e.g., kidneys, bones, brain).	Harder to diagnose; non-specific symptoms.
Latent TB (LTBI)	Infected with TB bacteria but not showing symptoms; non-contagious.	Can progress to active TB if untreated.
Drug-Resistant TB (DR-TB)	Resistant to standard TB drugs (e.g., MDR-TB, XDR-TB).	Difficult to treat; requires longer and more intensive regimens.
Children's TB	TB in children; can affect both pulmonary and extrapulmonary organs.	Difficult to diagnose in children due to vague symptoms.
TB-HIV Co-infection	TB in people with HIV; TB is a leading cause of death in people with HIV.	Complex treatment for both HIV and TB simultaneously.

Challenges in Combating TB

While India's progress has been commendable, the journey to TB elimination is not without its challenges:

- **Late Diagnosis**: Many TB cases, especially among the vulnerable, remain undiagnosed until the disease has advanced, increasing the risk of transmission.
- **Stigma and Misinformation**: TB still carries a **social stigma** in many parts of India, discouraging people from seeking treatment. Misinformation about the disease also hinders effective control efforts.
- **Resource Constraints**: Despite innovations, many parts of India, particularly rural areas, still face **limited access to healthcare infrastructure** and diagnostic facilities.
- **Drug Resistance**: The emergence of **drug-resistant TB** (DR-TB) adds another layer of complexity to the treatment process, demanding more expensive and prolonged therapies.

How to Mitigate These Challenges

- **Early Detection and Screening**: Expanding access to **portable diagnostic tools** and integrating AI-powered technologies will enable the early detection of TB, particularly among high-risk populations.

- **Community Awareness and Education**: **Stigma reduction** and **awareness campaigns** are essential. By mobilizing communities and involving influential local leaders, such as faith-based organizations, the general public can be educated on the importance of early diagnosis and treatment adherence.
- **Increased Investment in Infrastructure**: Strengthening healthcare facilities in underserved areas will provide easier access to TB testing and treatment. Ensuring that **rural areas** and **remote communities** have the necessary tools to diagnose and treat TB is crucial.
- **Addressing Drug-Resistant TB**: Enhanced focus on **personalized treatment plans** and **newer drugs** can help tackle the rise of drug-resistant TB. The **Differentiated TB care programme** launched as part of the TB Mukt Bharat Abhiyaan is a step in this direction, offering customized care based on patient needs.

Achievements of India

India's **100-day Intensified TB Mukt Bharat Abhiyaan** has yielded impressive results:

- **Wide Screening**: The campaign screened **12.97 crore people** from vulnerable populations, reaching even the most remote areas and high-risk groups.
- **Identification of Hidden Cases**: A remarkable **7.19 lakh TB cases** were notified, with **2.85 lakh of these being asymptomatic** cases that would have been missed without this intensified approach.
- **Massive Community Mobilization**: Over **13.46 lakh Nikshay Shivirs** were held, engaging over **30,000 elected representatives** and **corporate partners**, along with more than **7.7 lakh students** in TB awareness activities.
- **Ni-Kshay Mitra Initiative**: The **Ni-Kshay Mitra** program provided essential nutritional and psychosocial support to TB patients, helping ensure their recovery. In 100 days, **1,05,181 new Ni-Kshay Mitras** were enrolled.
- **Increased Financial Support**: The government doubled financial assistance under the **Ni-Kshay Poshan Yojana**, increasing the monthly aid for TB patients from ₹500 to ₹1,000, recognizing the critical link between nutrition and recovery.

Way Forward

The **100-day campaign** is just the beginning. India's path to **TB elimination by 2025** requires continued innovation, greater public-private partnerships, and sustained community engagement.

- **Scaling Up Diagnostic Innovations**: Expanding access to **AI-based diagnostics** and next-generation TB tests will ensure that no case goes undetected, especially in rural and underserved areas.
- **Sustaining Community Mobilization**: The power of **jan bhagidari (people's participation)** has been key to the campaign's success. To maintain momentum, ongoing community involvement in TB awareness and support for patients is essential.
- **Integration with Other Health Initiatives**: TB elimination efforts should be integrated with **other public health initiatives** like the **Swachh Bharat Mission** and **polio eradication drive**, reinforcing the message of collective responsibility and coordinated action.
- **Focus on Research and Drug Resistance**: Continued investment in **TB research**, including the development of new vaccines, drugs, and diagnostic tools, will help combat the evolving challenge of **drug-resistant TB**.

India's fight against **TB** has evolved from a fragmented battle to a **nationwide movement** that blends **cutting-edge technology**, **innovative community involvement**, and **strong government action**. The success of the **100-day Intensified TB Mukt Bharat Abhiyaan** is a testament to what can be achieved when governments, communities, and individuals unite with a common goal. With continued innovation, investment, and participation, India is not just fighting TB — it is on the path to **defeating it**.

6.2. COMMISSION ON GENETIC RESOURCES FOR FOOD AND AGRICULTURE

Why in this News?

Representatives from the Commission on Genetic Resources for Food and Agriculture recently convened in Rome for their 20th meeting (CGRFA-20).

About the CGRFA-

The **Commission on Genetic Resources for Food and Agriculture** (CGRFA) was established by the **Food and Agriculture Organization (FAO)** in 1983 to focus on plant genetic resources (PGR). It has since become the primary international forum where governments discuss, negotiate, and make decisions on matters related to **genetic resources for food and agriculture** (GRFA).

The Commission has **179 member countries**, including **India**.

Over time, the Commission's mandate expanded to cover all sectors of GRFA, including **plant, animal, forest, aquatic, microbial, and invertebrate genetic resources**, thus encompassing the broad spectrum of biodiversity essential for food and agriculture.

Key Highlights of the Reports:

- **The Third Report on the State of the World's Plant Genetic Resources for Food and Agriculture** will assess global trends in **crop diversity**, challenges in **conservation**, and successful **seed-saving initiatives** and **breeding techniques**.
- **The Second Report on the State of the World's Forest Genetic Resources** will evaluate the **status of forest biodiversity** and emphasize the role of **genetic diversity** in **sustainable forest management** and **climate adaptation**. A new global information system will be introduced to help countries track forest genetic resources.

These reports underscore the importance of **genetic diversity** for **food security**, **climate adaptation**, and **sustainable agriculture**, especially in the face of threats like **climate change**, **deforestation**, **pests**, and **diseases**.

> **Q. Which of the following reports are associated with the Commission on Genetic Resources for Food and Agriculture (CGRFA)?**
>
> 1. The Third Report on the State of the World's Plant Genetic Resources for Food and Agriculture.
> 2. The Second Report on the State of the World's Forest Genetic Resources.
> 3. The Annual Report on the Status of Global Marine Biodiversity.
>
> Select the correct answer using the code below: *[UPSC Pre. Practice Question]*
>
> (a) 1 and 2 only   (b) 2 and 3 only
>
> (c) 1 only   (d) 1, 2 and 3
>
> **Ans. (a) 1 and 2 only**

Why in the News?

Recently, the **second Global Conference on Air Pollution and Health** in Cartagena, Colombia, focuses on reducing air pollution-related deaths by half by 2040 from the 2015 level. With **7 million premature deaths** globally, especially in developing nations, the conference calls for global action to address this public health crisis.

Organizing Bodies: WHO, UN partners, global health institutions, civil society, and research organizations.

Key outcomes include:

- **Commitment to halve deaths** from air pollution by 2040.
- **Stronger legislation** to enforce WHO guidelines, with an emphasis on political leadership from local authorities.
- **Scientific evidence** links air pollution to cognitive decline, mental health issues, and respiratory diseases.
- A push for **clean energy transition** to reduce emissions from fossil fuels.
- Addressing **energy poverty**, which continues to affect poor households, hindering full energy transition.
- A call for **greater investment** in air quality and climate finance, with a focus on local government action.

About the First Global Conference on Air Pollution and Health:

- **Venue**: WHO Headquarters, Geneva, Switzerland
- **Objective**: Launch a global agenda for **air pollution mitigation** as a public health priority.

The conference stresses the importance of **coordinated action** across all sectors to tackle the growing public health threat of air pollution and ensure cleaner, healthier environments.

> **Q.** Discuss the key outcomes of the Second Global Conference on Air Pollution and Health. How can global initiatives, such as this conference, help address the growing challenge of air pollution and its impact on public health?   *[UPSC MAINS Practice Question]*

Why in the News?

Recently**, UNESCO, MeitY, and Ikigai Law** organised a **stakeholder consultation** on the **AI Readiness Assessment Methodology (RAM)** in Hyderabad.

Aim:

- **Create an India-specific AI policy report** focusing on ethical AI.
- **Map strengths and opportunities** in the Indian AI ecosystem.
- **Involve diverse stakeholders** (policymakers, technologists, academia, practitioners) in shaping AI readiness.
- Align with the **INDIAai Mission**, reinforcing the development of **Safe and Trusted AI**.
- Promote **ethical, accountable, and secure AI development** in India.

> **Q.** Discuss the significance of the AI Readiness Assessment Methodology (RAM) for India in the context of ethical and inclusive AI governance. How can India leverage such frameworks to shape a globally responsible AI ecosystem?   *[UPSC MAINS Practice Question]*

Why in the News?

The **Technology and Innovation Report 2025: Inclusive Artificial Intelligence for Development** surveys the complex artificial intelligence landscape, aiming to help decision makers design science, technology and innovation policies that foster inclusive technological progress.

Key Objective of the Report

- **Unprecedented Focus:** Highlights AI's potential to advance Sustainable Development Goals while warning of inequality risks without oversight.
- **Historical Insight:** Leverages past technological lessons to prioritize equitable distribution and human development.
- **Inclusive Framework:** Promotes transparent, ethical AI development, focusing on vulnerable populations and regions.
- **Evidence-Driven:** Emphasizes infrastructure, data, and skills as key drivers, based on a multidimensional approach.
- **Proactive Stance:** Calls for measures to prevent AI from widening global disparities.
- **Full Lifecycle Governance:** Stresses oversight across AI development, adoption, and impact, focusing on productivity and workforce.
- **Local Integration:** Advocates embedding national contexts into AI strategies.
- **Global Guidance:** Offers a framework for international AI cooperation, aiming for shared prosperity.

Key Highlights of National Strategies Case Studies

- **China AI Policy:** Targets AI leadership by 2030 with state-driven 5G and data investments for smart cities and industry.
  - Prioritizes scale over ethics, contrasting with the report's equity focus.
- **European Union (EU) AI Policy:** Leads with ethical AI via the AI Act, balancing innovation with infrastructure and skills support.
  - Aligns with the report's human-centric vision, setting global fairness standards.
- **United States (U.S.) AI Policy:** Drives AI through market innovation and tech giants' data and cloud dominance.
  - Boosts progress but risks inequality, diverging from the report's governance goals.

Major Policy Takeaways Highlighted in the Report

- **Global Disparity:** Notes AI's concentration in few nations (e.g., U.S., China) and urges policies to reduce inequality gaps.
- **Inclusive Governance:** Seeks a global AI framework with ethical oversight and multi-stakeholder input, countering tech dominance.
- **Leverage Points:** Identifies infrastructure, data, and skills as essential for AI readiness and opportunity.
- **Worker-Centric AI:** Pushes AI to enhance, not replace, labor, with reskilling to support developing nations' workforces.
- **National Strategies:** Encourages integrating AI into cohesive government policies, guided by case studies (China, EU, U.S.).
- **International Cooperation:** Advocates collaboration for unified AI governance, using DPI, open innovation, and capacity-building.

- **Ethical Accountability:** Proposes disclosures and flexible regulations to ensure AI fairness, especially for SMEs.
- **South-South Synergy:** Promotes resource-sharing in the Global South via partnerships like BRICS and ASEAN.
- **Human-Centered Focus:** Shifts AI toward people-first development, ensuring equitable benefits and human complementarity.

History shows technology boosts growth but not equity. Stronger global cooperation can refocus AI on shared prosperity and human-centered progress.

> **Q.** Discuss the key objectives and policy takeaways of the Technology and Innovation Report 2025 on Inclusive Artificial Intelligence for Development. Analyze how inclusive AI governance can address global disparities and promote equitable technological progress, with reference to national strategies and international cooperation.
>
> *[UPSC MAINS Practice Question]*

6.6. WORLD'S FIRST 3D-PRINTED RAILWAY STATION

Why in the News?

Japan builds the world's first 3D-printed railway station (Hatsushima), completed in just **6 hours** using **off-site additive manufacturing**, reducing labor and on-site construction time.

What is 3D Printing (Additive Manufacturing)?

3D Printing is a **modern fabrication technology** where objects are made by **depositing materials layer by layer**, directly from a digital design. It's the opposite of traditional methods where material is **cut or drilled away (subtractive manufacturing)**.

How it Works:

- **Design Creation:** A 3D digital model is prepared using **CAD (Computer-Aided Design)** or through **3D scanning** of an object.
- **Layer Slicing & Code Generation:** The model is converted into **thin digital layers** and transformed into **machine-readable G-code**.
- **Printing Process:** Materials like plastic, metal, or concrete are deposited layer-by-layer to build the final object.
- **Post-Processing:** Once printed, objects are cleaned, cured, sometimes painted or assembled, and tested for durability.

Materials Used:

- **Plastics:** ABS, PLA, Nylon
- **Metals:** Titanium, Aluminum, Stainless Steel
- **Ceramics & Concrete**
- **Biomaterials:** Used in medical & tissue engineering (e.g., bioinks)

Common 3D Printing Techniques:

- FDM (Fused Deposition Modeling)
- SLA (Stereolithography)
- Material Jetting
- DED (Directed Energy Deposition)
- Sheet Lamination

Real-World Applications:

- **Construction:** Rapid construction of houses, bridges, stations (like Hatsushima)
- **Healthcare:** Prosthetics, implants, organs-on-chip
- **Automotive & Aerospace:** Engine parts, lightweight components
- **Fashion:** Shoes, jewelry, smart clothing
- **Defense & Disaster Relief:** Printing shelters or drone parts in remote areas

What is 4D Printing?

