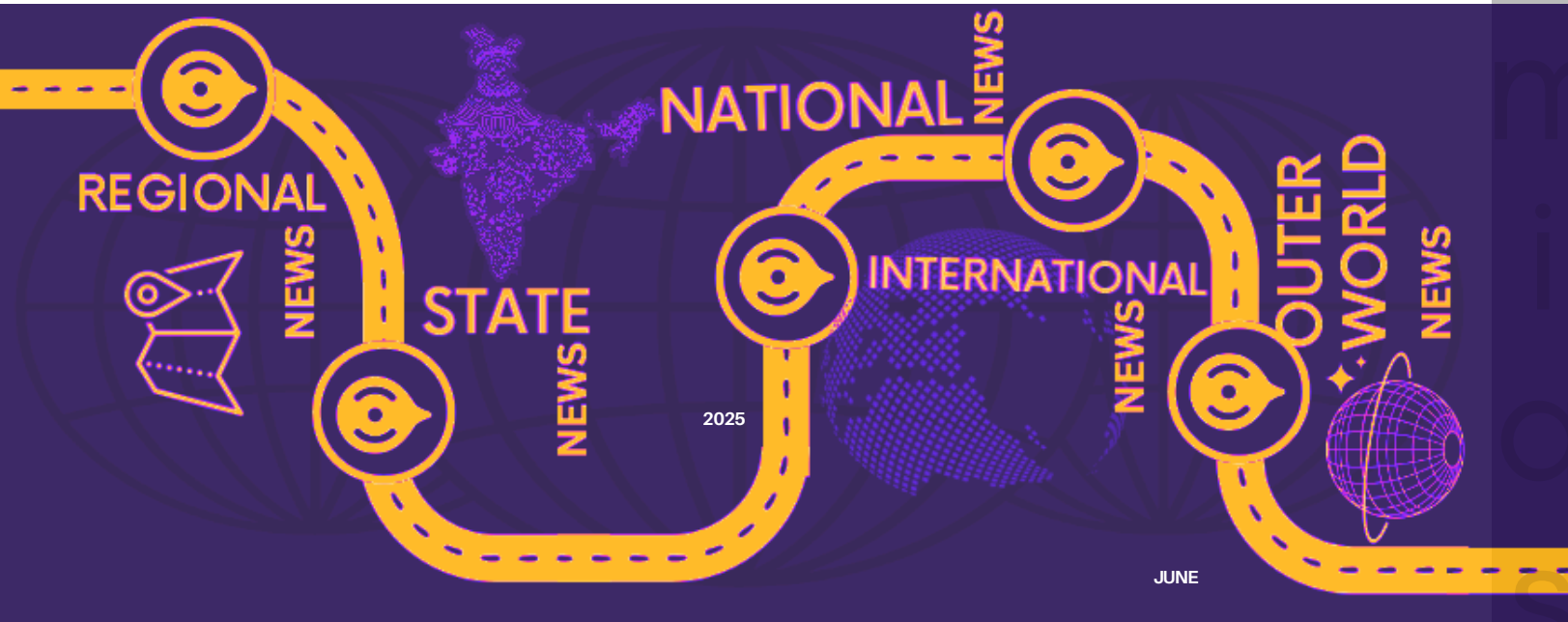


# explore



Monthly

## CURRENT AFFAIRS



### MUST READ!

- CONTEMPT OF COURT AND NCERT TEXTBOOK CONTROVERSY
- CONSTITUTION (131ST AMENDMENT) BILL, 2026
- WEST ASIA GEOPOLITICS AND ITS IMPACT ON INDIA'S FOOD & ENERGY SECURITY
- SHIFT FROM LPG TO PNG IN INDIA: ENERGY TRANSITION
- INDIA FERTILISER CRISIS
- HERITAGE CONSERVATION IN INDIA
- RIVER BASIN MANAGEMENT (RBM) SCHEME
- INDIA'S NDC 3.0 (2031-2035)
- ENVIRONMENTAL IMPACT OF MODERN WARFARE: EMERGING ECOLOGICAL CRISIS
- BACILLE CALMETTE-GUÉRIN (BCG) VACCINE: ROLE IN TB CONTROL AND GLOBAL HEALTH
- DOWRY LAWS IN INDIA

### SPECIAL COLUMNS

- TELANGANA – TELANGANA PARENTAL SUPPORT BILL, 2026
- ANDHRAPRADESH – ANDHRA PRADESH POPULATION MANAGEMENT POLICY 2026

**MAY** ..... **EKAĀM̄**  
**2026** ..... **IAS ACADEMY**



# EKAM IAS ACADEMY

Lets Work Together, We Hard, You Smart



MAJOR OBEROI

UPSC CSE - GENERAL STUDIES

## PRELIMS + MAINS

### FOUNDATION COURSE

#### NEW BATCH

#### STARTING SOON

Offline & Online

### UPSC CSE - OUR OPTIONALS

**PSIR**

**BY MAJOR OBEROI**

14 + years of Experience



**ANTHROPOLOGY**

**BY VIDHEY**

7 + years of Experience



**GEOGRAPHY**

**BY VIJAY KUMAR**

13 + years of Experience



**HISTORY**

**BY NABI RASOOL**

13 + years of Experience



**MATHEMATICS**

**BY LOHITH REDDY**

5 + years of Experience



**SOCIOLOGY**

**BY SANDEEP REDDY**

13 + years of Experience



### BATCHES STARTING SOON

**ADMISSIONS**  
**OPEN**



**81210 27337**

## PREFACE

Welcome to our monthly current affairs magazine! We are thrilled to provide you with the latest information and updates on the most important events that happened in our country and around the world in the month of MARCH 2026. Our magazine is designed to help you prepare for competitive examinations like UPSC and other State PSC Exams, and we hope that you will find it informative, engaging, and useful.

In this magazine, you will find a wide range of topics covering current affairs, including politics, economics, sports, science and technology, and many more. Our team of writers and editors work hard to bring you the most accurate and up-to-date information, so you can stay informed and prepared for any competitive exam. We understand that preparing for competitive exams can be a daunting task, but we are here to make it easier for you. Our magazine is designed to be easy to read and understand, with clear and concise articles that will help you stay on top of the latest news and events.

We believe that knowledge is power, and we are committed to helping you achieve your goals. Whether you are preparing for a government job, entrance exam, or any other competitive exam, our magazine will provide you with the information and insights you need to succeed.

Thank you for choosing our magazine, and we hope that you find it helpful and informative.

## ACKNOWLEDGMENTS

We extend our heartfelt gratitude and appreciation to the exceptional team of content developers who have played a pivotal role in shaping our UPSC Current Affairs Magazine. Your unwavering dedication, extensive research, and commitment to delivering high-quality content have been instrumental in making this publication a trusted resource for our readers.

Your relentless pursuit of current affairs, profound understanding of complex issues, and the ability to distil them into informative, concise, and engaging articles have set a benchmark in the field of competitive examination preparation.

We are proud to have a team that goes above and beyond, ensuring that our readers are well-informed and well-prepared for the UPSC examinations. Your exceptional contributions are the driving force behind our magazine's success.

Thank you for your hard work, expertise, and passion for delivering top-notch content. Your efforts have not only enriched our magazine but have also played a significant role in the educational journey of countless aspiring civil servants.

We look forward to continuing this remarkable journey of knowledge dissemination with your continued support and excellence.

With deep appreciation,

**EKAM IAS ACADEMY**

## POLITY AND GOVERNANCE

<b>EXECUTIVE .....</b>	<b>1</b>
Prime Minister's Tenure and Term Limits in India .....	1
<b>JUDICIARY .....</b>	<b>2</b>
Contempt of Court and NCERT Textbook Controversy .....	2
Judicial Recusal in India .....	3
<b>POLICIES / SCHEMES / ACTS / REPORTS / COMMITTEES IN NEWS .....</b>	<b>4</b>
Constitution (131 <sup>st</sup> Amendment) Bill, 2026 .....	6
Viksit Bharat Shiksha Adhishthan (VBSA) Bill, 2025 .....	7
<b>ELECTIONS AND RPA, 1951 .....</b>	<b>7</b>
Special Intensive Revision (SIR) of Electoral Rolls.....	7
<b>INSTITUTIONS IN NEWS .....</b>	<b>8</b>
Politicization of Anti-Corruption Bodies in India .....	8
<b>GOVERNANCE .....</b>	<b>9</b>
Internet Censorship in India .....	9
<b>PRELIMS POINTERS IN NEWS .....</b>	<b>10</b>
Panchayat Advancement Index (PAI) 2.0.....	10
Abhilekh Patal Portal.....	11
Nasha Mukh Bharat Abhiyaan (NMBA)...	11
Sahayog Portal.....	12
Prime Minister Internship Scheme (PMIS).....	12
<b>ARTICLE: PANCHAYATI RAJ INSTITUTIONS (PRIS) IN INDIA .....</b>	<b>13</b>

## INTERNATIONAL RELATIONS

<b>INDIA RELATIONS WITH OTHER NATIONS..</b>	<b>15</b>
---	-----------

India–South Korea Relations.....	15
India–Azerbaijan Relations.....	16
<b>INTERNATIONAL INSTITUTIONS, AGENCIES AND FORAMS.....</b>	<b>17</b>
UNSC Reform: India's Demand for Expansion of Permanent Members with Veto.....	17
<b>GLOBAL ISSUES.....</b>	<b>18</b>
West Asia Geopolitics and Its Impact on India's Food & Energy Security.....	18
US–Iran Ceasefire (2026) And Role of Mediation in International Relations.....	19
<b>PRELIMS POINTERS IN NEWS.....</b>	<b>21</b>
SAARC Currency Swap Framework.....	21
Trans-Arabian Pipeline (TAPLINE).....	22
Punatsangchhu Hydroelectric Projects (INDIA–BHUTAN).....	22
World Anti-Doping Agency (WADA).....	23
OPEC+ (Organization of the Petroleum Exporting Countries Plus).....	23
<b>ARTICLE: INDIAN DIASPORA - A STRATEGIC NATIONAL ASSET .....</b>	<b>24</b>

## ECONOMY

<b>GROWTH AND DEVELOPMENT, INCLUSION.....</b>	<b>26</b>
India's Informal Sector: Growth Without Transformation.....	26
<b>BANKING AND FINANCIAL INTERMEDIARIES.....</b>	<b>27</b>
Unified Payments Interface (UPI).....	27
<b>AGRICULTURE AND ALLIED.....</b>	<b>28</b>
Indian Agriculture Growth and Transformation.....	29
<b>TAXATION.....</b>	<b>29</b>
Fuel Excise Duty Cut in India.....	29



# EKAM IAS ACADEMY

Lets Work Together, We Hard, You Smart

HYDERABAD

UPSC - CSE | APPSC | TGPSC

## TRADE AND EXTERNAL SECTOR.....30

Foreign Portfolio Investor (FPI) Outflows from India.....30

## FINANCIAL MARKETS.....31

Women's Access to Credit in India.....31

## INFRASTRUCTURE.....32

Shift From LPG to PNG in India: Energy Transition.....33

## PRELIMS POINTERS IN NEWS.....34

Credit Guarantee Fund Trust for Micro and Small Enterprises (CGTMSE).....34

National Floor Level Minimum Wage (NFLMW).....35

Credit Default Swaps (CDS).....36

Ad Valorem Duty .....37

Non-Deliverable Derivative (NDD) Market.

e-Commerce Moratorium (WTO).....38

Vishwa Sutra Initiative.....39

Windfall Tax.....40

Export Inspection Council (EIC).....40

## ARTICLE: INDIA FERTILISER CRISIS ..... 41

## HISTORY

## ART AND CULTURE.....42

Heritage Conservation in India.....42

## PRELIMS POINTERS IN NEWS .....44

Samrat Samprati .....44

Balirajgarh Archaeological Site.....45

Bankey Bihari Temple.....45

Byzantine Empire.....46

Amber Fort (Amer Fort).....46

## GEOGRAPHY

## WATER RESOURCES.....47

River Basin Management (RBM) Scheme.....47

## PRELIMS POINTERS IN NEWS.....48

Manikya Dhara Falls.....48

Pykara Lake.....49

Strait Of Malacca.....50

Santiaguito Volcano.....50

Salween River.....51

Hussain Sagar Lake.....52

Atlantic Meridional Overturning

Circulation (AMOC).....52

## ENVIRONMENT

## BIODIVERSITY AND CONSERVATION .. 53

Shekha Jheel Bird Sanctuary: India's 99<sup>th</sup> Ramsar Site.....53

## CLIMATE CHANGE AND POLLUTION ... 54

Green Factory Standards in India

Microplastic Pollution in India.....55

## INDIAN INITIATIVES, EFFORTS AND COMMITMENTS .....55

India's NDC 3.0 (2031–2035).....56

## DISASTER MANAGEMENT.....57

Legislative Vacuum in India's Heat Crisis.....58

## PRELIMS POINTERS IN NEWS..... 59

Honey Badger (Ratel).....59

Limnonectes Motijheel (New Frog Species).....60

Tibetan Antelope (Chiru).....60

Mookambika Wildlife Sanctuary.....61

Raimona National Park.....61

Black Panthers (Melanistic Big Cats).....62

Nagarjunasagar–Srisaïlam Tiger Reserve (NSTR).....62

Millipede.....63

Woolly-Necked Stork.....63

**ARTICLE: ENVIRONMENTAL IMPACT OF MODERN WARFARE: EMERGING ECOLOGICAL CRISIS ..... 64**

**SCIENCE AND TECHNOLOGY**

**MEDICAL HEALTH/VACCINES/DISEASES ..... 67**

Bacille Calmette-Guérin (BCG) Vaccine: Role in TB Control and Global Health....67  
 Artemether-Lumefantrine for Infants: Advancing Malaria Treatment.....67

**SPACE TECHNOLOGY ..... 68**

Artemis-II Mission and the new era of Lunar Exploration.....68

**EMERGING TECHNOLOGIES ..... 69**

India's Nuclear Power Expansion - Shanti Act, 2025.....69  
 Direct-To-Device (D2D) Technology: Satellite-Based Connectivity Revolution.70

**PRELIMS POINTERS IN NEWS ..... 71**

Flex Fuel Vehicles (FFVs).....71  
 Sports Genomics Programme.....72  
 Hubble Tension.....73  
 Kawasaki Disease.....74  
 Curiosity Rover.....75  
 Scarlet Fever.....75  
 Keytruda (Pembrolizumab) .....76  
 Cerium-Magnesium Changesite.....77

**ARTICLE: PROTOTYPE FAST BREEDER REACTOR (PFBR) & INDIA'S THREE-STAGE NUCLEAR PROGRAMME ..... 78**

**SECURITY**

**BORDER MANAGEMENT.....80**

Radical Security Shift in Jammu & Kashmir. Use Of Snakes and Crocodiles in Border Security.....80

**PRELIMS POINTERS IN NEWS..... 81**

INS Kalpeni.....82  
 Project Dantak.....83  
 Truck Mounted Attenuator (TMA).....84  
 Astra Mk-2 Missile.....84  
 INS Dhruv.....85  
 Exercise Dustlik.....86

**SOCIETY**

**VULNERABLE SECTIONS OF SOCIETY... 86**

Dowry Laws in India.....86  
 Womaniya Initiative .....87

**PRELIMS POINTERS IN NEWS..... 87**

Gond Tribe.....88  
 Smile Scheme.....88  
 Muthuvan Tribe.....89  
 Tharu Tribe.....89  
 Baisakhi Festival.....90  
 Lanjia Saora Tribe.....90

**ARTICLE: ABORTION LAW IN INDIA .... 91**

**KNOW YOUR STATE**

**TELANGANA ..... 93**

TELANGANA PARENTAL SUPPORT BILL, 2026 ..... 93

**ANDHRA PRADESH ..... 95**

ANDHRA PRADESH POPULATION MANAGEMENT POLICY 2026.....95

# POLITY AND GOVERNANCE

## EXECUTIVE

### PRIME MINISTER'S TENURE AND TERM LIMITS IN INDIA

SOURCE: THE HINDU

#### Why in News?

Narendra Modi completed over 8,900 days in elected office, renewing debate on long executive tenure and absence of term limits.

#### Constitutional Position of Prime Minister

- Appointed by the **President under Article 75**, usually the **leader of the majority in Lok Sabha**.
- Can be a member of **either House of Parliament**.
- Holds office as long as they enjoy **confidence of the Lok Sabha**.
- Can be removed through a **no-confidence motion**.
- Salary and conditions are **decided by Parliament**.

### FUNCTIONS OF A PRIME MINISTER



#### Why No Term Limit in India?

- The **Constitution does not prescribe term limits** for Prime Minister.
- Dr. **B. R. Ambedkar** argued that:
  - **Parliament provides continuous accountability** through debates and motions.
  - Daily scrutiny is stronger than **periodic elections alone**.
- India adopted the **British Westminster model**, where no term limits exist.

#### Comparative Perspective

- **United States:** President limited to **two terms (22nd Amendment)**.
- Countries like **Brazil, Indonesia, and South Korea** have fixed limits.
- Parliamentary democracies like the UK rely on **party mechanisms and internal leadership challenges**.

India lacks both **formal term limits and strong intra-party checks**.

#### Changing Nature of Parliamentary Accountability

##### Impact of Anti-Defection Law (Tenth Schedule)

- Introduced by **52nd Amendment (1985)** to prevent political defections.
- Disqualifies MPs who vote against **party whip**.
- Upheld in **Kihoto Hollohan case (1992)**.

##### Consequences

- Weakens **independent decision-making of legislators**.
- Makes **no-confidence motions less effective** when ruling party has majority.
- Reduces **Parliament's ability to check executive power**.

#### Risks of Prolonged Executive Tenure

- Possibility of **concentration of political power** over time.
- Greater influence over:
  - **Institutions and appointments**
  - **Policy decisions and electoral narratives**
- Risk of **institutional weakening and reduced accountability**.
- Democratic decline may occur gradually through **institutional erosion rather than abrupt change**.

#### Presidential Paradox in India

- India follows an **informal convention of two terms for President**, despite no legal restriction.
- The President has **limited executive power**, yet constrained by convention.
- The Prime Minister, with **real executive authority**, has **no such limits**.

#### Debate on Term Limits

##### Arguments in Favour

- Prevents **excessive concentration of power**.
- Encourages **leadership rotation and fresh ideas**.

- Strengthens institutional democracy and accountability.

**Arguments Against**

- Limits people’s democratic choice.
- Elections already provide periodic accountability.
- May disrupt policy continuity and governance stability.

**Possible Reforms**

- Reform anti-defection law to allow voting freedom in confidence motions.
- Introduce limited term restrictions (e.g., two consecutive terms with gap).
- Strengthen intra-party democracy and leadership challenges.
- Enhance parliamentary oversight mechanisms.
- Ensure independent functioning of institutions.

**Way Forward**

- Balance between executive stability and democratic accountability is essential.
- Strengthen institutional checks rather than relying solely on elections.
- Promote transparent governance and internal party reforms.
- Encourage debate on constitutional safeguards without undermining democracy.

**Conclusion**

India’s system relies on parliamentary checks rather than fixed term limits for the Prime Minister. Strengthening institutional accountability is crucial to prevent concentration of power.

**JUDICIARY**

**CONTEMPT OF COURT AND NCERT TEXTBOOK CONTROVERSY**

**SOURCE: THE HINDU**

**Why in News?**

A controversy over an NCERT Class 8 textbook discussing judiciary-related issues has reignited debate on free speech, academic autonomy, and judicial authority.

**Concept of Contempt of Court**

- Defined under the Contempt of Courts Act, 1971, it ensures compliance with judicial orders and respect for courts.

**Types of Contempt**

- **Civil Contempt:** Willful disobedience of court orders, judgments, or undertakings.
- **Criminal Contempt:** Includes acts that:
  - Obstruct justice or judicial proceedings
  - Prejudice fair trial
  - Scandalise or lower authority of courts

The idea of “scandalising the court” is debated as it may restrict legitimate criticism.

**Article 129 and Article 215**

• The Powers of Supreme Court and High Court as a court of record which includes the power to punish for contempt of itself.

**Article 142(2)**

• It enables the Supreme Court to investigate and punish any person for its contempt.

**Rationale Behind Contempt Powers**

- Judiciary lacks direct enforcement mechanisms (force or finances) and depends on public confidence.
- Contempt powers safeguard:
  - Rule of law and judicial independence
  - Authority of court orders
  - Integrity of justice delivery system
- However, misuse can lead to:
  - Suppression of dissent and criticism
  - Erosion of democratic discourse

**Fair Criticism vs Criminal Contempt**

**1. Fair criticism:**

- Based on facts, evidence, and reasoned arguments
- Intended to improve transparency and accountability

**2. Criminal contempt:**

- Involves false, malicious, or reckless allegations
- Aims to damage public trust in judiciary

The challenge lies in clearly distinguishing between the two, to avoid a chilling effect on free speech.

**NCERT Textbook Controversy: Key Issues**

- An NCERT textbook included a chapter discussing “corruption in judiciary”, triggering institutional concerns.
- The Supreme Court intervened, leading to:
  - Withdrawal of the textbook
  - Reconstitution of expert committees
- Concerns raised:

- Impact on **academic freedom and intellectual independence**
- Lack of **consultation and due process with authors**
- Justification:
  - Need to **protect credibility and public trust in judiciary**

**Judicial Accountability: Broader Concerns**

- Even limited instances of **judicial misconduct** can harm institutional trust.
- Existing mechanisms:
  - **Impeachment** – complex and politically influenced
  - **In-house inquiry** – lacks transparency and enforceability
- Need for:
  - **Independent oversight mechanisms**
  - **Greater transparency and accountability frameworks**

**Role of Education in Constitutional Democracy**

- Textbooks are vital for building **constitutional awareness among students.**
- They must present:
  - Judiciary as **protector of rights and Constitution**
  - Challenges like **delays, corruption concerns, and accountability gaps**
- Balanced content promotes:
  - **Critical thinking without undermining institutions**

**Way Forward**

- Ensure **restrained and judicious use of contempt powers.**
- Promote **constructive criticism and open institutional dialogue.**
- Strengthen **judicial accountability mechanisms.**
- Protect **academic freedom while maintaining institutional respect.**
- Encourage **legal literacy and constitutional values in education.**

**Conclusion**

Contempt powers must balance judicial dignity with democratic freedoms. A system rooted in **accountability, dialogue, and trust** strengthens the rule of law.

**JUDICIAL RECUSAL IN INDIA**

**SOURCE: THE HINDU**

**Why in News?**

The recusal of **Chief Justice Surya Kant** from hearing petitions on the **Election Commissioners Appointment Act, 2023** has revived debate on **judicial impartiality.**

**What is Judicial Recusal?**

- Recusal is when a judge **steps aside due to potential bias or conflict of interest.**
- It ensures that justice is not only done but also **seen to be done.**

**Key Features**

- Based on **judicial discretion and personal conscience.**
- No party can **force a judge to recuse.**
- The case is **reassigned to another bench** after recusal.

**JUDICIAL RECUSAL: THE INTEGRITY GAP**

Judicial impartiality relies on clear, consistent standards for when a judge must step away from a case.

<p><b>IMPARTIALITY: JUSTICE MUST BE SEEN</b></p>  <p>Recusal prevents conflicts of interest to maintain public trust in the foundation of democracy.</p> 	<p><b>LACK OF UNIFORM CODIFIED STANDARDS</b></p>  <p>Decisions are currently left to individual discretion rather than a statutory framework</p> 	<p><b>PREVENT STRATEGIC "FORUM SHOPPING"</b></p>  <p>Without strict norms, litigants may use recusal requests to influence which judges hear their cases.</p>	<p><b>THE NEED FOR INSTITUTIONAL REFORM</b></p>  <p>Establishing structured guidelines will balance judicial independence with the need for transparency and efficiency.</p> 
--	--	---	--

**Reasons for Recusal**

- **Conflict of interest**, such as financial or personal connections with parties.
- **Prior involvement** in the case at an earlier stage.
- Situations creating a **reasonable apprehension of bias.**
- Cases where the judge may have **institutional or indirect interest.**

**Legal Basis and Evolution in India**

- Recusal originates from the principle: **"nemo judex in causa sua"** (no one should be a judge in their own case).
- India lacks a **codified statutory framework**, relying on judicial precedents.

**Important Judgments**

- **Manak Lal v. Prem Chand (1957):** Established **pecuniary interest leads to disqualification.**

- **Ranjit Thakur v. Union of India (1987):** Introduced “reasonable apprehension of bias” test.
- **State of West Bengal v. Shivananda Pathak (1998):** Defined bias as **inability to remain impartial.**
- **Supreme Court Advocates-on-Record Association (2015):** Reinforced **automatic disqualification in financial conflicts.**

**Doctrine of Necessity**

- When all judges face **similar conflict**, recusal may not be possible.
- Courts invoke **Doctrine of Necessity**, meaning the case must still be heard.
- Applied in cases like **NJAC judgment (2015)**, where all judges had institutional stakes.

**Global Practices**

- **United States:** Clear statutory rules under judicial code for recusal.
- **United Kingdom:** Formal guidelines by judicial bodies.
- **Canada:** Judicial conduct code includes recusal norms.

Compared to these, India relies more on **self-regulation than formal rules.**

**Issues in Current Recusal Practice**

- **No codified law**, leading to inconsistency in decisions.
- Lack of **transparency**, as reasons for recusal are not always disclosed.
- Possibility of **bench fixing or strategic recusals.**
- No mechanism to **review or challenge recusal decisions.**
- Overuse or misuse may delay **important constitutional cases.**

**Need for Codification and Reform**

- Establish a **clear legal framework for recusal standards.**
- Mandate **written reasons for recusal to ensure transparency.**
- Introduce **independent oversight or review mechanisms.**
- Balance **judicial discretion with accountability.**
- Learn from global practices while preserving **judicial independence.**

**Way Forward**

- Develop a **uniform code of judicial conduct** for recusal.

- Strengthen **institutional mechanisms** instead of ad hoc decisions.
- Promote **transparency to maintain public confidence.**
- Ensure recusal is used **judiciously, not strategically.**

**Conclusion**

**Judicial recusal is vital for ensuring fairness and trust in the judiciary. A clear, transparent, and consistent framework is essential for institutional integrity.**

**POLICIES/SCHEMES/ACTS/REPORTS/ COMMITTEES IN NEWS**

**CONSTITUTION (131ST AMENDMENT)**

**SOURCE: INDIAN EXPRESS**

**Why in News?**

The **Constitution (131st Amendment) Bill, 2026** was **defeated in Lok Sabha** as it failed to secure the required **two-thirds majority.**

The bill aimed to **link delimitation with women’s reservation**, triggering debate on **federal balance and gender justice.**

**What is Delimitation?**

- **Delimitation** refers to **redrawing electoral boundaries** to ensure fair representation based on population.
- It is guided by the principle of **“one person, one vote, one value.”**
- In India, delimitation has been **frozen since 1976 (based on 1971 Census)** to promote population control.
- Delimitation Commissions have been set up in **1952, 1963, 1973, and 2002.**

**What is delimitation**

**The process of redrawing boundaries** of Lok Sabha and state Assembly seats to represent changes in the population.

**The main task of the Delimitation Commission** is redrawing the boundaries of the various assembly and Lok Sabha constituencies based on a recent census.



## Key Features of the 131st Amendment Bill

- Proposed **delimitation based on 2011 Census** instead of waiting for the next Census.
- Suggested **expansion of Lok Sabha seats** from about **550 to nearly 850**.
- Linked delimitation with **implementation of 33% reservation for women**.
- Assured **uniform increase in seats across states** to address regional concerns.
- Included provisions to **increase SC/ST reserved seats proportionally**.

## Reasons for Defeat of the Bill

- Failed to achieve the **special majority (two-thirds of members present and voting)**.
- **Unified opposition resistance** due to political and regional concerns.
- Fear that **population-based delimitation benefits northern states** with higher growth.
- Lack of **legal guarantees on equal seat increase across states**.
- Objection to **linking women's reservation with delimitation**, causing delays.
- Concerns over **political motives and electoral advantage**.

## Government's Arguments

- Emphasised **democratic fairness**, correcting unequal representation due to population changes.
- Argued that delimitation is necessary for **timely implementation of women's reservation by 2029**.
- Highlighted disparities where **some MPs represent far larger populations than others**.
- Assured **balanced representation and federal fairness**.
- Stated that reforms would **strengthen inclusive governance**.

## Opposition's Concerns

- Demanded **decoupling women's reservation from delimitation**.
- Raised concerns about **reduced political influence of southern states**.
- Criticised absence of **clear legal safeguards and written assurances**.
- Alleged **political manipulation of constituency boundaries**.
- Suggested inclusion of **caste census data for equitable representation**.

### Status of Women's Representation in India

- Women constitute only about **14–15% in Lok Sabha**, far below proposed 33%.

- In State Assemblies, representation is often **below 10%**.

### Challenges to Women's Political Participation

- **Patriarchal social norms** restrict leadership opportunities.
- Limited **access to funding and political networks**.
- Political parties provide **fewer tickets to women candidates**.
- Women often contest from **less winnable constituencies**.
- Marginalised women face **intersectional barriers (caste, class, region)**.

### Significance of the Issue

#### Positive Aspects

- **Delimitation ensures equal representation** reflecting population changes.
- Women's reservation promotes **inclusive and participatory governance**.
- Increased representation improves **policy outcomes and social justice**.
- Helps address **malapportionment in electoral constituencies**.

#### Concerns

- Risk of **federal imbalance between states**.
- **Delay in implementing women's reservation** due to conditional linkage.
- Potential for **political polarization and regional tensions**.
- Administrative challenges in **expanding and reorganizing constituencies**.

#### Way Forward

- Build **political consensus through dialogue among states and parties**.
- **Decouple women's reservation from delimitation** for faster implementation.
- Provide **clear legal guarantees to protect federal balance**.
- Adopt a **balanced delimitation formula** considering population and performance.
- Strengthen **Delimitation Commission transparency and stakeholder participation**.
- Promote women's participation through:
  - **Party-level quotas**
  - **Capacity building and financial support**
- Use **updated and reliable data** for fair representation.

#### Conclusion

The bill's failure reflects the complexity of balancing representation, federalism, and gender justice. Reforms must ensure equity, consensus, and inclusiveness in India's democratic framework.

## VIKSIT BHARAT SHIKSHA ADHISHTHAN (VBSA) BILL, 2025

SOURCE: PIB

### Why in News?

The **Viksit Bharat Shiksha Adhishtan Bill, 2025** has been introduced in the **Lok Sabha** to create a **single apex regulator for higher education**.

### What is the VBSA Bill, 2025?

- The Bill proposes the creation of **Viksit Bharat Shiksha Adhishtan (VBSA)** as the **apex authority** for regulating higher education institutions (HEIs).
- It seeks to **replace multiple regulators** with a **single streamlined body**.
- It excludes **medical and legal education**, which will continue under separate regulatory frameworks.