4D printing is an **evolution of 3D printing**, where objects are created using **smart materials** that can **change shape or function automatically** in response to external conditions (heat, light, water, etc.).

How it's Different:

While 3D printed objects remain static, 4D printed objects can:

- Self-assemble
- Morph into different shapes
- React to temperature/moisture
- Heal themselves or adapt

4D Printing Applications:

Sector	Use-Cases
Medical	Self-adjusting stents, temperature-sensitive implants
Apparel	Smart uniforms that ventilate or change color dynamically
Aerospace	Self-cooling engine parts, shock-absorbing materials
Military	Adaptive battlefield gear or structures that deploy on command

Japan's innovation in building a railway station using 3D printing highlights the **future of construction** — faster, cost-effective, and sustainable. Technologies like **3D and 4D printing** are redefining the boundaries of architecture, manufacturing, and healthcare, and are expected to play a key role in **India's infrastructure and smart cities vision** as well.

> **Q.** Discuss how 3D printing technology can revolutionize infrastructure development in countries like India. Highlight its benefits and challenges in large-scale adoption.
>
> *[UPSC MAINS Practice Question]*

6.7. BIOMASS SATELLITE MISSION (IE) AND (ESA)

Why in the News?

The European Space Agency (ESA) is set to launch its **Biomass mission** aboard a **Vega C rocket** from **French Guiana**. As the **seventh mission** under ESA's Earth Explorer programme. Biomass aims to revolutionize our understanding of global forests and their role in the **carbon cycle**.

What Is the Biomass Mission?

Biomass is a satellite mission that will use advanced **P-band radar** to create **3D maps** of Earth's forests, measuring **above-ground biomass** and forest height from canopy to roots. The satellite will orbit **666 km in a sun-synchronous orbit**, ensuring consistent lighting conditions for imaging.

Mission Goals

- Measure the **amount of carbon** stored in forests

- Monitor **deforestation** and forest degradation
- Improve understanding of forests' role in **absorbing CO₂**
- Support efforts in **climate change mitigation**

Why It Matters?

Forests absorb around **16 billion tonnes of CO₂ annually** and store **861 gigatonnes of carbon**. Yet, global forest loss — 3.7 million hectares in 2023 — contributes about **6% of global CO₂ emissions**. Biomass will fill critical data gaps and support smarter climate policies.

Key Features

P-band SAR Radar: First satellite to use deep-penetrating 70 cm radar

12-metre Antenna: Scans Forest canopies and ground biomass

Global Coverage: Includes tropical, boreal forests etc

Carbon Flow Monitoring: Tracks forest carbon dynamics

Sun-Synchronous Orbit: Ensures optimal observation timing at 666 km altitude

The **Biomass mission** will deliver vital insights into forest health and carbon storage, helping scientists and policymakers better respond to climate change.

> **Q.** How do satellite-based Earth observation missions like ESA's Biomass contribute to climate change mitigation efforts? Highlight the technological and policy relevance of such missions.
>
> *[UPSC MAINS Practice Question]*

6.8. INDIA'S PHARMACEUTICAL AND MEDICAL DEVICES SECTOR

Why in the News?

India's pharmaceutical and medical devices sectors witnessed a combined FDI inflow of ₹19,134.4 crore during FY 2024–25, reaffirming their growing importance in the global healthcare supply chain and domestic economic strategy.

Background of the News

India is globally recognised as the *"Pharmacy of the World"* due to its leadership in producing cost-effective, high-quality generic medicines and vaccines. Supported by focused government schemes, regulatory reforms, and international investment, the sector is undergoing a paradigm shift from volume-based to value-based growth.

The Department of Pharmaceuticals, under the Ministry of Chemicals and Fertilizers, leads the sector's policy, aiming to ensure equitable access to medicines while enhancing India's global competitiveness.

Historical Context

India's pharmaceutical rise is deeply rooted in the **Patents Act of 1970**, which excluded product patents in medicines—enabling the growth of generics through reverse engineering. The **TRIPS-compliant amendments (2005)** marked a shift towards original R&D and innovation. This evolution from process imitation to process innovation has defined India's trajectory in global pharma.

Government Initiatives

1. **Production Linked Incentive (PLI) Schemes:**
   - ₹15,000 crore for pharmaceuticals (2021–2028): Supports high-value products like biopharmaceuticals, patented drugs, APIs, and medicines for lifestyle diseases.
   - ₹6,940 crore for bulk drugs: Promotes domestic manufacturing of 41 critical bulk drugs; 34 out of 48 approved projects operational by Dec 2024.

- ₹3,420 crore for medical devices: Incentivizes domestic production of high-end diagnostic and therapeutic devices.

2. **Bulk Drug Parks Scheme (2020):** Three parks approved (Gujarat, Himachal Pradesh, Andhra Pradesh) with central assistance of up to ₹1,000 crore per park to boost self-reliance and reduce import dependency.

3. **Pradhan Mantri Bhartiya Janaushadhi Pariyojana (PMBJP):** With over **15,479 Jan Aushadhi Kendras** (as of April 2025), this initiative ensures affordable medicines and encourages the use of generics across the public healthcare system.

4. **Strengthening of Pharmaceuticals Industry (SPI) Scheme (2021–2026):** Outlay of ₹500 crore to assist MSMEs in regulatory upgrades, infrastructure development, and knowledge-sharing across clusters.

5. **Patent and Regulatory Reforms:** Shift in R&D priorities post-2005 to encourage original drug discovery. However, recent Draft Patents (Amendment) Rules, 2023, have raised concerns over access to generics.

Way Forward

- **Regulatory Streamlining:** Simplify and digitize compliance mechanisms, especially for MSMEs.
- **IPR Balancing:** Ensure innovation incentives while protecting public health through affordable generics.
- **Skilling and Research:** Build a robust talent pipeline in biotechnology, regulatory science, and pharmaceutical engineering.
- **Global Collaboration:** Foster public-private and international partnerships for research, clinical trials, and technology transfer.

India's pharmaceutical and medical devices sectors stand at a strategic inflection point—transitioning from volume leadership to innovation leadership. With sustained policy support, infrastructure investments, and a forward-looking regulatory framework, the sector is poised to emerge not only as a global manufacturing hub but also as a cradle of pharmaceutical innovation. In the larger vision of *Atmanirbhar Bharat*, these sectors are not just economic assets but vital instruments of health security, global diplomacy, and social justice.

Q. With reference to India's Bulk Drug Parks Scheme, consider the following statements:

1. The scheme aims to reduce import dependency on active pharmaceutical ingredients (APIs).
2. The Central Government provides up to ₹1,000 crore or 70% of the project cost per park.
3. The scheme is valid up to FY 2030–31.

Which of the statements given above is/are correct?　　　　*[UPSC Pre. Practice Question]*

(a) 1 and 2 only　　　　　　　　　　(b) 2 and 3 only

(c) 1 and 3 only　　　　　　　　　　(d) 1, 2 and 3

Ans. (a) 1 and 2 only

Why in the News?

India's Chief of Defence Staff, General Anil Chauhan, recently emphasized the urgent need to accelerate India's military space program, warning that the future of warfare increasingly depends on space dominance.

Background

India's achievements in space technology—ranging from lunar missions to anti-satellite (ASAT) tests—show its scientific prowess. However, as global powers like the U.S. and China expand their military footprints in space, India's strategic vulnerabilities have become apparent. With adversaries developing counter-space capabilities and integrating space operations into their defense doctrines, the militarization of space is no longer theoretical—it is a pressing geopolitical reality.

Historical Context

The militarization of space began during the Cold War, with the U.S. and USSR competing in missile defense and surveillance. The Outer Space Treaty of 1967 sought to prevent an arms race in space but lacked strong enforcement mechanisms. India's 2019 ASAT test, "Mission Shakti," marked its entry into the space warfare arena, yet it remains significantly behind in terms of capabilities compared to rivals like China.

Government Initiatives in Space Security

- **Defence Space Agency (DSA)** established to coordinate military space efforts.
- Conducted **Anti-Satellite (ASAT) test** in 2019, showcasing kinetic counter-space capability.
- **Gaps remain:**
  o No integrated **Tri-Service Space Command**.
  o **Lack** of a clear **space warfare doctrine**.
  o **Limited indigenous counter-space technologies**.
- **Indian Space Policy 2023:**
  o Focuses on **commercial and civilian space growth**.
  o **Defense-specific frameworks** are still underdeveloped.
- Critical emerging needs:
  o **Real-time Space Situational Awareness (SSA)**.
  o **Quantum encryption** and **satellite cybersecurity**.

Way Forward

- **Establish a dedicated Space Command** for integrated tri-service space operations.
- Formulate a **National Space Doctrine** aligned with cyber and nuclear strategies.
- Invest in:
  o **Advanced SSA capabilities**.
  o **Co-orbital defense systems**.
  o **Quantum communication** and **cyber resilience** for space assets.
- Promote **collaboration among ISRO, DRDO, startups, and academia** for innovation and R&D.
- Enhance **global space diplomacy** to shape international norms and boost India's soft power.

As space evolves into a contested domain of modern warfare, India must pivot from a reactive stance to a proactive, strategic approach. Its technological sovereignty and national security now depend on mastering the final frontier. Building upon its scientific legacy, India must secure space as a strategic domain, ensuring readiness against current and future threats.

> **Q. Which of the following statements is/are correct about India's strategic challenges in space warfare?**
> 1. India currently operates a full-fledged independent Space Command.
> 2. China has integrated space operations within its military through the Strategic Support Force.

6.10. LEPTOBRACHIUM ARYATIUM

Why in the news?

In a landmark discovery, a new species of frog, Leptobrachium aryatium, has been officially recognized after a 21-year-long study that began in 2004.

Habitat & Ecological Significance

Leptobrachium aryatium was discovered in the Garbhanga Reserve Forest, located on the southwestern edge of Guwahati, Assam, bordering the state of Meghalaya. The forest lies adjacent to Deepor Beel, a Ramsar Wetland site, and plays a crucial role as part of the Garbhanga-Rani-Deepar Beel elephant corridor, essential for the movement of regional wildlife.

Name Origins: A Tribute to Education

The frog has been named after Arya Vidyapeeth College, a renowned educational institution in Guwahati. The naming honors the college's significant contribution to transforming the region from a liquor brewing hub into a respected center of education. This gesture reflects the growing recognition of the intersection between education and environmental conservation in the region.

Key Biological Features

Leptobrachium aryatium belongs to the Leptobrachium genus, which is known for its characteristic stocky bodies, broad heads, and short hind limbs. This species stands out with:

• Fiery orange-and-black eyes, making it visually distinctive.

• A reticulated throat pattern that sets it apart from similar species.

• A rhythmic dusk-time call, which contributes to its bioacoustic identity.

Scientific Validation

The confirmation of Leptobrachium aryatium as a new species was achieved through a combination of:

• Morphological analysis, which focused on physical features.

• Genetic (DNA) testing, establishing it as a separate species.

• Bioacoustic studies, which analyzed the unique call patterns of the frog.

The discovery of Leptobrachium aryatium is not only a remarkable contribution to biodiversity studies but also a testament to the importance of long-term ecological research This finding contributes to a deeper understanding of India's amphibian diversity and underscores the significance of preserving the ecosystems that sustain such unique species.

6.11.   NEWS IN SHORT
6.11.1. "K2-18B "

Why in the News?

A team of scientists from the **University of Cambridge** has reported potential signs of life in the atmosphere of the exoplanet **K2-18b**.

About K2-18B

- A team of scientists using **NASA's James Webb Space Telescope (JWST)**, detected **carbon-bearing molecules** such as **methane** and **carbon dioxide**, and potential traces of **dimethyl sulphide (DMS)**—a molecule primarily produced by life on Earth.
- This is the **first detection of such biosignature gases beyond our solar system**, though the team clarifies that it does **not confirm extraterrestrial life**, but marks the **strongest evidence yet** in this direction.

> **K2-18b** is an exoplanet orbiting the **cool dwarf star K2-18**, discovered in **2015** by NASA's Kepler Space Telescope. It lies in the **habitable zone** — the region around a star where conditions may allow liquid water to exist.

Historical Context of Exoplanetary Research

Since the **1990s**, scientists have discovered over **5,000 exoplanets**. The focus has increasingly shifted from detection to analyzing **atmospheric composition**, temperature, and habitability potential.

Notable missions include:

- **Kepler Mission (2009-2018)**: Pioneered large-scale detection of exoplanets
- **James Webb Space Telescope (JWST)**: Currently providing detailed spectroscopic data of distant planetary atmospheres
- **TESS (Transiting Exoplanet Survey Satellite)**: Searching for Earth-sized planets in nearby star systems

K2-18b now stands at the **forefront of astrobiology**, due to its potential to host **chemical processes associated with life**.

The detection of potential **biosignature gases** on K2-18b is a **milestone in the quest for extraterrestrial life**, showcasing how advancements in space science are transforming our understanding of the universe.

> **Q.** "The detection of potential biosignatures in the atmosphere of K2-18b marks a turning point in the global quest for extraterrestrial life."
>
> Discuss the scientific significance of this discovery. How can such developments influence the future of space exploration, international cooperation, and scientific research in India?
>
> *[UPSC MAINS Practice Question]*

6.11.2. VIBE CODING

Why in the News?

Vibe coding has recently gained significant attention in Silicon Valley, following its introduction by Andrej Karpathy, co-founder of OpenAI.

What is Vibe Coding?

- Vibe coding refers to leveraging generative AI to not only assist with but also fully generate the code for an app. At its essence, it involves using natural language to communicate with AI models, such as ChatGPT, to create applications without needing detailed knowledge of programming languages. Users can simply prompt these large language models (LLMs) to generate the entire code for a tool or service, with the AI handling the technical work.
- The term "vibe coding" was coined by Andrej Karpathy, a renowned software engineer who previously served as the head of AI at Tesla and was one of the founding engineers at OpenAI, the company behind ChatGPT.

Benefits and Risks of Vibe Coding

- Vibe coding opens new possibilities for individuals who have ideas for apps or services but lack the technical skills to code. It allows them to turn their concepts into reality without needing to master complex programming languages.

- However, this innovation also brings significant risks. One concern is the potential security implications. With vibe coding, inexperienced users may rely on AI to generate code rather than using traditional coding methods or understanding the intricacies of the codebase. While AI-generated code may meet the basic user request, it could be inefficient, difficult to maintain, or vulnerable to security threats.

- In contrast, skilled human project managers and developers are able to frame the code in a way that aligns with the specific goals of the project and ensures it operates efficiently. An AI system, however, may not fully comprehend the larger context, which could lead to performance issues, high maintenance costs, and overlooked security flaws.

Q. What is 'vibe coding,' and how is it transforming the app development landscape in Silicon Valley, including its potential benefits and associated risks? *[UPSC MAINS Practice Question]*

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ART & CULTURE

7.1. MEENAKARI CRAFT

Why in the News?

Recently, the Indian Prime Minister visited to Bangkok for the 6th BIMSTEC Summit, he gifted exquisite Indian handicrafts, including Meenakari artifacts, to the Thai Prime Minister and her spouse.

Meenakari

It is the art of decorating metal or ceramic surfaces with vibrant colors and intricate patterns through enamelling. This technique involves fusing powdered glass onto surfaces at high temperatures, resulting in detailed and durable designs.

Historical Origins:

- Meenakari originated in Safavid Iran and was refined by the Mughals in India.
- The term "Meenakari" comes from *Meena* (heaven) and *Kari* (to do), meaning "placing paradise onto an object."
- Introduced to India during the Mughal era, it was further enhanced in the 20th century with the influence of Iranian artisans.

Indian Regions Known for Meenakari:

- **Jaipur (Rajasthan):** Famous for its red, green, and white Mughal-style motifs.
- **Gujarat & Lucknow:** Each region showcases its own unique style.

Key Features:

- Uses precious metals like gold and silver, as well as copper and brass.
- Includes geometric, floral, and animal motifs.
- Meenakari is applied to a wide range of items such as jewelry, vases, figurines, crockery, home decor, and furniture.
- The finished products often have a polished, glassy appearance with striking contrasts.

> **Q. Consider the following statements regarding the Meenakari craft:**
>
> 1. It originated in India during the reign of the Mauryas.
> 2. It was introduced and refined in India under the Mughals, with later influence from Iranian artisans.
> 3. Meenakari is practiced only in Rajasthan and not in other parts of India.
>
> Which of the statements is/are correct?   *[UPSC Pre. Practice Question]*
>
> (a) 2 only   (b) 1 and 2 only
>
> (c) 1 and 3 only   (d) 2 and 3 only
>
> **Ans. (a) 2 only**

7.2. GITA AND NATYASHASTRA ADDED TO UNESCO'S MEMORY OF THE WORLD REGISTER

Why in the News?

Recently, the manuscripts of the Bhagavad Gita and Bharat Muni's Natyashastra were added to UNESCO's Memory of the World Register.

UNESCO's Memory of the World Programme

Established: 1992

Purpose: The Memory of the World (MoW) Programme is a global initiative by UNESCO aimed at preserving humanity's documentary heritage. It seeks to protect valuable archival records, manuscripts, and rare collections from neglect, decay, and destruction, while promoting greater accessibility and public awareness.

Criteria for Inclusion:

- Demonstrated outstanding universal value
- Historical, cultural, or social significance
- Authenticity, integrity, and rarity of the document

India and the Memory of the World Register

With the recent addition of the *Bhagavad Gita* and *Natyashastra*, India now boasts **14 entries** in UNESCO's prestigious Memory of the World Register.

In 2024, several other Indian classics, including *Ramcharitmanas*, *Panchatantra*, and *Sahrdayāloka-Locana*, were also inscribed in the MOWCAP (Memory of the World Committee for Asia and the Pacific) Regional Register.

Bhagavad Gita (The Song of the Lord)

- **Attributed to:** Sage Vyasa
- **Overview:** A 700-verse philosophical and spiritual dialogue between Lord Krishna and the warrior Arjuna, set on the battlefield of Kurukshetra.
- **Significance:** The Gita presents enduring ethical, moral, and metaphysical principles at the heart of Hindu philosophy and spiritual practice.

Natyashastra (Treatise on Performing Arts)

- **Author:** Bharat Muni
- **Overview:** An ancient and foundational text on Indian classical performance arts, encompassing dance, drama, music, and stagecraft.
- **Significance:** The Natyashastra introduces key aesthetic concepts such as *Rasa* (emotive essence), which continue to shape Indian cultural expressions in the arts.

Q. With reference to UNESCO's Memory of the World (MoW) Programme, consider the following statements:

1. It was launched to safeguard intangible cultural heritage like festivals and folk dances.
2. Manuscripts and rare documents of historical significance are eligible for inclusion in the register.
3. The programme was established in the 21st century.

Which of the statements given above is/are correct?   *[UPSC Pre. Practice Question]*

(a) 2 only   (b) 1 and 3 only

(c) 1 and 2 only   (d) 1, 2 and 3

Ans. (a) 2 only

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SOCIAL ISSUES

8.1. 'EDUCATION AND NUTRITION: LEARN TO EAT WELL' REPORT

Why in the News?

UNESCO's recent global report, Education and Nutrition: Learn to Eat Well, unveiled at the 'Nutrition for Growth' summit in March, emphasizes the critical link between nutrition and education.

Key Findings:

- **Global Impact:** Around 418 million children across 161 countries benefit from school meal programs.
- **Nutritional Shortcomings:** Over half of the school meal programs worldwide fall short in providing adequate fruits and vegetables, with a third including sugary drinks in their offerings.
- **Rising Obesity:** The incidence of childhood obesity has doubled in more than 100 countries over the past two decades.
- **India's Efforts:** The PM-POSHAN scheme in India stands out as one of the largest, feeding 118 million children daily.
- **Hidden Hunger:** While school meal programs are widespread, micronutrient deficiencies persist due to limited dietary variety.
- **Nutrition Education Gaps:** Only 17 countries globally have successfully integrated nutrition education into their school curricula, and even fewer connect it to national food standards.

Interconnection of Education and Nutrition:

- **Enhanced Learning:** Proper nutrition directly impacts cognitive function, improving attention, memory, and academic performance.
- **Improved Access & Equity:** School meals serve as an incentive for enrollment, particularly among girls and families from lower socioeconomic backgrounds.
- **Health & Development:** Good childhood nutrition is foundational to lifelong physical and cognitive development, influencing future earning potential.
- **Supporting Local Economies:** School meal programs linked to local agricultural systems create beneficial farm-to-table economies.
- **Promoting Social Equity:** Well-designed meal programs act as a safety net for vulnerable groups, addressing inequality in access to food and education.
- **Global Success Stories:** Countries like Brazil and Finland, with well-established school meal systems, report better retention rates and improved learning outcomes.

Challenges Identified:

- **Subpar Meal Quality:** Many school meals include highly processed, sugary, and nutritionally poor foods.
- **Lack of Nutrition Education:** Few countries integrate nutritional literacy into their curricula alongside meal programs.
- **Overdependence on Staples:** Many programs rely heavily on basic staples such as rice, wheat, and maize, neglecting dietary diversity.
- **Urban-Rural Disparity:** Inconsistent infrastructure, such as cold chains and supply chains, affects meal distribution between urban and rural areas.
- **Monitoring Deficiencies:** Many nations lack proper frameworks to assess the impact of school meals on children's health and education.

- **Limited Tracking:** Only 8% of countries monitor the nutritional quality of school meals in line with WHO standards.

Path Forward:

- **Curriculum Integration:** Make nutrition education a core component of school curricula at all levels.
- **Adopt Standards:** Implement evidence-based food standards aligned with WHO dietary guidelines.
- **Support Local Agriculture:** Encourage local sourcing for school meal programs, promoting seasonal and diverse food options.
- **Train Educators:** Equip teachers and staff with the skills needed to effectively deliver nutrition education in classrooms.
- **Establish Monitoring Frameworks:** Develop national benchmarks and tracking systems to evaluate both health and academic benefits of school meals.
- **National Strategies:** UNESCO advocates for the creation of clear national strategies with accountability measures for school nutrition programs.

The UNESCO report stresses the inseparable link between quality nutrition and education. Investing in balanced, nutritious school meals is not just a welfare initiative—it is an essential strategy for human capital development. A well-nourished child is better equipped for learning, and an educated child will go on to contribute more effectively to society.

Q. Which organization recently released the "Education and Nutrition: Learn to Eat Well" report? *[UPSC Pre. Practice Question]*

(a) World Health Organization (WHO)

(b) United Nations Educational, Scientific and Cultural Organization (UNESCO)

(c) Food and Agriculture Organization (FAO)

(d) United Nations Children's Fund (UNICEF)

Ans. (b) United Nations Educational, Scientific and Cultural Organization (UNESCO)

8.2. NEW UGC REGULATIONS ON FOREIGN DEGREE EQUIVALENCE

Why in the News?

The University Grants Commission (UGC) has notified fresh regulations to make it easier for Indian students to get their foreign academic qualifications recognised in India.

New UGC Regulations on Foreign Degree Equivalence

- **Online System Introduced**
  - Students can now apply for equivalence certificates through a dedicated UGC portal with required documents and fees.
  - Applications will be processed within **15 working days**.
- **Review Mechanism**
  - If dissatisfied, students can seek a review by paying a fee.
  - Review decisions will also be delivered within **15 working days**.
- **Coverage and Exclusions**
  - Applicable to foreign school-level and higher education qualifications from recognised institutions.
  - **Not applicable** to professional degrees like Medicine, Law, Nursing, Architecture—these remain under respective regulatory bodies.

- o Degrees from **franchise setups or unrecognised institutions** are excluded.
- **Equivalence Criteria:** Recognition status, course duration and structure, credit load, assessment method, and comparability with Indian programmes are considered.

Rationale Behind the New UGC Regulations

- **Solving Long-standing Issues:** Students faced delays, confusion, and lack of clarity in getting foreign degrees recognised. The new system ensures **speed, transparency, and consistency**.
- **Aligned with NEP 2020:** Supports the goal of making India a **global education hub** by enabling smoother **academic mobility and international collaboration**.
- **Upholding Standards:** Ensures only degrees from **recognised, quality institutions** are accepted, maintaining the **credibility of Indian higher education**.
- **Protecting Students:** Prevents misuse by excluding degrees from **franchise-based or unaccredited institutions**, ensuring **student interests are safeguarded**.
- **Encouraging Returnees:** Eases re-entry for Indian students returning from abroad, making it simpler to **continue studies or careers in India**.

The new UGC regulations offer a faster, transparent, and student-friendly process for recognising foreign degrees. Aligned with NEP 2020, they uphold academic standards, protect student interests, and support India's goal of becoming a global education hub.

> **Q.** Evaluate the significance of the UGC's Recognition and Grant of Equivalence to Qualifications Obtained from Foreign Educational Institutions Regulations, 2025. Discuss how these regulations address longstanding issues for students, align with the National Education Policy 2020, and contribute to making India a global education hub.
>
> *[UPSC MAINS Practice Question]*

8.3. LANGUAGE POLICY IN INDIA

Why in the News?

The Haryana government has implemented the three-language formula in schools under the Board of School Education, Bhiwani, as per the National Education Policy, 2020.

Background of the News

The **Haryana School Education Board, Bhiwani** has announced the implementation of the **three-language formula** for **classes 9 and 10** in all affiliated government and private schools.

This policy will come into effect for **class 9 students from the academic year 2025–26**, and for **class 10 from 2026–27**. The announcement was made by Board Chairman **Prof. (Dr.) Pawan Kumar**, aligning with the objectives of the **National Education Policy (NEP) 2020**.

Under this revised curriculum framework, students will study a total of **seven subjects**, including **six compulsory** and **one optional**. As part of the language requirement, **class 9 students must select one additional language**—either **Sanskrit, Urdu, or Punjabi**—which will be studied along with **Hindi and English** as compulsory subjects. From 2026–27 onward, **class 10 students** will also have an **additional compulsory subject** in line with this policy.

The Language Debate in India

Historical Background

Since independence, India's language policy has been a contentious issue. Language has traditionally been seen more as a tool of instruction than as a means of cognitive development. Colonial-era education policies reinforced this view, focusing more on rote learning than exploration or critical thinking.

Constitutional Debates

The Constituent Assembly extensively debated the question of a national language. While **Hindi** was adopted as the **official language**, its multiple dialects and regional sensitivities made the process complex. **English**, though expected to fade over time, remained a dominant link language due to practical and political considerations.

Three-Language Formula: Evolution and Framework

Introduced in the **1968 National Policy on Education**, the **three-language formula** aimed to promote multilingualism:

- **Students were expected to learn:** their **mother tongue/regional language**, **Hindi**, and **English**.
- In **Hindi-speaking states**, the third language was to be a **modern Indian language**, preferably from the south.

NEP 2020 and Policy Shift

The **National Education Policy 2020** retained the three-language formula but added flexibility. It allows **States, regions, and students to choose the languages**, provided that **at least two are native Indian languages**, thereby respecting federal diversity and autonomy.

Challenges in Implementation

- **Lack of diversity**: In many Hindi-speaking regions, the third language rarely includes languages from other Indian states.
- **Private schools** in northern India often neglect regional languages like Tamil or Punjabi.
- **Political resistance**, especially from states like **Tamil Nadu**, has made implementation inconsistent.