## Viksit Bharat Shiksha Adhishtan Bill, 2025

### A New Era in Higher Education

- A landmark reform aligned with the vision of Hon'ble Prime Minister Shri Narendra Modi to modernise India's higher education system.
- Anchored in NEP 2020, it strengthens autonomy, accreditation and academic standards of HEIs enabling excellence in education, research and innovation.
- All HEIs under the Ministry of Education, UGC, AICTE and NCTE will come under the Viksit Bharat Shiksha Adhishtan. The CoA will function as a PSSB as envisioned in NEP 2020.
- It introduces a technology-driven regulatory framework to ensure simplicity, transparency and quality.

education.gov.in | f | X | YouTube | Instagram | @EduMinOfIndia

### Key Features of the Bill

#### 1. Three-Vertical Structure

- **Regulatory Council:** Ensures **institutional governance and compliance**.

- **Accreditation Council:** Focuses on **quality assessment and ranking systems**.
- **Standards Council:** Sets **academic standards, curriculum, and learning outcomes**.

#### 2. Unified Regulation

- Eliminates duplication by replacing **UGC, AICTE, and NCTE**.
- Provides a **single-window mechanism** for regulation and coordination.

#### 3. Separation of Funding

- VBSA will **not provide grants**, unlike UGC.
- Funding powers are shifted to the **Ministry of Education**, marking a structural change.

#### 4. Composition

- Commission headed by a **Chairperson (honorary)** with **12 members**.
- Councils consist of **experts and government nominees**, ensuring professional oversight.

#### 5. Penalty and Enforcement Powers

- Can impose **finances ranging from ₹10 lakh to ₹70 lakh**.
- Has authority to **suspend or close institutions for violations**.

#### 6. Appeals Mechanism

- Appeals against decisions lie with the **Central Government**, not an independent tribunal.

#### Need for the Bill

- To address **fragmented regulation and overlapping jurisdictions**.
- To implement **National Education Policy 2020 effectively**.
- To promote **multidisciplinary education and research institutions**.
- To improve **global ranking and competitiveness of Indian universities**.
- To respond to **digitalisation, internationalisation, and skill-based learning needs**.

#### Issues and Concerns

##### 1. Centralisation of Power

- Shifting funding to the Ministry may lead to **bureaucratic control over academic institutions**.

##### 2. Federal Concerns

- Education is in the **Concurrent List**, but the Bill may reduce **State role in governance**.

##### 3. Institutional Autonomy

- Critics argue it may weaken the independence of **premier institutions like IITs and IIMs**.

##### 4. Lack of Social Justice Provisions

- No clear mechanism to ensure **reservation for SC, ST, and OBC groups**.

#### 5. Appeals to Government

- Absence of **independent appellate authority** may reduce fairness and transparency.

#### Significance of the Reform

##### Positive Aspects

- Simplifies governance through **single regulatory framework**.
- Enhances **quality assurance and standardisation**.
- Supports **innovation, research, and multidisciplinary education**.
- Aligns Indian education with **global best practices**.

##### Concerns

- Risk of **over-centralisation and reduced academic freedom**.
- Potential weakening of **federal balance**.
- Concerns about **transparency and accountability mechanisms**.

##### Way Forward

- Ensure **greater participation of States** through State Higher Education Councils.
- Create an **independent funding body (like Higher Education Grants Council)**.
- Strengthen **institutional autonomy and academic freedom safeguards**.
- Include **explicit provisions for social justice and inclusiveness**.
- Establish an **independent appellate mechanism** for dispute resolution.
- Promote **stakeholder participation including faculty, students, and experts**.

##### Conclusion

The VBSA Bill aims to transform India's higher education through unified regulation and improved standards. Its success depends on balancing efficiency with autonomy, and central coordination with federal cooperation.

## ELECTIONS AND RPA, 1951

### SPECIAL INTENSIVE REVISION (SIR) OF ELECTORAL ROLLS

SOURCE: INDIAN EXPRESS

#### Why in News?





The **Special Intensive Revision (SIR)** of electoral rolls in **West Bengal** has triggered concerns over **large-scale voter deletions and electoral integrity**.

#### What is Special Intensive Revision (SIR)?

- SIR is a **comprehensive verification process** aimed at updating electoral rolls by removing ineligible entries and adding eligible voters.
- It involves:
  - **Door-to-door verification**
  - Use of **data analytics and software-based identification of discrepancies**
  - Multiple layers of **scrutiny and review**
- Unlike routine revisions, SIR is **more rigorous and large-scale**.

### THE VOTER LIST CLEAN-UP

THERE ARE FOUR KINDS OF ELECTORAL ROLL REVISIONS

 <p><b>INTENSIVE REVISION</b> Fresh electoral rolls prepared from scratch with 100 per cent door-to-door verification</p>	 <p><b>SUMMARY REVISION</b> Annual process; updates made based on claims and objections without field verification</p>	 <p><b>PARTLY INTENSIVE AND SUMMARY</b> Mixed approach. Existing rolls published in draft while officers conduct household verification</p>	 <p><b>SPECIAL REVISION</b> Done when routine updates are deemed insufficient. Can be attached to other methods</p>
--	---	--	--

 **SPECIAL INTENSIVE REVISION:** Current Bihar exercise. Not defined in electoral rules; a discretionary method created by the ECI in 2025 to validate voter citizenship

#### Issues in SIR in West Bengal

- Despite no strong evidence of inflated voter lists, a **mass verification drive** was undertaken.
- Around **27 lakh voters (~5% electorate)** were reportedly removed from rolls.
- The process raised concerns about:
  - **Lack of transparency in deletions**
  - **Limited opportunity for affected voters to respond**
  - **Inconsistent verification standards**

#### Procedural Concerns

- **Inadequate adjudication:** Authorities reportedly did not examine all submitted documents.
- **Questionable exclusions:** Even individuals with valid IDs were removed.
- **Lack of data transparency:** Absence of accessible, machine-readable deletion lists hindered public scrutiny.
- **Time constraints:** Appeals mechanisms are ineffective due to **electoral roll freezing before elections**.

#### Concerns of Bias and Discrimination

- Patterns of deletion reportedly show **concentration in specific regions and communities**.
- Allegations of **political or demographic bias** have emerged.
- Even perception of bias can **undermine electoral credibility and fairness**.

**Implications for Democracy**

**1. Electoral Impact**

- Deletion of a large voter base can **alter election outcomes**, especially in closely contested constituencies.

**2. Democratic Legitimacy**

- Elections rely on **universal adult suffrage**; exclusion weakens democratic foundations.
- Large-scale deletions risk **eroding public trust in institutions**.

**3. Socio-Economic Impact**

- Electoral rolls are linked to **identity and access to welfare schemes**.
- Removal may affect **citizenship claims and entitlements**.

**Key Challenges**

- **Balancing accuracy vs inclusion** in electoral rolls.
- Ensuring **procedural fairness and transparency**.
- Avoiding **politicisation of electoral processes**.
- Maintaining **institutional trust and independence of ECI**.

**Way Forward**

- Ensure **transparent, uniform, and verifiable voter verification procedures**.
- Publish **detailed and accessible data on additions and deletions**.
- Strengthen **time-bound and accessible grievance redressal mechanisms**.
- Provide **judicial guidelines limiting large-scale revisions close to elections**.
- Safeguard **independence and credibility of the Election Commission**.
- Promote **public awareness and participation in electoral processes**.

**Conclusion**

The SIR controversy highlights critical challenges in ensuring inclusive and credible elections. Strengthening transparency, accountability, and fairness is essential for democratic legitimacy.

**INSTITUTIONS IN NEWS**

**POLITICIZATION OF ANTI-CORRUPTION BODIES IN INDIA**

**SOURCE: PIB**

**Why in News?**

The collapse of the **Delhi excise policy case** due to lack of evidence has raised concerns about **misuse of anti-corruption agencies**.

**Anti-corruption bodies**

- **Anti-corruption bodies** are institutional mechanisms designed to **detect, investigate, and prevent corruption** in governance.
- In India, agencies like **Central Bureau of Investigation (CBI), Enforcement Directorate (ED), Central Vigilance Commission (CVC), and Lokpal** play key roles.
- However, increasing allegations of **political influence** have raised concerns about their **neutrality and effectiveness**.

**What is Politicization of Anti-Corruption Bodies?**

- It refers to the **use of investigative agencies for political purposes**, rather than impartial enforcement of law.
- It undermines the principle of **non-partisanship in governance and rule of law**.

**Factors Leading to Politicization**

**1. Executive Control and Dependence**

- Agencies often function under **administrative control of the executive**, affecting independence.
- This leads to **perception of selective targeting** of political opponents.

**2. Influence on FIR Registration**

- Investigations may be initiated due to **political pressure rather than strong evidence**.
- Weak cases often collapse during judicial scrutiny.

**3. Use of Criminal Law as Political Tool**

- Arrests and investigations sometimes coincide with **election cycles**, influencing public perception.
- Creates impression of **law being used as an instrument of political competition**.

**4. Weak Evidence and Over-Reliance on Suspicion**

- Cases may be built on **speculation rather than forensic financial evidence**.
- Courts often reject such cases due to **lack of prima facie proof**.

#### 5. Media Trials and Public Narratives

- High-profile cases are amplified in media, shaping **public opinion before trial**.
- This affects **fair trial and institutional credibility**.

#### Implications of Politicization

##### 1. Erosion of Institutional Credibility

- Frequent collapse of cases reduces **public trust in investigative agencies**.

##### 2. Public Cynicism

- Citizens become skeptical about **genuine anti-corruption efforts**.

##### 3. Personal and Reputational Damage

- Individuals face **long detention and reputational harm** without conviction.

##### 4. Misallocation of Resources

- Focus on politically sensitive cases diverts attention from **serious economic and corruption issues**.

##### 5. Weakening Rule of Law

- Selective enforcement undermines **equality before law and democratic principles**.

#### Challenges in Addressing Politicization

- Corruption is often **complex and hidden**, making evidence collection difficult.
- Lack of **advanced forensic and data analytics capacity**.
- Fragmented system with **multiple agencies lacking coordination**.
- Judicial reluctance to treat **policy decisions as criminal acts without clear evidence**.

#### Way Forward

- **Strengthening Institutional Independence:** Ensure **functional autonomy of agencies** from executive interference.
- **Evidence-Based Investigations:** Focus on **forensic accounting, digital tracking, and data analytics**.
- **Judicial Accountability Standards:** Cases should be filed only when **strong prima facie evidence exists**.
- **Improving Coordination:** Enhance cooperation among agencies like **CBI, ED, and CVC**.
- **Political and Ethical Restraint:** Political actors must avoid **misuse of agencies for partisan purposes**.
- **Transparency and Oversight:** Strengthen **parliamentary and judicial oversight mechanisms**.

#### Conclusion

**Politicization of anti-corruption bodies undermines trust and weakens democratic institutions.** Ensuring independence, transparency, and evidence-based functioning is essential for credible governance.

## GOVERNANCE

### INTERNET CENSORSHIP IN INDIA

**SOURCE: INDIAN EXPRESS**

#### Why in News?

Rapid expansion of India's digital ecosystem has raised concerns over **opaque internet censorship practices and uneven implementation**.

#### Legal Framework Governing Internet Censorship

Internet regulation is mainly governed by the **Information Technology Act, 2000**.

#### Key Provisions

- **Section 69A:** Allows the government to **block access to online content** on grounds like sovereignty, security, and public order.
- **Section 79:** Provides **safe harbour protection to intermediaries** (ISPs, social media platforms) if they follow government directives.
- Additionally, **ISP licensing agreements** mandate compliance with blocking orders, strengthening enforcement.

#### Judicial Safeguards and Interpretation

1. In **Shreya Singhal v. Union of India**, the Supreme Court upheld Section 69A but laid safeguards:
  - **Review committees for oversight**
  - **Opportunity for affected parties to be heard**
2. The Court emphasized that censorship must be **reasonable, proportionate, and legally justified**. However, these safeguards are often **weakly implemented in practice**, leading to opacity.

#### Technical Mechanisms of Website Blocking

##### 1. DNS Blocking (DNS Poisoning)

- ISPs manipulate domain resolution to **redirect or deny access**.
- Most widely used due to **ease and low cost**.

##### 2. HTTP Interception

- Blocks access by intercepting unencrypted traffic and showing **block pages**.
- Declining relevance due to **HTTPS adoption**.

### 3. SNI Filtering

- Inspects encrypted traffic during connection setup and **terminates blocked domains**.

#### Scale and Nature of Censorship in India

- A 2025 study identified **43,000+ blocked domains**, reflecting large-scale censorship.
- Only a small fraction were **blocked uniformly across ISPs**, indicating inconsistency.
- Common categories:
  - **Piracy and copyright content**
  - **Gambling and adult websites**
  - **Extremism and national security threats**

#### Major Issues in India's Censorship System

##### 1. Lack of Transparency

- Blocking orders are **confidential**, preventing public scrutiny.
- Users and website owners are **not informed of reasons or duration** of blocking.

##### 2. Inconsistent Implementation Across ISPs

- Same website may be **accessible on one network but blocked on another**.
- Leads to **unequal digital experience and information asymmetry**.

##### 3. Arbitrary and Overbroad Blocking

- Entire domains are often blocked instead of **specific URLs or content**.
- Some domains remain blocked **even after official unblocking orders**.

##### 4. Weak Oversight and Accountability

- Review committees lack **transparency and independence**.
- No clear penalties for **wrongful blocking or non-compliance**.

#### Impact on Fundamental Rights

- **Freedom of Speech and Expression:** Excessive censorship restricts **Article 19(1)(a)** rights and limits democratic debate.
- **Right to Information:** Unequal access to content affects **informed participation in governance**.
- **Due Process and Fairness:** Lack of notice and appeal mechanisms weakens **procedural justice**.

#### Challenges in Regulating Online Content

- Difficulty in distinguishing between **harmful and legitimate speech**.
- Increasing use of **encryption and VPNs** complicates enforcement.
- Rapid growth of **digital platforms and cross-border data flows**.

- Limited **technical and forensic capabilities** in enforcement agencies.

#### Way Forward

- **Transparency and Public Disclosure:** Maintain a **public database of blocked websites**, except for sensitive cases.
- **Standardisation Across ISPs:** Issue **uniform technical guidelines** to ensure consistent implementation.
- **Strengthening Oversight Mechanisms:** Establish **independent regulatory or review bodies** for accountability.
- **User Rights and Redressal:** Ensure **notification to users and website owners** with appeal mechanisms.
- **Rights-Based Regulation:** Ensure censorship is **proportionate, necessary, and aligned with constitutional values**.

#### Conclusion

India's internet governance must strike a balance between **security concerns and digital freedoms**. A transparent and accountable system is essential to **protect rights while ensuring safe online spaces**.

## PRELIMS POINTERS IN NEWS

### PANCHAYAT ADVANCEMENT INDEX (PAI) 2.0

SOURCE: THE HINDU

#### Why in News?

The Ministry of Panchayati Raj released the **PAI 2.0 report for FY 2023-24** covering all Gram Panchayats.

#### About PAI 2.0

- **PAI 2.0** is India's first **nationwide index to measure Gram Panchayat performance** using measurable indicators.
- It aligns local governance with **Localization of Sustainable Development Goals (LSDGs)** for inclusive development.

#### Indicators of Panchayat Advancement Index



#### Key Features

- It evaluates over 2.5 lakh Gram Panchayats using 150 indicators and 230 data points across sectors.
- The framework is based on nine LSDG themes including poverty, health, infrastructure, governance, and women empowerment.
- Panchayats are ranked into five categories (Achiever to Beginner) based on composite scores.
- It acts as a monitoring and planning tool for improving local service delivery and accountability.

**Significance**

- It enables evidence-based planning and targeted intervention at the grassroots level.
- It promotes competitive federalism and accountability among Panchayati Raj Institutions (PRIs).
- It strengthens localisation of SDGs by linking global goals with village-level outcomes.

**ABHILEKH PATAL PORTAL**

**SOURCE: PIB**

**Why in News?**

The Prime Minister encouraged citizens to explore the portal to understand India’s historical legacy and archival records.

**Abhilekh Patal Portal**

- The Abhilekh Patal Portal is a digital archival platform providing online access to historical records maintained by the National Archives of India.
- It aims to digitise and democratise access to India’s documentary heritage.



**ABHILEKH PATAL**

**Key Features**

- It hosts over 7 million digitised records including government files, private papers, maps, and archival media.
- It provides online access to historical documents for researchers, students, and the general public globally.
- It includes rare archival collections such as photographs, microfilms, and official records of historical importance.
- It is managed by the National Archives of India under the Ministry of Culture.

**Significance**

- It ensures preservation of historical documents through digital storage and accessibility.
- It supports research, policymaking, and academic studies by providing authentic archival sources.
- It promotes public awareness of India’s administrative, cultural, and political history.

**Challenges**

- Issues related to incomplete digitisation, limited awareness, and technological accessibility remain.
- Need for better user interface and multilingual access to increase usability.

**NASHA MukT BHARAT ABHIYAAN (NMBA)**

**SOURCE: THE HINDU**

**Why in News?**

The Ministry of Social Justice and Empowerment is launching the NMBA App 2.0 to strengthen monitoring and outreach under drug demand reduction efforts.

**About NMBA App 2.0**

- **Nasha MukT Bharat Abhiyaan (2020)** is a national campaign to tackle substance abuse through awareness, treatment, and community participation.
- It has expanded from 272 districts to all districts in India, reflecting a nationwide preventive strategy.



**Key Features**

- The programme focuses on mass awareness campaigns, school and college outreach, and community engagement to prevent drug abuse.
- It promotes identification, counselling, and rehabilitation of affected individuals through healthcare and de-addiction centres.

- It builds capacity of service providers including NGOs, healthcare workers, and counsellors for effective intervention.
- The NMBA App 2.0 enables e-pledges, access to IEC material, helpline services, and location of nearby de-addiction centres.
- It integrates real-time monitoring of grant-in-aid institutions and transparency in fund utilisation.

**Significance**

- It addresses drug abuse as a public health and social issue rather than only a criminal problem.
- It promotes community-driven behavioural change involving youth, women, and civil society.
- It strengthens early intervention and treatment access, reducing long-term social and economic costs.

**SAHAYOG PORTAL**

**SOURCE: INDIAN EXPRESS**

**Why in News?**

The Delhi High Court questioned mandatory participation of social media platforms in the sahyog portal.

**Sahyog Portal**

- The Sahyog Portal (2024) is a government platform for quick removal of illegal online content through coordinated action.
- It strengthens enforcement of intermediary accountability under IT laws.



**Key Features**

- It provides a centralised interface connecting government agencies, nodal officers, and online intermediaries.
- It operates under Section 79(3)(b) of the IT Act, 2000 ensuring legal backing for compliance.
- It enables automated and time-bound takedown notices for unlawful digital content.
- It focuses on platform responsibility rather than direct government blocking powers under Section 69A.

**Significance**

- It ensures faster removal of harmful content related to national security and social crimes.

- It strengthens digital governance and regulatory oversight over online platforms.
- It supports efforts to combat cybercrime, trafficking, and misinformation ecosystems.

**Challenges**

- Concerns regarding free speech, over-regulation, and lack of transparency in takedown processes.
- Need for clear accountability mechanisms to prevent misuse of regulatory powers.

**PRIME MINISTER INTERNSHIP SCHEME (PMIS)**

**SOURCE: PIB**

**Why in News?**

The government has expanded eligibility under PMIS to include final-year undergraduate and postgraduate students.

**Prime Minister Internship Scheme**

- The Prime Minister Internship Scheme is designed to provide structured industry exposure to youth from low-income backgrounds.
- It bridges the gap between education and employment by linking students with top companies.



**Key Features**

- The scheme offers **12-month internships across 24 sectors including energy, banking, hospitality, and manufacturing.**
- It provides **financial assistance of at least ₹9,000 per month to support trainees during internships.**
- It targets **youth aged 21–25 years from families with income below ₹12 lakh and no government employment background.**
- It includes **students with basic educational qualifications while excluding premier institution graduates to ensure inclusivity.**
- The recent reform allows **final-year students to participate with institutional approval (NOC).**

**Significance**

- It enhances **skill development, industry readiness, and practical exposure among youth.**
- It supports **inclusive growth by targeting economically weaker sections.**
- It strengthens **public-private partnerships in skill and employment generation.**

**Challenges**

- Ensuring **quality and meaningful internships across sectors remains a concern.**

Monitoring outcomes like **job conversion and skill acquisition needs improvement.**

**ONLINE GAMING AUTHORITY OF INDIA (OGAI)**

**SOURCE: THE HINDU**

**Why in News?**

The government has operationalised the **Online Gaming Authority of India under the 2025 Act.**

**Online Gaming Authority of India (OGAI)**

- The **Online Gaming Authority of India (OGAI)** is a central regulator created to ensure **safe, fair, and accountable digital gaming ecosystems.**
- It reflects the need to manage the rapid growth of **online gaming and associated financial risks.**



**Key Features**

- It functions under the Ministry of Electronics and Information Technology as a **centralised digital regulatory body.**
- It is responsible for **registration, classification, and regulation of online games including identification of real-money gaming.**
- It issues **guidelines, codes of conduct, and compliance directions for gaming platforms.**
- It coordinates with **law enforcement and financial agencies to prevent fraud, addiction, and illegal transactions.**
- It consists of **six members including senior officials from multiple ministries ensuring inter-sectoral governance.**

**Significance**

- It brings **legal clarity and uniform regulation to a rapidly growing digital sector.**
- It protects users from **fraud, addiction risks, and exploitative gaming practices.**
- It promotes **responsible innovation and growth of the gaming industry.**

# PANCHAYATI RAJ INSTITUTIONS (PRIS) IN INDIA - POLITY

**Why in News?**

The **Ministry of Panchayati Raj** celebrated **National Panchayati Raj Day**, marking **33 years of the 73rd Constitutional Amendment Act (1992).**

- The government continues to assess performance of PRIs through tools like the **Panchayat Advancement Index (PAI).**

**Evolution of Panchayati Raj in India**

- The idea of village governance existed since **ancient times** through informal Panchayats.

- The **Balwant Rai Mehta Committee** recommended a **three-tier system** for democratic decentralisation.
- Rajasthan became the **first state (1959)** to implement Panchayati Raj.
- The **L M Singhvi Committee** advocated **constitutional recognition**.
- The **73rd Constitutional Amendment Act (1992)** added **Part IX** to the Constitution and institutionalised PRIs across India.

### Structure of Panchayati Raj Institutions

- PRIs follow a **three-tier system**:
  - **Gram Panchayat (village level)**
  - **Panchayat Samiti (block/intermediate level)**
  - **Zila Parishad (district level)**
- The **Gram Sabha** acts as the **foundation of direct democracy**, involving all adult members of the village.
- Regular elections are conducted every **five years**, ensuring continuity of governance.

### Key Features of PRIs

- Constitutional status ensures **stability and legal protection**.
- Provision for **reservation**:
  - At least **1/3 seats for women** (many states increased to 50%)
  - Reservation for **SCs and STs** based on population
- Devolution of powers related to **29 subjects (11th Schedule)** such as agriculture, health, and rural development.
- Establishment of **State Finance Commissions** to recommend financial distribution.

### Challenges With the PRI System

Lack of Support Staff

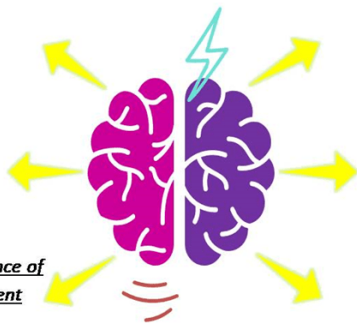
Creation of Parallel Bodies

Lack of Convergence of Various Government Programmes

Lack of Effective Devolution

Insufficient Grants/Funds

Infrastructural Challenges



### Significance of PRIs

#### 1. Strengthening Grassroots Democracy

- Enables **direct participation of citizens** in governance and decision-making.

- Promotes **accountability and transparency** at local level.

#### 2. Women Empowerment

- Reservation has brought **millions of women into political leadership**, improving representation.
- Encourages **gender-sensitive policymaking**.

#### 3. Inclusion of Marginalized Sections

- Ensures representation of **SCs, STs, and weaker sections**, promoting social justice.

#### 4. Localized Development

- PRIs play a key role in implementing schemes like:
  - **MGNREGA**
  - **Swachh Bharat Mission**
- Improves delivery of **basic services like water, sanitation, and education**.

#### 5. Participatory Planning

- Development plans are based on **local needs and priorities**, increasing effectiveness.

#### Government Initiatives

- **Panchayat Advancement Index (PAI)** to measure performance and development.
- Promotion of **e-Panchayat and digital governance systems**.
- Capacity-building programs for **elected representatives**.

#### Way Forward

- Ensure proper devolution of **Funds, Functions, and Functionaries** to strengthen autonomy.
- Enhance **digital infrastructure and connectivity** in rural areas.
- Conduct regular **capacity-building and training programs**.
- Strengthen **Gram Sabha participation** for better decision-making.
- Promote **financial transparency and social audits**.
- Encourage **performance-based incentives** for Panchayats.

#### Conclusion

**Panchayati Raj Institutions are the backbone of India's grassroots democracy and rural development. Strengthening their autonomy, capacity, and accountability is key to achieving inclusive and sustainable growth.**

# INTERNATIONAL RELATIONS

## INDIA RELATIONS WITH OTHER NATIONS

### INDIA- SOUTH KOREA RELATION

SOURCE: THE HINDU

#### Why in News?

India–South Korea ties are gaining renewed focus with efforts to deepen cooperation in **technology, supply chains, and maritime security**.

The partnership aims to achieve **\$50 billion trade by 2030**, reflecting its growing strategic importance.



#### Evolution of India–South Korea Relations

##### 1. Early Phase (1950s–1990s)

- India played a **neutral role in the Korean War**, contributing to humanitarian efforts.
- Diplomatic relations were formally established in **1973**.
- Limited engagement due to **Cold War constraints and India’s closed economy**.

##### 2. Economic Engagement Phase (1991–2009)

- India’s **economic liberalisation (1991)** opened avenues for Korean investment.
- Entry of major companies: **Samsung, Hyundai, LG**
- Formation of **Joint Commission (1996)** for economic cooperation.

##### 3. Strategic Partnership Phase (2010–2022)

- Signing of **CEPA (2010)** boosted trade and investment.

- Relationship upgraded to **Special Strategic Partnership (2015)**.
- Convergence of:
  - India’s **Act East Policy**
  - Korea’s **New Southern Policy**

##### 4. Emerging High-Tech Partnership (2022–Present)

- Focus on **“Chips to Ships” strategy**:
  - Semiconductors
  - Shipbuilding
  - AI and digital technologies
- Increasing collaboration in **Indo-Pacific security and resilient supply chains**.

#### Significance of South Korea for India

##### 1. Semiconductor and Technology Cooperation

- South Korea’s expertise helps India build **resilient chip supply chains**.
- Supports India’s ambition for **self-reliance in electronics manufacturing**.

##### 2. Maritime Security and Shipbuilding

- Cooperation enhances **naval infrastructure and shipyard modernisation**.
- Strengthens **Indo-Pacific maritime security and sea lane protection**.

##### 3. Defence Manufacturing

- Shift from **buyer-seller model to co-production**.
- **Example**: K-9 Vajra artillery system
- Supports **Make in India in defence sector**.

##### 4. Economic and Trade Integration

- Bilateral trade crossed **\$27 billion (2024–25)**.
- Korean investment in India exceeds **\$6 billion**.
- Key sectors:
  - Electronics
  - Automobiles
  - Infrastructure

##### 5. Indo-Pacific Geopolitical Convergence

- Both countries support a **free, open, and rules-based Indo-Pacific**.
- Act as a **counterbalance to regional dominance and coercive practices**.

##### 6. Clean Energy and Green Mobility

- Korean firms contribute to **EV sector and renewable energy transition**.
- Partnerships in **electric mobility and hydrogen energy**.

##### 7. Cultural and People-to-People Ties

- Historical links like **Queen Heo Hwang-ok legend**.
- Growing popularity of **Korean culture (Hallyu wave)** in India.

## Challenges in India–South Korea Relations

### 1. Trade Imbalance

- India faces a **persistent trade deficit** with South Korea.
- Non-tariff barriers limit **Indian exports**.

### 2. Limited Defence Technology Transfer

- Hesitation in sharing **critical technologies** restricts deeper cooperation.

### 3. Supply Chain Constraints

- Korean SMEs face issues in **integrating with India's industrial ecosystem**.

### 4. Geopolitical Differences

- South Korea's cautious approach towards China contrasts with India's **strategic assertiveness**.

### 5. Limited Talent Mobility

- Barriers in **visa, language, and recognition of qualifications** hinder workforce mobility.

## Way Forward

- **Upgrade CEPA (CEPA 2.0):** Address trade imbalance and remove **non-tariff barriers**.
- **Strengthen Technology Partnership:** Establish **semiconductor and AI collaboration corridors**.
- **Enhance Defence Co-Development:** Promote **joint R&D and manufacturing** in advanced defence systems.
- **Improve Supply Chain Integration:** Facilitate entry of **Korean SMEs into India's manufacturing ecosystem**.
- **Promote Financial and Digital Cooperation:** Develop **local currency trade mechanisms** and digital payment integration.
- **Boost People-to-People Ties:** Expand **education, tourism, and skill exchange programs**.

## Conclusion

India–South Korea relations are evolving into a **high-technology and strategic partnership** shaping Indo-Pacific stability. Deepening cooperation can create a **mutually beneficial, resilient, and future-ready alliance** in a multipolar world.

## INDIA–AZERBAIJAN RELATIONS

**SOURCE: INDIAN EXPRESS**

Why in News?

India and **Azerbaijan** have resumed high-level diplomatic engagement after a period of strain, marking a **strategic reset in bilateral relations**.

## Background of India–Azerbaijan Relations

- India recognized Azerbaijan's independence in **1991 after the USSR collapse**.
- Historical links date back to the **Silk Route**, reflected in cultural sites like the Ateshgah temple.
- Engagement occurs through platforms like:
  - **Non-Aligned Movement (NAM)**
  - Voice of Global South initiatives



## Strategic Significance of the Reset

### 1. Strengthening Connectivity – INSTC

- Azerbaijan is a key link in the **International North-South Transport Corridor (INSTC)**.
- Route:
  - India → Iran ports (Chabahar/Bandar Abbas) → Azerbaijan → Russia/Europe
- Helps India:
  - **Bypass Pakistan's land barriers**
  - Access **Central Asia and Eurasia efficiently**

### 2. Countering Regional Geopolitics

- Azerbaijan has close ties with **Pakistan and Turkey**.
- Reset prevents formation of an **anti-India strategic bloc** in the region.
- Strengthens India's position in **Central Asian geopolitics**.

### 3. Enhancing Energy Security

- Azerbaijan lies in the **Caspian Sea hydrocarbon region**, rich in oil and gas.
- India's **ONGC Videsh Ltd** has invested over **\$1.2 billion** in oil fields and pipelines.
- Offers opportunities for:
  - **Oil imports and diversification**
  - Future **Trans-Caspian energy projects**

### 4. Regional Security Cooperation

- Both countries discussed **counter-terrorism cooperation**.
- Aligns India with regional mechanisms like **SCO anti-terror frameworks**.

#### 5. Diplomatic Balancing Strategy

- India follows a **“de-hyphenation approach”**: Maintains ties with both **Armenia and Azerbaijan independently**
- Enhances India’s image as a **neutral and reliable partner**.

#### Areas of Bilateral Cooperation

##### 1. Trade and Economy

- Trade peaked at **\$1.88 billion (2022)** but declined to **~\$400 million (2025)**.
- Dominated by **oil imports**, indicating low diversification.

##### 2. Energy Cooperation

- Indian investments in:
  - Azeri-Chirag-Gunashli oil fields
  - Baku-Tbilisi-Ceyhan pipeline
- Crucial for **long-term energy partnerships**.

##### 3. Capacity Building

- India supports Azerbaijan through **ITEC programme** (training and skill development)

##### 4. Tourism and Cultural Links

- India is among the **top 5 tourist source countries** for Azerbaijan.
- Cultural ties strengthened through **diaspora and heritage links**.

#### Challenges in India–Azerbaijan Relations

##### 1. Armenia Factor

- India’s strong defence ties with **Armenia** create tensions.
- Azerbaijan has criticised India’s **military exports to Armenia**.

##### 2. Divergence on Kashmir Issue

- Azerbaijan, as part of **OIC**, often aligns with Pakistan’s stance.

##### 3. Influence of China (BRI)

- China’s **Belt and Road Initiative (BRI)** dominates regional infrastructure.
- India’s projects face **delays and limited resources**.

##### 4. Trade Imbalance and Limited Diversification

- Heavy reliance on **oil imports** with limited exports from India.

##### 5. Sanctions and Connectivity Challenges

- Western sanctions on **Iran and Russia** complicate INSTC operations.

#### Way Forward

#### 1. Strengthen Connectivity Networks

- Integrate **Chabhar Port** with **Trans-Caspian routes via Azerbaijan**.

#### 2. Economic Diversification

- Expand cooperation in **IT, pharmaceuticals, digital infrastructure**

#### 3. Maintain Strategic Balance

- Continue **de-hyphenation policy** with Armenia and Azerbaijan.

#### 4. Institutional Dialogue Mechanisms

- Establish platforms like **Caspian-India Dialogue** for regional cooperation.

#### 5. Enhance Energy Cooperation

- Explore:
  - **Gas pipelines and swap arrangements**
  - **Long-term hydrocarbon agreements**

#### Conclusion

India’s reset with Azerbaijan strengthens its **connectivity, energy security, and Central Asia strategy**. Balancing geopolitical interests while expanding economic ties will be crucial for sustained engagement.

## INTERNATIONAL INSTITUTIONS, AGENCIES AND FORAMS

### UNSC REFORM: INDIA'S DEMAND FOR EXPANSION OF PERMANENT MEMBERS WITH VETO

SOURCE: INDIAN EXPRESS

#### Why in News?

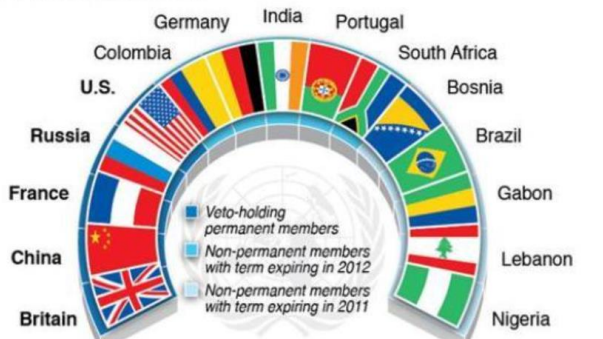
India’s Permanent Representative at the **United Nations** reiterated that **UNSC reform must include expansion of permanent members with veto powers**.

#### India’s Stand on UNSC Reform

- India highlights a **crisis of legitimacy and representativeness** in the UNSC.
- The current system gives **disproportionate power to five permanent members (P5)**:
  - USA, UK, France, Russia, China
- India opposes creation of **new categories without veto**, as it would:
  - **Dilute reform goals**
  - **Maintain dominance of existing powers**

India supports **comprehensive reform, not incremental changes.**

Each Council member has one vote. Decisions need at least nine of the 15 members' votes



### Key Arguments by India

#### 1. Need for Equitable Power Distribution

- Present system concentrates power in **5 countries over 180+ nations.**
- Expansion will ensure **fair representation and inclusivity.**

#### 2. Outdated Global Representation

- UNSC structure reflects **1945 realities**, ignoring rise of: **India, Brazil, African nations**
- Entire regions like **Africa and Latin America lack permanent seats.**

#### 3. Veto Power Imbalance

- Veto is the **core source of inequality in decision-making.**
- Without extending veto, new members would remain **second-class participants.**

#### 4. Ineffectiveness of Current System

- Frequent veto use has led to **policy paralysis** in conflicts like:
  - West Asia
  - Ukraine
- Weakens UNSC's ability to **maintain global peace.**

#### 5. Failure of Recent Reforms

- The **2022 UNGA resolution** requiring debate after veto has **not reduced its use.**
- Over **20+ resolutions** have been vetoed since then, showing limited impact.

### India's Alignment and Strategy

1. India supports the **African Union's demand** for:
  - **Permanent seats with veto for Africa**
2. Works with coalitions like:
  - **G4 (India, Brazil, Germany, Japan)**
  - **L.69 group (developing countries)**

### Challenges in UNSC Reform

- **Veto Paradox:** Any reform requires approval of **existing P5 members**, who are unlikely to dilute their own power.
- **Resistance from P5:** While some support expansion, there is **no agreement on granting veto to new members.**
- **Complex Negotiation Process:** IGN lacks a **formal text-based negotiation**, leading to slow progress.
- **Regional Rivalries:** Groups like **Uniting for Consensus (UfC)** oppose new permanent members to block regional competitors.
- **National Interests Over Global Good:** Countries often use UNSC for **strategic or political advantages**, limiting reform momentum.

### Way Forward

- **Text-Based Negotiations:** Move towards **formal draft-based discussions with timelines.**
- **Comprehensive Reform Approach:** Address both **membership expansion and veto reform together.**
- **Strengthening Global Coalitions:** Enhance cooperation through **G4 and developing nations bloc.**
- **Incremental Pressure through UNGA:** Use **General Assembly resolutions** to build moral and political pressure.
- **Charter Amendments:** Explore reforms in **UN Charter to reflect modern geopolitical realities.**

### Conclusion

UNSC reform is essential to make global governance more **representative and effective.** Without expanding permanent membership with veto, the Council risks losing relevance in a multipolar world.

## GLOBAL ISSUES

### WEST ASIA GEOPOLITICS AND ITS IMPACT ON INDIA'S FOOD & ENERGY SECURITY

**SOURCE: THE HINDU**

#### Why in News?

Escalating tensions in **West Asia** involving **Israel, Iran**, and global powers are disrupting **energy and fertiliser supply chains.**

**Strategic Importance of West Asia for India**

## 1. Energy Security Backbone

- India imports **85–90% of crude oil**, with about **40% routed through the Strait of Hormuz**, a major global chokepoint.
- Countries like **Saudi Arabia, Iraq, and UAE** are key suppliers.
- Even minor disruptions can trigger **sharp price spikes and inflationary pressures**.

## 2. Fertiliser Supply Dependency

- Gulf nations such as **Qatar, Oman, and Saudi Arabia** supply key inputs.
- Around **63% of urea imports and 32% of DAP imports** originate from this region.
- India depends almost entirely on imports for **potash (MOP)** and partly for **rock phosphate**.

## 3. Trade and Diaspora Linkages

- West Asia is a major destination for **Indian agricultural exports (rice, spices, tea)**.
- It hosts a large **Indian diaspora**, contributing significantly through remittances.



### Impact of Geopolitical Tensions on Fertiliser Supply

- Fertiliser production is closely tied to **natural gas availability**, especially for urea.
- Disruptions in gas supply increase **production costs and reduce global output**.
- Shutdowns of facilities like those in **UAE and Qatar** have caused supply shortages.
- Global fertiliser prices have surged, with **urea prices rising by 30–40%**.

#### India's Fertilizer Dependency

- India is the **second-largest fertiliser consumer globally** but heavily dependent on imports.

- In **2023–24**, consumption was about **600+ lakh metric tonnes**, with a significant share imported.
- Import dependence:
  - **DAP**: Only ~40% met domestically
  - **MOP**: Almost entirely imported
  - **Urea**: Partial imports despite domestic production
- Imports may exceed **22 million tonnes in coming years**, increasing vulnerability.

### Impact on Agriculture and Economy

- **Rising Input Costs**: Increase in **fertiliser, fuel, and logistics costs** raises cost of cultivation.
- **Reduced Fertiliser Application**: Farmers reduce usage due to high prices, leading to **nutrient imbalance in soil**.
- **Decline in Productivity**: Lower fertiliser use leads to **reduced crop yields and food production**.
- **Food Inflation**: Increased production costs are passed to consumers, causing **price rise in essential commodities**.
- **Fiscal Burden**: Government increases **fertiliser subsidies** to protect farmers, straining fiscal resources.

### Impact on Farmers and Rural Economy

- Farmers face **income instability due to rising costs and uncertain output**.
- Small and marginal farmers are **most vulnerable**, often forced into debt cycles.
- Agriculture supports **~45–46% of population**, amplifying socio-economic impact.

### Impact on Trade and Supply Chains

- Shipping disruptions increase **freight costs and delays**.
- Export sectors affected:
  - **Basmati rice shipments to Gulf markets**
  - **Tea, spices, coconut exports**
- Leads to **loss of export earnings and market competitiveness**.

### Food Security Concerns

- Combined effects of **high input costs, reduced productivity, and trade disruptions** threaten food security.
- Risks include:
  - **Lower food production**
  - **Higher consumer prices**
  - **Supply chain instability**
- Agriculture supports **~45% of population and ~15–16% of GDP**, amplifying the impact.

### Policy Imperatives

- **Diversification of Supply Sources:** Reduce dependence on West Asia by sourcing from **Africa, Russia, and Central Asia.**
- **Boost Domestic Fertiliser Production:** Invest in **urea plants, phosphatic fertilisers, and potash exploration.**
- **Promote Sustainable Agriculture:** Encourage **organic farming, nano-fertilisers, and precision agriculture.**
- **Strengthen Strategic Reserves:** Maintain **buffer stocks of fertilisers and energy resources.**
- **Improve Logistics and Trade Routes:** Develop **alternative shipping corridors and infrastructure resilience.**

#### Way Forward

- Adopt an integrated approach combining **energy policy, agriculture policy, and trade strategy.**
- Promote **self-reliance while maintaining global partnerships.**
- Enhance **climate-resilient agriculture and efficient input usage.**

#### Conclusion

West Asia tensions underline India's structural dependence on external resources. Building resilient supply chains and sustainable agriculture is critical for long-term economic and food security.

## US-IRAN CEASEFIRE (2026) AND ROLE OF MEDIATION IN INTERNATIONAL RELATIONS

**SOURCE: THE HINDU**

#### Why in News?

The **US-Iran ceasefire (Islamabad Accord, 2026)** has temporarily eased tensions in **West Asia**, reopening the **Strait of Hormuz.**

#### What is the US-Iran Ceasefire (Islamabad Accord)?

- A **two-week ceasefire agreement** brokered with mediation support, aimed at halting escalating hostilities.
- Key elements:
  - **Pause in military strikes** by the US and allies
  - **Reopening of Strait of Hormuz** by Iran
  - Commitment to **dialogue and de-escalation**
- It represents a **strategic compromise**, balancing **security concerns with economic stability.**

#### Significance of the Ceasefire for India

##### 1. Energy Security Stabilisation

- India imports a large share of its oil from the Gulf region.
- Closure of Hormuz would have caused:
  - **Fuel shortages**
  - **Sharp rise in oil prices**
- Reopening ensures **stable energy supply and price moderation.**

##### 2. Protection of Indian Diaspora

- Around **1 crore Indians live in Gulf countries**, contributing significantly through remittances.
- Conflict risked:
  - **Loss of lives and livelihoods**
  - Large-scale evacuation challenges
- Ceasefire ensured **safety and continuity of remittances.**

##### 3. Economic Stability

- Prevented **global oil shock and inflationary pressures.**
- Protected sectors like:
  - **Transport and manufacturing**
  - **Agriculture (fuel-dependent)**

#### Role of Mediation in the Conflict

##### 1. Acts as a "Circuit Breaker"

- Stops escalation when parties are unwilling to compromise directly.
- Creates a **temporary pause for dialogue.**

##### 2. Prevents Global Economic Crisis

- Strait of Hormuz handles nearly **20% of global oil trade.**
- Mediation prevented **global energy disruption and recession risks.**

##### 3. Alternative to Weak Global Institutions

- The **United Nations Security Council** often faces deadlock due to veto politics.
- Informal mediation provides **faster and flexible solutions.**

##### 4. Rise of Middle Powers

- Countries like **Pakistan** played a mediator role.
- Shows shift from **superpower dominance to multi-actor diplomacy.**

##### 5. Face-Saving Mechanism

- Allows conflicting nations to **avoid direct defeat narratives.**
- Helps leaders present outcomes as **diplomatic success domestically.**

**Concept of Mediation in International Relations**

- **Mediation** is a **peaceful dispute resolution method** involving a neutral third party.
- It aims to:
  - **Reduce tensions**
  - **Facilitate dialogue and compromise**
- Recognised under **UN Charter (Article 33)** as a key peaceful tool.

**Theoretical Foundations of Mediation**

**1. Ripeness Theory**

- Conflict resolution works when both parties face a **“mutually hurting stalemate”**.

**2. Contingency Model**

- Success depends on:
  - **Nature of conflict**
  - **Credibility and capability of mediator**

**3. Biased Mediation**

- Mediators may not be neutral but effective due to **influence and leverage**.

**Challenges in Mediation**

- **Sovereignty concerns:** States resist external involvement.
- **Trust deficit:** Doubts about mediator neutrality.
- **Lack of enforcement:** Agreements depend on voluntary compliance.
- **Power asymmetry:** Stronger parties may dominate outcomes.
- **Geopolitical complexity:** Multiple actors complicate negotiations.

**India’s Approach to Mediation**

- Emphasises **bilateral resolution** for sensitive issues like Kashmir.
- Supports **multilateral mediation in global conflicts**.
- Follows principle of **strategic autonomy and non-alignment**.
- Acts as a **neutral facilitator rather than active mediator**.
- Historical example: Role in **Korean War mediation efforts**.

**Way Forward**

- Strengthen **multilateral mediation frameworks** through UN and regional bodies.
- Promote **multi-track diplomacy** (official + informal dialogues).
- Ensure **inclusive participation** (women, civil society).
- Provide **economic incentives for compliance**.
- Focus on **root causes of conflicts, not just ceasefires**.

**Conclusion**

The US–Iran ceasefire highlights mediation as a crucial tool in modern conflict resolution. It transforms crises into manageable diplomatic processes, ensuring stability in an interconnected world.

**PRELIMS POINTERS IN NEWS**

**SAARC CURRENCY SWAP FRAMEWORK**

**SOURCE: THE HINDU**

**Why in News?**

India approved **₹30 billion swap support to Maldives under the SAARC Currency Swap Framework** to ease foreign exchange stress.

**Currency Swap Framework**

- The **SAARC Currency Swap Framework** is a liquidity support mechanism through which India provides **short-term foreign exchange assistance to neighbouring countries**.
- It is designed to **prevent sudden balance of payments crises and currency instability in South Asia**.

**Key Features**

- It provides **immediate liquidity support through RBI without requiring countries to approach global financial markets or institutions like IMF**.
- It includes an **INR swap window of ₹25,000 crore along with a USD/Euro window of about \$2 billion to meet diverse currency needs**.
- It operates through **bilateral arrangements between the Reserve Bank of India and partner central banks under pre-decided terms**.
- It eliminates **exchange rate and market risks as swap conditions are fixed in advance**.
- It enables **flexible and quick disbursement, which is critical during sudden external shocks such as currency depreciation or reserve depletion**.

**Relevance in Current Context**

- It helps smaller economies like Maldives manage **tourism shocks, import bills, and currency volatility**.
- It strengthens India’s **Neighbourhood First policy and financial diplomacy in a region with limited regional integration mechanisms**.

- It also promotes use of Indian Rupee in cross-border transactions, supporting gradual currency internationalisation.



About SAARC

- South Asian Association for Regional Cooperation was established in 1985 at Dhaka to promote regional cooperation in economic, social, and cultural sectors.
- It includes eight member countries and follows unanimity in decisions while excluding bilateral disputes from its agenda.

TRANS-ARABIAN PIPELINE (TAPLINE)

SOURCE: INDIAN EXPRESS

Why in News?

Rising tensions near the Strait of Hormuz have pushed Gulf countries to explore alternative oil transport routes like TAPLINE-type infrastructure.



Trans-Arabian Pipeline (Tapline)

- The Trans-Arabian Pipeline (Tapline) was a historic oil pipeline that connected Saudi Arabian oil fields to the Mediterranean Sea.
- It was a major innovation in land-based oil transportation during the mid-20th century.

Key Features

- It was built by a subsidiary of Arabian American Oil Company and became operational in 1947 as a strategic export route.

- The pipeline stretched over 1,200 km, making it the longest crude oil pipeline globally at that time.
- It transported oil from Saudi Arabia through Jordan and Syria to Sidon port in Lebanon for export to Europe.
- Its operations declined due to geopolitical conflicts, transit disputes, and the increasing efficiency of oil tankers, leading to closure in 1990.

Relevance Today

- Demonstrates the importance of diversified energy routes to reduce dependence on vulnerable chokepoints like the Strait of Hormuz.
- Highlights how geopolitical instability directly impacts global energy supply chains.
- Serves as a model for current efforts by Gulf countries to develop pipelines bypassing high-risk maritime routes.

PUNATSANGCHHU HYDROELECTRIC PROJECTS (INDIA-BHUTAN)

SOURCE: THE HINDU

Why in News?

India and Bhutan signed the tariff protocol for Punatsangchhu-II (1020 MW) during high-level bilateral engagement.



Punatsangchhu Hydroelectric Projects

- The Punatsangchhu Hydroelectric Projects are flagship India-Bhutan initiatives aimed at harnessing hydropower resources for mutual economic benefit.
- These projects are central to Bhutan's hydropower-driven economy and India's renewable energy strategy.

Punatsangchhu-II (PHEP-II)

- It is a **1020 MW run-of-the-river project** located in Wangdue Phodrang district on the Punatsangchhu River.
- It is funded by India through a **30% grant and 70% loan model with long-term repayment arrangements**.
- The project includes a **91 m dam, diversion structures, and an underground powerhouse with six turbines for efficient generation**.
- It is implemented by a **joint project authority with technical coordination committees ensuring smooth execution**.

**Punatsangchhu-I (PHEP-I)**

- It is a **1200 MW project** located on the same river with a higher dam structure and funding pattern of **40% grant and 60% loan**.
- It involves **large-scale infrastructure such as diversion tunnels and underground powerhouse systems**.

**Strategic and Economic Role**

- Hydropower exports constitute a major share of Bhutan’s revenue, making India a **key energy partner**.
- India benefits through **clean electricity imports and strengthened strategic influence in the Himalayan region**.
- These projects contribute to **regional energy integration and low-carbon development goals**.

**WORLD ANTI-DOPING AGENCY (WADA)**

**SOURCE: THE HINDU**

**Why in News?**

India hosted the **Global Anti-Doping Intelligence & Investigations Network (GAIIN)** conference of World Anti-Doping Agency.



**World Anti-Doping Agency**

- The **World Anti-Doping Agency (WADA)** is an international body established in **1999 to lead the global fight against doping in sports**.
- It ensures **uniform rules, fair competition, and protection of athletes’ health worldwide**.

**Core Functions**

- It develops and enforces the **World Anti-Doping Code, which harmonises anti-doping rules across countries and sports organisations**.
- It publishes the **Prohibited List every year specifying banned substances and methods in and out of competition**.
- It conducts **scientific research, education programmes, and capacity building for national anti-doping agencies**.
- It coordinates **intelligence gathering and investigations to detect organised doping networks**.
- It monitors **compliance of countries, sports federations, and agencies with anti-doping standards**.

**Governance Structure**

- The **Foundation Board (42 members)** is the highest decision-making body with equal representation from governments and the Olympic movement.
- The **Executive Committee (16 members)** manages day-to-day operations and policy implementation.
- It operates as a **collaborative institution between governments and sporting bodies globally**.

**Key Features**

- Headquarters located in **Montreal, Canada** with global regional offices.
- Works with **over 650 sports organisations and national agencies under a common code**.
- The **2026 Prohibited List** introduced clarifications on substances and new restrictions on methods like blood withdrawal misuse.

**OPEC+ (ORGANIZATION OF THE PETROLEUM EXPORTING COUNTRIES)**

**SOURCE: THE HINDU**

**Why in News?**

OPEC+ members recently agreed to **maintain stable oil production despite geopolitical tensions**.



**About OPEC+**

- OPEC+ is a coalition of major oil-exporting countries formed in 2016 by OPEC and non-OPEC producers.
- It aims to coordinate crude oil production levels to influence global oil prices and ensure market stability.

**Composition**

- It includes 12 OPEC members along with 10 additional producers like Russia, Mexico, Kazakhstan, and Oman.
- The core OPEC group was established in 1960 by Iran, Iraq, Kuwait, Saudi Arabia, and Venezuela.

**Key Features**

- Member countries meet periodically to decide production quotas and manage supply in global markets.
- It plays a major role in balancing demand-supply dynamics and preventing extreme price volatility.

- It acts as a coordinated cartel-like mechanism influencing international energy markets.

**Role in Global Economy**

- It significantly impacts global oil prices, inflation trends, and energy security of importing countries.
- Production decisions influence economic stability, trade balances, and geopolitical alignments worldwide.
- It helps producers protect revenues while avoiding market crashes due to oversupply.

**Challenges**

- Internal disagreements among members often affect production discipline and coordination.
- Rising competition from renewable energy and shale oil reduces long-term influence.

Geopolitical tensions (e.g., sanctions, conflicts) complicate collective decision-making.

# INDIAN DIASPORA - A STRATEGIC NATIONAL ASSET

**Why in News?**

Recent policy discussions emphasise transforming India's diaspora from remittance contributors to strategic partners in technology, investment, and diplomacy.

**Changing Nature of Indian Diaspora**

- Earlier dominated by low-skilled labour migration, especially to Gulf countries.
- Now increasingly composed of:
  - Highly skilled professionals in USA, UK, Europe
  - Leaders in technology, finance, academia, and healthcare
- Shift from "brain drain" to "brain circulation" with increasing collaboration and return migration.

**Role of Diaspora in India's Development**

**1. Economic Contribution and Remittances**

- India received \$138 billion in remittances (2025–26), highest globally.
- These flows:
  - Support household consumption
  - Finance nearly half of India's trade deficit
- Act as stable, non-debt capital inflows.

**2. Investment and Startup Ecosystem**

- Diaspora plays a key role in venture capital and private equity.
- Indian-origin investors contribute to:

- Growth of startup ecosystem (100+ unicorns)
- Funding in AI, fintech, SaaS sectors
- Provide global market access and mentorship.

**3. Technology Transfer and Innovation**

- Diaspora professionals help establish:
  - Global Capability Centers (GCCs)
- India hosts 1700+ GCCs generating \$45+ billion revenue.
- Facilitates movement from service economy to innovation-driven economy.

**4. Scientific Collaboration and R&D**

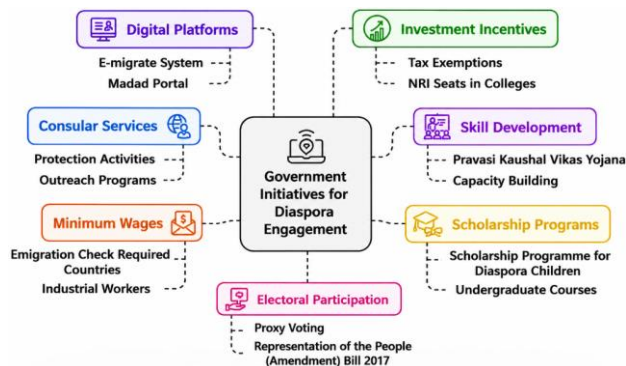
- Initiatives like VAIBHAV Fellowship bring diaspora scientists to India.
- Promotes Joint research in AI, quantum computing, renewable energy
- Helps bridge domestic skill gaps in frontier technologies.

**5. Geopolitical and Diplomatic Influence**

- Diaspora acts as soft power and lobbying force.
- Influences policies in host countries:
  - Example: support for India-US technology partnerships
- Enhances India's global image and diplomatic leverage.

**6. Education and Knowledge Systems**

- Diaspora funding supports **New-age universities (Ashoka, Plaksha)**
- Improves **Research standards and Global academic collaboration**



### Challenges in Leveraging Diaspora Potential

#### 1. Regulatory and Taxation Barriers

- Complex rules under **FEMA and taxation laws** deter investment.
- Delays in **fund transfers and compliance procedures**.

#### 2. FCRA Restrictions

- Tight regulations limit **diaspora philanthropy and NGO funding**.

#### 3. Lack of Dual Citizenship

- OCI provides limited rights compared to full citizenship.
- Restricts **Political participation and Land ownership flexibility**

#### 4. Bureaucratic Delays

- Slow approvals in **Research collaborations and Investment projects**

#### 5. Infrastructure and Quality of Life Issues

- Urban challenges like **Pollution, congestion, weak infrastructure**
- Discourage **reverse migration of skilled professionals**.

#### 6. Fragmented Institutional Engagement

- Lack of a **centralised system to map diaspora skills and contributions**.
- Engagement often limited to **symbolic events**.

#### 7. Geopolitical and Diplomatic Challenges

- Diaspora affected by **India's diplomatic tensions with host countries**
- May reduce **lobbying effectiveness**.

### Significance of Diaspora as Strategic Asset

- Acts as a **bridge between India and global markets**.
- Strengthens **economic resilience and foreign exchange stability**.
- Enhances **technological capability and innovation ecosystem**.
- Boosts India's **soft power and global influence**.
- Supports **inclusive and sustainable development**.

### Way Forward

#### 1. Policy and Regulatory Reforms

- Simplify **taxation and investment procedures**.
- Ease **FEMA and compliance norms**.

#### 2. Institutional Framework

- Create a **centralised digital diaspora database and engagement platform**.

#### 3. Encourage Investment and Innovation

- Launch **diaspora bonds and co-investment funds**.
- Promote **startup collaborations and R&D partnerships**.

#### 4. Strengthen Academic and Scientific Links

- Expand programs like **VAIBHAV Fellowship**.
- Enable **dual academic affiliations**.

#### 5. Improve Ease of Living

- Enhance **urban infrastructure and quality of life**.

#### 6. Enhance Soft Power and Cultural Ties

- Promote **cultural diplomacy, tourism, and education exchanges**.

#### 7. Move Towards Flexible Citizenship Models

- Explore **enhanced OCI benefits or quasi-dual citizenship frameworks**.

### Conclusion

India's diaspora is no longer just a source of remittances but a **powerful engine of growth, innovation, and diplomacy**. Harnessing this global network effectively can transform it into a **strategic pillar of India's rise as a global power**.

# ECONOMY

## GROWTH AND DEVELOPMENT, INCLUSION

### INDIA'S INFORMAL SECTOR: GROWTH WITHOUT TRANSFORMATION

SOURCE: INDIAN EXPRESS

#### Why in News?

The Annual Survey of Unincorporated Sector Enterprises (ASUSE) 2025 shows that India's informal sector is expanding in size but not improving in quality or productivity.

#### Scale and Importance of Informal Sector

##### 1. Massive Economic Footprint

- Around **7.92 crore enterprises**, reflecting continuous expansion.
- Provides employment to **12.81 crore workers**, making it the **largest employment provider**.

##### 2. Socio-Economic Role

- Absorbs labour displaced from **agriculture and rural distress**.
- Supports **local consumption and small-scale economic activities**.
- Acts as a **shock absorber during economic slowdowns**.

##### 3. Sectoral Composition

- Services: **42%**, Trade: **31%**, Manufacturing: **27%**.
- Indicates dominance of **low-capital, demand-driven sectors rather than industrial production**.



#### Key Trends in Informal Economy

##### 1. Growth in Enterprises

- Nearly **8% increase in establishments**, showing ease of entry.
- However, lack of diversification shows **structural rigidity**.

##### 2. Nature of Employment

- Employment increased by **6.18%**, but quality remains poor.
- Composition:
  - **62% self-employed (owner-operated)**
  - **24% hired workers**
- Suggests **job creation is largely survival-oriented rather than formal wage employment**.

##### 3. Output Growth (GVA)

- GVA grew by **10.9%**, indicating expansion in economic activity.
- Dominance of **trade and services (nearly 80%)** shows shift away from manufacturing-led growth.

##### 4. Productivity Trends

- Per worker productivity rose marginally from **₹1.49 lakh to ₹1.56 lakh**.
- Indicates incremental improvements and Lack of technological upgradation

##### 5. Wage Dynamics

- Average wages increased by only **~3.8%**, slower than output growth.
- Reflects **Income inequality within sector** and Weak labour bargaining power

**Structural Issues in Informal Sector**

**1. Weak Industrial Base**

- Manufacturing faces constraints like Low investment, Poor technology adoption and Limited scalability
- Leads to **absence of industrial transformation.**

**2. Persistent Informality**

- About **95% enterprises are proprietary or small partnerships.**
- Results in Lack of access to formal credit, Absence of social security and Limited integration with formal economy

**3. Low Productivity Trap**

- Reliance on **traditional methods and low-skilled labour.**
- Prevents movement towards **high-value economic activities.**

**4. Inequality and Job Quality**

- Growth is concentrated in **self-employment rather than formal jobs.**
- Workers lack Job security, Minimum wage protection and Social benefits

**Policy Measures**

- **Focus on Quality Transformation:** Move beyond increasing number of enterprises to improving **Productivity and efficiency**
- **Promote Formalisation:** Simplify compliance to encourage **gradual transition to formal sector.**
- **Enhance Productivity:** Invest in **Skill development and Technology adoption**
- **Improve Labour Welfare:** Extend **social security, pensions, and insurance.**
- **Support Women Entrepreneurs:** Provide targeted **Credit schemes and market access**
- **Strengthen Resilience:** Build **Local supply chains, Infrastructure and logistics networks**

**Way Forward**

- Shift from **survival-based employment to productive employment generation.**
- Integrate informal enterprises into **formal value chains.**
- Focus on **inclusive growth, innovation, and structural transformation.**

**Conclusion**

India's informal sector continues to expand but remains trapped in low productivity and vulnerability. Transforming it into a dynamic, inclusive, and resilient sector is essential for long-term economic progress.