Role of CABE

The **Central Advisory Board of Education (CABE)** played a vital role in shaping India's language education policies since the 1920s. However, it has remained largely inactive in recent years, reducing coordination in policy dialogue between the Centre and the states.

The Real Concern: Decline in Language Education

- **Poor teaching standards** in both regional languages and English persist.
- The shift to **English-medium instruction**, especially in states like **Andhra Pradesh**, is undermined by teachers' inadequate language proficiency.
- Language learning is not being used to promote critical thinking, and **reading habits are on the decline**, affecting long-term proficiency in all languages.

The **language debate in India** goes beyond policy—it reflects deeper concerns of identity, equity, and federalism. While the **three-language formula** aims to promote national integration, **improving the quality of language education** should be the real focus. Unless schools foster a culture of effective language learning and habitual reading, policies alone will not achieve their intended goals.

> **Q.** The three-language formula, while aiming to promote multilingualism and national integration, faces significant implementation challenges in India's diverse federal structure.
>
> Critically examine the evolution, intent, and practical issues of the three-language formula in the context of the National Education Policy 2020. Suggest measures to improve the quality and inclusiveness of language education in India.   *[UPSC MAINS Practice Question]*

Why in the News?

India is facing a growing public health challenge in the form of non-communicable diseases (NCDs), which are contributing to an alarming 66% of the country's deaths. These diseases—such as heart disease, diabetes, and cancer—are increasingly being seen as a "silent epidemic" due to their rising prevalence and significant economic impact.

Experts agree that the future health of the nation lies in preventive healthcare, which focuses on disease prevention, early detection, and lifestyle modifications rather than solely relying on treatment once a disease has manifested.

What is Preventive Healthcare?

Preventive healthcare focuses on avoiding diseases rather than treating them once they occur. This approach includes proactive measures like regular health check-ups, early screenings, lifestyle changes (such as healthier diets and increased physical activity), and vaccinations to prevent the onset of diseases. Preventive healthcare aims to identify risks early, making it possible to intervene before conditions worsen.

Key characteristics of preventive healthcare include:

- **Proactivity**: Regular screenings for conditions like high blood pressure, diabetes, and certain cancers can help detect diseases before symptoms appear.
- **Holistic Approach**: Preventive healthcare takes a comprehensive approach to health, emphasizing the importance of nutrition, exercise, mental health, and environmental factors such as pollution control.
- **Technology Integration**: The use of artificial intelligence (AI), wearables, and health apps plays a pivotal role in predicting risks and supporting health management.

Notable examples of preventive healthcare initiatives in India include:

- **Ayushman Bharat Health & Wellness Centres (HWCs)**: These centres focus on early detection and prevention of diseases in rural areas, offering a wide range of health services.
- **National Cancer Screening Programme**: This program is designed to promote early detection of cancer, particularly among high-risk populations.

Key Issues

- **Economic Impact**: Treating NCDs may cost India $3.5–4 trillion by 2030, threatening productivity and the youth dividend.
- **Lifestyle Factors**: Poor diet, inactivity, and **tobacco** cause ~80% of heart attacks and strokes. WHO says 80% of cardiovascular events are preventable through lifestyle changes.
- **Digital Opportunities**: With over 750 million smartphone users, India can scale preventive care through AI health apps and telemedicine.

Challenges

- **Low Awareness**: Only 30% of urban adults **undergo** annual check-ups; most seek care only when ill.
- **Rural Disparities**: Rural healthcare access is **limited**, with poor infrastructure and a low doctor-to-patient ratio.
- **Limited Funding**: India spends just 2.1% of **GDP** on health, far below global averages.
- **Cultural Barriers**: Preventive care is often **undervalued** culturally.
- **Weak Corporate Engagement**: Under 10% of firms offer structured health programs.

Way Forward

- **Policy Support**: Strengthen schemes like **Ayushman** Bharat and regulate unhealthy foods.
- **Public Campaigns**: Expand efforts like "Fit **India**" and "Eat Right India" to promote healthy living.
- **Private Sector Role**: Encourage corporate **wellness** initiatives and regular health screenings.
- **Technology Integration**: Use AI tools, **wearables**, and telehealth for early detection and monitoring.
- **Urban Planning**: Build cities that promote **active** lifestyles through walkable, green infrastructure.

A shift toward preventive healthcare is vital for reducing disease burden, protecting the economy, and ensuring long-term well-being. A collaborative, tech-enabled, and awareness-driven approach can build a healthier India.

> **Q.** "Examine how preventive healthcare can transform India's public health landscape, and evaluate the role of government initiatives, digital technology, and lifestyle changes in this transition."
>
> *[UPSC MAINS Practice Question]*

8.5. SICKLE CELL DISEASE (SCD)

Why in the News?

Researchers at the **Raman Research Institute (RRI)** have come up with an innovative, cost-effective **electro-fluidic device** to enable early-stage screening of **Sickle Cell Disease (SCD)**.

What is Sickle Cell Disease (SCD)?

Sickle Cell Disease is a **hereditary blood disorder** that affects how red blood cells (RBCs) function in the body. In this condition, the protein inside RBCs—**hemoglobin**—is defective. Hemoglobin's main job is to carry oxygen throughout the body.

How It Disrupts the Body:

- **Normal red blood cells** are soft, round, and flexible allowing them to flow easily through blood vessels.
- In SCD, an abnormal form of hemoglobin called **hemoglobin S** causes the RBCs to become **stiff and crescent-shaped** (like a sickle).
- These deformed cells are less mobile, prone to clumping, and often block blood circulation, resulting in pain and oxygen shortage in tissues.
- Moreover, these cells have a much shorter lifespan, leading to a constant **deficiency of RBCs**—a condition known as **chronic anemia**.

What Causes Sickle Cell Disease?

- SCD occurs due to a **genetic mutation** in the gene responsible for producing part of the hemoglobin molecule.
- A person develops **SCD only when both parents** pass on the faulty gene (i.e., the individual inherits two copies of the mutated gene).
- If a person inherits the gene from only one parent, they don't develop the disease but are said to have **sickle cell trait**—they remain healthy but can transmit the gene to their children.

Common Symptoms

In Infants and Children	In Adolescents and Adults
• Persistent fatigue or irritability (due to anemia) • Swelling in hands and feet Yellowing of skin or eyes (jaundice)	• Frequent episodes of intense pain (especially in joints, chest, and abdomen) • Recurrent infections • Delayed growth or puberty • Risk of organ damage, strokes, and vision problems

How Is It Treated?

While there is **no universal cure**, several treatment options can manage symptoms and improve quality of life:

- **Bone marrow (stem cell) transplant** – currently the only known potential cure, but suitable only for select patients.
- **Medications** – like hydroxyurea, pain relievers, and antibiotics help control complications.
- **Blood transfusions** – used during crises or surgery to increase normal RBC count.
- **Gene therapy** – an emerging frontier; in fact, **the UK recently became the first country to approve gene therapy** for treating SCD, showing promising long-term results.

Why This Matters

India has a **high burden of SCD**, especially among tribal and rural communities. With the invention of an affordable and portable testing device by RRI scientists, **early detection** and **timely intervention** could become much easier paving the way for better healthcare access in remote areas.

Q. Consider the following statements about Sickle Cell Disease:
1. Sickle Cell Disease is caused by a mutation in the hemoglobin gene, resulting in abnormally shaped red blood cells.
2. The disease primarily affects individuals of African, Mediterranean, and Southeast Asian descent.
3. Sickle Cell Disease can be completely cured through blood transfusions alone.
4. Individuals with sickle cell trait are asymptomatic but can pass on the gene to their offspring.

Which of the statements given above is/are correct?   *[UPSC Pre. Practice Question]*

(a) 1 and 2 only   (b) 1, 2, and 4 only

(c) 2, 3, and 4 only   (d) 1, 2, 3, and 4

Ans. (b) 1, 2, and 4 only

8.6. PEN- PLUS APPROACH

Why in the News?

WHO Package of Essential NCD Interventions (PEN)—which focuses on common NCDs at the primary health care level has increased access to services for severe non-communicable diseases (NCDs) over the last four years, in Africa.

Package of Essential NCD Interventions (PEN)

PEN stands for **Package of Essential Non-communicable Disease interventions**. It is a plan by the **World Health Organization (WHO)** to help countries—especially low- and middle-income ones—treat common **non-communicable diseases (NCDs)** like diabetes, heart disease, asthma, and high blood pressure.

What does the PEN process do?

It helps **primary health care centers** (like small clinics) to:

- **Detect diseases early**
- **Provide basic treatment and medicines**
- **Offer lifestyle advice** (like diet, exercise, and quitting smoking)
- **Monitor patients regularly**

Why is it important for India?

In many poor or rural areas, people don't have access to big hospitals or specialists. PEN helps **local health workers** provide good care **close to where people live**, so diseases can be treated early and managed better.

- NCDs cause **over 60% of all deaths** in India.
- Many people don't even know they have conditions like high BP or diabetes until it's too late.
- By catching diseases **early at the local level**, India PEN helps prevent **hospitalisation and deaths**.

The PEN initiative is vital for early detection and treatment of NCDs at the local level. In India, it helps reduce deaths and hospitalisations by bringing essential care closer to people, especially in rural areas. Scaling up India PEN is key to improving public health and achieving universal health coverage.

Q. What is the primary focus of the WHO's PEN-Plus approach in Africa?
   (a) Infectious disease control   *[UPSC Pre. Practice Question]*
   (b) Severe non-communicable diseases
   (c) Maternal health improvement
   (d) Malnutrition prevention
   Ans. (b) Severe non-communicable diseases

8.7. TYPE 5 DIABETES

Why in the News?

The **International Diabetes Federation (IDF)** has officially recognized **Type 5 diabetes** as a **distinct form of the disease**, marking a critical development in global health discourse. **Background**

Diabetes is broadly categorized into:

- **Type 1**: Autoimmune destruction of insulin-producing beta cells
- **Type 2**: Insulin resistance typically associated with obesity and sedentary lifestyle
- **Gestational diabetes**: Occurring during pregnancy
- **MODY, LADA, and others**: Less common forms based on genetic or age-related factors

With the recognition of **Type 5**, the global understanding of diabetes now expands to include a variant associated not with excess, but with **nutritional deprivation**.

What is Type 5 Diabetes?

Type 5 Diabetes acknowledges a lesser-known but severe form of diabetes primarily found in lean and malnourished individuals, especially among teenagers and young adults in low- and middle-income countries.

Type 5 diabetes primarily affects **lean, malnourished youth**, often in **resource-constrained settings**. It is characterized by:

- Abnormal functioning of **pancreatic beta cells**
- **Insufficient insulin production**, despite the absence of insulin resistance

- Often **misdiagnosed** as Type 1 or Type 2 due to lack of awareness

This condition challenges the prevailing perception that diabetes is solely a disease of affluence and lifestyle.

Historical Context

While Type 5 diabetes has only recently been recognized officially, **clinical cases of atypical diabetes in undernourished individuals** have been observed for decades in countries like India, Bangladesh, and parts of sub-Saharan Africa. However, **limited research funding**, **poor diagnostics**, and **overgeneralization** under existing diabetes types kept it outside mainstream classification.

Way Forward

- **Public Health Recognition**: National health programs, especially in developing countries, must begin identifying and addressing Type 5 diabetes distinctly.

- **Nutritional Interventions**: Addressing **malnutrition in early life** is key to prevention.

- **Capacity Building**: Medical practitioners must be trained to **differentiate between diabetes types**, especially in low-resource settings.

- **Research Support**: Governments and international bodies must **fund studies** on the pathophysiology, management, and long-term effects of Type 5 diabetes.

- **Data Collection**: Improved **epidemiological tracking** to understand its prevalence and impact.

The formal recognition of **Type 5 diabetes** by the International Diabetes Federation is a **landmark step** in global health equity. It highlights the **need for context-specific health interventions** and urges policymakers to re-evaluate assumptions around non-communicable diseases. For India and other developing countries, this development reinforces the link between **poverty, undernutrition, and chronic illness**, and underscores the importance of a **holistic approach to public health** that includes **preventive care, nutritional security, and awareness**.

> **Q.** *The recognition of Type 5 Diabetes challenges conventional assumptions about non-communicable diseases (NCDs) and their association with affluence.* Discuss the implications of this recognition for public health policy in developing countries like India. Suggest a comprehensive strategy to address this emerging health concern.
>
> *[UPSC MAINS Practice Question]*

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GOVERNMENT SCHEMES & INITIATIVES

9.1. VIBRANT VILLAGES PROGRAMME-II

Why in the News?

The Union Cabinet approved the Vibrant Villages Programme -II (VVP-II) as a Central Sector Scheme, furthering its commitment for the vision of Viksit Bharat@2047 for 'Safe, Secured & Vibrant land borders'.

About VVP

The Vibrant Villages Programme (VVP) is a visionary initiative launched by the Government of India to foster inclusive development and security in India's remote and strategically located border villages.

Achievements of VVP-I

VVP-I focused on villages located along the Northern land border, especially in Arunachal Pradesh, Ladakh, Himachal Pradesh, Uttarakhand, and Sikkim.

Key outcomes of VVP-I include:

- Identification and development of **663 border villages** in Phase I.
- Creation of **Village Action Plans (VAPs)** tailored to local needs and challenges.
- Improved **connectivity**, including roads and telecom infrastructure in remote high-altitude areas.
- Promotion of **local culture and tourism** to generate sustainable livelihood opportunities.
- Enhanced participation of local communities in governance and **border vigilance**.
- **Convergence of schemes** such as PMGSY, Jal Jeevan Mission, and Ujjwala Yojana to ensure last-mile delivery.

VVP-I laid a strong foundation for replicating the model across other international land borders under VVP-II.