**BANKING AND FINANCIAL INTERMEDIARIES**

**UNIFIED PAYMENTS INTERFACE (UPI)**

**SOURCE: PIB**

**Why in News?**

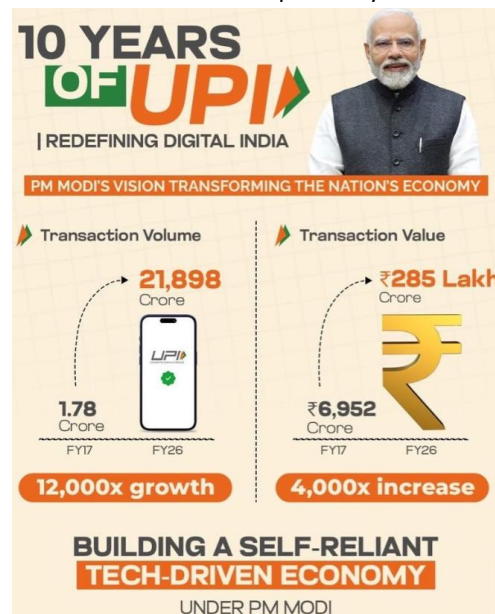
UPI has completed 10 years, emerging as the backbone of India's digital payment ecosystem. It has transformed consumer behaviour, financial inclusion, and global fintech leadership.

**Unified Payments Interface (UPI)**

- **Unified Payments Interface (UPI)** is a **real-time, mobile-based payment system** that enables instant transfer of money between bank accounts.
- Developed by the **National Payments Corporation of India (NPCI)** in 2016 and regulated by the **Reserve Bank of India**, it has revolutionised digital payments in India.

**How it Works**

- UPI allows users to:
  - Link multiple bank accounts to a **single mobile application**
  - Transfer money instantly using a **Virtual Payment Address (VPA)**
- Key features:
  - **24x7 real-time transactions**
  - **No need to share bank details**
  - **Authentication through UPI PIN**
- Built on systems like **IMPS and AEPS**, ensuring seamless interoperability.



## Growth and Current Status of UPI

### 1. Massive User Base

- Over **400 million active users** across India.
- Targeting **1 billion users in the next decade**.

### 2. High Transaction Volume

- Processes **22+ billion transactions per month**.
- Around **750 million transactions daily**, indicating scale and reliability.

### 3. Expanding Ecosystem

- Connected to:
  - **700+ banks**
  - Nearly **50 third-party apps** (PhonePe, Google Pay, Paytm, BHIM)
- Over **100 financial platforms integrated**.

### 4. Organic Growth

- Growth is now **broad-based and organic**, driven by Small merchants, Rural adoption, Youth and elderly users

#### Key Innovations in UPI

- **UPI Lite & Lite X** – Small-value offline payments
- **UPI Tap & Pay** – NFC-based transactions
- **Credit Line on UPI (CLOU)** – Access to micro-credit
- **UPI Circle** – Delegated payments for family members
- **Hello UPI** – Voice-enabled transactions
- **Biometric authentication** – Fingerprint/face-based payments
- **ATM withdrawals via UPI** – Cardless cash withdrawal

## Significance of UPI

### 1. Financial Inclusion

- Enables access to digital payments for **Small vendors, rural populations, and informal sector**
- Reduces dependence on **cash economy**.

### 2. Digital Economy Growth

- Supports **E-commerce, fintech, and digital services**
- Enhances **ease of doing business and tax transparency**.

### 3. Cost Efficiency

- Zero or minimal transaction cost improves **adoption among small users**.

### 4. Behavioural Transformation

- Shift from **Cash-based to digital transactions**
- Builds **financial discipline and transaction records**.

### 5. Global Leadership

- UPI is recognized globally for **Scalability and efficiency**

- Expanded to countries like UAE, Singapore, France, Nepal, Bhutan
- Enhances India's **soft power in fintech diplomacy**.

#### Strengths of UPI System

- **Scalability:** Designed to handle unlimited growth
- **Reliability:** Low system-wide failure rates
- **Interoperability:** Works across banks and platforms
- **Innovation-driven model:** Continuous feature upgrades

## Challenges in UPI Ecosystem

### 1. Declining Subsidies

- Reduced government incentives may affect **long-term sustainability**.

### 2. Lack of Monetisation

- Absence of **Merchant Discount Rate (MDR)** limits revenue for payment companies.

### 3. Cybersecurity Risks

- Rising cases of:
  - **Digital frauds and phishing attacks**
- Emerging threats from **AI and advanced technologies**.

### 4. Infrastructure Pressure

- Handling massive transaction volumes requires **High investment in data centres and servers**

### 5. Market Concentration

- Two players dominate:
  - PhonePe (~45%)
  - Google Pay (~33%)
- Raises concerns of **systemic risk and competition issues**.

## Future Opportunities

### 1. Credit Expansion

- UPI can enable **formal credit access to 500 million users**.

### 2. Micro-Credit Ecosystem

- Helps underserved populations access **small loans at affordable rates**.

### 3. Internationalisation

- Expansion into more countries will boost **Remittances and cross-border payments**

### 4. Integration with Emerging Technologies

- AI, blockchain, and voice-based systems will enhance **user experience and security**

## Way Forward

- Introduce a **balanced monetisation model (selective MDR)**.
- Strengthen **cybersecurity frameworks and awareness**.

- Promote **competition and reduce market concentration**.
- Invest in **digital infrastructure and resilience**.
- Expand UPI globally to enhance **India's fintech leadership**.

### Conclusion

UPI has transformed India's digital payments landscape, making transactions fast, inclusive, and efficient. Sustaining its growth requires innovation, security, and a viable economic model for the ecosystem.

## AGRICULTURE AND ALLIED

### INDIAN AGRICULTURE GROWTH AND TRANSFORMATION

SOURCE: PIB

#### Why in News?

India's agriculture and allied sectors have recorded an average growth of **4.4% in recent years**, reflecting improved productivity and resilience.

#### Performance of Indian Agriculture

##### 1. Foodgrain Production

- Total production reached **~357 million tonnes (2024-25)**.
- Growth driven by **Rice, wheat, maize, and millets (Shree Anna)**
- Reflects **better input use, irrigation expansion, and improved seeds**.

##### 2. Horticulture Growth

- Output exceeded foodgrain production at **~360+ million tonnes**.
- Key segments: **Fruits and vegetables**
- Indicates **shift towards high-value agriculture**.

##### 3. Global Position

- India ranks:
  - **1st in pulses, millets, spices, coconut**
  - **2nd in rice, wheat, fruits, vegetables, sugarcane**
- Demonstrates strong **global agricultural presence**.

##### 4. Agricultural Exports

- Exports increased from **\$34.5 billion (FY20) to over \$50 billion (FY25)**.
- Processed food share rising, indicating **value addition and diversification**.

#### Key Drivers of Growth

##### 1. Policy Support

- Budget allocation increased significantly, strengthening **public investment in agriculture**.
- Focus on **high-value crops and region-specific agriculture**.

##### 2. Technology and Innovation

- Use of **Improved seeds, digital tools, precision farming**
- **Soil Health Cards (25+ crore issued)** promote **scientific nutrient management**.

##### 3. Irrigation Expansion

- Under **Pradhan Mantri Krishi Sinchayee Yojana (PMKSY)**, irrigated area increased to **~56%**.
- Promotes **efficient water use through drip and sprinkler systems**.

##### 4. Credit and Mechanisation

- Agricultural credit reached **₹28+ lakh crore (2024-25)**.
- Establishment of **Custom Hiring Centres (CHCs)** improves access to machinery.

##### 5. Livestock and Allied Sectors

- Vaccination drives and artificial insemination enhance **livestock productivity**.
- Fisheries and dairy contribute to **income diversification**.

#### Major Government Initiatives

##### 1. Production and Self-Reliance

- **National Food Security and Nutrition Mission (NFSNM)**
- **Mission for Aatmanirbharta in Pulses**
- **National Mission on Edible Oils (NMEO)**

##### 2. Income and Risk Support

- **Minimum Support Price (MSP)** ensures remunerative prices.
- **PM-KISAN** provides direct income support (**₹4.27 lakh crore disbursed**).
- **Pradhan Mantri Fasal Bima Yojana (PMFBY)** offers crop insurance coverage.

##### 3. Market Reforms

- **e-NAM platform** connects farmers to digital markets.
- Expansion of **Farmer Producer Organisations (FPOs)** enhances bargaining power.

##### 4. Food Processing and Value Addition

- **PM Kisan Sampada Yojana and PLI Scheme** promote food processing.
- Strengthens **cold chain, storage, and logistics infrastructure**.

##### 5. Cooperative and Institutional Reforms

- Computerisation of **PACS** improves governance and credit delivery.
- New cooperative policies enhance **collective farming and marketing**.

#### Sustainable Agriculture and Climate Focus

- Promotion of **natural farming** across lakh hectares.
- Expansion of **ethanol blending** reduces import dependence and boosts farmer income.
- Aligns with **Sustainable Development Goals (SDGs)**:
  - SDG 2 (Zero Hunger)
  - SDG 13 (Climate Action)

#### Challenges in Indian Agriculture

- **Fragmented Land Holdings**: Small farm sizes reduce **productivity and mechanisation efficiency**.
- **Climate Change**: Increasing risks from **Droughts, floods, erratic rainfall**
- **Market Inefficiencies**: Price volatility and weak **market linkages** affect farmer income.
- **Dependence on Monsoon**: Despite irrigation gains, agriculture still remains **weather-dependent**.
- **Low Value Addition**: Limited processing reduces **export competitiveness and farmer earnings**.

#### Way Forward

- **Promote Crop Diversification**: Shift from cereals to **high-value crops and allied activities**.
- **Strengthen Agri-Infrastructure**: Expand **storage, cold chains, and logistics networks**.
- **Encourage Technology Adoption**: Use **AI, IoT, and precision farming techniques**.
- **Improve Market Access**: Strengthen **e-NAM and global export linkages**.
- **Enhance Climate Resilience**: Promote **climate-smart agriculture and water management**.

#### Conclusion

India's agriculture is transitioning from subsistence to a **technology-driven and market-oriented sector**. Sustained reforms and innovation can make it **more resilient, productive, and globally competitive**.

## TAXATION

### FUEL EXCISE DUTY CUT IN INDIA

SOURCE: PIB

#### Why in News?

The Government of India has reduced **excise duty on petrol and diesel by ₹10 per litre** to cushion the impact of rising global crude oil prices.

#### What is Excise Duty on Fuel?

- **Excise duty** is an **indirect tax imposed by the Central Government** on goods manufactured or sold within the country.
- It is levied as a **specific tax (₹ per litre)** rather than a percentage.
- Components include:
  - **Basic Excise Duty**
  - **Road and Infrastructure Cess (RIC)**
  - **Agriculture Infrastructure and Development Cess (AIDC)**

The recent cut has reduced **central tax burden significantly**, bringing diesel excise close to zero.

#### How Fuel Prices are Determined in India

##### 1. Crude Oil Cost

- Represents the **base raw material price**.
- Influenced by Global benchmarks (e.g., Brent crude) and **Exchange rate (USD-INR)**
- A weaker rupee increases fuel prices even if crude prices remain stable.

##### 2. Refinery Transfer Price (RTP)

- Price at which refineries supply fuel to OMCs.
- Includes Refining cost, Freight and insurance and Port handling charges

##### 3. OMC Margin

- Oil Marketing Companies (IOCL, BPCL, HPCL) add a margin to cover Transportation and storage, Operational costs and Profit.

##### 4. Central Excise Duty

- Fixed tax levied by the Union Government.
- Reduction directly lowers **retail fuel price** or reduces losses of OMCs.

##### 5. Dealer Commission

- Commission paid to petrol pump dealers.
- Covers:
  - Operational expenses
  - Wages and maintenance
- Typically around **3–4% of retail price**.

##### 6. State VAT (Value Added Tax)

- Imposed by state governments as a **percentage of total price**.
- Varies widely across states, leading to **price differences across regions**.

**Fuel Price Composition (Approximate Share)**

- **Base Price:** 45–50%
- **Central Taxes:** 3–20%
- **State VAT:** 15–25%
- **Dealer Commission:** 3–4%

Taxes constitute a significant portion, making fuel pricing a **fiscal and political issue**.

#### Rationale Behind Excise Duty Cut

##### 1. Inflation Control

- Fuel prices directly affect Transport costs and Food prices
- Reduction helps **moderate inflation**.

##### 2. Consumer Relief

- Reduces burden on Households and Transport sector
- Improves **disposable income**.

##### 3. Support to OMCs

- OMCs often absorb losses when prices are not fully passed on.
- Tax cuts improve their **financial stability**.

##### 4. Economic Growth

- Lower fuel costs reduce Production costs and Logistics expenses
- Supports **industrial and economic activity**.

#### Implications of the Duty Cut

##### Positive Impacts

- **Lower retail fuel prices** or stabilized prices
- Reduction in **inflationary pressures**
- Improved **consumer sentiment and demand**

##### Negative Impacts

- Loss of **government revenue**, affecting fiscal deficit
- Limits spending on Infrastructure and Welfare schemes

#### Challenges in Fuel Pricing

##### 1. High Import Dependence

- India remains vulnerable to **global oil price fluctuations**.

##### 2. Tax Structure Complexity

- Dual taxation: Central excise + State VAT
- Lack of uniformity across states.

##### 3. Exchange Rate Volatility

- Depreciation of rupee increases import cost.

##### 4. Limited Inclusion in GST

- Petroleum products are outside GST, limiting **tax harmonisation**.

#### Way Forward

##### 1. Rationalise Fuel Taxes

- Move towards **uniform tax structure or GST inclusion**.

##### 2. Diversify Energy Sources

- Promote Electric vehicles, Biofuels and Renewable energy

##### 3. Strengthen Strategic Reserves

- Build **oil reserves** to cushion global shocks.

##### 4. Improve Pricing Transparency

- Ensure **clear communication of price components** to consumers.

#### Conclusion

The excise duty cut on fuel reflects a **balancing act between inflation control and fiscal stability**. Long-term solutions lie in tax reforms, energy diversification, and reduced dependence on imported crude oil.

## TRADE AND EXTERNAL SECTOR

### FOREIGN PORTFOLIO INVESTOR (FPI) OUTFLOWS FROM INDIA

#### SOURCE: THE HINDU

#### Why in News?

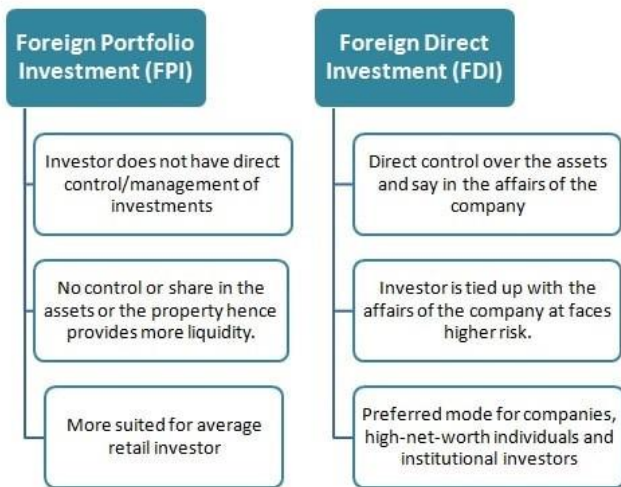
India has witnessed **sustained outflows of Foreign Portfolio Investors (FPIs)** since late 2024, raising concerns over **market stability and investor confidence**.

#### Foreign Portfolio Investors (FPIs)

- **Foreign Portfolio Investors (FPIs)** are non-resident entities that invest in **financial assets such as equities, bonds, and mutual funds** without seeking control.
- They provide **liquidity, capital inflows, and global integration of financial markets**.

#### Recent Trends in FPI Flows

- Continuous outflows since **October 2024**, marking one of the **largest sustained withdrawals**.
- Foreign ownership in Indian equities has dropped to a **multi-year low**.
- Indian markets have **underperformed other emerging markets significantly**.
- Domestic Institutional Investors (DIIs) have partly offset the outflows, maintaining stability.



### Key Reasons Behind FPI Outflows

#### 1. High Valuation of Indian Markets

- Indian equities trade at a **premium of nearly 50% over emerging market average.**
- Investors find High valuation vs moderate growth (10–15%) less attractive
- Declining valuation multiples reflect **reduced confidence in future earnings growth.**

#### 2. Changing Global Investment Landscape

- India is no longer the **only attractive emerging market.**
- Other economies gaining traction:
  - China (policy stability, tech sectors)
  - Taiwan (semiconductors)
  - South Korea (corporate reforms)
  - Brazil (commodity cycle)
- Investors are **diversifying portfolios**, reducing India exposure.

#### 3. Growth and Earnings Concerns

- Expected earnings growth seen as **moderate and possibly capped.**
- Concerns about sustainability of **high growth expectations.**

#### 4. Sectoral Challenges

- Key sectors facing issues:
  - **IT services:** AI disruption threatens outsourcing model
  - **Banking:** Rising competition from public sector banks
  - **Consumer sector:** Limited growth and high valuations
  - **Pharma:** Transition to complex generics and biosimilars
- Lack of strong new growth sectors reduces investor confidence.

#### 5. Innovation and Technology Gap

- India is perceived as lacking leadership in **Artificial Intelligence, robotics, advanced manufacturing**
- Limited presence in **high-tech global value chains** affects long-term outlook.

#### 6. Structural Economic Constraints

- Slow progress in **“China+1” manufacturing shift.**
- Persistent issues:
  - Land acquisition challenges
  - Regulatory complexity
  - Infrastructure gaps

#### 7. Regulatory and Policy Concerns

- Investors cite:
  - **Tax uncertainty and compliance burden**
  - Regulatory unpredictability
- Ease of doing business concerns remain relevant in a **low-return environment.**

#### 8. Impact of Artificial Intelligence

- AI may disrupt India’s **services-led growth model.**
- Reduced reliance on human labour could weaken **IT exports.**

#### Cyclical vs Structural Factors

##### Cyclical Factors

- Short-term global capital rotation
- Attractive returns in other markets
- Temporary sentiment-driven outflows

##### Structural Factors

- High valuation premium
- Limited innovation leadership
- Weak manufacturing growth
- Regulatory bottlenecks

Structural issues require **long-term policy intervention.**

#### Implications of FPI Outflows

- **Stock Market Volatility:** Increased volatility and **decline in foreign participation.**
- **Currency Pressure:** Outflows can lead to **depreciation of the Indian Rupee.**
- **Impact on Investment Climate:** Weakens perception of India as a **preferred investment destination.**
- **Economic Growth Concerns:** Reduced capital inflows may affect **Corporate investment and Market expansion**
- **Increased Dependence on Domestic Investors:** DIIs play a stabilizing role, but **foreign capital remains crucial for growth.**

#### Way Forward

##### 1. Improve Ease of Doing Business

- Simplify **tax structures and regulatory frameworks.**
- Ensure **policy stability and predictability.**

**2. Boost Manufacturing and Supply Chains**

- Accelerate **Make in India** and **PLI** schemes.
- Attract global firms under **China+1** strategy.

**3. Promote Innovation Ecosystem**

- Increase **R&D investment** and support **deep-tech sectors**.
- Strengthen capabilities in **AI, semiconductors, and advanced manufacturing**.

**4. Strengthen Financial Markets**

- Enhance **market transparency and governance standards**.

**5. Encourage Domestic Capital Formation**

- Deepen **mutual funds, pension funds, and insurance participation**.

**6. Sectoral Reforms**

- Revive growth in **IT, banking, manufacturing, and pharmaceuticals**
- Encourage **emerging sectors like green energy and digital economy**.

**Conclusion**

FPI outflows reflect both global shifts and domestic structural challenges in India’s economy. Addressing valuation concerns, boosting innovation, and strengthening policy frameworks is essential to restore investor confidence.

**FINANCIAL MARKETS**

**WOMEN’S ACCESS TO CREDIT IN INDIA**

**SOURCE: INDIAN EXPRESS**

**Why in News?**

A joint report by **NITI Aayog, TransUnion CIBIL, and MSC** highlights that women are shifting from **basic borrowers** to **key economic contributors**.

**Key Trends in Women’s Credit Access**

**1. Rapid Growth in Credit Portfolio**

- Women now hold a credit portfolio of **₹76 lakh crore**, accounting for **26% of total credit**.
- This represents a **five-fold increase since 2017**, indicating rising financial participation.

**2. Expansion in Business Lending**

- Business loans for women have grown **7.5 times since 2017**.
- Now constitute **~25% of total credit**, showing a shift towards **entrepreneurial activities**.

**3. Improved Credit Penetration**

- Credit-active women increased from **19% (2017) to 36% (2025)**.
- Around **16 crore women** are active borrowers, reflecting wider inclusion.

**4. Shift Towards Sophisticated Credit Products**

- Women are moving from Microfinance loans to Cash credit and overdraft facilities
- Indicates **growing enterprise maturity and financial awareness**.

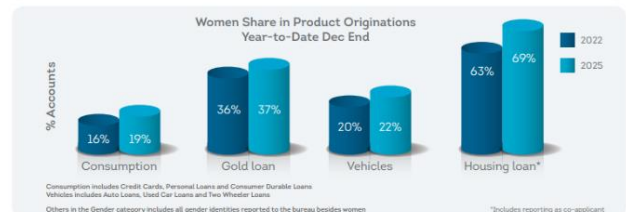
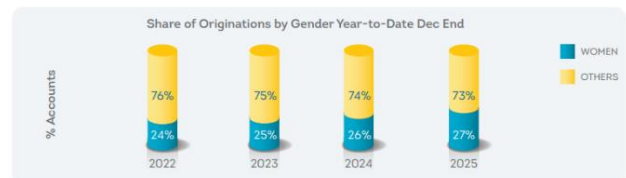
**6. Regional Growth Trends**

- Southern and Western states dominate credit volume.
- Northern states like Bihar (59% CAGR) and Uttar Pradesh (42% CAGR) emerging as **high-growth regions**.

**7. Strong Credit Behaviour**

- Women show **better repayment discipline** with **30% lower default rates** than average.
- Highlights their reliability as borrowers.

**WOMEN BORROWERS SHARE IN ALL KEY RETAIL PRODUCTS CONTINUE TO EXPAND WITH HIGHER SHARE IN SECURED PRODUCTS LIKE GOLD LOANS AND HOUSING LOANS**



**Role of Rural Women Entrepreneurs**

- Rural Women Nano-Entrepreneurs (RWNEs) form a significant segment.
- Around **60–70% use digital payments**, but usage remains limited.
- Constraints:
  - Shared devices
  - Limited digital independence

**Key Challenges in Women’s Credit Access**

- **Time Poverty: Unpaid care responsibilities** limit women’s **financial engagement**.
- **Limited Financial Autonomy: Lack of decision-making power** restricts control over **credit and investments**.
- **High Turnaround Time for Loans: Lengthy verification and documentation processes** delay access to **formal credit**.

- **Microfinance Sector Stress:** Rising NPAs and over-indebtedness lead to reduced lending by institutions.
- **Decline in New-to-Credit Borrowers:** Preference for existing borrowers limits entry of first-time women borrowers.
- **Limited Access to Advanced Credit Products:** Low use of formal business finance tools shows weak financial depth.

**Way Forward**

- **Strengthen Financial Visibility:** Use digital transaction data for flow-based lending models.
- **Improve Financial Literacy:** Expand credit education programmes to promote responsible borrowing.
- **Promote Gender-Sensitive Products:** Design flexible repayment loans aligned with income patterns.
- **Leverage Self-Help Groups (SHGs):** Use SHG networks to build trust and financial awareness.
- **Reduce Loan Processing Time:** Digitise loan lifecycle (KYC, verification, disbursement) for faster access.
- **Data-Driven Policy Making:** Use credit data analytics to identify gaps and underserved regions.

**Conclusion**

Women are emerging as reliable and growth-oriented participants in India’s credit ecosystem. Bridging gaps in access, autonomy, and financial literacy can unlock their full economic potential for inclusive development.

**INFRASTRUCTURE**

**SHIFT FROM LPG TO PNG IN INDIA:  
ENERGY TRANSITION**

**SOURCE: THE HINDU**

**Why in News?**

India is witnessing a policy shift towards expanding Piped Natural Gas (PNG) connections to strengthen energy security.

**Reasons for India’s Shift from LPG to PNG**

**1. High Import Dependence on LPG**

- Annual LPG consumption: ~34 million tonnes, with only ~12 million tonnes produced domestically.
- Around 60% is imported, mainly from West Asia.

- Vulnerable to:
  - Geopolitical tensions
  - Supply disruptions in chokepoints like Strait of Hormuz

**2. Diversified Supply of Natural Gas**

- LNG can be sourced from multiple global suppliers, reducing risk concentration.
- India imports ~27 million tonnes of LNG annually, similar to domestic production.

**3. Energy Security and Strategic Autonomy**

- PNG reduces dependence on:
  - Limited supplier countries
  - Maritime transport risks
- Boosts domestic production through agencies like ONGC.

**4. Economic and Consumer Benefits**

- PNG is often cheaper than LPG in urban areas.
- Provides:
  - Continuous supply
  - No need for cylinder booking or storage
- Safer as gas disperses quickly in case of leakage.

**5. Environmental Advantages**

- Natural gas is a cleaner fossil fuel:
  - Lower carbon emissions
  - Minimal particulate pollution
- Supports India’s climate commitments and clean energy transition.

**Fuel Types**

**1. LPG (Liquefied Petroleum Gas)**

- Mixture of propane and butane, stored in cylinders.
- Easy to transport and widely used for cooking purposes.

**2. LNG (Liquefied Natural Gas)**

- Natural gas cooled to -160°C, reducing volume for transport.
- Imported via ships and regasified at terminals.

**3. PNG (Piped Natural Gas)**

- Natural gas supplied through pipeline networks directly to households.
- Provides continuous and safe supply without storage needs.

**4. CNG (Compressed Natural Gas)**

- Natural gas compressed for use as a transport fuel.

**Challenges in PNG Expansion**

**1. Infrastructure Limitations**

- Pipeline networks are uneven, with southern, central and north-eastern regions lacking adequate coverage.

**2. Last-Mile Connectivity Issues**

- Urban congestion, land acquisition hurdles, and multiple clearances delay pipeline installation.

**3. Supply Constraints**

- Limited domestic production and competing sectoral demand restrict availability of natural gas.

**4. LNG Import Dependence**

- Rising PNG demand increases reliance on imports, while absence of storage infrastructure heightens supply risks.

**5. Industrial Resistance**

- High conversion costs and lack of technical awareness discourage MSMEs from adopting PNG.

**Future Prospects**

- **Domestic Production Boost:** KG Basin projects expected to increase output by 10–25%.
- **LNG Infrastructure Expansion:** India has ~9 LNG terminals, with more planned.
- **Gas-Based Economy Vision:** Government aims to increase gas share to 15% of energy mix (currently ~6%).

**Way Forward**

- **Balanced Transition Strategy:** Continue LPG in rural areas while expanding PNG in urban regions.
- **Strengthen Infrastructure:** Expand pipelines to underserved regions.
- **Enhance Domestic Production:** Invest in exploration and production (E&P).
- **Support MSMEs:** Provide financial incentives and technical assistance.
- **Develop Storage Capacity:** Create strategic gas reserves for supply stability.
- **Promote Public Awareness:** Encourage adoption through consumer education campaigns.

**Conclusion**

India’s transition from LPG to PNG represents a strategic move towards energy security and cleaner fuels. Sustained infrastructure expansion, supply diversification, and policy support are crucial for achieving a gas-based economy.

**PRELIMS POINTERS IN NEWS**

**CREDIT GUARANTEE FUND TRUST FOR MICRO AND SMALL ENTERPRISES (CGTMSE)**

**SOURCE: THE HINDU**

**Why in News?**

CGTMSE organised a **Global Symposium on Credit Guarantees**, highlighting its role in MSME financing.

**About CGTMSE**

- The **Credit Guarantee Fund Trust for Micro and Small Enterprises (CGTMSE)** was set up in **2000** to improve access to formal credit for MSMEs without collateral.
- It is a joint initiative of the Ministry of MSME and Small Industries Development Bank of India.

**SALIENT FEATURES**



**Core Features**

- It provides **credit guarantee cover to lending institutions, reducing risk in lending to micro and small enterprises.**
- The guarantee coverage generally ranges between **75% to 85% of the loan amount depending on borrower category and loan size.**
- The corpus is funded in a **4:1 ratio between Government of India and SIDBI.**
- It enables lending by **banks, NBFCs, Small Finance Banks, and institutions like NSIC and NEDFi.**

**Working Mechanism**

- Banks provide **collateral-free loans to MSMEs under CGTMSE coverage.**

- In case of default, the trust **reimburses a major portion of the loss to the lender**, thereby reducing credit risk.
- This encourages financial institutions to **expand lending to first-time entrepreneurs and small businesses**.

### Importance in MSME Sector

- MSMEs contribute nearly **30% to India's GDP and over 45% to exports**, but face major credit constraints.
- CGTMSE helps address the issue of **lack of collateral and credit history**, which is a key barrier for small enterprises.

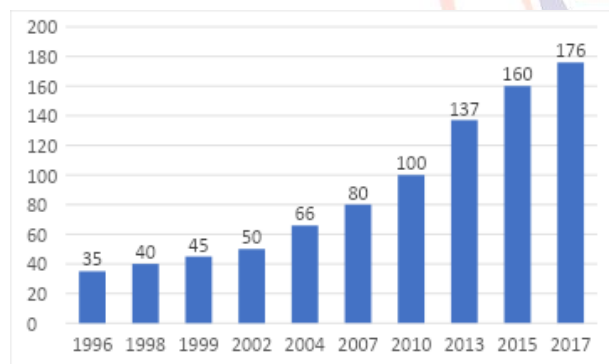
It supports **financial inclusion, entrepreneurship, and employment generation**.

## NATIONAL FLOOR LEVEL MINIMUM WAGE (NFLMW)

**SOURCE: INDIAN EXPRESS**

### Why in News?

The government is considering **revision of National Floor Level Minimum Wage to reduce wage disparities across states**.



### About NFLMW

- The **National Floor Level Minimum Wage (NFLMW)** is a benchmark wage below which **states cannot fix their minimum wages**.
- It was introduced in **1996 as a non-statutory measure** to provide basic income security.

### Key Features

- It acts as a **guiding benchmark for states while fixing minimum wages under labour laws**.
- It considers factors like **cost of living, inflation, and minimum consumption requirements**.
- It is revised periodically based on the **Consumer Price Index for Industrial Workers (CPI-IW)**.

- The **Code on Wages, 2019** formalises the concept of floor wage to ensure uniformity.

### Current Status

- The current floor wage is around **₹176 per day**, which has remained unchanged since 2017.
- The proposed revision aims to address **regional wage disparities and rising inflation**.

### Issues and Concerns

- Being **non-statutory earlier, enforcement depends on state compliance**, leading to variations.
- Differences in economic conditions across states create **challenges in uniform wage fixation**.
- Low wage levels may still be insufficient to ensure **decent living standards**.

## CREDIT DEFAULT SWAPS (CDS)

**SOURCE: THE HINDU**

### Why in News?

RBI has fixed **CDS sale limits for FY 2026–27 while maintaining FPI investment norms**.



Credit Default Swaps (CDS)



### About Credit Default Swap

- A **Credit Default Swap (CDS)** is a financial derivative that allows **transfer of credit risk from one party to another**.
- It functions similarly to **insurance against default of a borrower or bond issuer**.

### Key Features

- It involves a **protection buyer who pays periodic premiums to a protection seller**.
- In case of a **credit event like default or bankruptcy, the seller compensates the buyer**.
- It is linked to an **underlying asset such as corporate bonds or loans**.

### Functions in Financial Markets

- It helps investors **hedge against default risk of bonds or loans**.
- It enables **speculation on creditworthiness of companies or governments**.

- It supports **price discovery and liquidity** in credit markets.

**Risks**

- Counterparty risk arises if the **seller fails to honour payment obligations**.
- Excessive speculation can lead to **financial instability**, as seen during the **2008 financial crisis**.

**AD VALOREM DUTY**

**SOURCE: HINDUSTHAN TIMES**

**Why in News?**

The U.S. announced a **100% ad valorem duty on pharmaceutical imports**, highlighting tariff mechanisms.

- Taxes on goods can be imposed either as **ad valorem (value-based) or specific (quantity-based)**.
- These methods are widely used in **trade policy, taxation, and revenue generation**.

<b>Ad Valorem Tax</b>  Taxation based on Fair Value  such as...	Real Estate
	Vehicles
	Personal Property

**Ad Valorem Duty**

- It is a tax calculated as a **percentage of the value of goods or property**.
- It ensures that **higher-value goods attract higher tax, maintaining equity**.
- Examples include **customs duties, GST, and property taxes**.

**Specific Tax**

- It is a **fixed tax charged per unit regardless of value**.
- It provides **certainty in revenue and is easier to administer**.
- Examples include **tax per litre of fuel or per pack of cigarettes**.

**Key Differences**

- Ad valorem tax depends on **value, while specific tax depends on quantity**.
- Ad valorem ensures **equity but may fluctuate with price changes**, whereas specific tax ensures **stability but may ignore value differences**.

**NON-DELIVERABLE DERIVATIVE (NDD) MARKET**

**SOURCE: THE HINDU**

**Why in News?**

The Reserve Bank of India has **barred banks from participating in rupee-based NDD contracts**.



**About Non-Deliverable Derivative**

- A **Non-Deliverable Derivative (NDD)** is a financial contract where parties **bet on future exchange rates without actual currency exchange**.
- It is widely used in **currencies with capital controls, such as the Indian Rupee**.

**Working Mechanism**

- Two parties agree on a **future exchange rate of the rupee against another currency (usually USD)**.
- There is **no physical delivery of currency due to regulatory restrictions on offshore trading**.
- On the settlement date, the **difference between agreed rate and market rate is calculated**.
- The final settlement is done in **cash, typically in US dollars**.

**Key Features**

- NDD trading takes place in **offshore financial centres like Singapore, London, and Hong Kong**.
- It is mainly used by **foreign investors, hedge funds, and global banks without direct access to Indian markets**.
- It acts as an **early indicator of rupee movement and influences onshore exchange rates**.
- It allows participants to **hedge currency risk or speculate on rupee fluctuations without holding the currency**.

**Concerns Associated with NDD**

- It can distort **price discovery as offshore markets may not reflect domestic economic fundamentals**.
- It enables **excessive speculation, leading to volatility in currency markets**.

- It remains **outside full regulatory oversight of Indian authorities.**

**RBI's Rationale**

- The restriction aims to **shift trading to regulated onshore markets and improve transparency.**
- It helps in **reducing arbitrage opportunities between offshore and domestic markets.**
- It strengthens **monetary policy transmission and exchange rate stability.**

**e-COMMERCE MORATORIUM (WTO)**

**SOURCE: THE HINDU**

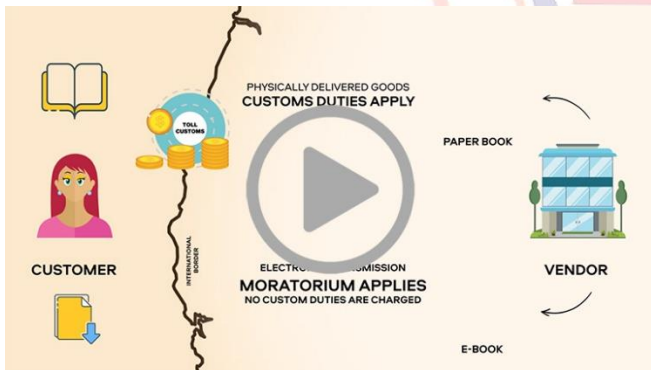
**Why in News?**

The WTO will reconsider extension of the **e-commerce moratorium at the 14th Ministerial Conference in Yaoundé.**

- India has raised concerns regarding **loss of tariff revenue due to continued extension.**

**e-Commerce Moratorium**

- The **e-commerce moratorium** is a WTO agreement that **prohibits member countries from imposing customs duties on electronic transmissions.**
- It was first adopted in **1998 to promote growth of digital trade globally.**



**Key Features**

- It applies to **digital goods and services such as software downloads, e-books, music streaming, and online gaming.**
- It has been **renewed periodically at WTO Ministerial Conferences, most recently in 2024.**
- It supports **cross-border digital trade by keeping transactions duty-free.**

**Benefits of Moratorium**

- It promotes **global digital trade by reducing costs and encouraging innovation.**
- It supports **growth of digital services sector and cross-border data flows.**

- It benefits consumers through **lower prices and wider access to digital products.**

**Concerns Raised by India**

- It results in **loss of potential tariff revenue, especially for developing countries.**
- It restricts policy space for **taxing rapidly growing digital economy sectors.**
- It may widen the **digital divide between developed and developing countries.**

**Debate in WTO**

- Developed countries support continuation for **free digital trade and innovation.**
- Developing countries demand **review or reform to protect fiscal interests and domestic industries.**

**VISHWA SUTRA INITIATIVE**

**SOURCE: TIMES OF INDIA**

**Why in News?**

The Ministry of Textiles launched **‘Vishwa Sutra – Weaves of India for the World’.**



**Vishwa Sutra Initiative**

- **Vishwa Sutra Initiative** is a programme designed to **integrate traditional Indian handlooms with global design elements.**
- It is implemented by the **Development Commissioner (Handlooms) in collaboration with NIFT.**

**Key Features**

- It showcases **30 unique handloom traditions from different Indian states in a unified global platform.**
- Each weave is **reimagined using design inspirations from 30 different countries**, blending tradition with modern aesthetics.
- It highlights **heritage weaving techniques that have evolved over generations.**
- It promotes **collaboration between artisans and designers for innovation and global appeal.**

**Examples of Fusion**

- Odisha Ikat with **Greek design influences**.
- Kanchipuram silk combined with **Nordic patterns**.
- Banarasi textiles adapted to **Middle Eastern fashion aesthetics**.

**Policy Relevance**

- It supports the **5F vision (Farm to Fibre to Factory to Fashion to Foreign)**.
- It aligns with the **Vocal for Local to Global strategy to boost exports and cultural diplomacy**.

**Challenges**

- Limited market access and branding restrict **global competitiveness of handloom products**.
- Need for **digital marketing, supply chain support, and design innovation**.

**WINDFALL TAX**

**SOURCE: THE HINDU**

**Why in News?**

The Government of India recently **increased windfall tax (export duty) on diesel and aviation turbine fuel (ATF)**.

**Windfall Tax**



**Benefits**

- Boosts government revenues
- Provide public services and other benefits to the citizens
- Windfall gains can repay interest-bearing consumer
- Invest the windfall proceeds in gold deposits

**About Windfall Tax**

- A **Windfall Tax** is a **higher tax imposed on companies earning unusually high profits due to external factors rather than their own efficiency or investment**.
- Such profits are generally linked to **global events like wars, supply disruptions, or sudden demand spikes**.

**Concept and Features**

- The term “windfall” refers to **unexpected and extraordinary gains beyond normal business returns**.
- It is imposed when **profits increase sharply without corresponding effort or innovation by firms**.

- It is usually targeted at sectors like **oil, gas, mining, and energy**, where global price fluctuations significantly affect profits.
- In India, it is often applied as an **export duty on petroleum products and crude oil**.

**Rationale Behind Windfall Tax**

- It allows the government to **capture a share of excess profits generated due to favourable external conditions**.
- It helps in **mobilising additional revenue during times of fiscal stress or global volatility**.
- It ensures **equity by redistributing gains that arise from global disruptions rather than enterprise performance**.

**Implications**

- It can help **reduce inflationary pressure by discouraging excessive exports and ensuring domestic supply**.
- It strengthens **government finances, especially during crises like pandemics or geopolitical conflicts**.
- However, frequent changes may create **policy uncertainty and discourage long-term investment in affected sectors**.

**Global Context**

- Several countries like the **UK and EU nations have imposed windfall taxes on energy companies during the recent energy crisis**.
- It is increasingly seen as a **tool for balancing corporate profits and public welfare during crises**.

**EXPORT INSPECTION COUNCIL (EIC)**

**SOURCE: THE HINDU**

**Why in News?**

India clarified that **EIC certification for rice exports is mandatory only for select European countries**.



Export Inspection Council

- The **Export Inspection Council (EIC)** is India's official body responsible for **ensuring quality and safety of export products**.
- It was established under the **Export (Quality Control and Inspection) Act, 1963** to support **credible and compliant export trade**.

**Structure and Organisation**

- It functions under the Ministry of Commerce and Industry.
- It is headed by a **Chairman, while the Director of Inspection & Quality Control manages operational activities**.
- It operates through **Export Inspection Agencies (EIAs) located across major cities with laboratory support**.

**Key Functions**

- It ensures that **exported goods meet quality, safety, and regulatory standards of importing countries**.

- It provides **mandatory certification for certain food products like fish, dairy, meat, and poultry items**.
- It offers **voluntary certification for other products to enhance credibility in international markets**.
- It conducts **inspection, testing, and quality assurance using accredited laboratories**.

**Role in Trade Promotion**

- It enhances **India's export reputation by ensuring compliance with global standards**.
- It helps exporters **access international markets by meeting sanitary and phytosanitary requirements**.
- It reduces **trade disputes and rejection of consignments due to quality issues**.

**Challenges**

- Compliance requirements may increase **costs and procedural burden for small exporters**.
- Need for continuous upgradation to meet **evolving global quality standards and certifications**.

# INDIA FERTILISER CRISIS

**Why in News?**

India is facing a sharp **fertiliser price surge and supply disruption** due to geopolitical tensions in West Asia and closure of key trade routes. The crisis has raised concerns about **kharif season**

**Current Situation of Fertiliser Crisis**

**1. Sharp Price Rise**

- Urea prices increased to **\$935–959/tonne**, nearly double recent levels.
- Other fertilisers:
  - DAP: **\$865–925/tonne**
  - Ammonia: **\$850–900/tonne**
  - Sulphur: up to **\$900/tonne**
- Indicates a **broad-based increase across inputs and raw materials**.

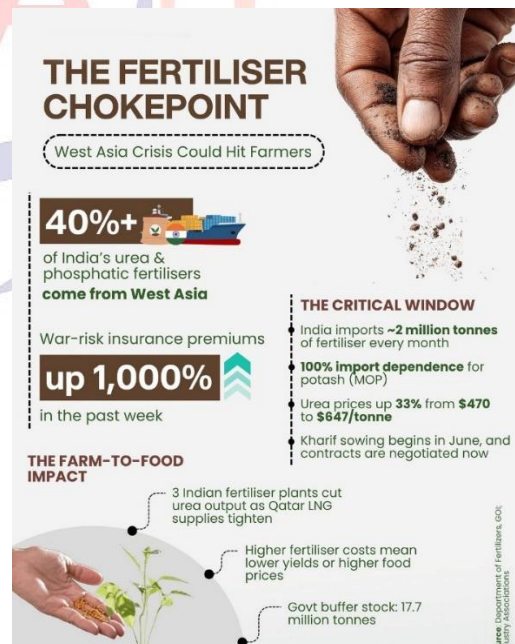
**2. Supply Chain Disruptions**

- Closure of **Strait of Hormuz** disrupted global shipments.
- Shutdown of facilities in Gulf countries reduced availability.
- India forced to source from **Indonesia, Morocco and Jordan**
- Increased competition has further pushed up prices.

**3. Kharif Season Supply Gap**

- Estimated requirement: **~19.4 million tonnes**
- Available stock: **~5.5 million tonnes**

- Indicates a **significant shortfall ahead of sowing season**.



**Structural Issues in India's Fertiliser Sector**

**1. High Import Dependence**

- Urea consumption: **39–40 million tonnes annually**
- Domestic production: **30–31 million tonnes**
- Imports: **9–10 million tonnes**
- Around **40% imports from Gulf region**, increasing vulnerability.

**2. Dependence on Natural Gas**

- Urea production depends on **LNG imports (~60% from Gulf)**.
- Disruptions affect both Imports and Domestic production capacity

### 3. Skewed Fertiliser Usage Pattern

- Urea accounts for **~55% of total fertiliser use**.
- Over-reliance leads to Soil nutrient imbalance and Environmental degradation

### 4. Production Constraints

- Monthly production fell from **~2.5 mt to ~1.5–1.8 mt** due to gas shortages.
- Recovery expected only after supply normalisation.

### Impact of Fertiliser Crisis

#### 1. Agricultural Impact

- Reduced availability may affect **Crop yields** and **Kharif sowing decisions**
- Farmers may cut usage due to high prices.

#### 2. Economic Impact

- Rising fertiliser prices increase **Cost of cultivation** and **Food inflation**
- Government subsidy burden likely to rise significantly.

#### 3. Food Security Concerns

- Lower productivity may affect **Food availability** and Public Distribution System (PDS)

#### 4. Trade and Fiscal Pressure

- Higher imports increase **Current account deficit**
- Subsidy expenditure impacts fiscal stability.

### Government and Policy Response

#### 1. Diversification of Imports

- Sourcing from new countries to reduce dependence on Gulf.

#### 2. Boosting Domestic Production

- Enhancing capacity through New fertiliser plants and Reviving closed units

#### 3. Efficient Distribution

- Ensuring timely supply through Buffer stock management and Improved logistics

### Alternative Solutions and Innovations

#### 1. Shift to Alternative Fertilisers

- Promote:
  - **TSP (Triple Super Phosphate)**
  - **MAP (Mono Ammonium Phosphate)**
  - **SSP (Single Super Phosphate)**
- Helps reduce dependency on urea and DAP.

#### 2. Fortified Fertilisers

- Adding micronutrients like Zinc, boron, iron
- Improves Nutrient efficiency and Crop yield

#### 3. Biostimulants and Organic Inputs

- Derived from Microbes, seaweed, organic matter
- Enhance Nutrient absorption and Soil health

#### 4. Improving Nutrient Use Efficiency

- Promote Balanced fertiliser use and Precision agriculture
- Reduces wastage and input costs.

### Way Forward

#### 1. Reduce Import Dependence

- Increase **domestic fertiliser production and gas availability**.

#### 2. Diversify Fertiliser Basket

- Encourage use of **alternative and balanced fertilisers**.

#### 3. Promote Sustainable Agriculture

- Adopt Organic farming, Bio-fertilisers and Precision techniques

#### 4. Strengthen Supply Chains

- Develop **storage, logistics, and strategic reserves**.

#### 5. Rationalise Subsidy Structure

- Shift towards **direct benefit transfer (DBT)** and efficient targeting.

### Conclusion

**India's fertiliser crisis highlights structural vulnerabilities due to import dependence and skewed usage patterns.** A shift towards diversification, innovation, and efficient nutrient management is essential for long-term agricultural sustainability.

# HISTORY

## ART AND CULTURE

### HERITAGE CONSERVATION IN INDIA

SOURCE: PIB

#### Why in News?

India is increasingly adopting a **holistic and integrated model of heritage conservation**, linking it with **tourism, livelihoods, and cultural diplomacy**.

#### Types of Cultural Heritage

##### 1. Tangible Cultural Heritage

- Includes **monuments, forts, temples, caves, and cultural landscapes** with historical value.
- Examples: Taj Mahal, Ajanta Caves, Sanchi Stupa
- Protected under **Ancient Monuments and Archaeological Sites and Remains (AMASR) Act, 1958**.
- Conservation involves Structural repairs, Chemical preservation and Regulation of nearby construction

##### 2. Intangible Cultural Heritage (ICH)

- Includes **oral traditions, performing arts, rituals, festivals, and traditional knowledge systems**.
- Examples: Yoga, classical dances, Vedic chanting
- Protected under **UNESCO Convention (2003)** and supported by **Article 29 of Constitution**.
- Plays a crucial role in preserving **cultural identity and continuity**.

#### Constitutional and Legal Framework

##### 1. Article 49

- Directs the State to **protect monuments of national importance**, forming the legal foundation of conservation.

##### 2. Seventh Schedule

- **Union List (Entry 67):** Central government protects national monuments
- **State List (Entry 12):** States manage other heritage sites
- Ensures **cooperative governance and decentralisation**.

##### 3. Article 51A (f)

- Makes it a **fundamental duty of citizens** to safeguard cultural heritage.

##### 4. AMASR Act, 1958

- Provides Legal protection of monuments and Regulation of construction in protected areas
- Recently amended to improve **monitoring and penalties**.

##### 5. National Policy for Conservation (2014)

- Emphasises:
  - **Minimal intervention principle**
  - Preservation of authenticity
  - Use of traditional materials with modern science
- Encourages **research, documentation, and community participation**.

#### Institutional Framework

##### 1. Archaeological Survey of India (ASI)

- Established in **1861**, under Ministry of Culture.
- Protects over **3,600 monuments across India**.
- Key functions:
  - Excavations and research
  - Structural and chemical conservation
  - Maintenance of site museums
- Budget allocation: **~₹374 crore (2024–25)**.

##### 2. National Mission on Monuments and Antiquities (NMMA)

- Established in **2007** to create a **comprehensive database of heritage assets**.
- Documented:
  - **11,000+ sites**
  - **12 lakh+ antiquities**.
- Supports better **planning, prioritisation, and digital documentation**.

**Ancient Monuments & Archaeological Sites and Remains Act, 1958**

- Purpose:** Protect and preserve monuments & archaeological sites of national importance
- Covers:**
  - Immovable Heritage
    - Monuments
    - Sites
    - Structures
- Key Provisions:**
  - Declaration of protected monuments
  - Regulation of construction near sites
  - Control over excavations
- Protection Zones:**
  - 100 m → Prohibited Area
  - 200 m → Regulated Area
- Implemented by:**
  - Archaeological Survey of India (ASI)
  - National Monuments Authority (NMA)

**Emerging Approaches in Heritage Conservation**

**1. Heritage–Economy Linkages**

- Programmes like **Adopt a Heritage 2.0** involve private entities in improving Amenities and Visitor experience
- Generates Employment and Local economic growth
- Promotes **sustainable tourism development**.

**2. Cultural Tourism and Festivals**

- Events like Konark Dance Festival and Khajuraho Dance Festival boost Tourism, Local crafts and services
- Strengthen **cultural diplomacy and global outreach**.

**3. Museum Modernisation and Digitisation**

- Digital cataloguing, conservation labs, and interactive displays enhance Preservation and Public engagement
- Makes heritage **accessible to younger generations**.

**4. Technology-Driven Conservation**

- Advanced tools include:
  - **3D laser scanning** for mapping
  - **Drone surveys** for monitoring
  - **GIS mapping** for environmental analysis
  - **Artificial Intelligence** for digitisation of manuscripts
- Improves Accuracy, Efficiency and Long-term preservation

**5. Public–Private Partnerships (PPP)**

- Under “Adopt a Heritage”: Private players act as **Monument Mitras**
- Responsible for Cleanliness and Tourist facilities
- Conservation remains under ASI, ensuring **quality control**.

**6. Digital Platforms**

- Indian Culture Portal offers Virtual tours and 360-degree experiences
- Enhances Accessibility and Educational outreach

**Global Recognition**

- India has **44 UNESCO World Heritage Sites**:
  - 36 cultural
  - 7 natural
  - 1 mixed
- Recent additions like **Maratha Military Landscapes (2024)** reflect growing recognition.

**Challenges in Heritage Conservation**

- **Urbanisation and Encroachment**: Rapid development threatens heritage zones.
- **Funding Constraints**: Limited financial resources for Maintenance and Restoration projects

- **Climate Change and Disasters**: Floods, erosion, and pollution damage structures.
- **Over-Tourism**: Excessive footfall leads to Physical degradation and Environmental stress
- **Limited Community Participation**: Lack of awareness reduces **local involvement in conservation**.

**Way Forward**

- **Promote Community-Based Conservation**: Engage local communities as **stakeholders and custodians**.
- **Sustainable Tourism Models**: Introduce Carrying capacity limits and Eco-friendly infrastructure
- **Enhance Funding and PPP**: Expand CSR participation and international collaborations.
- **Technology Integration**: Scale up AI, Digital archives and Monitoring systems
- **Capacity Building**: Train experts in Conservation science and Heritage management

**Conclusion**

India’s heritage conservation has evolved into a **dynamic and integrated model combining preservation with development**. Sustained innovation, community participation, and policy support are key to safeguarding this legacy for future generations.

**PRELIMS POINTERS IN NEWS**

**VIRLI KHANDAR MEGALITHIC EXCAVATION**

**SOURCE: THE HINDU**

**Why in News?**

A recent excavation at **Virli Khandar in Bhandara district revealed unique burial architecture, artefacts, and unusual pottery arrangements**.



**Virli Khandar**

- **Virli Khandar** is a **megalithic burial site** that offers insights into **early Iron Age cultural and ritual practices in central India**.

- Megalithic cultures in India (c. 1000 BCE–300 CE) are known for **stone-based burial structures and rich grave goods**.

**Key Archaeological Features**

- The site shows **composite burial structures combining stone circles and upright stones (menhirs), differing from typical dolmen sites**.
- Around **69 burial locations have been identified, with selected excavations revealing complex funerary patterns**.
- Artefacts include **iron tools (axes, arrowheads), copper ornaments, carnelian beads, gold jewellery, and skeletal remains**, indicating a developed material culture.
- Nearly **50 pots were found systematically arranged in inverted positions, suggesting ritualistic or symbolic significance**.

**Unique Observations**

- The pottery was placed over **black cotton soil, which helped stabilise the vessels despite soil pressure and breakage**.
- The practice of **placing pots upside down remains unexplained and may indicate ritual beliefs or protective symbolism**.
- The presence of both **iron tools and ornamental objects suggests a society with technological knowledge and social stratification**.

**About Menhirs**

- A menhir is a **large upright stone erected by humans, often associated with burial or commemorative practices**.
- Examples include **Mudumal menhirs in Telangana (UNESCO tentative list) and Grand Menhir Brisé in France**.

**SAMRAT SAMPRATI**

**SOURCE: INDIAN EXPRESS**

**Why in News?**

The Prime Minister inaugurated the **Samrat Samprati Museum in Koba on Mahavir Jayanti**.



**Samrat Samprati**

- **Samrat Samprati was a Mauryan ruler and grandson of Ashoka, known for his strong patronage of Jainism**.
- He is regarded as a key figure in **spreading Jain philosophy across regions in and beyond India**.

**Historical Profile**

- He ruled around **230–220 BCE during the later Mauryan period**.
- He was the **son of Kunala and is believed to have governed parts of the empire after Ashoka’s death**.
- Jain texts describe him as a **devout follower who adopted teachings under monk Suhastin**.

**Contribution to Jainism**

- He is credited with **spreading Jainism across regions such as South India, western India, and possibly Central Asia**.
- He reportedly supported **construction of temples, installation of idols, and establishment of charitable institutions**.
- His role is often compared to Ashoka’s support for Buddhism in terms of **religious propagation**.

**Samprati Museum**

- The museum is designed as a **“Kala-Tirth” combining cultural exhibition with spiritual learning**.

It aims to **preserve Jain art, manuscripts, and heritage for future generations**.

**BALIRAJGARH ARCHAEOLOGICAL SITE**

**SOURCE: INDIAN EXPRESS**

**Why in News?**

The Archaeological Survey of India has resumed excavation at **Balirajgarh in Madhubani district**.



**About Balirajgarh**

- **Balirajgarh** is an ancient fortified site associated with the **Videha Kingdom** and the cultural region of **Mithila**.
- It has been recognised as a **site of national importance since 1938**.

**Archaeological Findings**

- Excavations reveal **multiple cultural layers including Northern Black Polished Ware, Sunga, Kushana, Gupta, and Pala periods**.
- Structural remains include **burnt brick constructions, fortifications, and residential buildings** indicating planned settlement.
- Artefacts such as **terracotta figurines, beads, coins, and tools** reflect economic and cultural activity.

**Key Features**

- The site includes a **massive fortification spread across nearly 176 acres, indicating urban planning and administrative importance**.
- Evidence suggests it may have been a **political and economic centre of the ancient Videha region**.
- Local traditions link it to **King Bali and the Janaka dynasty of Mithila**.

**BANKEY BIHARI TEMPLE**

**SOURCE: THE HINDU**

**Why in News?**

The Supreme Court of India declined to make structural changes to practices at the **Bankey Bihari Temple in Vrindavan**.



**Bankey Bihari Temple**

- The **Bankey Bihari Temple** is one of the most revered Krishna temples located in **Vrindavan, associated with Bhakti tradition**.
- It is dedicated to **Lord Krishna in his 'tribhanga' (three-bend) posture**.

**Historical Background**

- The temple was established by **Swami Haridas, a saint and guru of the musician Tansen**.

- The present structure was built in **1864** and reflects **traditional North Indian temple architecture**.

**Key Features**

- The deity is worshipped in a **distinctive posture symbolising grace and divine playfulness**.
- The temple uniquely **does not use bells or conch sounds during worship**, maintaining a serene atmosphere.
- It is part of the **"Thakur of Vrindavan" group of seven important temples**.
- The temple walls are adorned with **paintings depicting religious themes and devotional art**.

**Cultural Importance**

- It is a major centre of **Krishna devotion and pilgrimage in the Braj region**.
- Historically, it also served as a **centre for revolutionary activities during the freedom struggle**.

**BYZANTINE EMPIRE**

**SOURCE: THE HINDU**

**Why in News?**

Archaeologists have discovered a **rare Byzantine fortified complex in southeastern Spain**, indicating western expansion.

The Byzantine Empire at its peak in 565 AD



**Byzantine Empire**

- The **Byzantine Empire** was the eastern continuation of the Roman Empire that lasted for nearly a **millennium after the fall of the Western Roman Empire (476 CE)**.
- It emerged when Constantine I established a new capital at **Constantinople in 330 CE**, giving rise to a powerful eastern empire.

**Key Features**

- The empire was strategically located on the **Bosphorus Strait**, making it a vital centre of **trade, defence, and cultural exchange between Europe and Asia**.

- Although Greek became the dominant language, the inhabitants continued to identify themselves as **Romans, preserving Roman administrative and legal traditions.**
- Governance was characterised by **strong centralised authority, where the emperor was considered divinely ordained.**
- It developed a **distinct blend of Roman political structure, Greek culture, and Christian religious traditions.**

## Golden Age under Justinian

- The empire reached its peak during the reign of Justinian I (527–565 CE).
- Major achievements included **territorial expansion into parts of Western Europe and North Africa.**
- The construction of the **Hagia Sophia**, an architectural marvel, symbolised Byzantine cultural brilliance.
- The codification of Roman laws into the **Corpus Juris Civilis** influenced **modern legal systems worldwide.**

## Challenges and Decline

- Continuous wars with **Persians, Arabs, and later Ottoman Turks weakened the empire economically and militarily.**
- Religious conflicts contributed to the **Great Schism of 1054 between the Eastern Orthodox and Roman Catholic Churches.**
- The sack of Constantinople during the **Fourth Crusade severely damaged its power and economy.**
- Finally, the empire ended in **1453 CE when the Ottomans captured Constantinople**, marking a major historical transition.

## Legacy

- The Byzantine Empire preserved **classical knowledge, art, architecture, and legal traditions during the medieval period.**
- It significantly influenced **Eastern Europe, Russia, and the development of Orthodox Christianity.**

## AMBER FORT (AMER FORT)

**SOURCE: THE HINDU**

### Why in News?

The Rajasthan High Court issued notices regarding elephant rides near Amber Fort, raising conservation concerns.



## About Amber Fort

- **Amber Fort** is a prominent Rajput-era fort located near Jaipur and represents **the architectural and cultural grandeur of medieval Rajasthan.**
- It served as the **capital of the Kachwaha Rajputs before Jaipur was established.**

## Historical Background

- The fort was initiated in **1592 by Raja Man Singh I**, a trusted general of Akbar.
- It was later expanded by **Jai Singh I**, who added several architectural elements and enhanced its grandeur.
- The capital was eventually shifted to Jaipur in **1727**, but Amber Fort remained an important historical site.

## Architectural Features

- The fort is built on the **Aravalli hills, offering strategic defence advantages and panoramic views.**
- It reflects a **fusion of Rajput and Mughal architectural styles**, seen in intricate carvings and decorative elements.
- Key structures include the **Diwan-i-Khas (Hall of Private Audience)** and **Sheesh Mahal (Mirror Palace)**, known for their artistic detailing.
- The use of **sandstone and marble, along with ornate gateways and courtyards, enhances its aesthetic appeal.**

## Cultural Significance

- Amber Fort is part of the **UNESCO World Heritage Site under the Hill Forts of Rajasthan.**
- It reflects the **military strength, artistic excellence, and royal lifestyle of Rajput rulers.**
- It remains a major **tourist attraction and symbol of Rajasthan's heritage.**

## Contemporary Concerns

- Issues such as **animal welfare (elephant rides), overcrowding, and environmental degradation pose challenges to conservation.**
- Sustainable tourism practices are required to **protect both heritage and ecological balance.**

# GEOGRAPHY

## WATER RESOURCES

### RIVER BASIN MANAGEMENT (RBM) SCHEME

SOURCE: PIB

#### Why in News?

The Government of India has approved continuation of the **River Basin Management (RBM) Scheme for 2026–2031** with an enhanced outlay of ₹2,183 crore.