Objectives of VVP-II

Approved by the **Union Cabinet in 2024**, **VVP-II** extends the programme beyond the Northern borders to strategic villages located along other international borders in **17 States/UTs**, including Punjab, Rajasthan, Gujarat, West Bengal, Assam, Bihar, J&K, and the Northeast.

The key objectives of VVP-II are:

- **Comprehensive Border Development**:
  o Improve **infrastructure**, housing, education, and health services in border villages.
  o Provide **all-weather road connectivity**, **electrification**, **telecom**, and **TV access** through convergence.
- **Livelihood Generation & Economic Integration**:
  o Support **cooperatives**, **SHGs**, and **value chain development** to create sustainable incomes.
  o Promote **rural tourism**, fairs, festivals, and local cultural heritage.
- **Internal Security and National Integration**:
  o Curb **trans-border crime** through better community engagement.
  o Transform local populations into the **'eyes and ears' of border guarding forces**.
- **Saturation of Government Schemes**:
  o Achieve **universal access** to welfare schemes (housing, LPG, pensions, insurance) through **convergence**.
- **Technology-Driven Implementation**:
  o Leverage digital tools like **PM Gati Shakti** for monitoring and inter-departmental coordination.
  o Ensure real-time tracking of progress via digital dashboards.

- **Collaborative Planning**:
  - o Village-specific action plans created in consultation with **local stakeholders** and **state authorities**.

With an outlay of **₹6,839 crore** till **2028–29**, VVP-II represents a strategic investment in **national security through local empowerment**, integrating remote communities into the developmental and cultural mainstream of India.

Q. Which of the following is a primary objective of the Vibrant Villages Programme-II?

(a) Urbanization of border areas *[UPSC Pre. Practice Question]*

(b) Promotion of rural tourism and local cultural heritage

(c) Restriction of community participation in border security

(d) Development of industrial zones in border villages

Ans. (b) Promotion of rural tourism and local cultural heritage

9.2. 10 YEARS OF PMMY

Why in the News?

On **8th April 2025**, Prime Minister **Narendra Modi** celebrated the **completion of 10 years** of the **Pradhan Mantri Mudra Yojana (PMMY)**, a flagship initiative launched in **2015** to provide collateral-free credit to micro and small enterprises. The occasion marked a decade of empowering self-reliant India by promoting entrepreneurship at the grassroots level.

What is PMMY?

The **Pradhan Mantri Mudra Yojana (PMMY)** was launched on **8th April 2015** by the Government of India to offer **collateral-free loans** up to **₹10 lakh** to **non-corporate, non-farm small/micro enterprises**. These loans are offered by **banks, NBFCs, MFIs, and other financial institutions**, and backed by the **Micro Units Development and Refinance Agency (MUDRA)**, a subsidiary of SIDBI.

Objectives of the Scheme

- To promote **financial inclusion** by bringing small entrepreneurs into the formal credit system.

- To provide **collateral-free loans** to micro and small businesses.

- To help generate **employment and self-employment opportunities**, especially among women, SCs, STs, OBCs, and minorities.

The **Pradhan Mantri MUDRA Yojana (PMMY)** provides **collateral-free loans** to micro and small businesses in three categories: Shishu (up to ₹50,000), Kishor (₹50,000–₹5 lakh), and **Tarun** (₹5–10 lakh). A new **Tarun Plus** category offers loans up to ₹20 lakh for eligible repeat borrowers.

Loan Categories under PMMY

Note: To strengthen support for aspiring entrepreneurs, the finance minister announced an increase in the loan limit to ₹20 lakh during the Union Budget 2024-25 on July 23, 2024. This new limit took effect on October 24, 2024. This announcement also introduces a new loan category, Tarun Plus, designed specifically for those who have previously availed and successfully repaid loans under the Tarun category, allowing them to access funding between ₹10 lakh and ₹20 lakh. Additionally, the Credit Guarantee Fund for Micro Units (CGFMU) will now provide guarantee coverage for these enhanced loans, further reinforcing the government's commitment to nurturing a robust entrepreneurial ecosystem in India.
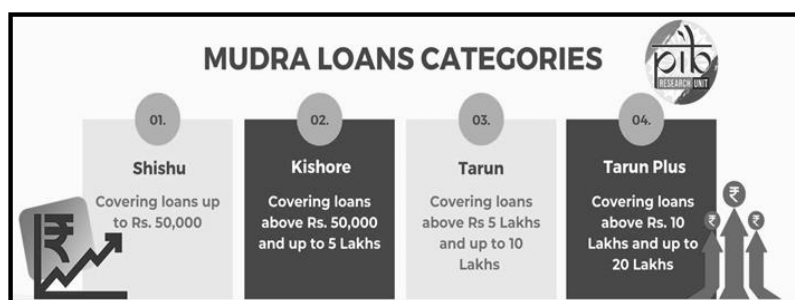
Eligibility

- Any **Indian citizen** engaged in income-generating activities in the **non-farm sector**.
- Applicants can be **proprietors**, **partnership firms**, or **private limited companies**.
- No requirement of **collateral** security.

Key Achievements in 10 Years

- **Over 52 crore loans sanctioned** amounting to **₹32.61 lakh crore** since inception.
- **68% of loan recipients are women**, highlighting the scheme's role in **women empowerment**.
- **Half of all Mudra accounts** are held by **SCs, STs, and OBCs**, reflecting the inclusive nature of the scheme.
- **11% of beneficiaries belong to minority communities**.
- **Tamil Nadu leads** in loan disbursement, followed by **Uttar Pradesh, Karnataka, West Bengal**, and **Bihar**.
- **Jammu & Kashmir** tops among UTs, with ₹45,815 crore disbursed across 21 lakh accounts.

Recent Developments and Policy Enhancements

- In 2024–25, the government **increased the Mudra loan target to ₹5.50 lakh crore**.
- Digitisation of loan processing under **Jan Samarth Portal** has made access easier and faster.
- Integration with **UPI and Aadhaar** for seamless **e-KYC** and fund disbursement.
- Enhanced focus on **women-led start-ups**, **green businesses**, and **digital enterprises**.
- Ongoing efforts to **link Mudra borrowers with skill development programs** under **PM Kaushal Vikas Yojana (PMKVY)**.

Impact on the Ground

- PMMY has fostered a culture of **micro-entrepreneurship**, especially in rural and semi-urban India.
- Generated millions of **livelihood opportunities** without the burden of collateral.
- Promoted **self-employment over job-seeking**, aligning with the vision of **Atmanirbhar Bharat**.
- Contributed significantly to **GDP growth** and **rural economic development**.

Challenges

- Concerns over **loan repayment and rising NPAs** in the micro-credit sector.
- Lack of **financial literacy** and business mentoring among new entrepreneurs.
- Need for **post-loan support**, including market linkage and product development.

Way Forward

- Strengthen **credit monitoring systems** to ensure sustainability.
- Enhance **digital literacy** and provide **business advisory services** to borrowers.
- Encourage **institutional partnerships** for capacity building.
- Develop **sector-specific Mudra models** (e.g., agriculture-allied, crafts, services).

In its 10-year journey, **PMMY has transformed the landscape of micro-enterprise financing** in India. By extending the reach of formal credit to millions, especially women and socially disadvantaged groups, the scheme has not only enhanced financial inclusion but also **empowered the entrepreneurial spirit** of New India.

As India looks towards becoming a **$5 trillion economy**, **schemes like Mudra Yojana** will remain pivotal in **fueling grassroots growth, employment generation**, and achieving the broader goals of **inclusive and sustainable development**.

9.3. ONE STATE ONE RRB

Why in the News?

Recently, the **Department of Financial Services (DFS)** has notified amalgamation of **26 Regional Rural Banks (RRBs)** on the principles of **'One State One RRB'.** It is the **fourth phase** of amalgamation of RRBs.

Objective: The initiative seeks to consolidate RRBs within each state into a single entity to:

- Improve operational efficiency through economies of scale
- Enhance governance and simplify regulatory oversight
- Optimize use of technology and digital banking systems
- Increase credit access and financial services for underserved rural populations

Key Benefits:

- **Operational Synergy:** Standardized systems, shared resources, and streamlined procedures
- **Cost Optimization:** Reduction in administrative overheads and service duplications
- **Improved Governance:** Better state-level planning and accountability
- **Technological Upgrade:** Integrated Core Banking Systems (CBS) and digital service delivery
- **Expanded Financial Inclusion:** Broader outreach to rural clients with more tailored financial products

Phased Amalgamation of RRBs in India

The process of RRB consolidation was initiated in 2004–05, following the recommendations of the Vyas Committee. It has since progressed in four phases:

Phase	Timeline	Objective	Outcome
Phase I	2006–2010	Improve financial viability and reduce fragmentation	Reduced from 196 to 82
Phase II	2013–2015	Streamline structure for better performance	Reduced to 56
Phase III	2019–2021	Align with modern banking and enhance sustainability	Reduced to 43
Phase IV	2025 (ongoing)	Implement 'One State, One RRB' for nationwide uniformity	To reduce to 28

Current Status and Reach

Following the completion of Phase IV:

- RRBs will have a **network of over 22,000 branches**, covering nearly **700 districts**
- Around **92% of branches** will be in **rural and semi-urban** areas, underlining their grassroots presence

Challenges and the Way Forward

Despite the expected benefits, the transition poses several challenges:

- **Staff Integration:** Aligning personnel across different entities and training them on unified systems
- **Regional Differences:** Addressing infrastructure gaps and localized banking needs
- **Customer Awareness:** Educating rural customers on changes and onboarding them into new systems

To mitigate these issues, the government is focusing on:

- Capacity building programs
- Robust change management
- Widespread financial literacy campaigns in rural regions

The 'One State, One RRB' initiative streamlines rural banking, enhancing efficiency, governance, and financial inclusion through strategic consolidation.

Q. With reference to the 'One State, One RRB' initiative, consider the following statements:

1. The initiative was launched based on recommendations of the Raghuram Rajan Committee.
2. It aims to consolidate all Regional Rural Banks (RRBs) in a state into a single entity.
3. One of its primary goals is to reduce urban–rural migration by creating more jobs in urban areas.

Which of the statements given above is/are correct?   *[UPSC Pre. Practice Question]*

(a) 1 and 2 only   (b) 2 only

(c) 2 and 3 only   (d) 1, 2 and 3

Ans. (b) 2 only

9.4. PLASTIC PARK SCHEME

Why in the News?

Recently, the Department of Chemicals and Petrochemicals is implementing the **Plastic Parks Scheme** under the **New Scheme of Petrochemicals** to develop modern, need-based parks with shared facilities, boosting India's downstream plastic processing industry.

What is Plastic Park?

A Plastic Park is a dedicated industrial zone for plastic-related industries, aimed at boosting investment, production, exports, and employment, while promoting sustainable growth through waste management and recycling.

The scheme has the following objectives:

- Enhance competitiveness, polymer absorption, and value addition in the domestic plastic processing industry through modern, R&D-driven measures.
- Boost investments by expanding capacity, improving infrastructure, and facilitating value addition and exports.
- Promote environmentally sustainable growth through innovative waste management and recycling methods.

- Implement a cluster development approach to leverage resource optimization and economies of scale.

Key Issues

- **Fragmented industry structure** with dominance of small and medium units limits efficiency and innovation.
- **Inadequate infrastructure** for large-scale recycling and waste processing.
- **Low awareness and adoption** of sustainable practices across all industry levels.
- **Limited enforcement** of regulations, especially in informal sectors.

The Government of India is actively promoting **environmentally sustainable growth** in the plastic industry through key regulations and initiatives:

- **Extended Producer Responsibility (EPR)** mandates reuse, recycling targets, and use of recycled content in packaging, ensuring accountability in plastic waste management.
- **Single-use plastic bans** aim to reduce environmental pollution.
- **Hazardous Waste Management Rules** ensure safe disposal of hazardous chemicals and encourage waste minimization and resource recovery.
- Adoption of **circular economy principles** promotes recycling, biodegradable alternatives, and innovation in plastic waste upcycling.
- The government supports **technology showcases and exhibitions** to promote advanced recycling and waste management solutions.
- India collaborates with **WTO, UNEP, and ISO** to align with international sustainability standards.

The Plastic Parks Scheme is a strategic initiative by the Department of Chemicals and Petrochemicals to boost industrial growth and environmental sustainability. By providing modern infrastructure and promoting cluster development, it supports production, exports, and employment, ensuring sustainable and innovation-led growth in India's plastics sector.

> **Q.** Plastic Parks Scheme is a step towards aligning industrial growth with environmental sustainability. Examine the objectives of the scheme and the challenges it seeks to address.
>
> *[UPSC MAINS Practice Question]*

9.5. GENOME INDIA PROJECT

Why in the News?

The preliminary findings of the Genome India Project, involving the genome sequencing of 9,772 Indians across 83 population groups, were recently published in *Nature Genetics*, highlighting India's genetic diversity and endogamy patterns.

Background of the News

Launched in January 2020, the Genome India Project was funded by the Department of Biotechnology (DBT) to create a reference genetic map by sequencing genomes of 10,000 healthy and unrelated Indian individuals. The study analyzed 9,772 samples after excluding two groups. Participants represented 83 diverse tribal and non-tribal communities from across 100+ geographical locations.

Government Initiative

The Genome India Project is a **Government of India initiative** under the Department of Biotechnology. It is a pan-India collaboration for sequencing and analysis of over 10,000 genomes.

Sampling Strategy

- Represented 83 groups: 30 tribal, 53 non-tribal
- Median: 159 individuals per non-tribal group; 75 per tribal group
- Included 3–6 parent-child pairs per group to detect **de novo mutations**
- Linguistically representative: Indo-European, Dravidian, Austro-Asiatic, Tibeto-Burman
- Two population groups were excluded (one ancient Andamanese group and one from ~5,500 years ago)

Tribal and Non-Tribal Genome Coverage

- **Tribal groups**: Austro-Asiatic, Tibeto-Burman, Indo-European, Dravidian, Continentally admixed.
- **Non-Tribal groups**: Same linguistic-cum-regional spread. This balance ensures accurate representation of India's genetic-linguistic structure.