#### What is the RBM Scheme?

- The RBM Scheme is implemented under the **Ministry of Jal Shakti for scientific and integrated river basin planning.**
- It focuses on:
  - **Water conservation**
  - **Flood control**
  - **Irrigation and hydropower planning**
  - **Ecosystem protection**
- Moves from **fragmented governance to integrated water resource management (IWRM).**

#### Key Features of the RBM Scheme

##### 1. Integrated Basin Planning

- Preparation of **comprehensive master plans** for river basins.
- Covers Surface water, Groundwater, Tributaries and ecosystems
- Ensures **balanced and sustainable utilisation of water resources.**

##### 2. Scientific Survey and Technology Use

- Use of advanced tools like **GIS mapping, Remote sensing, LiDAR and drone surveys**
- Helps in Accurate data collection, Better planning and forecasting

##### 3. Interlinking of Rivers (ILR)

- Implemented through **National Water Development Agency (NWDA).**
- Identified **30 river-linking projects:**
  - 26 feasibility reports completed
  - 15 DPRs prepared
- Aims to transfer water from **surplus to deficit regions.**

#### 4. Flood and Erosion Control

- Focus on vulnerable regions like North-East India and Brahmaputra basin
- Includes Protection of Majuli Island, Raised platforms in flood-prone areas

#### 5. Community-Based Water Management

- Promotion of **Springshed management** and Traditional water conservation practices
- Encourages **local participation, especially tribal communities.**

#### Need for River Basin Management in India

##### 1. Climate Change and Variability

- Increasing Floods, Droughts and Erratic monsoons
- Requires **basin-level resilience planning.**

##### 2. Water Scarcity

- Growing demand from Agriculture and Industry
- Over-extraction of groundwater causing **resource depletion.**

##### 3. Inter-State and International Rivers

- Rivers like Indus and Brahmaputra need coordinated management for **water diplomacy and security.**

##### 4. Disaster Risk Reduction

- Basin-level planning helps prevent Flooding, Soil erosion and Waterlogging

##### 5. Socio-Economic Development

- Reliable water supply supports Agriculture and Livelihoods
- Crucial for millions dependent on **informal economy.**

### Outcomes of RBM

- Improved irrigation infrastructure.
- Increased hydropower generation.
- Better flood and erosion control along with infrastructure development.
- Sustainable water resource management.
- Socio-economic upliftment of regions, especially in the North East and Himalayan areas.

Source: Ministry of Jal Shakti

#### Challenges in Water Governance

- **Difficult Terrain:** Remote regions like **J&K and North-East** face logistical challenges.
- **Inter-State Disputes:** Conflicts over water sharing delay projects and policy implementation.
- **Data Gaps:** Lack of real-time hydrological data affects Forecasting and Decision-making
- **Ecological Concerns:** Infrastructure projects may Disturb ecosystems and Affect biodiversity
- **Financial and Implementation Constraints:** High costs of flood control and erosion management often exceed estimates.

**Way Forward**

- **Strengthen Technology Integration:** Expand use of **LiDAR, AI, and real-time monitoring systems**
- **Improve Institutional Coordination:** Enhance cooperation between Central Water Commission (CWC), NWDA and State agencies
- **Promote Community Participation:** Involve local communities in Water conservation and Monitoring
- **Focus on Springshed Management:** Revive natural water sources in **hilly and tribal regions.**
- **Enhance Capacity Building:** Train officials through institutions like **NEHARI** for better governance.

**Conclusion**

The River Basin Management Scheme marks a shift towards **integrated and scientific water governance in India.** Its success will be crucial for ensuring **water security, climate resilience, and sustainable development in the future.**

**PRELIMS POINTERS IN NEWS**

**MANIKYA DHARA FALLS**

**SOURCE: INDIAN EXPRESS**

**Why in News?**

A missing teenager from Kerala was found near **Manikya Dhara Falls after a drone-based search operation.**



**About Manikya Dhara Falls**

- **Manikya Dhara Falls** is a scenic perennial waterfall located in the **Baba Budangiri hills of the Western Ghats** in Karnataka.
- The name **“Manikyadhara”** means **“stream of pearls,”** reflecting the sparkling appearance of water droplets under sunlight.

**Geographical Features**

- It is situated in the **Chikkamagaluru district within the ecologically rich Western Ghats region,** a recognised global biodiversity hotspot.
- The waterfall originates in **dense forest terrain and flows throughout the year, even during dry summer months.**
- It has a modest height of **around 30 feet but gains prominence due to its continuous flow and surrounding landscape.**

**Ecological Significance**

- The region is part of the **Western Ghats ecosystem, which supports high levels of endemism in flora and fauna.**
- The surrounding forests contribute to **watershed protection, climate regulation, and biodiversity conservation.**
- Being perennial, the falls indicate **stable groundwater recharge and healthy hydrological conditions.**

**Cultural and Religious Importance**

- Locally known as **Nellikayi Theertha,** the site holds **religious significance for local communities.**
- It is associated with **traditional beliefs that bathing in the water can cure ailments,** reflecting a blend of nature and spirituality.
- The area is also linked to **Baba Budangiri, a region known for syncretic religious traditions combining Sufi and Hindu influences.**

**Tourism and Concerns**

- The site attracts visitors due to its **mist-covered hills, cool climate, and serene environment.**
- However, increasing tourism raises concerns about **safety risks, lack of infrastructure, and environmental degradation.**
- Incidents like recent accidents highlight the need for **regulated tourism, proper signage, and emergency response systems.**

**PYKARA LAKE**

SOURCE: THE HINDU

Why in News?

The Madras High Court refused to lift restrictions on boating activities at Pykara Lake.



About Pykara Lake

- Pykara Lake is a scenic freshwater lake located near Ooty in the Nilgiri hills.
- It is formed by the construction of a dam on the Pykara River, which is a major river in the region.

Geographical Features

- The lake is situated about 20 km from Ooty in the Nilgiri district of Tamil Nadu.
- The Pykara River originates from the Mukurthi peak and flows through forested terrain.
- The region lies within the Western Ghats, a global biodiversity hotspot.

Ecological Importance

- The lake is surrounded by Mukurthi National Park, which is part of the UNESCO-listed Western Ghats.
- It supports rich biodiversity including endemic flora and fauna.
- The river holds cultural significance for the Toda tribe, who consider it sacred.

Hydrological and Economic Role

- The Pykara Dam contributes to hydropower generation (~60 MW), making it one of the oldest power stations in South India.
- Nearby Pykara Falls (two-tier waterfalls) enhance tourism potential.

Issues and Concerns

- Increasing tourism activities such as boating can disturb fragile ecosystems and wildlife habitats.
- There are concerns about pollution, waste generation, and ecological degradation.
- Judicial intervention reflects the need for balancing tourism with environmental conservation.

STRAIT OF MALACCA

SOURCE: INDIAN EXPRESS

Why in News?

Concerns over closure of the Strait of Hormuz have renewed focus on alternative chokepoints like the Strait of Malacca.



About Strait of Malacca

- The Strait of Malacca is a narrow waterway connecting the Indian Ocean (Andaman Sea) with the Pacific Ocean (South China Sea).
- It is one of the most strategically significant maritime routes in the world.

Geographical Features

- It lies between Malaysia, Indonesia, Thailand, and Singapore.
- It is relatively narrow and shallow in some parts, making navigation challenging.
- The region experiences monsoonal climate with seasonal wind patterns affecting shipping.

Strategic Importance

- It carries nearly one-fourth of global maritime trade and is a major oil transit route.
- Around 60% of India's seaborne trade and a large share of LNG imports pass through this strait.
- It acts as a critical link between East Asia, South Asia, and Europe.

Security and Governance

- The strait is jointly monitored by Indonesia, Malaysia, and Singapore through coordinated patrols.
- It faces risks such as piracy, maritime accidents, and geopolitical tensions.

Challenges

- Overdependence on a single chokepoint creates vulnerability to disruptions in global trade.

- Rising tensions in Indo-Pacific waters increase strategic competition and security concerns.

## SANTIAGUITO VOLCANO

SOURCE: THE HINDU

### Why in News?

The **Santiaguito Volcano** recently erupted, forcing evacuation of nearby hikers.



### About Santiaguito Volcano

- **Santiaguito Volcano** is an active volcanic complex in western Guatemala, formed after the **1902 eruption of Santa María Volcano**.
- It is among the **most active lava dome systems in the world**.

### Geological Features

- It consists of a **group of lava domes formed inside a volcanic crater created by earlier eruptions**.
- The volcano reaches a height of **about 2,500 meters and has multiple craters**.
- Continuous activity includes **ash emissions, lava flows, and pyroclastic flows**.

### Formation and Evolution

- The catastrophic **1902 eruption destroyed the summit of Santa María and led to the formation of Santiaguito domes**.
- Since 1922, the dome complex has been **growing continuously due to volcanic activity**.

### Hazards and Risks

- Frequent eruptions release **ash clouds, rocks, and toxic gases affecting nearby populations**.
- Pyroclastic flows and lava can cause **severe destruction and loss of life**.
- Past eruptions (1929, 2010) have resulted in **significant fatalities and damage**.

### Importance in Geography

- It provides insights into **plate tectonics, volcanic processes, and disaster management**.
- It is part of the **Pacific Ring of Fire, a zone of intense seismic and volcanic activity**.

## SALWEEN RIVER

SOURCE: THE HINDU

### Why in News?

Reports indicate **arsenic contamination in the Salween River basin**, linked to unregulated mining in Myanmar.



### About Salween River basin

- The **Salween River** (called **Nu** in China and **Thanlwin** in Myanmar) is one of the **major transboundary rivers of Southeast Asia**.

### Course and Geography

- It originates in the **eastern Himalayas of Tibet at an altitude of about 4,000 metres**.
- It flows through **China's Yunnan province, Myanmar, and forms part of the Myanmar-Thailand border**.
- Finally, it drains into the **Andaman Sea through the Gulf of Martaban**.
- It runs parallel to major rivers like **Yangtze and Mekong in the "Three Parallel Rivers" region (UNESCO World Heritage Site)**.

### Ecological and Cultural Importance

- The basin supports **over 200 fish species, many of which are endemic**.

- It sustains rich biodiversity and diverse ecosystems, contributing significantly to global ecological balance.
- Around 10 million people from various ethnic communities depend on the river for livelihood and culture.
- It plays an important role in timber transport, especially floating teak logs.

**Key Concerns**

- Mining activities have led to heavy metal contamination, including arsenic pollution affecting water quality and health.
- Proposed hydropower projects pose risks of ecosystem disruption and displacement of indigenous communities.
- Being a transboundary river, lack of coordinated governance complicates conservation efforts.

**HUSSAIN SAGAR LAKE**

**SOURCE: INDIAN EXPRESS**

**Why in News?**

The Hussain Sagar Lake is witnessing severe algal bloom and foul odour due to rising temperatures and pollution.



**About Hussain Sagar Lake**

- Hussain Sagar is a historic artificial lake built in 1562 during the Qutb Shahi period.
- It connects the twin cities of Hyderabad and Secunderabad and has significant cultural and historical value.

**Key Features**

- It was constructed under Ibrahim Quli Qutb Shah for water supply and irrigation purposes.
- It spans around 5.7 sq km and is among the largest man-made lakes in Asia.
- The lake is famous for the monolithic Buddha statue located at its centre.

- It is surrounded by parks such as Lumbini Park and Indira Park, making it a major recreational hub.

**Environmental Concerns**

- Continuous inflow of untreated sewage and industrial effluents has led to severe pollution.
- Nutrient enrichment has caused eutrophication, leading to algal blooms and oxygen depletion.
- This affects aquatic life, water quality, and public health.

**Urban Significance**

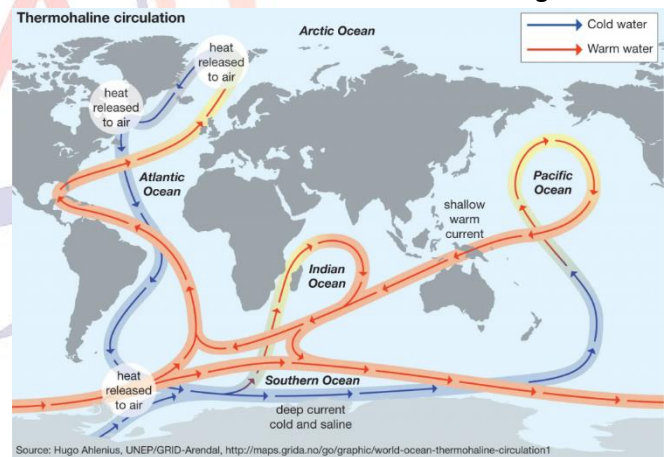
- The lake is an important example of urban water resource management and heritage conservation.
- It also plays a role in microclimate regulation and urban biodiversity support.

**ATLANTIC MERIDIONAL OVERTURNING CIRCULATION (AMOC)**

**SOURCE: INDIAN EXPRESS**

**Why in News?**

A recent study warns that collapse of the AMOC could release stored carbon and worsen climate change.



**Atlantic Meridional Overturning Circulation**

- The Atlantic Meridional Overturning Circulation is a system of ocean currents that redistributes heat across the Atlantic Ocean.
- It plays a crucial role in regulating global climate and weather patterns.

**Working Mechanism**

- Warm surface water moves northward (e.g., Gulf Stream).
- It cools, becomes denser, and sinks in the North Atlantic due to increased salinity.
- This deep water flows southward and later rises again through upwelling, completing the circulation cycle.

**Importance**

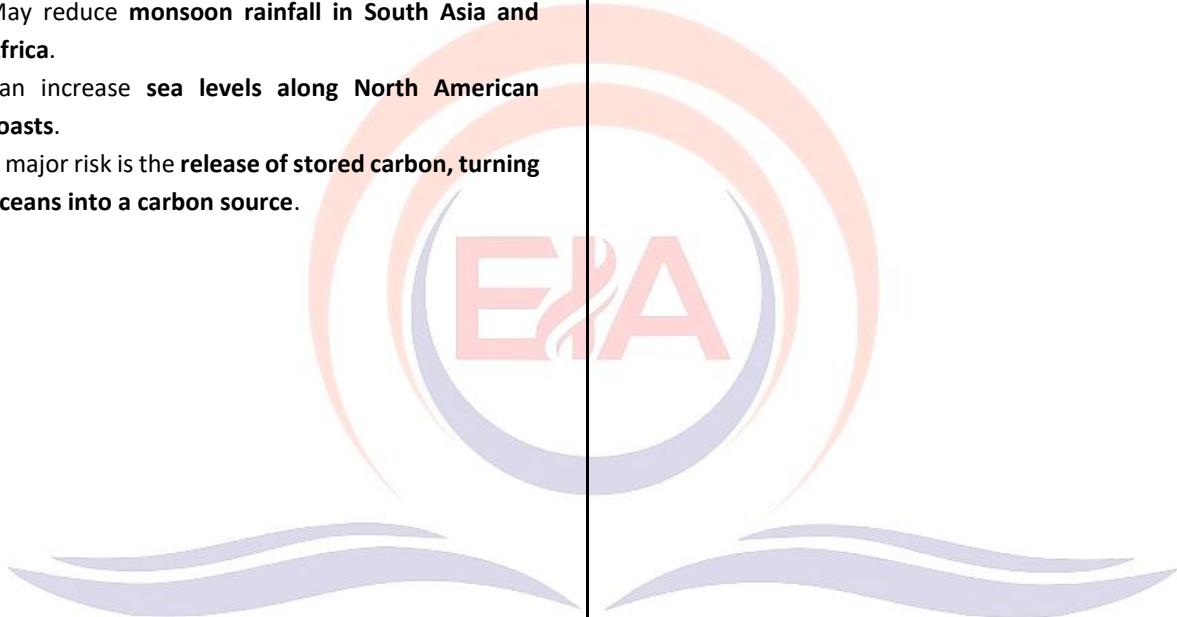
- It helps maintain **mild climate conditions in Western Europe despite high latitudes.**
- It contributes to the **global heat budget and climate balance.**
- It acts as a **carbon sink by absorbing atmospheric CO<sub>2</sub> into ocean waters.**

**Weakening Trends**

- Climate change is causing **warming of ocean surfaces and increased freshwater input from ice melt.**
- This reduces water density and **weakens the sinking process, slowing the circulation.**

**Consequences of Collapse**

- Could lead to **cooler temperatures in Europe but extreme weather variability globally.**
- May reduce **monsoon rainfall in South Asia and Africa.**
- Can increase **sea levels along North American coasts.**
- A major risk is the **release of stored carbon, turning oceans into a carbon source.**



# ENVIRONMENT

## BIODIVERSITY AND CONSERVATION

### SHEKHA JHEEL BIRD SANCTUARY: INDIA'S 99TH RAMSAR SITE

SOURCE: THE HINDU

#### Why in News?

Ministry of Environment, Forest and Climate Change has declared **Shekha Jheel Bird Sanctuary** as a **Ramsar Site (Wetland of International Importance)**.



#### About Shekha Jheel Bird Sanctuary

##### 1. Location and Origin

- Located in **Aligarh**, Uttar Pradesh.
- Covers an area of about **25 hectares**.
- Formed in **1852** due to construction of the **Upper Ganga Canal**.
- The canal divides the wetland into **two distinct sections**.

##### 2. Ecological Significance

- Serves as an important **wintering ground for migratory birds**.
- Hosts over **160+ species of water birds**.
- Key species include Painted stork
  - Bar-headed goose
- Also supports mammals like:
  - **Blackbuck (Schedule I species)**
  - Blue bull (nilgai)

Acts as a **biodiversity hotspot in the Gangetic plains**.

##### 3. Flora and Vegetation

- Dominant native vegetation includes **Terminalia arjuna** and **Syzygium cumini (Jamun)**
- However, ecosystem is increasingly threatened by **invasive species** such as Lantana camara, Parthenium hysterophorus and Water hyacinth

#### What is a Ramsar Site?

A **Ramsar Site** is a wetland designated under the Ramsar Convention for its **international ecological importance**.

- Criteria include:
  - Supporting rare or endangered species
  - Hosting migratory birds
  - Maintaining ecological balance

India is among the leading countries in **Ramsar site designations globally**.

#### Importance of Shekha Jheel Ramsar Designation

##### 1. Biodiversity Conservation

- Provides **critical habitat for migratory birds and aquatic species**, enhancing **ecosystem resilience**.

##### 2. Strengthening Wetland Governance

- Ensures **legal protection** and **scientific management** for **sustainable resource utilisation**.

##### 3. Boost to Eco-Tourism

- Promotes **birdwatching and nature tourism**, generating **local employment opportunities**.

##### 4. Climate Change Mitigation

- Acts as a **carbon sink** and **flood buffer**, supporting **climate adaptation strategies**.

#### Key Threats to Shekha Jheel

##### 1. Siltation and Habitat Degradation

- **Unscientific land modifications** increase **sedimentation**, reducing **water depth** and **habitat quality**.

##### 2. Invasive Species Proliferation

- Spread of **water hyacinth** lowers **oxygen levels** and destroys **aquatic habitats**.

##### 3. Eutrophication

- **Excess nutrients** trigger **algal blooms**, degrading **water quality** and harming **aquatic life**.

##### 4. Anthropogenic Pressures

- **Infrastructure development** and farming activities increase **poaching risks** and reduce **open water areas**.

##### 5. Loss of Forest Cover

- **Land-use changes** degrade **surrounding vegetation**, destabilising the **wetland ecosystem**.

#### Way Forward

##### 1. Scientific Wetland Management

- Regular monitoring of **water quality** and **biodiversity indicators** ensures effective conservation.

**2. Control of Invasive Species**

- Adopt **mechanical and biological methods** to manage **water hyacinth and lantana**.

**3. Community Participation**

- Engage **local communities** in **conservation and sustainable livelihoods**.

**4. Regulated Eco-Tourism**

- Promote tourism within **carrying capacity limits** using **eco-friendly infrastructure**.

**5. Strengthen Legal Protection**

- Enforce strict laws to prevent **poaching, encroachment, and habitat destruction**.

**Conclusion**

The inclusion of Shekha Jheel as a Ramsar site strengthens India’s wetland conservation framework and biodiversity protection efforts. **Effective management and community participation will be key to sustaining its ecological and economic value.**

**CLIMATE CHANGE AND POLLUTION**

**GREEN FACTORY STANDARDS IN INDIA**

**SOURCE: PIB**

**Why in News?**

There is growing demand to develop **green factory standards in India** to make manufacturing more **climate-friendly and globally competitive**.

**Changing Global Manufacturing Landscape**

**1. Rise of ESG Norms**

- Investors increasingly focus on **Environmental, Social, and Governance (ESG)** criteria.
- Companies with strong sustainability practices attract **greater investment and credibility**.

**2. Sustainable Supply Chains**

- Global supply chains now assess **Carbon footprint** and Resource efficiency
- Sustainability has become a **key factor alongside cost and efficiency**.

**3. Global Certification Advantage**

- Developed countries use **standardised green certifications**.
- These certifications improve Market access and Investor confidence

**India’s Industrial Growth vs Climate Challenge**

**1. Rising Emissions**

- India contributes around **7–8% of global greenhouse gas emissions**.
- Rapid industrialisation may increase emissions further.

**2. Dual Objective**

- India must **Expand manufacturing for jobs and growth** and **Reduce emissions intensity**
- This creates a **development–environment trade-off**.

**Existing Green Certification Ecosystem in India**

**1. Available Systems**

- India already has **green building certifications**, Energy efficiency programmes and Industrial sustainability assessments

**2. Industry-Level Initiatives**

- Adoption of Rooftop solar, Waste heat recovery and Recycling systems

**3. Key Issue: Fragmentation**

- Multiple certifications exist independently.
- Results in:
  - Lack of **uniform national benchmark**
  - Poor global recognition
  - Difficulty in communicating sustainability achievements

**Why India Needs a Green Factory Framework**

**1. Context-Specific Approach**

- India has unique conditions like Water scarcity and regional diversity
- Western models are **not fully applicable**.

**2. Boost Global Competitiveness**

- A unified certification will **improve global credibility** and Enhance export potential

**3. MSME Inclusion**

- MSMEs contribute over **30% of GDP**.
- A simple, scalable framework ensures **inclusive sustainability adoption**.

**4. Attract Green Investments**

- Standardised metrics enable Access to **ESG-linked financing** and better investor confidence

**5. Policy Integration**

- Can align with Production Linked Incentive (PLI) schemes and Climate commitments
- Ensures **coherence in industrial and environmental policy**.

**Key Components of Green Factory Standards**

**1. Energy Efficiency**

- Reduce energy intensity
- Promote **renewable energy adoption (solar, wind)**

**2. Water Management**

- Efficient water use
- Recycling and reuse systems
- Focus on **water-stressed regions**

**3. Waste Management and Circular Economy**

- Waste reduction and recycling
- Resource recovery and reuse
- Promote **industrial symbiosis**

**4. Carbon Footprint Reduction**

- Measure and monitor emissions
- Encourage **net-zero transition pathways**

**5. Digital Integration**

- Use of Smart sensors and Data analytics Improve **monitoring and reporting**

**6. MSME-Friendly Framework**

- Simplified compliance
- Tier-based certification system
- Encourages gradual adoption

**Challenges in Implementation**

**1. Diverse Industrial Conditions**

- Variations in Energy costs and Infrastructure Make standardisation difficult

**2. High Initial Costs**

- Adoption of green technologies requires **capital investment**

**3. Awareness and Capacity Gaps**

- MSMEs lack technical knowledge and financial resources

**4. Policy Coordination Issues**

- Multiple ministries and agencies involved
- Leads to **fragmented governance**

**Way Forward**

**1. Develop Unified National Standard**

- Create a **single green factory certification framework**

**2. Align with Global Standards**

- Ensure compatibility with International ESG norms
- While retaining **India-specific features**

**3. Provide Incentives**

- Offer Tax benefits and Subsidies
- Encourage adoption, especially among MSMEs

**4. Capacity Building**

- Training programmes for Industry stakeholders  
Improve awareness and implementation

**5. Strengthen Monitoring Systems**

- Ensure Transparency and Credibility of certification

**Conclusion**

A unified green factory standard is essential for aligning India's industrial growth with sustainability goals. It will enhance global competitiveness, attract investments, and support a resilient low-carbon manufacturing ecosystem.

**MICROPLASTIC POLLUTION IN INDIA**

**SOURCE: THE HINDU**

**Why in News?**

A recent study on Chennai's beaches highlights that although microplastic quantity is lower, **toxic nylon fibres pose serious ecological risks.**



**About Microplastics**

- **Microplastics** are plastic particles **smaller than 5 mm**, widely present in air, water, soil, and food systems.
- They are categorized into:
  - **Primary microplastics** (intentionally manufactured like microbeads)
  - **Secondary microplastics** (formed from breakdown of larger plastics)
- Due to their **persistence, invisibility, and toxicity**, microplastics have emerged as a **major environmental and public health concern** globally and in India.

**Status of Microplastic Pollution in India**

### 1. Airborne Microplastics

- Contribute around **5% of PM2.5/PM10 pollution** in cities like Delhi and Kolkata.
- Estimated lifetime inhalation: **~3 grams per person**.

### 2. Aquatic Pollution

- India releases nearly **3.9 lakh tonnes of microplastics annually** into water bodies.
- Makes India one of the **major global contributors**.

### 3. Food Chain Contamination

- Microplastics found in:
  - **Sea salt (100% samples)**
  - **Seafood (13–27 particles per 100g)**
- Indicates widespread contamination of **marine food systems**.

### 4. Human Exposure

- Urban Indians may ingest **5–7 grams annually**, equivalent to a **credit card's weight of plastic**.

### Major Sources of Microplastics

#### 1. Fishing Industry

- Nylon fishing nets and ropes degrade into **microfibres**.
- Major source of marine pollution, especially in coastal areas.

#### 2. Synthetic Textiles

- Washing polyester and nylon clothes releases **thousands of microfibres**.
- Sewage systems carry these fibres into rivers and oceans.

#### 3. Mismanaged Plastic Waste

- Single-use plastics degrade under Sunlight (UV radiation) and Ocean waves
- Leads to formation of **secondary microplastics**.

#### 4. Personal Care Products

- Microbeads in Cosmetics and Toothpaste Enter water systems due to lack of filtration.

### Environmental and Health Impacts

#### 1. Marine Ecosystem Damage

- Microplastics harm Fish, Coral reefs and Marine biodiversity
- Ingestion leads to **physical and chemical toxicity**.

#### 2. Bioaccumulation

- Microplastics accumulate across food chain levels.
- Higher concentration found in Predators and Humans

#### 3. Human Health Risks

- Linked to Hormonal disruption and Immune system issues

- Still an emerging area of research with growing concern.

### 4. Coastal Economy Impact

- Affects Fisheries and Tourism
- Threatens India's **blue economy potential**.

### Government Initiatives

#### 1. Single-Use Plastic Ban (2022)

- Banned **19 high-litter plastic items** to reduce waste generation.

#### 2. Plastic Waste Management Rules

- Introduced **Extended Producer Responsibility (EPR)**.
- Ensures producers manage plastic waste lifecycle.

#### 3. Swachh Sagar, Surakshit Sagar Campaign

- Nationwide coastal cleanup covering **75 beaches**.

#### 4. National Marine Litter Policy (Draft)

- Focuses on Monitoring and Reducing land-based marine pollution

### Key Challenges

#### 1. Detection Difficulties

- Monitoring focuses on quantity, not **toxicity or composition**.

#### 2. Transboundary Nature

- Ocean currents carry plastics across borders, making regulation difficult.

#### 3. Lack of Alternatives

- Industries depend on Cheap plastic materials
- Sustainable substitutes are costly.

#### 4. Infrastructure Gaps

- Waste management and sewage treatment systems are **inadequate**.

### Way Forward

#### 1. Technological Solutions

- Install **microfibre filters in washing machines**.
- Upgrade sewage treatment plants with **advanced filtration systems**.

#### 2. Promote Sustainable Alternatives

- Encourage Biodegradable fishing nets and Eco-friendly materials

#### 3. Policy Reforms

- Shift to **risk-based monitoring** focusing on toxicity and polymer type.

#### 4. Strengthen Awareness

- Introduce Plastic footprint labelling and Public awareness campaigns

#### 5. Circular Economy Approach

- Promote Recycling and Waste reduction
- Reduce plastic generation at source.

### Conclusion

Microplastic pollution is an emerging invisible threat affecting ecosystems and human health. A combination of policy reforms, technological innovation, and behavioural change is essential to tackle this challenge effectively.

## INDIAN INITIATIVES, EFFORTS AND COMMITMENTS

### INDIA'S NDC 3.0 (2031–2035)

SOURCE: INDIAN EXPRESS

#### Why in News?

The Union Cabinet has approved India's updated **Nationally Determined Contribution (NDC 3.0)** for 2031–2035 to be submitted to UNFCCC under the Paris Agreement.

#### About Nationally Determined Contribution (NDC)

- A **Nationally Determined Contribution (NDC)** is a country's **national climate action plan**, outlining commitments to **reduce greenhouse gas emissions and adapt to climate change impacts**.
- These commitments are **self-determined, progressive, and periodically updated (every 5–10 years)** to enhance ambition.

#### Key Highlights of India's NDC 3.0

##### 1. Expansion of Non-Fossil Energy Capacity

- Target: **60% of total installed electricity capacity from non-fossil sources by 2035**.
- Current status: **~52.57% (2026)**, already exceeding earlier 2030 targets.
- Includes Solar energy, Wind energy, Hydropower and Nuclear energy

##### 2. Reduction in Emissions Intensity

- Target: **47% reduction in emissions intensity of GDP (from 2005 levels) by 2035**.
- Achievement so far: **~36% reduction by 2020**, demonstrating steady progress.

##### 3. Enhancement of Carbon Sink

- Target: **3.5–4 billion tonnes CO<sub>2</sub> equivalent carbon sink** through forests and tree cover.
- Current achievement: **~2.29 billion tonnes CO<sub>2</sub> equivalent**.

**Green goals**

The targets set for 2035 under the Nationally Determined Contribution (NDC) are part of India's formal climate pledges under the Paris Agreement

Reduce emissions intensity of GDP by **47%** from 2005 level

Achieve **60%** installed electric power from non-fossil fuel energy resources

Create carbon sink of **3.5 to 4.0 billion tonnes** of CO<sub>2</sub> equivalent through forest and tree cover

As a signatory to the Paris Agreement, India was required to update its NDC by 2025 with actions towards curbing fossil fuel and improving energy efficiency

#### India's Approach to Climate Action

##### 1. Equity and CBDR-RC Principle

- Based on **Common but Differentiated Responsibilities and Respective Capabilities (CBDR-RC)**.
- Recognises Historical responsibility of developed nations and India's development needs

##### 2. Whole-of-Society Approach

- Integrates Government policies, Industry participation and Citizen involvement
- Ensures **inclusive and coordinated climate action**.

##### 3. Strategic Government Initiatives

- **Green Hydrogen Mission** → decarbonising industries
- **PM Surya Ghar Yojana** → rooftop solar expansion
- **PM-KUSUM** → solarisation of agriculture
- **PLI schemes** → green manufacturing ecosystem

##### 4. Technology-Driven Mitigation

- Focus on **Carbon Capture, Utilisation and Storage (CCUS)**, Battery storage technologies, and Expansion of nuclear power
- Essential for **hard-to-abate sectors like steel and cement**.

##### 5. Global Climate Leadership

- India leads global initiatives such as International Solar Alliance, Coalition for Disaster Resilient Infrastructure and Global Biofuel Alliance
- Strengthens India's role in **climate diplomacy and Global South leadership**.

##### 6. Adaptation and Resilience

- Driven by **National Action Plan on Climate Change (NAPCC)**.
- Includes Mangrove restoration (MISHTI), Climate-resilient agriculture and Water conservation programmes

##### 7. Behavioural Change Approach

- Promotes **Lifestyle for Environment (LiFE)**.
- Encourages Sustainable consumption and Citizen participation

### A Five-Point Plan for Next Generation NDCs



### Significance of NDC 3.0

- **Strengthens Climate Leadership:** Positions India as a credible and responsible global climate leader.
- **Supports Net-Zero Target:** Aligns with India's goal of achieving net-zero emissions by 2070.
- **Drives Green Growth:** Promotes clean energy investments and green jobs, supporting Viksit Bharat vision.
- **Enhances Energy Security:** Reduces dependence on imported fossil fuels, improving strategic autonomy.

### Challenges in Achieving NDC 3.0

- **Capacity vs Generation Gap:** High renewable capacity but low actual generation due to intermittency.
- **Storage and Grid Bottlenecks:** Lack of battery storage and transmission infrastructure limits renewable integration.
- **Continued Coal Dependence:** Heavy reliance on coal for electricity slows decarbonisation efforts.
- **Financial Constraints:** Requires large-scale investment (\$40–50 billion annually) for transition.
- **Land and Afforestation Issues:** Land scarcity restricts expansion of renewable projects and forest cover.

### Way Forward

- **Round-the-Clock Renewable Energy:** Integrate solar, wind, and storage systems for reliable energy supply.
- **Repurposing Coal Infrastructure:** Convert abandoned mines into solar parks and storage facilities.
- **Just Transition Framework:** Ensure reskilling and economic diversification in coal-dependent regions.
- **Climate Finance Mobilisation:** Use blended finance and multilateral funding to support investments.

- **Strengthen Carbon Markets:** Implement Carbon Credit Trading Scheme (CCTS) for emission reduction incentives.
- **Promote Agroforestry:** Integrate trees into agriculture to enhance carbon sinks.

### Conclusion

India's NDC 3.0 reflects a balanced pathway combining climate ambition with developmental priorities and equity. Its success will depend on finance, technology, and inclusive policies to achieve sustainable and resilient growth.

## DISASTER MANAGEMENT

### LEGISLATIVE VACUUM IN INDIA'S HEAT CRISIS

SOURCE: INDIAN EXPRESS

#### Why in News?

Researchers highlight that over 57% of Indian districts are now heat-prone, yet legal protection for workers remains inadequate.

#### Legislative Vacuum

- The legislative vacuum refers to the absence of binding laws ensuring protection from extreme heat, especially for vulnerable populations.
- Current frameworks:
  - Provide guidelines and advisories
  - Lack mandatory enforcement mechanisms
- Heat protection is not fully recognised as part of the Right to Life under Article 21, despite its direct impact on survival and dignity.

#### Scale and Impact of the Heat Crisis

##### 1. Expanding Geographic Spread

- Over 57% of districts are now heat-prone, including Coastal regions and Temperate zones
- Indicates climate-induced spatial expansion of heatwaves.

##### 2. Vulnerable Workforce

- Around 400–490 million workers operate in informal sectors such as Construction, Street vending and Gig economy
- They lack Cooling facilities and Legal protection

##### 3. Health Risks

- Exposure leads to Heatstroke, Dehydration and Chronic illnesses

- Sanitation workers face **higher micro-climate temperatures due to toxic waste conditions.**

**4. Economic Impact**

- Heat reduces Labour productivity and Working hours
- Forces workers to choose between **health and income**, affecting national output.

**Indian Meteorological Department (IMD) criteria for Heatwaves**

Heat wave Scenario		40°C Plains	30°C Hills
Maximum Temperature			
Heat wave conditions prevail when:		Severe heat wave conditions prevail when:	
Normal maximum temperature	Deviation from normal	Normal maximum temperature	Deviation from normal
Above 40°C	4-5°C or more	Above 40°C	6°C or more
At or below 40°C	5-6°C or more	At or below 40°C	7°C or more
<b>When should a heat wave be DECLARED?</b>			
Recorded maximum temperature			
At or above		At or below	
<b>45°C for all locations</b>		<b>40°C for coastal locations</b>	

**Causes of Rising Heatwaves**

**1. Climate Change**

- Global warming increases Frequency and Duration of heatwaves

**2. Urban Heat Island Effect**

- Rapid urbanisation replaces Vegetation with concrete
- Traps heat and raise local temperatures.

**3. Humidity-Heat Interaction**

- High humidity leads to **Wet Bulb Temperature**, limiting body cooling capacity

**4. Atmospheric Changes**

- Altered jet streams and wind patterns create Persistent **heat domes**

**5. Deforestation**

- Loss of green cover reduces Natural cooling (evapotranspiration)

**Gaps in Existing Legal Framework**

**1. Factories Act, 1948**

- Covers only **indoor workers**, focusing on factory-based workplaces.
- Fails to address **occupational heat exposure in outdoor sectors** like construction and street vending.
- Results in **exclusion of a large informal workforce** from legal heat protection.

**2. OSHWC Code, 2020**

- Does not explicitly recognise **heat as a mandatory occupational hazard.**

- Leaves **heat safety standards to government discretion**, not binding.
- Lacks **clear guidelines on work-rest cycles, hydration, and cooling measures.**

**3. Lack of Disaster Classification**

- Heatwaves are not fully included in the **nationally notified disaster list.**
- Limits states to using only **~10% of disaster response funds** for heat-related relief.
- Leads to **inadequate financial support and weak institutional response.**

**4. Gig and Informal Worker Exclusion**

- Workers are classified as **contractors/partners**, not formal employees.
- This removes **employer responsibility for providing heat safety measures.**
- Results in **lack of legal protection for a large informal workforce.**

**5. Weak Enforcement Mechanisms**

- Existing guidelines are mostly **advisory in nature, not legally binding.**
- Absence of **monitoring and accountability systems** reduces effectiveness.
- Leads to **poor implementation and low compliance on ground.**

**Way Forward**

**1. Recognise Heatwaves as National Disaster**

- Include heatwaves in **Notified Disaster List**
- Enables greater funding and response capacity.

**2. Legal Recognition of 'Right to Cool'**

- Recognise thermal safety as part of **Article 21 (Right to Life)**
- Makes protection a fundamental right.

**3. Binding Safety Standards**

- Mandate Work-rest cycles
- Provision of water and shade Ensure enforceable workplace safety.

**4. Adopt Heat Index-Based Regulation**

- Use **temperature + humidity** for Triggering safety measures

**5. Financial Protection Mechanisms**

- Introduce Heat insurance schemes
- Compensate income loss during extreme heat.

**6. Strengthen Urban Planning**

- Promote Urban greening and Cool roof Reduce heat exposure at source.

**Conclusion**

India's heat crisis reflects a shift from environmental challenge to a question of social justice and labour rights. Filling the legislative gap with enforceable protections is essential to safeguard vulnerable populations in a warming climate.

## PRELIMS POINTERS IN NEWS

### HONEY BADGER (RATEL)

SOURCE: THE HINDU

#### Why in News?

The presence of Honey Badger was confirmed in Kheoni Wildlife Sanctuary, Madhya Pradesh.



#### About Honey Badger

- The **Honey Badger**, also known as the ratel, is a **small but extremely powerful carnivorous mammal belonging to the weasel family**.
- It is widely known for its **fearless behaviour and strong defensive abilities**.

#### Distribution and Habitat

- It has a **wide distribution across Africa, the Middle East, and parts of South Asia including India**.
- It inhabits **dry regions, grasslands, forests, and scrublands**, showing high adaptability.
- It typically lives in **burrows dug with its strong forelimbs**.

#### Physical and Behavioural Traits

- It has a **compact body, thick loose skin, and sharp claws, enabling it to defend itself effectively**.
- Its distinctive colour pattern includes a **white-grey upper body and black lower body**.
- It is mostly **nocturnal and omnivorous, feeding on small animals, insects, fruits, and roots**.

- Known for its aggression, it can **take on animals much larger than itself**.

#### Ecological Role

- It plays a role in **controlling rodent populations and maintaining ecological balance**.
- Its digging behaviour contributes to **soil aeration and ecosystem processes**.

#### Conservation Status

It is listed as **"Least Concern"** by IUCN, but local threats include **habitat loss and human conflict**.

### LIMNONECTES MOTIJHEEL (NEW FROG SPECIES)

SOURCE: THE HINDU

#### Why in News?

Scientists discovered a new frog species **Limnonectes motijheel** in **Namdapha Tiger Reserve, Arunachal Pradesh**.



#### About Limnonectes motijheel

- **Limnonectes motijheel** is a newly identified species belonging to the **"fanged frog" group**, known for unique anatomical and behavioural features.
- It adds to the **growing list of amphibian diversity in India's northeastern region**.

#### Habitat and Distribution

- It was discovered in **Namdapha Tiger Reserve**, one of India's most biodiverse protected areas.
- The region lies at the **junction of Indo-Malayan and Indian biogeographic zones**, supporting diverse ecosystems.

#### Key Characteristics

- The species has **small fang-like projections in the lower jaw, possibly used for feeding or territorial defence**.
- It is a **medium-sized frog with distinctive markings, including a dorsal ridge and dark stripe patterns**.
- Unlike most frogs, it exhibits **mud-nesting behaviour beneath leaf litter, which is rare in India**.

#### Ecological Importance

- Amphibians act as **bio-indicators of environmental health, reflecting ecosystem changes.**
- The discovery indicates **high levels of endemism and ecological richness in northeastern forests.**

**Associated Biodiversity (Namdapha)**

- The reserve hosts **four big cat species (tiger, leopard, snow leopard, clouded leopard)** and rare species like **Hoolock Gibbon.**
- It supports **diverse vegetation ranging from tropical forests to alpine scrub.**

**TIBETAN ANTELOPE (CHIRU)**

**SOURCE: DTE**

**Why in News?**

A Delhi court convicted an art dealer for **illegal export of shahtoosh shawls made from Tibetan Antelope hair.**



**About Tibetan Antelope**

- The **Tibetan Antelope (Chiru)** is a **high-altitude mammal endemic to the Qinghai–Tibetan Plateau,** known for producing the ultra-fine **shahtoosh wool.**
- It is a **symbol of fragile alpine ecosystems and one of the most illegally exploited wildlife species.**

**Habitat and Distribution**

- Found at **extreme altitudes (3,000–5,500 m)** in cold desert, alpine grasslands, and plateau regions.
- In India, it occurs in **Ladakh (Aksai Chin, Chang Chenmo Valley, Daulat Beg Oldi region).**
- The species is **highly migratory, moving long distances for seasonal grazing and breeding.**

**Key Features**

- Medium-sized animal with **slender body, long legs, and high endurance** suited for thin oxygen levels.
- Only males possess **long curved horns used for dominance and mating competition.**
- The coat changes seasonally: **light brown in summer for camouflage and thick wool in winter for insulation.**

- The **shahtoosh fibre is derived from its undercoat,** which is extremely fine and warm.

**Ecological Role**

- It plays a role in **maintaining alpine grassland ecosystems by grazing and nutrient cycling.**
- Acts as prey for **predators like wolves, thereby sustaining the food chain.**

**Threats**

- **Illegal poaching for shahtoosh wool remains the biggest threat,** as one shawl requires killing multiple animals.
- **Infrastructure development and habitat fragmentation** disrupt migratory routes.
- **Climate change affects fragile high-altitude ecosystems and forage availability.**

**Conservation Status**

- **IUCN: Near Threatened**
- **CITES: Appendix I (strict trade ban)**

**Wildlife Protection Act, 1972: Schedule I (highest protection)**

**RAIMONA NATIONAL PARK**

**SOURCE: THE HINDU**

**Why in News?**

A new gecko species was discovered near **Raimona National Park,** highlighting its biodiversity richness.



**Raimona National Park**

- **Raimona National Park is a recently declared protected area in Assam,** forming part of the **Eastern Himalayan biodiversity hotspot.**
- It plays a crucial role in **transboundary conservation and species connectivity.**

**Location and Geography**

- Located in **Kokrajhar district in the Bodoland Territorial Region**, along the **India–Bhutan border**.
- The terrain includes **foothills, river valleys, and forested landscapes ranging from low to moderate elevation**.
- Important rivers such as **Sankosh, Saralbhanga, and Pekua define its boundaries**.

**Ecological Significance**

- Forms a **transboundary conservation landscape with Bhutan’s protected areas and West Bengal’s Buxa Tiger Reserve**.
- Acts as an **elephant corridor and wildlife movement zone between India and Bhutan**.
- Part of a **larger ecological network ensuring genetic flow and species survival**.

**Flora and Fauna**

- Vegetation includes **moist deciduous and evergreen forests, grasslands, and diverse orchid species**.
- Key fauna include **Golden Langur (endemic), Asian elephant, tiger, clouded leopard, and wild buffalo**.
- It supports **rich avifauna and butterfly diversity, indicating ecological health**.

**Importance**

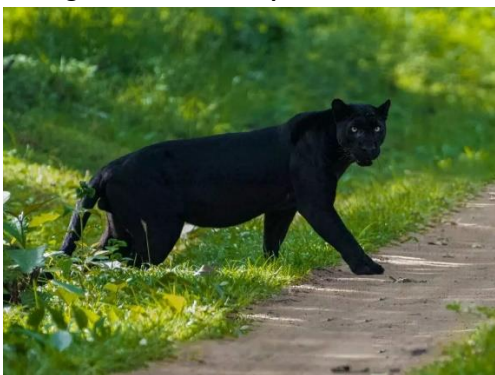
- Critical for **conservation of endangered primates like the Golden Langur**.
- Enhances **India’s protected area network in Northeast India**.
- Promotes **eco-tourism and sustainable livelihoods for local communities**.

**BLACK PANTHERS (MELANISTIC BIG CATS)**

**SOURCE: THE HINDU**

**Why in News?**

A female **Black Panther** will be introduced at **Indira Gandhi Zoological Park, Visakhapatnam**.



**About Black Panther**

- A **Black Panther is not a separate species but a melanistic form of leopards or jaguars**, characterised by **excess dark pigmentation**.
- In India, it usually refers to **melanistic leopards**.

**Distribution**

- Found across **Asia, Africa, and the Americas**, depending on species (leopard or jaguar).
- In India, sightings are reported in **Western Ghats (Karnataka, Kerala), Sundarbans, and parts of Central India**.

**Key Features**

- Their **black or dark brown coat provides camouflage in dense forests**, aiding **stealth hunting**.
- Spots (rosettes) are still visible under sunlight, showing their **true leopard identity**.
- They are **solitary, territorial, and highly adaptive predators**.
- The melanism trait is due to **genetic mutation leading to excess melanin production**.

**Ecological Role**

- They act as **apex or meso-predators, maintaining ecological balance by regulating prey populations**.
- Their presence indicates **healthy forest ecosystems with sufficient prey base**.

**Threats**

- **Habitat loss due to deforestation and human expansion**.
- **Poaching and illegal wildlife trade**.
- **Road accidents and human-wildlife conflict**.

**Conservation Status**

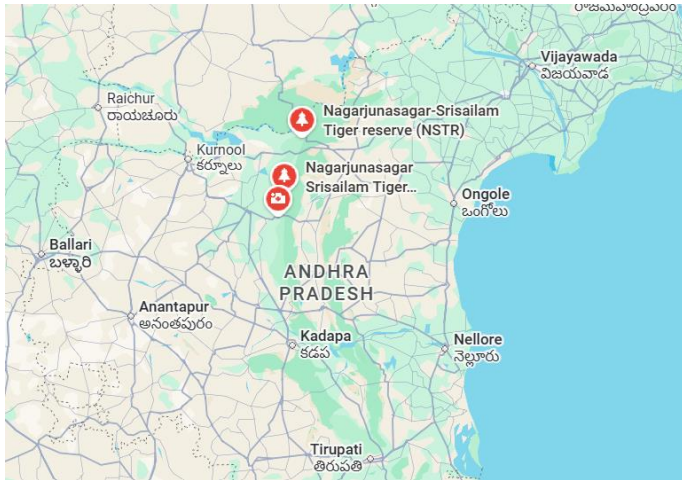
- Since they are leopards:
  - **IUCN: Vulnerable**
  - **CITES: Appendix I**
  - **Wildlife Protection Act: Schedule I**

**NAGARJUNASAGAR–SRISAILAM TIGER RESERVE (NSTR)**

**SOURCE: THE HINDU**

**Why in News?**

Authorities are planning to **revive a tiger enclosure project in Nagarjunasagar–Srisailam Tiger Reserve for orphaned and injured tiger cubs**.



**About Nagarjunasagar–Srisailem Tiger Reserve**

- NSTR is one of the largest tiger reserves in India, located in the Nallamala hills.
- It is a key part of Project Tiger, playing a vital role in conserving large carnivores and forest ecosystems.

**Location and Geography**

- Situated across Andhra Pradesh (and parts of Telangana) in the Eastern Ghats landscape.
- Named after Nagarjuna Sagar Dam and Srisailem Dam, which are major hydrological features.
- The Krishna River flows through the reserve, creating deep valleys and gorges.

**Topography and Vegetation**

- Characterised by plateaus, ridges, deep valleys, and rugged terrain, making it a natural refuge for wildlife.
- Dominated by tropical dry deciduous forests with bamboo and grass undergrowth, supporting herbivores and predators.

**Flora and Fauna**

- Flora includes rare endemic species like Andrographis nallamalayana and Premna hamiltonii, indicating ecological uniqueness.
- Fauna includes tiger, leopard, wild dog, wolf, sloth bear, sambar, chital, and chinkara, reflecting rich biodiversity.
- The reserve supports both predator-prey balance and ecosystem stability.

**Ecological and Cultural Significance**

- Acts as a major tiger habitat and wildlife corridor in the Eastern Ghats.
- Houses important sites like Mallikarjuna Temple at Srisailem and Buddhist remains at Nagarjunakonda, linking ecology with heritage.

**Challenges**

- Human-wildlife conflict and habitat fragmentation due to development pressures.

- Need for better conservation infrastructure like rescue centres and monitoring systems.

**MILLIPEDE**

**SOURCE: DTE**

**Why in News?**

A study reported self-cleaning ability in a Western Ghats millipede species similar to the lotus effect.



**About Millipedes**

- Millipedes are segmented arthropods belonging to the class Diplopoda, known for having numerous legs.
- They are important detritivores that help maintain soil health.

**Physical Features**

- They have elongated cylindrical bodies with multiple segments, each bearing two pairs of legs.
- Their body is covered by a hard exoskeleton that protects against predators and environmental stress.
- They are generally slow-moving and rely on defence rather than speed.

**Habitat and Distribution**

- Found across all continents except Antarctica, with highest diversity in tropical regions.
- They inhabit moist environments such as leaf litter, forest floors, and decaying wood.

**Behaviour and Adaptations**

- Their main defence is curling into a tight coil to protect soft body parts.
- Some species release chemical secretions with foul smell to deter predators.

- Recent research shows **self-cleaning surfaces that prevent dirt accumulation**, useful for scientific innovation.

**Ecological Importance**

- They act as **decomposers, breaking down organic matter and recycling nutrients into soil.**

Their activity improves **soil structure, fertility, and ecosystem productivity.**

**WOOLLY-NECKED STORK**

**SOURCE: THE HINDU**

**Why in News?**

Rare sightings of the **Woolly-Necked Stork** have been reported in **Tamil Nadu’s agricultural landscapes.**



**About Woolly-Necked Stork**

- The **Woolly-Necked Stork** is a **large wading bird belonging to the stork family**, known for its distinctive white neck.
- It is an indicator of **healthy wetland and agricultural ecosystems.**

**Habitat and Distribution**

- Distributed across **Africa and South & Southeast Asia**, including India.
- Found in **wetlands, riverbanks, paddy fields, ponds, and open grasslands.**
- In India, it is commonly seen in **northern and central regions**, with occasional sightings in the south.

**Physical and Behavioural Traits**

- It has a **black body with a contrasting white woolly neck and white belly**, making it easily identifiable.
- It is a **soaring bird that uses thermal currents for long-distance flight.**
- Usually found **alone or in small groups**, unlike some colonial storks.

**Feeding and Ecology**

- It is **carnivorous, feeding on fish, amphibians, reptiles, insects, and small aquatic organisms.**
- Plays a role in **controlling pest populations and maintaining ecological balance in wetlands.**

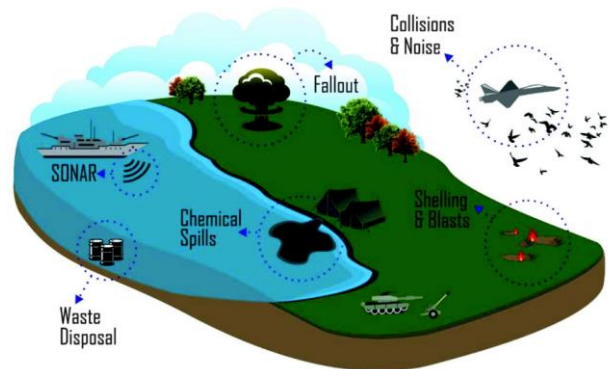
**Conservation Status and Threats**

- IUCN Status: Near Threatened**, indicating declining populations.
- Threats include **wetland loss, agricultural intensification, pollution, and human disturbance.**

**ENVIRONMENTAL IMPACT OF MODERN WARFARE: EMERGING ECOLOGICAL CRISIS**

**Why in News?**

Recent conflicts in West Asia, particularly involving Iran, highlight that **environmental damage is no longer temporary but long-lasting and cumulative.**



**Environmental Consequences of Modern Warfare**

**1. Greenhouse Gas Emissions and Climate Change**

- Military operations are **energy-intensive**, involving aircraft, missiles, and heavy vehicles, leading to **large-scale greenhouse gas emissions in short periods**.
- Destruction of infrastructure like oil facilities further releases carbon into the atmosphere, accelerating **global warming and climate instability**.

**2. Air Pollution and Toxic Exposure**

- Attacks on refineries, fuel depots, and industrial areas release **soot, particulate matter, and toxic gases**, which can travel long distances.
- This results in **serious health issues such as respiratory diseases and cardiovascular disorders**, and may even cause phenomena like **“black rain” due to polluted atmospheric particles**.

**3. Marine and Coastal Ecosystem Damage**

- Conflict zones near seas, especially regions like the **Persian Gulf**, are vulnerable to **oil spills and chemical leakage** due to damaged tankers and pipelines.
- Such spills destroy **marine biodiversity, fisheries, coral ecosystems**, and disrupt long-term ecological balance, affecting livelihoods dependent on coastal resources.

**4. Soil and Water Contamination**

- Destruction of industrial infrastructure releases **heavy metals, chemicals, and hazardous waste into soil and groundwater**, contaminating ecosystems.
- This leads to **declining agricultural productivity, unsafe drinking water, and long-term ecological degradation**, affecting both human and environmental health.

**5. Disruption of Essential Infrastructure**

- Attacks on **desalination plants, water pipelines, and irrigation systems** directly threaten water availability, especially in arid regions.
- This creates a direct link between **environmental damage and human survival**, increasing risks of displacement and humanitarian crises.

**Historical Evolution of Environmental Damage**

**1. Early Wars**

- Events like the **World Wars** caused large-scale destruction of forests and farmland, but impacts were largely **localized and time-bound**.

**2. Vietnam War**

- Marked a shift where environmental damage became **intentional**, with chemicals like **Agent Orange** used to destroy forests, causing **long-term ecological and health consequences**.

**3. Gulf War (1991)**

- Deliberate oil spills in the Persian Gulf resulted in **massive marine pollution**, highlighting environmental damage as a **strategic weapon**.

**4. Contemporary Conflicts**

- Conflicts like the **Russia–Ukraine war** show that even **protected ecological zones and biodiversity hotspots are not immune**, indicating a growing scale of damage.

**Shift from Episodic to Systemic Crisis**

- Earlier environmental damage was **temporary and localized**, whereas modern warfare leads to **persistent pollution and cumulative ecological stress**.
- Multi-domain warfare (land, sea, air, cyber) expands the **geographical and temporal scale of damage**, contributing to **climate change and biodiversity loss over time**.

**Existing Legal and Institutional Frameworks**

**1. ENMOD Convention (1976)**

- Prohibits deliberate environmental modification techniques, but has a **limited scope** and does not address broader war-related damage.

**2. Geneva Conventions (1977 Protocol I)**

- Mandate protection against **widespread, long-term, and severe environmental damage**, though enforcement remains weak.

**3. Rome Statute (1998)**

- Recognises environmental war crimes, but the **high threshold for proving damage limits accountability**.

**4. UN Draft Principles (2022)**

- Provide guidelines for environmental protection before, during, and after conflict, but are **non-binding and lack enforcement mechanisms**.

**Gaps in Current Frameworks**

- The requirement of proving **“widespread, long-term, and severe” damage makes legal action difficult**, allowing many violations to go unpunished.
- Absence of **independent monitoring and enforcement bodies weakens compliance**, while military emissions remain outside global climate frameworks.
- Limited focus on **restoration, compensation, and long-term ecological recovery further aggravates environmental damage**.

#### Ecocide: A New Legal Perspective

- **Ecocide** refers to **large-scale destruction of ecosystems**, whether intentional or due to negligence.
- Recognising ecocide as an international crime can **lower legal thresholds, expand accountability, and strengthen deterrence against environmental destruction**.
- It also acknowledges the **intrinsic value of ecosystems beyond human use**, promoting environmental justice.

#### Way Forward

##### 1. Strengthening Legal Frameworks

- Expand definitions of environmental harm to include **cumulative and climate-related damage**, and reduce thresholds for accountability.

##### 2. Binding International Agreements

- Convert existing guidelines into **legally enforceable global treaties with clear compliance mechanisms**.

##### 3. Independent Monitoring Mechanisms

- Establish global institutions to **track and assess environmental damage in conflict zones using scientific tools and satellite data**.

##### 4. Integration with Climate Policy

- Include **military emissions in global carbon accounting systems**, ensuring comprehensive climate governance.

##### 5. Focus on Restoration and Reparations

- Post-conflict reconstruction must prioritise **ecosystem restoration alongside economic rebuilding**, ensuring long-term sustainability.

##### 6. Recognition of Ecocide

- Incorporate ecocide into international law to **strengthen deterrence and enable prosecution of environmental crimes**.

#### Conclusion

Modern warfare has transformed environmental damage into a persistent and global ecological crisis affecting

**climate, biodiversity, and human survival.** Strengthening legal accountability and integrating environmental protection into peace frameworks are essential for sustainable and secure global development.

# SCIENCE AND TECHNOLOGY

## MEDICAL HEALTH/VACCINES/DISEASES

### BACILLE CALMETTE-GUÉRIN (BCG) VACCINE: ROLE IN TB CONTROL AND

SOURCE: THE HINDU

#### Why in News?

India has supplied **13 tonnes of BCG vaccines and related materials to Afghanistan**, strengthening health cooperation and humanitarian support.

#### BCG (Bacille Calmette-Guérin) vaccine

The **BCG (Bacille Calmette-Guérin) vaccine** is the **only approved vaccine for Tuberculosis (TB)**, a major infectious disease affecting millions globally.

#### About BCG Vaccine

##### 1. Historical Development

- Developed by Albert Calmette and Camille Guérin at the Pasteur Institute.
- First administered in **1921 after years of research**, making it one of the oldest vaccines still in use.

##### 2. Nature of the Vaccine

- Derived from a weakened strain of **Mycobacterium bovis**.
- Designed to **trigger immune response without causing infection**.

##### 3. Composition

- Active component: **Live attenuated bacteria**.
- Contains stabilisers like:
  - Glycerol
  - Mineral salts
- Supplied in **freeze-dried (lyophilised) form**, requiring reconstitution before use.

#### Mechanism of Action

- The vaccine introduces weakened bacteria, enabling the immune system to:
  - Recognise mycobacterial antigens
  - Activate **T-cell mediated immunity**
- This prepares the body to **respond quickly to future infection by Mycobacterium tuberculosis**.

#### Administration and Features

##### 1. Method of Delivery

- Given **intradermally**, usually in the **upper arm**.
- ##### 2. Target Group
- Primarily administered to **Newborns and infants** in high TB-burden countries

##### 3. BCG Scar

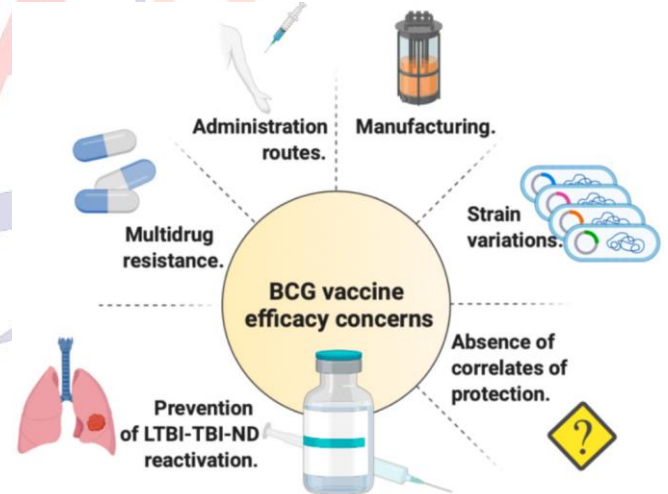
- A small lesion forms at the injection site, leading to a **permanent scar**, indicating successful vaccination.

##### 4. Additional Medical Use

- Used as **immunotherapy for bladder cancer**, showing its broader medical significance.

#### Objectives of BCG Vaccination

- Prevent **severe childhood TB**, including:
  - TB meningitis
  - Disseminated TB
- Reduce overall **TB burden in endemic regions**.
- Provide partial protection against:
  - **Leprosy**
  - Other mycobacterial infections



#### Significance of BCG Vaccine

##### 1. Public Health Importance

- Provides **70–80% protection against severe TB in children**, reducing mortality significantly.

##### 2. Role in National Programmes

- Integral to India's **Universal Immunisation Programme (UIP)**.
- Supports goals under **National TB Elimination Programme (NTEP)**.

##### 3. Global Health Impact

- One of the **most widely administered vaccines worldwide**, especially in developing nations.

##### 4. Vaccine Diplomacy

- India's supply to Afghanistan reflects:
  - Soft power diplomacy
  - Commitment to global health equity

**India's Efforts in TB Control**

- Target to eliminate TB by 2025, ahead of global SDG target (2030).
- Initiatives include:
  - Nikshay portal for tracking patients
  - Nutritional support schemes
  - Expansion of diagnostics and treatment facilities

**Way Forward**

**1. Development of New Vaccines**

- Invest in research for more effective TB vaccines targeting adults.

**2. Strengthen Immunisation Coverage**

- Ensure universal access, especially in high-burden and remote areas.

**3. Integrated TB Control Strategy**

- Combine vaccination with Early diagnosis and Effective treatment

**4. Global Collaboration**

- Enhance partnerships for Vaccine supply, Research and innovation

**Conclusion**

The BCG vaccine remains a cornerstone of TB prevention, especially for protecting children from severe disease. However, strengthening immunisation, innovation in vaccines, and global cooperation are essential to eliminate TB effectively.

**ARTEMETHER-LUMEFANTRINE FOR INFANTS: ADVANCING MALARIA TREATMENT**

**SOURCE: INDIAN EXPRESS**

**Why in News?**

The World Health Organization has approved a child-friendly formulation of Artemether-Lumefantrine for infants weighing 2–5 kg.