Key Genetic Findings

- **180 million genetic variants** identified:
    - 130 million on autosomes (non-sex chromosomes)
    - 50 million on sex chromosomes (X & Y)
- ~98% of the human genome is non-coding; mutations here help trace **evolutionary history**
- **Endogamy** leads to accumulation of rare mutations, many of which are disease-linked
- Helps understand **founder effects** in Indian sub-populations

Medical Implications

- Enables **precision medicine** tailored to Indian genetic makeup
- Identification of **population-specific disease-causing variants**
- Supports **early detection, prevention**, and **affordable diagnostics**
- Informs **public health policies** and aids in tackling genetic disorders at community level

Way Forward

- Broaden the dataset with more population groups
- Launch targeted studies on common and rare genetic diseases
- Integrate findings into **national health policy**
- Collaborate with international genome databases to ensure Indian data is well-represented
- Encourage genome-based **preventive healthcare and counseling**

The Genome India Project marks a transformational shift in India's approach to health, genetics, and population studies. By documenting the genomic blueprint of a diverse population, it strengthens scientific understanding, promotes equitable healthcare, and positions India as a global contributor to genomic research.

Q. What was the rationale behind including parent-child pairs in each group during the Genome India Project's sampling strategy? *[UPSC Pre. Practice Question]*

(a) To analyze linguistic similarities among population groups

(b) To estimate genetic drift due to migration

(c) To detect de novo mutations by comparing generational genome sequences

(d) To validate blood pressure and phenotype data accuracy

Ans. (c) To detect de novo mutations by comparing generational genome sequences

Why in the News?

A study highlighted the benefits of Surat ETS (Emissions Trading Scheme), which is the first of its kind globally for particulate matter and India's first pollution trading scheme of any kind.

Surat ETS

- **Monitoring Pollution**: All large coal-using factories had to install machines called **Continuous Emissions Monitoring Systems (CEMS)** that track air pollution (specifically, particulate matter) in real-time. Earlier, inspections were done only occasionally, which wasn't reliable.
- **Setting a Pollution Limit (Cap)**: The pollution control board (GPCB) set a **total pollution limit** for all factories combined. This limit was first kept high (280 tonnes/month) but later reduced (to 170 tonnes) once real-time data showed actual emissions were lower.
- **Giving and Selling Pollution Permits**:
  - Each factory got some **free permits** based on how much it usually pollutes.
  - The rest of the permits were **auctioned every week**, so factories could buy more if needed.
  - Each permit allowed a factory to emit **1 kg of particulate matter**.
- **Trading Permits**: If a factory reduced its pollution, it could **sell its extra permits** to another factory that needed more creating a market. This encouraged factories to cut pollution where it was cheapest to do so.
- **Checking Compliance**: At the end of each period (4–6 weeks), GPCB checked if each factory had enough permits for the pollution it caused. If not, the factory had to pay a **penalty**.

Result: Factories in the trading scheme polluted **20–30% less**, **followed rules 99% of the time**, and **saved money**—showing that this method works better than older ways of controlling pollution.

> **Q.** Discuss the operational mechanism and significance of the Surat Emissions Trading Scheme (ETS) as the world's first particulate-emissions market. Evaluate its impact on pollution reduction and compliance, and suggest how this model can be scaled to other Indian cities to address air pollution. **[UPSC MAINS Practice Question]**

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PLACES IN NEWS

Why in the News?

Recently, concerns have emerged regarding the proposed land grants within the core area of **Nagarahole National Park** (also known as Nagarahole Tiger Reserve), specifically within its ecologically sensitive **swampy grasslands**.

Overview of Nagarahole National Park:

- **Official Name**: **Rajiv Gandhi National Park** (named after the **Nagarahole stream** – "Nagara" meaning serpent and "Hole" meaning stream).
- **Designation**: A **Tiger Reserve** and one of India's foremost sites under **Project Tiger**.
- **Location**: Spread across **Kodagu** and **Mysuru** districts in **Karnataka**, covering **847.98 sq. km**, with the **core area** being **643.39 sq. km** and the **buffer zone** covering **204.59 sq. km**.
- **Ecological Importance**: Part of the **Nilgiri Biosphere Reserve**, and contiguous with **Bandipur Tiger Reserve** and **Wayanad Wildlife Sanctuary**, making it a critical wildlife corridor in the **Western Ghats**.

Ecological History:

- **Wildlife Sanctuary**: Originally declared in **1955**, it was upgraded to a **National Park** in **1988**.
- **Tiger Reserve**: In **1999**, it was designated as a **Tiger Reserve** under **Project Tiger**.

Flora & Fauna:

- **Flora**: Dominated by **tropical moist** and **dry deciduous forests**, **swampy grasslands (Hadlus)**, and species like **teak**, **rosewood**, and **sandalwood**.
- **Fauna**: Home to a rich diversity of species including **tigers**, **leopards**, **wild dogs**, **sloth bears**, **Asiatic elephants**, **gaur**, **sambar**, **chital**, **muntjac**, **mouse deer**, and the **south-western langur**.

Rivers:

- **Nagarahole River**: Flows through the park, contributing to the ecological richness of the area.
- **Kabini River**: Forms the northern boundary of the park, acting as a natural demarcation between Nagarahole and **Bandipur Tiger Reserve**.
- **Taraka River**: Flows through the southeastern parts of the park, further enriching its biodiversity.

Significance:

- Part of the **Nilgiri Biosphere Reserve**, Nagarahole is a critical region for **ecological connectivity** and **conservation** in the **Western Ghats**.
- **Asiatic Elephants**: It hosts the world's largest herd of **Asiatic elephants**, making it a keystone area for elephant conservation.
- **Biodiversity**: The park supports a **high level of biodiversity** and plays a pivotal role in maintaining the ecological balance of the region.

Concerns:

The recent proposal to grant land within the park's core area, particularly in the ecologically sensitive **swampy grasslands** (Hadlus), has raised alarms. These areas are vital for maintaining the **food chain** and habitat for herbivores, which are essential prey for apex predators like tigers. Encroachment in such zones could exacerbate **human-wildlife conflict**, disrupting the park's delicate ecosystem.

10.2. AGASTHYAMALAI LANDSCAPE

Why in the News?

Supreme Court directed the Central Empowered Committee (CEC) to survey the Agasthyamalai landscape area and report violations of laws like the Forest Conservation Act, 1980 and Wildlife (Protection) Act, 1972.

Agasthyamalai Landscape

- The **Agasthyamalai Landscape**, also known as the **Agasthyamalai Biosphere Reserve (ABR)**, is a vital ecological region in India.
- It is located in the **southern part of the Western Ghats**, spanning the states of **Tamil Nadu and Kerala**.
- Recognized by **UNESCO** as a **Biosphere Reserve**, it covers an area of approximately **3,500 sq. km**.
- The region is renowned for:
  o Its **exceptional biodiversity**
  o A high number of **endemic and endangered species**
  o Significant **ecological and cultural heritage**
- The Agasthyamalai Biosphere Reserve includes several important wildlife sanctuaries and reserves:
  o Periyar Tiger Reserve
  o Srivilliputhur Grizzled Squirrel Wildlife Sanctuary
  o Meghamalai Wildlife Sanctuary
  o Tirunelveli Wildlife Sanctuary

Recent Environmental Concern

- A report by the **Ministry of Environment and Forests**, submitted to the **National Green Tribunal (NGT)**, revealed that nearly **13,000 sq. km** of forest land in the Agasthyamalai region is **under encroachment**.
- The **CEC survey** is intended to:
  o Identify **non-forestry activities**
  o Detect **encroachments**
  o Ensure **compliance with environmental laws**
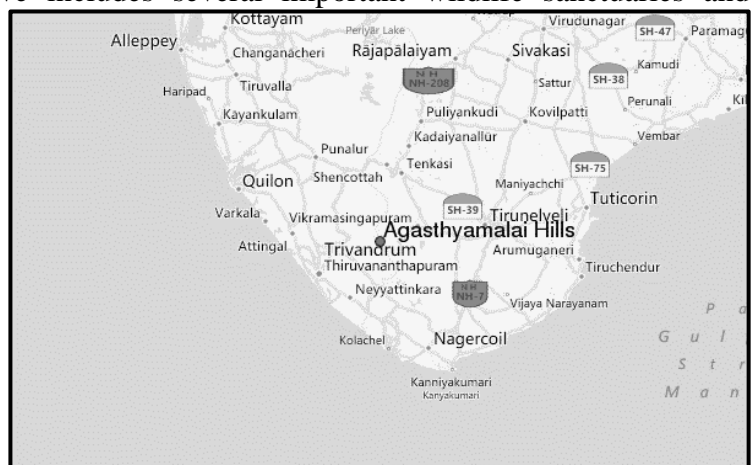
Relevant Environmental Laws

- **Forest (Conservation) Act, 1980 (FCA)**: Regulates the use of forest land for **non-forest purposes** and mandates **central approval** for any diversion of forest land.
- **Wildlife (Protection) Act, 1972 (WPA)**: Provides for the **protection of wildlife and their habitats**, creation of **protected areas**, and **rehabilitation provisions** for people affected by conservation measures.

Committees on Protection of the Western Ghats

- **Gadgil Committee (2011)**
  o Recommended that the **entire Western Ghats** be declared an **Ecologically Sensitive Area (ESA)**
  o Emphasized **local governance** and **strict environmental regulation**
  o Criticized for being **too restrictive**; not fully implemented
- **Kasturirangan Committee (2013)**
  o Advocated a **balanced approach**, declaring only **37%** of the Western Ghats as ESA
  o Permitted **plantations and agriculture**, but banned **polluting industries**
  o Considered **more development-friendly**; partially accepted
- **Draft ESA Notification (2024)**
  o Issued by **MoEFCC** on **July 31, 2024**
  o Proposed **56,825.7 sq. km** of the Western Ghats across **six states** as ESA: Gujarat, Maharashtra, Goa, Karnataka, Kerala, and Tamil Nadu
  o **Public feedback period** ended October 2024; implementation still under review due to **state-level resistance**

Forest Cover – India and Neighbouring Countries

(*India State of Forest Report, 2023*)

Country	Forest Cover (%)	Remarks
India	25.17%	21.76% Forest, 3.41% Tree Cover
Nepal	~44.74%	Significant conservation success
Bhutan	~72%	Among the highest in the world
Sri Lanka	~29%	Declining due to urban expansion

Q. The Agasthyamalai Landscape is a critical ecological zone facing increasing threats from encroachment and legal violations. Strong enforcement of environmental laws and sustainable conservation efforts are essential to protect its rich biodiversity and ecological integrity.

[UPSC MAINS Practice Question]

10.3. BANDIPUR NATIONAL PARK

Why in the News?

Bandipur National Park is in the news due to protests against the proposed lifting of the night traffic ban on NH-766, which passes through its core area, raising concerns over wildlife safety.

Historical Background

The area was originally established in 1931 by the Maharaja of Mysore as the **Venugopala Wildlife Park**, spanning just 90 square kilometers. Its ecological value led to its declaration as a **Tiger Reserve in 1973** under the Government of India's flagship **Project Tiger** initiative. Later, in 1986, it became an integral part of the **Nilgiri Biosphere Reserve**, recognized under UNESCO's Man and the Biosphere Programme.

Geographical and Ecological Features

- **Landscape**: The park's terrain includes a mix of **dry and moist deciduous forests**, **scrublands**, and patches of **evergreen vegetation** in certain areas.
- **Key Flora**: Bandipur supports a diverse plant population including **teak**, **rosewood**, **sandalwood**, **Indian kino tree**, and **giant bamboo**.

Wildlife Richness

Bandipur is a critical habitat for several species, especially **large mammals** and **endemic fauna** of the Western Ghats:

- **Flagship species**: **Bengal Tiger**, listed as endangered under the IUCN Red List.
- **Other prominent mammals**: **Indian elephant**, **leopard**, **sloth bear**, **gaur**, **sambar deer**, and **chital**.
- **Endemic fauna**: Includes the **black-naped hare** and the **Malabar giant squirrel**, highlighting the region's ecological uniqueness.

Night Traffic Ban and Conservation Success

A significant conservation move was implemented in **2009**, when the Karnataka government imposed a **night-time vehicle ban (9 PM to 6 AM)** on **National Highway 766 (NH-766)**, which runs through the core area of the park. This decision aimed to reduce roadkill incidents and disturbances to nocturnal wildlife.

- **Before the Ban (2004–2009)**: Over **280 animal deaths** due to road accidents.
- **After the Ban (2010–2018)**: Wildlife mortality reduced drastically to just **34 reported cases**.
- **Supreme Court Verdict (2019)**: The apex court upheld the night ban, recognizing it as a successful model for balancing development with ecological sustainability.

NH-766 and the Current Debate

NH-766, previously known as NH-212, links **Kozhikode in Kerala** to **Kollegal in Karnataka**, cutting through Bandipur's core zone. Recent reports of the Karnataka government considering lifting the night ban have triggered widespread protests under the **'Save Bandipur'** campaign, led by environmentalists and concerned citizens. The concern is that revoking the ban would endanger the park's fragile ecosystem and reverse hard-won conservation gains.

Bandipur National Park stands as a symbol of India's commitment to wildlife conservation, particularly for species like the tiger and elephant. The continued protection of this vital habitat is not just a regional issue but a matter of national environmental policy. The success of measures like the night traffic ban demonstrates that well-enforced regulations can lead to tangible ecological benefits.

Q. Which of the following statements regarding the Nilgiri Biosphere Reserve is/are correct?

1. It was the first biosphere reserve in India designated under UNESCO's Man and the Biosphere (MAB) Programme.
2. The reserve spans across the states of Karnataka, Kerala, and Tamil Nadu.
3. Bandipur National Park is one of the protected areas included within its boundaries.
4. The vegetation is restricted only to tropical evergreen forests and montane grasslands.

Select the correct answer using the code below: *[UPSC Pre. Practice Question]*

(a) 1, 2 and 3 only   (b) 1, 3 and 4 only

(c) 2 and 4 only   (d) 1, 2, 3 and 4

Ans. (a) 1, 2 and 3 only

Why in the News?

An ancient Greek theater discovered in Lefkada sheds new light on the Ionian Islands' rich cultural past as a thriving city-state.

Geographical & Historical Significance

- Located on ancient trade routes, the islands were influenced by **Greek, Roman, Byzantine, and Venetian** cultures.
- Known for **fertile land** and **clear waters**, they were historically important for **agriculture and commerce**.
- Prone to earthquakes; the **1953 quake** caused major damage, especially in Cephallenia and Zakynthos.

Cultural & Architectural Highlights

- A newly discovered **ancient theater in Lefkada** features 21 rows of seats with advanced **acoustic and visual design**, reflecting Greek engineering skill.
- The theater underscores **Lefkada's classical importance** as a cultural and military hub in the **Acarnanian region**.

The Ionian Islands remain a blend of natural beauty, strategic significance, and rich cultural heritage.

> **Q. Assertion (A):** The Ionian Islands played a crucial role in ancient Mediterranean trade and cultural exchange.
>
> **Reason (R):** Their strategic location between mainland Greece and Italy, along with fertile lands and access to sea routes, made them a hub of economic and civilizational interactions.
>
> Which of the following options given below is/are correct?   *[UPSC Pre. Practice Question]*
>
> (a) Both A and R are true, and R is the correct explanation of A.
>
> (b) Both A and R are true, but R is not the correct explanation of A.
>
> (c) A is true, but R is false.
>
> (d) A is false, but R is true.
>
> **Ans. (a) Both A and R are true, and R is the correct explanation of A.**

10.5. TAIWAN STRAIT

Why in the News?

China launches major military drills in the Taiwan Strait, with the Shandong carrier operating east of Taiwan, heightening regional tensions.

What is the Taiwan Strait?

The Taiwan Strait is a relatively narrow body of water that acts as a maritime boundary between the island of Taiwan and mainland China's southeastern coast, specifically the Fujian Province. This strait is a critical point of contention in East Asia and frequently features in geopolitical disputes and military strategy.

Geographic Overview:

- **Location:** It lies between the **South China Sea** to the south and the **East China Sea** to the north, effectively linking the two.

- **Bordering Nations:** The strait separates the **People's Republic of China (PRC)** on the west from **Taiwan** on the east.
- **Key Features:**
  - Forms part of the broader **Asian continental shelf**.
  - Several rivers from China's mainland—like the **Min River** and **Jiulong River**—flow into the strait.
  - Notably, there is a significant **underwater elevation** (bank) just north of the **Penghu Islands**, adding to the strait's complex marine topography.

Strategic and Global Importance

- **Geopolitical Flashpoint:** The Taiwan Strait has become one of the most sensitive and militarized zones in the Indo-Pacific region. It is central to the triangular dynamics between **China**, **Taiwan**, and the **United States**.
- **Military Significance:** The strait is a frequent site for military drills, aerial surveillance missions, and power projection by naval forces. China often uses exercises here to signal its stance on Taiwan's status, while the U.S. and allies conduct freedom of navigation operations to assert international sea access rights.
- **Economic and Trade Relevance:** As a busy international shipping lane, the Taiwan Strait is vital for global commerce. Disruptions here can affect major supply chains, especially in tech and semiconductors, given Taiwan's industrial strengths.

Q. Arrange the following islands in the South China Sea in chronological order from north to south:

1. Spratly Islands
2. Paracel Islands
3. Scarborough Shoal
4. Pratas Islands

Select the correct order from the options below:

(a) 2, 4, 3, 1   (b) 4, 2, 1, 3

(c) 2, 1, 4, 3   (d) 4, 3, 1, 2

Ans. (a) 2, 4, 3, 1

10.6. THAR DESERT

Why in the News?

A new study shows the Thar Desert has seen a 38% annual rise in vegetation over 20 years, driven by stronger monsoons and expanding agriculture.

Thar Desert: Location & Coverage

Often referred to as the **Great Indian Desert**, the Thar is located in the northwestern part of the **Indian subcontinent**. It covers around **2 lakh square kilometers** and spreads across:

- **India**: Rajasthan (major portion), Gujarat, Punjab, and Haryana
- **Pakistan**: Southeastern regions like Sindh and parts of Punjab

Physical Geography & Climatic Conditions

- The desert lies **east of the Indus River floodplains** and is bordered by:
  - **Punjab Plains** in the north and northeast
  - **Aravalli Hills** in the southeast
  - **Rann of Kachchh** to the south
- The region experiences a **tropical desert climate**, defined by:
  - Very **low annual rainfall**
  - **Extreme temperatures**
  - Dominance of **dry winds** and **subsiding high-pressure systems**

Soil Types & Agricultural Aspects

The Thar is not entirely barren—its **soil types**, though sandy and dry, are suitable for selective cultivation when supported by irrigation. Key soil varieties include:

- **Desert soil** (sandy and porous)
- **Red Desertic soil**
- **Sierozems**
- **Red and Yellow soils**
- **Lithosols & Regosols**
- Some patches also contain **saline and calcareous** soils

These soils are generally **well-drained**, coarse in texture, and rich in **calcium compounds**, enabling the growth of hardy crops like bajra, moth, and pulses.

Flora and Fauna: A Unique Ecosystem

Despite being arid, the Thar sustains a **diverse range of wildlife** adapted to desert conditions. Notable species include:

- **Chinkara** (Indian Gazelle)
- **Nilgai** (Blue Bull)
- **Blackbuck**
- The critically endangered **Great Indian Bustard (GIB)**, a ground-dwelling bird

The **Desert National Park** in Rajasthan, one of India's largest protected areas, serves as a major biodiversity hotspot in the region.

Natural Resources and Economic Significance

The Thar is not just ecologically significant but also **economically important** due to its rich mineral base:

- Houses **massive lignite coal reserves**, among the world's largest
- Abundant in **gypsum**, used in cement and plaster industries
- Hosts natural **salt deposits** from inland saline lakes like:
  - **Sambhar Lake** (India's largest inland Salt Lake)
  - **Kuchaman Lake**

These resources contribute significantly to **local livelihoods and industries**.

Q. Consider the following statements regarding the Thar Desert:

1. The Thar Desert is primarily located in India and Pakistan, covering parts of Rajasthan, Gujarat, Punjab, and Sindh.
2. The Thar Desert is one of the driest regions in the world, with annual rainfall averaging less than 50 mm in most areas.
3. The Thar Desert is home to the endangered species, the Indian Wild Ass, which is found primarily in the Rann of Kutch.

Which of the following options is correct?   *[UPSC Pre. Practice Question]*

(a) 1 only   (b) 2 only

(c) All three   (d) None

Ans. (a) 1 only

*****

MISCELLANEOUS

Why in the News?

On April 7 every year we celebrate World Health Day to focus on global health challenges and drives action to improve public health. It was started by the **World Health Organization (WHO)** in **1950**, it unites governments, institutions, and communities in addressing critical health priorities each year.

This year's theme, "Healthy Beginnings, Hopeful Futures," emphasizes maternal and newborn health, aiming to eliminate preventable deaths and prioritize women's well-being.

Key Health Achievements in India:

- **Maternal & Child Health**:
  o Neonatal Mortality Rate (NMR) dropped from 26 (2014) to 20 (2020) per 1,000 live births.
  o Under-5 Mortality Rate (U5MR) fell from 45 (2014) to 32 (2020) per 1,000 live births.
  o Programs like Maternal Death Surveillance and Response (MDSR), the Mother and Child Protection Card, and the Reproductive and Child Health Portal track maternal and newborn health.

India vs Global Progress (1990–2020)

Indicators	India Reduction (%)	Global Reduction (%)
Maternal Mortality Ratio (MMR)	83%	42%
Neonatal Mortality Rate (NMR)	65%	51%
Infant Mortality Rate (IMR)	69%	55%
Under-5 Mortality Rate (U5MR)	75%	58%

- **Health Initiatives**:
  o **Ayushman Arogya Mandirs (AAMs)**: Over 1.76 lakh Health & Wellness Centres providing primary care, wellness programs, and screenings.
  o **Ayushman Bharat Digital Mission (ABDM)**: 76 crore health accounts created, linking over 52 crore health records.
  o **U-WIN**: Digital platform for immunization tracking, with 7.90 crore beneficiaries registered.
  o **eSanjeevani**: India's largest telemedicine service, offering 36 crore consultations since 2020.

Disease Control and Elimination:

- **Malaria**: 69% reduction in cases and 68% in deaths between 2017 and 2023.
- **Measles & Rubella**: Significant reduction, with many districts reporting zero cases.
- **Tuberculosis**: TB incidence fell by 17.7%, with a notable reduction in deaths and missed cases.
- **Kala-azar**: Successfully eliminated in 2024.

Ayushman Bharat PM-JAY:

- Over 55 crore beneficiaries covered with ₹5 lakh health insurance.
- 40 crore Ayushman Cards issued, and 31,846 hospitals empanelled.

Mental Health:

- **Tele-MANAS**: 24/7 mental health support via 53 cells across 36 states/UTs, handling over 20 lakh calls.

India's healthcare progress reflects a strong commitment to equitable, accessible, and quality health services, advancing towards universal health coverage with a focus on maternal and childcare, digital health, and disease elimination.

11.2. CITY KEY OF HONOUR AWARD TO INDIAN PRESIDENT

Why in the News?

India's President received Lisbon's highest civic honour, the 'City Key of Honour', as both nations mark 50 years of diplomatic ties in 2025.

India-Portugal Relations – A Deep-Rooted Connection

- **Historical Context:**
  - The Indo-Portuguese connection dates back to **1498**, when **Vasco da Gama** first arrived in **Calicut**, opening direct sea trade routes between Europe and India.
  - Diplomatic tensions post-colonial rule were normalized after the **Carnation Revolution in Portugal (1974)**.
  - This led to the signing of the **Goa Treaty in 1975**, formally re-establishing friendly diplomatic relations.
- **Strategic & Political Cooperation:**
  - Portugal has been a **consistent supporter of India's strategic ambitions**:
    - Backs India's **permanent seat at the United Nations Security Council (UNSC)**
    - Supports India's entry into the **Nuclear Suppliers Group (NSG)**
  - It played a key role in fostering **India-EU relations**, by **hosting the first India-EU Summit in Lisbon in 2000** during the tenure of PM Atal Bihari Vajpayee.
- **Trade and Economic Engagement:**
  - **Bilateral trade** between India and Portugal has grown steadily:
    - As of **2025**, the trade volume is around **USD 1.5 billion**
    - This marks a **50% increase** from 2020, when it was approx. **USD 951 million**
  - **Key sectors:** Renewable energy, IT, pharmaceuticals, and textiles
- **People-to-People & Diaspora Links:**
  - Portugal is home to a significant Indian community. Around **1.25 lakh Indians** reside in the country.
  - The Indian diaspora in Portugal contributes to both economies and acts as a bridge of culture and commerce.
- **Cultural & Educational Ties:**
  - The **Indian Council for Cultural Relations (ICCR)** runs a **Chair at the University of Lisbon**, facilitating academic and cultural exchanges.
  - Joint cultural initiatives include the **release of commemorative stamps** celebrating **500 years of India-Portugal relations**.
  - Various cultural festivals and academic conferences are regularly organized to promote mutual understanding.

This honor not only highlights the deep-rooted friendship between India and Portugal but also reaffirms their commitment to strengthening bilateral ties through shared values, strategic cooperation, and cultural exchange.

11.3. MAHADAYI RIVER

Why in the News?

The **Mahadayi River**, also known as the **Mandovi** in Goa, originates from the **Bhimgad Wildlife Sanctuary** in the Western Ghats, Karnataka. It is a lifeline for three states—**Karnataka**, **Goa**, and

Maharashtra—but has become the center of a heated water-sharing dispute, especially concerning the **Kalasa-Banduri project**.

Geography and Course:

- **Source:** Bhimgad Wildlife Sanctuary, Belagavi District, Karnataka
- **Course:**
  o Flows through **Karnataka** (35 km), **Maharashtra** (1 km), and **Goa** (45 km)
  o Joins the **Zuari River** in Goa and empties into the **Arabian Sea**
- **Tributaries:** Includes **Nerul River**, **Mapusa River**, **St. Inez Creek**, **Valvanti River**, **Dudhsagar River**, and **Udnai River**
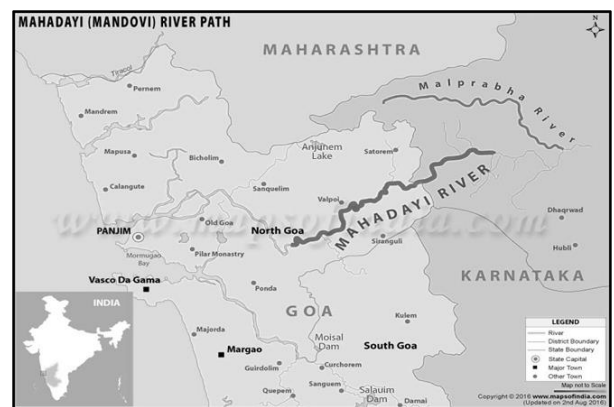
Ecological Importance:

- **Basin Area:** Spans **2,032 sq. km**, with **Goa** covering the largest share (1,580 sq. km)
- The river is essential for **drinking water**, **agriculture**, and **biodiversity** in Goa, making it a vital resource for millions of people.

Cultural Significance:

The Mahadayi, or Mandovi, holds deep cultural and historical value in Goa and the surrounding regions, featuring in numerous traditions and local economies.

The Kalasa-Banduri Project: A Major Controversy

The **Kalasa-Banduri project**, proposed by **Karnataka**, aims to divert water from the Mahadayi River to the **Malaprabha Basin** in a bid to address water scarcity in the **Hubballi-Dharwad** and **Gadag** regions of Karnataka. However, the project has sparked massive protests, especially from **Goa's activists** and local communities, who raise several ecological, social, and legal concerns.

The Dispute:

- **Karnataka's Position:** Karnataka argues that the diversion will provide essential water to drought-prone areas in northern Karnataka, supporting agricultural and drinking water needs.
- **Goa's Concerns:** Goa opposes the project, claiming that the water diversion will have severe ecological consequences, damaging local water security, wildlife habitats, and agricultural sustainability. Activists also argue that it violates decisions made by the **Mahadayi Water Disputes Tribunal**.

Current Status and Growing Tensions

The matter is currently under review by the **Supreme Court**, with both parties, Karnataka and Goa, continuing to press their demands. The water-sharing dispute has intensified local and regional tensions, with concerns about the river's future growing on both sides.

Beyond the politics, the dispute also underscores the broader issue of balancing **economic needs**, **environmental protection**, and **sustainable resource management**, particularly in ecologically sensitive regions like the Western Ghats.

> **Q. The Kalasa-Banduri project is associated with which river?** *[UPSC Pre. Practice Question]*
>
>   (a) Krishna River
>
>   (b) Kaveri River
>
>   (c) Narmada River
>
>   (d) Mahadayi River
>
>   **Ans. (d) Mahadayi River**

11.4. NATIONAL PANCHAYATI RAJ DAY

Introduction

Every year, **April 24** is observed as **National Panchayati Raj Day** in India to commemorate the enactment of the **73rd Constitutional Amendment Act, 1992**, which came into force on this day in 1993. This landmark amendment provided constitutional status to Panchayati Raj Institutions (PRIs) and institutionalized **decentralized, participatory governance** in rural India. The celebration of this day reaffirms India's commitment to empowering local self-governments and promoting inclusive development from the grassroots level.

Why is it celebrated?

The 73rd Amendment added **Part IX** to the Constitution, titled "The Panchayats," and the **11th Schedule**, which lists 29 functions to be devolved to Panchayats. It mandated the establishment of a **three-tier structure** of Panchayati Raj:

1. Gram Panchayat (Village level)

2. Panchayat Samiti (Block level)

3. Zila Parishad (District level)

It also introduced **direct elections**, **reservations for SCs/STs and women (one-third minimum)**, a fixed **five-year term**, and the establishment of **State Finance Commissions** and **State Election Commissions**.

Recent Government Initiatives to Strengthen Panchayati Raj

1. **e-Gram Swaraj Portal & App**

    - Launched in April 2020, this is a digital platform for planning, budgeting, accounting, and monitoring activities at the Gram Panchayat level. It promotes transparency and real-time access to Panchayat activities.

2. **SVAMITVA Scheme**

    - Launched by the Ministry of Panchayati Raj, the **SVAMITVA (Survey of Villages and Mapping with Improvised Technology in Village Areas)** scheme uses drone technology to provide **property cards to rural households**, helping establish clear ownership and enabling credit access.

3. **Rashtriya Gram Swaraj Abhiyan (RGSA)**
   - RGSA is aimed at **capacity building and training** of Panchayati Raj functionaries. It promotes the development of governance capabilities and supports PRIs in achieving Sustainable Development Goals (SDGs).

4. **People's Plan Campaign – Sabki Yojana Sabka Vikas**
   - This annual campaign empowers Panchayats to **prepare participatory Gram Panchayat Development Plans (GPDPs)** by involving local citizens and aligning with national priorities like health, education, sanitation, and women empowerment.

5. **Gram Manchitra**
   - A GIS-based planning tool integrated with the eGram Swaraj Portal to enable **spatial planning** by mapping assets and planning developmental works accordingly.

6. Financial Incentives and Awards

To encourage performance, the government confers **National Panchayat Awards**, including

- Deen Dayal Upadhyay Panchayat Sashaktikaran Puraskar
- Nanaji Deshmukh Rashtriya Gaurav Gram Sabha Puraskar
- e-Panchayat Puraskar
- Child-Friendly Gram Panchayat Award

In **2025**, awards like **Climate Action Special Panchayat Award** and **Atma Nirbhar Panchayat Special Award** were introduced to incentivize PRIs working on sustainability and self-reliance.

Boosting Rural Economy Through Panchayats

Panchayats are not only local governance bodies but also **catalysts of rural economic development**. Key government efforts include:

- **Financial Devolution**: States are empowered to devolve funds to Panchayats through recommendations of the State Finance Commissions.
- **MGNREGS (Mahatma Gandhi National Rural Employment Guarantee Scheme)**: Gram Panchayats play a crucial role in planning and implementing this employment guarantee program.
- **Livelihood Missions**: Schemes like **NRLM** (National Rural Livelihood Mission) and **DAY-NULM** depend on Panchayats for community mobilization and asset creation.
- **Infrastructure Development**: Through the **15th Finance Commission Grants**, Panchayats have received funds for water supply, sanitation, and basic amenities.
- **Local Market Support**: Promotion of local SHGs and **One District One Product (ODOP)** initiatives often involve coordination with Panchayati institutions.

Challenges in the Panchayati Raj System

Despite progress, several challenges persist:

- **Lack of Devolution of Powers**: Many states have not transferred the full 29 subjects to PRIs.
- **Capacity Deficit**: Limited administrative and technical capacity in rural areas.
- **Financial Dependence**: Panchayats still depend heavily on state and central government funds.
- **Social Inequities**: Issues of caste, gender, and political interference affect fair representation and functioning.

Way Forward

- **Strengthen Devolution**: States must ensure the real transfer of functions, funds, and functionaries to Panchayats.

- **Capacity Building**: Continuous training and digital literacy for Panchayat functionaries.
- **Transparency & Accountability**: Expanding digital tools for monitoring, audits, and citizen engagement.
- **Increased Autonomy**: Encouraging Panchayats to raise their own revenue and improve financial management.
- **Integrated Planning**: Aligning Panchayat development plans with state and national missions.

National Panchayati Raj Day is a reminder of India's commitment to **grassroots democracy and inclusive governance**. With the right reforms and support, **Panchayati Raj Institutions can become engines of rural transformation**, ensuring that development is truly "of the people, by the people, and for the people." Strengthening PRIs not only empowers local governance but also accelerates India's march towards **sustainable and equitable rural development**.

> **Q.** The 73rd Constitutional Amendment was a watershed moment in India's journey towards grassroots democracy. Discuss its significance and critically evaluate the progress made in empowering Panchayati Raj Institutions (PRIs) since its enactment.
>
> *[UPSC MAINS Practice Question]*

11.5. IMD FORECASTS ABOVE NORMAL SOUTHWEST MONSOON IN 2025

Why in the News?

The **India Meteorological Department (IMD)**, in its **Long Range Forecast (LRF)** released on April 15, 2025, has predicted an **above-normal Southwest Monsoon** for the year 2025.

Background

- The **Southwest Monsoon** (June to September) accounts for **over 70% of India's annual rainfall** and is crucial for **Kharif crops**, drinking water, hydroelectric power, and groundwater recharge.
- The **LPA (Long Period Average)** is the average rainfall received during the southwest monsoon over the past 50 years, serving as a baseline for forecasting.
- The seasonal rainfall is likely to be **106% of the Long Period Average (LPA)**, which stands at **87 cm**.
- This forecast comes as a positive development after recent years of erratic monsoon behavior influenced by **El Niño** and **climate variability**.

Historical Context

- India has experienced **several droughts and monsoon failures** due to El Niño events (e.g., 2002, 2009, 2015).
- Years with **above-normal rainfall** (e.g., 2013, 2019) have typically supported strong **agricultural output**, GDP growth, and **lower food inflation**.
- The government and RBI have historically used monsoon forecasts to guide **agricultural planning, food management policies**, and **inflation control**.

Significance of the Forecast

- **Agricultural Sector Boost**: More than **50% of India's net sown area is rain-fed**. An above-normal monsoon enhances **Kharif crop yield**, especially rice, pulses, and oilseeds.
- **Rural Economy and Employment**: A good monsoon improves **rural incomes**, boosts **demand for goods and services**, and **reduces distress migration**.
- **Inflation Control and Monetary Policy**: Adequate rainfall lowers the risk of **food inflation**, helping the **RBI maintain a growth-supportive stance** in its monetary policy.

- **Hydropower Generation and Water Security**: Full reservoirs post-monsoon enable **higher hydropower generation** and **urban-rural water supply stability**.

Challenges and Caveats

- **Regional Variability**: While all-India rainfall may be above normal, **regional distribution** could still be uneven, causing **localized droughts or floods**.

- **Climate Change Impact**: Intensified and erratic rainfall patterns due to **climate change** may increase **flood risk** and **soil erosion**.

- **Overdependence on Monsoon**: Despite improvements, India still lacks **adequate irrigation infrastructure** in many regions.

Way Forward

- **Strengthen Climate-Resilient Agriculture**: Promote **drought- and flood-resilient crops**, expand **micro-irrigation**, and improve **agro-advisory services**.

- **Better Monsoon Management**: Integrate **real-time weather data** with **crop insurance**, MSP, and **sowing pattern decisions**. Improve **reservoir and watershed management** to capture excess rainwater.

- **Data-Driven Policy Planning**: Leverage IMD forecasts in **district-level planning**, **disaster preparedness**, and **input distribution**.

- **Invest in Rural Infrastructure**: Strengthen **storage, cold chain, market access**, and **rural roads** to reduce post-harvest losses.

The IMD's forecast of an above-normal monsoon in 2025 offers a window of opportunity for India's agrarian economy and food systems. However, effective planning, climate adaptation, and equitable distribution of water resources remain key to translating this forecast into real gains for **farmers, the economy**, and **climate resilience**. In a changing climate era, **predictability must be matched with preparedness**.

> **Q.** "An above-normal monsoon, while promising for agriculture and rural livelihoods, also brings with it the challenge of regional disparities and climate-related vulnerabilities."
>
> Critically examine the implications of the 2025 IMD monsoon forecast for India's agriculture, economy, and climate resilience. Suggest strategies to maximize the benefits and mitigate associated risks. *[UPSC MAINS Practice Question]*

11.6. WORLD WATER DAY 2025

Why in the News?

Recently, on 22nd March, the World Water Day 2025 was celebrated with the theme 'Glacier Preservation'.

Glacier Preservation

It highlights the urgent issue of glacier preservation amid rapid melting due to global warming. As temperatures rise, glaciers are shrinking, disrupting the water cycle and causing unpredictable meltwater flows. This leads to floods, droughts, landslides, and rising sea levels, threatening billions of people, communities, and ecosystems. To address this, glacier preservation is a critical priority, requiring reduced greenhouse gas emissions to slow glacial retreat and sustainable management of meltwater. Protecting glaciers is framed as essential for human and planetary survival in the face of climate change.

Key messages for World Water Day 2025

- **Glaciers are melting faster than ever.** As the planet gets hotter due to climate change, our frozen world is shrinking, making the water cycle more unpredictable and extreme.

- **Glacial retreat threatens devastation.** For billions of people, meltwater flows are changing, causing floods, droughts, landslides and sea level rise, and damaging ecosystems.
- **Glacier preservation is a survival strategy.** We must work together to reduce greenhouse gas emissions and manage meltwater more sustainably for people and the planet.

> **Q.** Discuss the significance of the theme 'Glacier Preservation' for World Water Day 2025. Analyze the impacts of glacial retreat on global water cycles and ecosystems, and suggest measures to promote sustainable glacier preservation for human and planetary survival.
>
> *[UPSC MAINS Practice Question]*

11.7. NEWS IN SHORT

11.7.1. AMALSAD CHIKOO: GUJARAT'S GI-TAGGED SWEET DELIGHT

Why in the News?

The Amalsad Chikoo was awarded the Geographical Indication (GI) tag.

Key Highlights

- The Amalsad Chikoo, a variety of sapota grown in the Navsari district of Gujarat, has recently been awarded the Geographical Indication (GI) tag, recognizing its unique taste, texture, and deep-rooted connection to the region. This makes it the third fruit from Gujarat to receive the GI tag, after the Gir Kesar mango and Kutchhi Kharek (date).
- Amalsad, the village after which this fruit is named, is the heart of chikoo cultivation in India. In fact, Gujarat alone accounts for 98% of India's chikoo exports, with major markets in the UAE, UK, and Bahrain.
- A GI tag helps protect the identity of regional products by certifying their origin and distinctive qualities, while also promoting economic benefits for local farmers.

> **Q. With reference to the recently GI-tagged Amalsad Chikoo, consider the following statements:**
>
> 1. It is the first fruit from Gujarat to receive the Geographical Indication (GI) tag.
> 2. Gujarat accounts for the majority of India's chikoo exports.
> 3. The GI tag certifies the origin and unique characteristics of regional products.
>
> Which of the statements given above is/are correct?   *[UPSC Pre. Practice Question]*
>
> (a) 1 and 2 only   (b) 2 and 3 only
>
> (c) 1 and 3 only   (d) 1, 2 and 3
>
> **Ans. (b) 2 and 3 only**

*****

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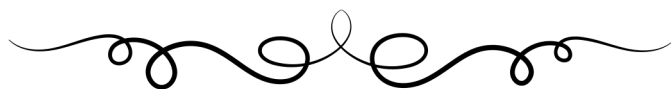
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