**ARTEMETHER-LUMEFANTRINE FOR INFANTS**

Effective treatment for uncomplicated malaria in infants



TREATS MALARIA EFFECTIVELY



SAFE FOR INFANTS



SHORT COURSE 3 DAYS



PROTECT YOUR BABY. TREAT MALARIA EARLY.

**What is Artemether-Lumefantrine?**

**1. Combination Therapy**

- It is a dual-drug antimalarial therapy combining:
  - Artemether → rapid action against parasites
  - Lumefantrine → long-acting component preventing relapse

**2. Mechanism of Action**

- Artemether quickly reduces parasite load in the bloodstream, providing immediate relief.
- Lumefantrine remains in the body longer, ensuring complete parasite clearance and preventing recurrence.

**3. WHO Prequalification**

- Approval by WHO ensures:
  - Quality, safety, and efficacy standards
  - Enables procurement by global health agencies

**Need for Infant-Specific Formulation**

**1. Treatment Gap in Neonates**

- Earlier, no dedicated medicines existed for infants below 5 kg body weight.
- Doctors relied on dose adjustments of adult or paediatric drugs, increasing risks.

**2. Risk of Incorrect Dosage**

- Manual dose adjustments could lead to Overdose (toxicity) and Underdose (treatment failure)

**3. High Vulnerability**

- Infants have Weak immune systems and Higher risk of severe malaria and death

**Key Features of the New Formulation**

**1. Precision Dosing**

- Specifically designed for infants weighing 2–5 kg, ensuring accurate dosage.

**2. Improved Safety Profile**

- Reduces chances of Side effects and Drug toxicity

### 3. Ease of Administration

- Child-friendly design ensures Better compliance and Easier administration for caregivers

### 4. Targeted for High-Risk Group

- Focuses on **newborns and very young infants**, the most vulnerable population.

### Significance of the Development

#### 1. Reduction in Infant Mortality

- Provides a **safe and effective treatment**, reducing deaths caused by malaria in early life.

#### 2. Strengthening Public Health Systems

- Enables governments and agencies to Deliver **standardised care** and Improve treatment outcomes

#### 3. Contribution to Global Malaria Goals

- Supports efforts under WHO's **Global Technical Strategy for Malaria**.

#### 4. Promotes Rational Drug Use

- Eliminates need for Risky dose modifications. Ensures **evidence-based treatment**.

### Challenges in Implementation

#### 1. Accessibility in Remote Areas

- Ensuring availability in Rural and high-burden regions

#### 2. Awareness Among Healthcare Workers

- Need for training on new dosage protocols

#### 3. Supply Chain Constraints

- Ensuring uninterrupted Production and Distribution

#### 4. Cost and Affordability

- Maintaining affordability for Low-income countries

### Way Forward

#### 1. Strengthen Health Systems

- Improve last-mile delivery of medicines in **malaria-endemic regions**.

#### 2. Capacity Building

- Train healthcare workers for Proper diagnosis and treatment

#### 3. Integration with Malaria Control Programmes

- Align with National malaria elimination strategies

#### 4. Promote Research and Innovation

- Encourage development of More child-specific formulations

### Conclusion

The introduction of infant-specific Artemether-Lumefantrine fills a critical gap in malaria treatment for newborns. Its effective implementation can significantly

reduce infant mortality and strengthen global malaria control efforts.

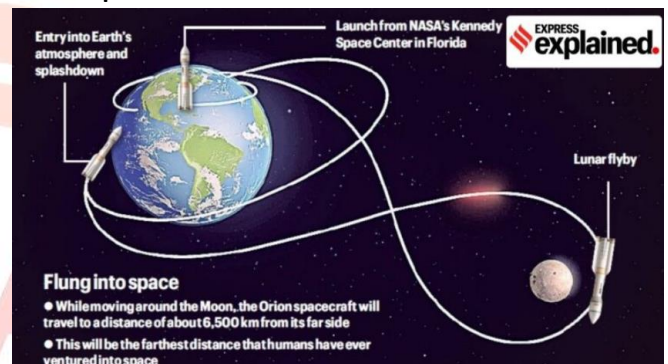
## SPACE TECHNOLOGY

### ARTEMIS-II MISSION AND THE NEW ERA OF LUNAR EXPLORATION

SOURCE: THE HINDU

#### Why in News?

The successful return of astronauts from Artemis-II marks a major milestone in humanity's journey towards **sustainable lunar exploration**.



#### Artemis-II Mission: Key Features

##### 1. First Crewed Deep-Space Test Mission

- Artemis-II is the first mission carrying astronauts aboard the **Orion spacecraft** using the **Space Launch System (SLS)**.
- Its main objective is to **test life-support, navigation, and communication systems** under real space conditions.

##### 2. Free-Return Trajectory for Safety

- The mission followed a **free-return trajectory**, where the spacecraft naturally loops around the Moon and returns to Earth using gravity.
- This provides a **built-in safety mechanism**, ensuring return even if propulsion systems fail.

##### 3. Precision Lunar Flyby

- Astronauts conducted a **far-side lunar flyby**, including operations during communication blackout.
- Demonstrates **human capability to operate autonomously in deep space conditions**.

##### 4. Heat Shield and Re-entry Validation

- Re-entry involved extreme conditions, with temperatures reaching **~2760°C**.

- NASA modified the heat shield design after Artemis-I, ensuring **safe atmospheric re-entry and crew recovery**.

### Strategic Roadmap of the Artemis Programme

#### 1. Artemis-III (Expected ~2028)

- Will land humans on the Moon, focusing on the **lunar south pole**, where **water ice deposits exist**.

#### 2. Permanent Lunar Presence

- Long-term goal includes **Lunar Gateway (orbiting space station)** and **Permanent lunar base**
- Acts as a stepping stone for **Mars missions**.

#### 3. Role of Private Sector

- Collaboration with companies like:
  - SpaceX
  - Blue Origin
- Marks a shift toward **public-private partnerships (PPP)** in space exploration.

### Changing Nature of Space Exploration

#### 1. From Competition to Collaboration

- Earlier space race (Cold War) focused on **geopolitical rivalry**.
- Present approach emphasises Scientific research, Economic opportunities and Global cooperation

#### 2. Artemis Accords

- Framework for:
  - Peaceful space exploration
  - Data sharing
  - Protection of space heritage
- India is a signatory, reflecting its role in **global space governance**.

### India's Space Vision and Strategy

#### 1. Independent Space Path

- Through **ISRO**, India maintains Strategic autonomy and Indigenous capabilities

#### 2. Key Missions and Goals

- Gaganyaan Mission** → Human spaceflight to Low Earth Orbit
- Bharatiya Antariksh Station (BAS)** → Planned by 2035
- Moon Mission (2040)** → Human landing target

#### 3. Technological Development

- Requires Next Generation Launch Vehicle (NGLV) and Advanced crew safety systems

### Significance of Lunar Exploration

#### 1. Scientific Importance

- Study of lunar south pole helps understand Solar system evolution and Water ice reserves

### 2. Economic Potential

- Moon contains Helium-3 and rare earth elements
- Opens avenues for Space mining and Space tourism

### 3. Technological Advancement

- Drives innovation in Robotics, AI navigation and Life-support systems

### 4. Strategic and Geopolitical Importance

- Enhances national prestige and **space leadership**.
- Ensures participation in **future space economy**.

### Need for Transparency in Space Missions

#### 1. Learning from Failures

- NASA's openness about Heat shield issues Enabled safer mission design.

#### 2. Importance for India

- ISRO needs to adopt **transparent reporting of failures**
- Encourages innovation and accountability.

#### 3. Benefits

- Promotes Scientific collaboration, Public trust and Efficient use of resources

### Challenges Ahead

#### 1. High Cost and Technological Complexity

- Space missions require Massive investment and Advanced engineering

#### 2. Legal and Governance Issues

- Need to address Space resource ownership and Global commons principles

#### 3. Sustainability Concerns

- Avoid Space debris and Over-exploitation of lunar resources

### Way Forward

#### 1. Strengthen Public-Private Partnerships

- Encourage private innovation in Launch systems and Space infrastructure

#### 2. Promote International Cooperation

- Collaborate under Artemis Accords, Share knowledge and reduce costs

#### 3. Focus on Reusable Technologies

- Develop Reusable launch vehicles Improve economic viability

#### 4. Build Sustainable Infrastructure

- Create Modular space stations and Long-term lunar habitats

### Conclusion

**Artemis-II marks a transition from symbolic exploration to building a sustainable human presence in space.** For India, combining technological innovation, global cooperation, and transparency will be key to achieving its lunar ambitions by 2040.

## EMERGING TECHNOLOGIES

### INDIA'S NUCLEAR POWER EXPANSION - SHANTI ACT, 2025

SOURCE: PIB

#### Why in News?

India has set an ambitious target to expand nuclear power capacity to **100 GW by 2047**, positioning it as a key pillar of **clean energy transition and Viksit Bharat vision**.



#### Major Reforms in India's Nuclear Sector

##### 1. Legislative Reforms – SHANTI Act, 2025

- The **Sustainable Harnessing and Advancement of Nuclear Energy for Transforming India (SHANTI) Act** resolves long-standing liability issues.
- Aligns Indian laws with global standards, enabling **foreign investment and technology collaboration**.
- Unlocks stalled projects such as **Jaitapur and Kovvada**, accelerating capacity expansion.

##### 2. Budgetary Push and Nuclear Mission

- Union Budget 2025–26 allocated **₹20,000 crore** for a Nuclear Energy Mission.
- Focus on **Small Modular Reactors (SMRs)** for flexible and cost-effective deployment.

##### 3. Progress in Three-Stage Nuclear Programme

- India has advanced to **Stage II** with the **Prototype Fast Breeder Reactor (PFBR)** at Kalpakkam.
- Enables conversion of **uranium into plutonium**, paving the way for future **thorium utilisation**.

##### 4. Indigenous Technology and Fleet Mode Deployment

- Shift to **standardised 700 MWe Pressurised Heavy Water Reactors (PHWRs)**.
- Allows simultaneous construction at multiple sites, reducing **time and cost overruns**.

##### 5. Public-Private and Institutional Collaboration

- Joint ventures like **ASHVINI (NPCIL + NTPC)** combine financial and technical expertise.

- Marks transition from a **state-dominated model to collaborative framework**.

##### 6. Strengthening Fuel Security

- Enhanced uranium supply through:
  - Strategic international partnerships
  - Domestic mining expansion (e.g., Jaduguda deposits)
- Ensures **long-term fuel availability**.

##### 7. Advancing Nuclear Waste Management

- Adoption of **partitioning and recycling technologies** converts waste into usable fuel.
- Reduces environmental risks and dependency on **long-term storage facilities**.

#### Significance of Nuclear Expansion

##### 1. Clean Energy Transition

- Provides **low-carbon electricity**, supporting India's **net-zero target by 2070**.

##### 2. Baseload Power Stability

- Unlike solar and wind, nuclear offers **continuous and reliable energy supply**.

##### 3. Energy Security

- Reduces dependence on **imported fossil fuels**, enhancing strategic autonomy.

##### 4. Industrial and Technological Growth

- Promotes development of **Advanced engineering and High-precision manufacturing**

#### Challenges in India's Nuclear Sector

##### 1. Land Acquisition and Public Resistance

- Large land requirements lead to **Local protests and Delays in project execution**

##### 2. High Capital Costs

- Nuclear projects require **massive upfront investment and long gestation periods**, making them less attractive than renewables.

##### 3. Regulatory and Policy Uncertainty

- Private sector faces **Complex licensing and Lack of clear regulatory framework for SMRs**

##### 4. Technological Constraints

- Delay in **Stage III thorium utilisation** keeps India dependent on imported uranium.

##### 5. Supply Chain and Geopolitical Risks

- Dependence on countries like **Russia** creates **vulnerability to global disruptions**.

##### 6. Skilled Workforce Shortage

- Limited number of trained nuclear professionals compared to future demand.

##### 7. Water and Environmental Constraints

- Nuclear plants require large water volumes, creating challenges in **water-scarce regions**.

**Way Forward**

**1. Integrate Nuclear into Green Finance**

- Recognise nuclear as **clean energy** to attract ESG investments and reduce financing costs.

**2. Develop Nuclear Parks**

- Pre-cleared sites with infrastructure to reduce Delays and Land acquisition issues

**3. Strengthen Domestic Supply Chain**

- Promote MSMEs through PLI schemes
- Build indigenous manufacturing ecosystem.

**4. Promote Public-Private Partnerships**

- Encourage private sector participation in Reactor construction and Technology development

**5. Expand Human Resource Capacity**

- Develop specialised training programmes in IITs and technical institutes

**6. Diversify Nuclear Applications**

- Use nuclear energy for Hydrogen production and Desalination which Improve economic viability.

**7. Ensure Policy Stability**

- Provide clear regulatory guidelines to reduce Investor uncertainty

**Conclusion**

India’s nuclear power expansion is crucial for achieving energy security and climate goals while ensuring reliable baseload power. A balanced approach combining policy reforms, technological innovation, and private participation is essential to realise the 100 GW vision by 2047.

**DIRECT-TO-DEVICE (D2D) TECHNOLOGY:  
SATELLITE-BASED CONNECTIVITY  
REVOLUTION**

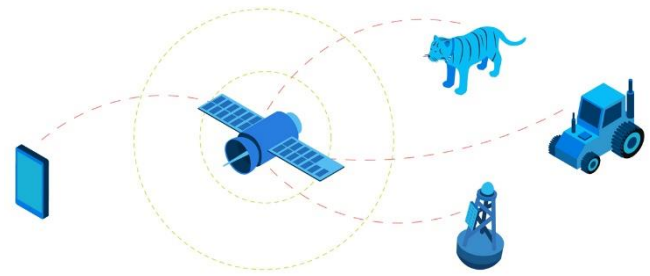
**SOURCE: THE HINDU**

**Why in News?**

The Department of Telecommunications, through the Telecommunication Engineering Centre, conducted a workshop to explore **Direct-to-Device (D2D) satellite communication**.

**What is Direct-to-Device (D2D) Technology?**

- D2D is a **satellite communication system** that allows regular **4G/5G smartphones** to connect **directly to satellites** without special hardware.
- It effectively turns satellites into “**cell towers in space**”, enabling communication in areas without terrestrial network coverage.



**How D2D Technology Works**

**1. Low Earth Orbit (LEO) Satellites**

- A constellation of **LEO satellites (500–2000 km altitude)** is deployed.
- These satellites have **advanced antennas capable of detecting low-power mobile signals**.

**2. Spectrum Integration**

- Uses **existing LTE/5G spectrum bands**, ensuring compatibility with current telecom infrastructure.

**3. Seamless Network Switching**

- When a user moves out of tower coverage, the device **automatically switches to satellite connectivity**.

**4. Non-Terrestrial Network (NTN)**

- The satellite acts as a relay, sending signals to **ground stations**, which connect to the core telecom network.

**Key Features of D2D Technology**

**1. Compatibility with Standard Devices**

- Works with **regular smartphones**, eliminating the need for satellite phones.

**2. Low Latency Communication**

- LEO satellites ensure **reduced delay compared to geostationary satellites**.

**3. No Need for Ground Infrastructure**

- Removes dependency on **cell towers**, especially in inaccessible regions.

**4. Software-Driven Integration**

- Being incorporated into global telecom standards like **3GPP Release 17 and 18**, ensuring interoperability.

**5. Emergency Communication**

- Currently focused on **SOS alerts** and **Text messaging**. Expected to expand to voice and data services.

**Significance of D2D Technology**

**1. Bridging Digital Divide**

- Provides **connectivity in remote, rural, and underserved areas**, supporting inclusive development.

**2. Disaster Management**

- Ensures communication during Earthquakes and Floods When terrestrial infrastructure is damaged.

### 3. Strategic and Security Importance

- Enhances communication in Border areas and Maritime zones

### 4. Boost to Digital Economy

- Enables E-governance, Telemedicine and Online education

### 5. Global Connectivity

- Moves towards **100% geographical coverage**, making communication universally accessible.

### Challenges in D2D Deployment

#### 1. Spectrum Coordination

- Risk of interference between Satellite and terrestrial networks

#### 2. Regulatory Issues

- Requires clear policies on Licensing and Spectrum allocation

#### 3. Cost and Infrastructure

- High cost of Satellite deployment and Maintenance

#### 4. Limited Initial Capabilities

- Early stage supports mainly Low-bandwidth communication

#### 5. Security Concerns

- Risks related to Data privacy and Signal interception

### Conclusion

Direct-to-Device technology represents a transformative step toward universal and resilient connectivity. With the right policy support and innovation, it can bridge the digital divide and strengthen disaster resilience in India.

## PRELIMS POINTERS IN NEWS

### FLEX FUEL VEHICLES (FFVs)

SOURCE: THE HINDU

#### Why in News?

India is promoting **E100 fuel blending and Flex-Fuel Vehicles amid global energy disruptions due to West Asia tensions.**

## 6 THINGS TO KNOW ABOUT ETHANOL AND FLEX FUEL

- 1 Flex fuel vehicles can run on both **petrol and ethanol**
- 2 India is aiming to achieve **E10 by 2022 and E20** (which would involve a 20% ethanol blend) **by 2025**
- 3 At present there are **no flex-fuel-powered engines or vehicles** with the exception of a limited-edition TVS Apache RTR motorcycle
- 4 Ethanol is hygroscopic, and has a tendency to absorb moisture making it **difficult to store in pure form**. Its affinity to attract moisture can also lead to impurities settling at the base of the fuel tank and contaminating the engine
- 5 At present **E10 isn't available** across the country, and will be made so by 2022
- 6 According to the government, **all vehicles manufactured since 2008 are E10 compatible** (but not optimised). **E100 ethanol will be sold at a lower price** from ethanol pumps

### Flex Fuel Vehicles

- **Flex Fuel Vehicles (FFVs) are internal combustion engine vehicles capable of running on petrol, ethanol, or a mix of both in varying proportions.**
- They are seen as a **transition technology towards cleaner fuels and reduced fossil fuel reliance.**

### Key Features

- FFVs can use **multiple fuel blends, including high ethanol mixtures like E20, E85, and even E100**, offering flexibility across regions.
- They are equipped with **fuel sensors and engine control modules that detect ethanol content and automatically adjust engine performance.**
- Vehicle components like **fuel injectors and storage systems are modified to handle ethanol's corrosive nature and different combustion properties.**

### Economic and Agricultural Linkages

- Ethanol is produced from **agricultural feedstocks such as sugarcane, maize, and surplus grains**, supporting farmers' income.
- Increased ethanol usage helps in **reducing India's import bill on crude oil**, improving the trade balance.
- It also contributes to **rural economic development and diversification of agriculture.**

### Advantages

- FFVs help in **reducing greenhouse gas emissions and vehicular pollution** compared to conventional fuels.
- They enhance **energy security by diversifying fuel sources.**
- Ethanol blending promotes **sustainable use of agricultural surplus and bio-based fuels.**

## SPORTS GENOMICS PROGRAMME

**SOURCE: THE HINDU**

**Why in News?**

Gujarat launched a **Sports Genomics Programme** to improve athlete performance ahead of global events like **Commonwealth Games 2030**.



**Gujarat Launches India's First Sports Genomics Programme to Forge Next-Gen Athletes**

**Sports Genomics Programme**

- The **Sports Genomics Programme** integrates **genetic, physiological, and performance data** to enhance athletic potential and personalised training.
- It represents a **modern approach** combining **biotechnology with sports science**.

**Objectives and Goals**

- To **identify sporting talent** at an early stage using **genetic indicators**.
- To create a **comprehensive athlete genome database** for scientific analysis.
- To develop **customised training, nutrition, and injury prevention strategies**.

**Key Features**

- The programme plans to **collect around 10,000 genetic samples** across multiple sports disciplines **over five years**.
- It focuses on both **endurance and power-based sports** to understand performance traits.
- It will help identify **genetic predisposition to injuries and recovery patterns**, improving athlete longevity.

**Significance**

- Enables **precision training tailored to individual genetic profiles**.
- Helps improve **international sports performance and medal prospects**.

- Promotes **scientific research and innovation** in sports medicine and biotechnology.

**Concerns and Challenges**

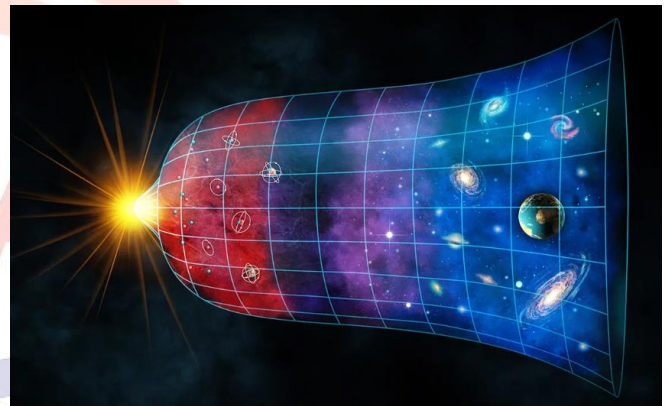
- Ethical issues related to **genetic privacy and data protection**.
- Risk of **genetic discrimination or over-reliance on biological factors**.
- Need for **robust regulatory framework and ethical guidelines**.

**HUBBLE TENSION**

**SOURCE: DTE**

**Why in News?**

New observations estimate the Universe's expansion rate at **around 73.5 km/s/Mpc**, intensifying the debate on **Hubble tension**.



**Hubble Tension**

- **Hubble Tension** refers to the **difference between two methods of measuring the Universe's expansion rate (Hubble Constant)**.
- It is one of the **most important unresolved problems in modern cosmology**.

**Nature of the Conflict**

- **Local Universe measurements** (using stars like Cepheids and supernovae) give a value of **~73 km/s/Mpc**.
- **Early Universe measurements** (based on Cosmic Microwave Background data) give a lower value of **~67 km/s/Mpc**.
- The difference is statistically significant, suggesting a **systematic issue or new physics**.

**Key Concepts**

- The **Hubble Constant (H<sub>0</sub>)** measures how fast the Universe is expanding.
- The discrepancy of nearly **10% cannot be easily explained by observational errors alone**.

**Significance**

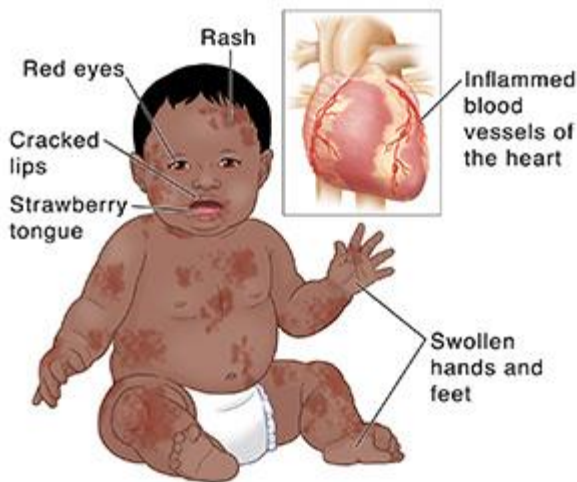
- Indicates that the **current standard model of cosmology may be incomplete.**
- Opens possibilities for **new physics such as dark energy variations or unknown particles.**
- Encourages refinement of **astronomical observation techniques and theoretical models.**

**KAWASAKI DISEASE**

**SOURCE: THE HINDU**

**Why in News?**

A study found that **adding prednisolone to standard therapy does not significantly reduce coronary complications.**



**Kawasaki Disease**

- **Kawasaki Disease is a rare inflammatory condition affecting blood vessels, primarily in young children.**
- It is a leading cause of **acquired heart disease in children.**

**Causes and Nature**

- The exact cause is **unknown, but it is believed to involve abnormal immune system response.**
- It leads to **inflammation of blood vessels, especially coronary arteries.**

**Symptoms**

- Persistent **high fever lasting more than five days** is the hallmark symptom.
- Other features include **rash, red eyes, swollen lymph nodes, cracked lips, and peeling skin on hands and feet.**
- It can cause **serious heart complications if untreated.**

**Diagnosis and Treatment**

- Diagnosis is based on **clinical symptoms rather than a specific test.**
- Standard treatment includes **intravenous immunoglobulin (IVIG) and aspirin therapy.**
- Early treatment significantly reduces the risk of **coronary artery damage.**

**CURIOSITY ROVER**

**SOURCE: INDIAN EXPRESS**

**Why in News?**

NASA's **Curiosity Rover has detected complex organic molecules on Mars**, indicating chemical conditions suitable for life.



**Curiosity Rover**

- The **Curiosity Rover is a robotic explorer sent by NASA to study Mars' surface, climate, and habitability.**
- It is part of the **Mars Science Laboratory (MSL) mission**, aimed at understanding whether Mars could have supported life.

**Mission Details**

- Launched in **2011** and landed in **Gale Crater in 2012**, a region believed to have once contained water.
- It explores **Mount Sharp**, a layered mountain that provides clues about Mars' geological history.
- It uses a **unique sky crane landing system**, marking a major technological advancement.

**Key Features**

- The rover is about **3 metres long and weighs nearly 900 kg**, making it one of the largest Mars rovers.
- It is powered by a **radioisotope thermoelectric generator (RTG)** using plutonium, ensuring long operational life.
- Equipped with advanced instruments for **chemical analysis, radiation detection, and soil examination.**

**Scientific Objectives**

- To determine whether **Mars ever supported microbial life**.
- To study the **planet’s climate and atmospheric conditions**.
- To analyse **geological features such as rocks and soil composition**.
- To gather data useful for **future human missions to Mars**.

**Significance**

- Discovery of **organic molecules suggests that Mars had conditions favourable for life in the past**.
- Provides insights into **planetary evolution and astrobiology**.

Helps in planning **human exploration and possible colonisation**.

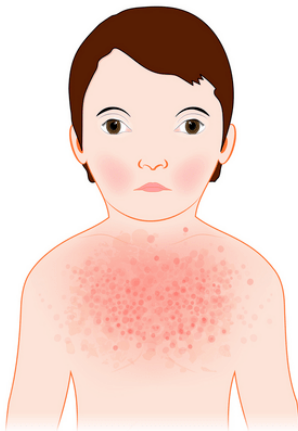
**SCARLET FEVER**

**SOURCE: THE HINDU**

**Why in News?**

New DNA evidence shows that the bacterium causing **Scarlet Fever** existed in the Americas before European arrival.

**Scarlet fever (scarlatina)**



Characteristic red cheeks and rash of scarlet fever



A white coating on the tongue, and «strawberry tongue»

**Scarlet fever**

- **Scarlet fever** is a **bacterial infection caused by Group A Streptococcus**, commonly affecting children.
- It is associated with **sore throat, fever, and a characteristic red rash**.

**Cause and Transmission**

- Caused by **Streptococcus pyogenes bacteria**, which also cause strep throat and skin infections.
- It spreads through **respiratory droplets from coughing or sneezing**, making it highly contagious.

**Symptoms**

- Persistent **high fever and sore throat** are primary symptoms.
- A **bright red rash spreads across the body**, along with a “strawberry tongue”.
- Other signs include **swollen lymph nodes, nausea, and body aches**.

**Complications**

- If untreated, it can lead to **serious conditions such as rheumatic fever, kidney damage, and heart complications**.
- Early diagnosis is essential to prevent **long-term health issues**.

**Treatment and Prevention**

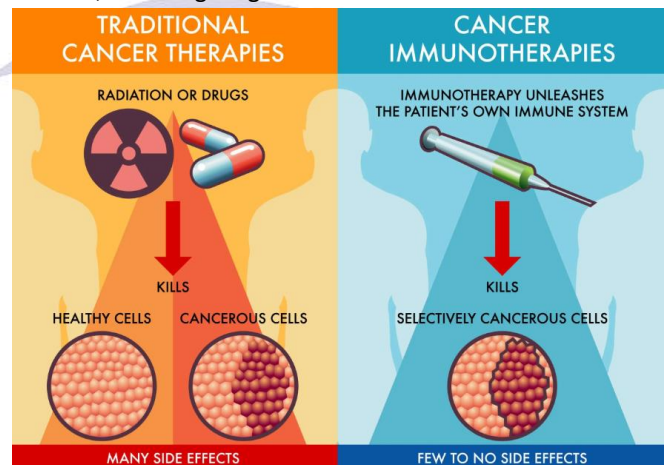
- Treated effectively using **antibiotics such as penicillin**, which reduce severity and transmission.
- No vaccine is available, so prevention depends on **hygiene and early medical intervention**.

**KEYTRUDA (PEMBROLIZUMAB)**

**SOURCE: THE HINDU**

**Why in News?**

Keytruda is increasingly used globally for treating multiple **cancers**, including lung and breast cancers.



**Keytruda**

- **Keytruda (pembrolizumab)** is an **immunotherapy drug that helps the body’s immune system fight cancer**.
- It belongs to the class of **checkpoint inhibitors**, a major advancement in oncology.

**Mechanism of Action**

- It works by targeting the **PD-1 receptor on T-cells**, which normally suppresses immune response.
- By blocking PD-1 interaction, it **activates T-cells to recognise and destroy cancer cells**.
- It is a **monoclonal antibody**, designed to bind specific molecular targets.

**Applications**

- Used to treat **lung cancer, cervical cancer, renal cell carcinoma, and aggressive breast cancers**.
- Often combined with **chemotherapy or radiation for improved outcomes**.

**Advantages over Conventional Therapy**

- Unlike chemotherapy, it **targets cancer cells indirectly through immune activation**, reducing damage to healthy tissues.
- Offers **long-term benefits in certain cancers by improving immune memory**.

**Challenges**

- High cost (over **₹1.5 lakh per vial**) limits accessibility.
- May cause **immune-related side effects** due to overactivation of immune system.
- Requires **specialised medical infrastructure for administration**.

**About Immunotherapy**

- Immunotherapy is a **treatment approach that strengthens or modifies the immune system to fight diseases like cancer**.
- It is emerging as a **key pillar alongside surgery, chemotherapy, and radiation therapy**.

**CERIUM–MAGNESIUM CHANGESITE**

**SOURCE: THE HINDU**

**Why in News?**

A new lunar mineral, **Cerium–Magnesium Changesite**, was identified from a meteorite sample in China.



**Cerium–Magnesium Changesite**

- **Cerium–Magnesium Changesite** is a recently discovered mineral found in lunar samples, contributing to understanding of planetary formation processes.
- It is among the **rare minerals identified outside Earth**.

**Key Characteristics**

- It is **colourless, transparent, and extremely small in size**, often only a few micrometres.
- Exhibits **fluorescent properties, emitting light under specific conditions**.
- Composed of **rare earth elements like cerium along with magnesium and iron**, making it scientifically significant.

**Scientific Importance**

- Provides insights into **chemical composition and evolution of the Moon’s crust**.
- Helps scientists understand **mineral formation under extreme conditions**.
- Offers clues about **lunar volcanic activity and thermal history**.

**Technological Relevance**

- Its **fluorescent properties may have applications in advanced materials and LED technologies**.
- Study of such minerals contributes to **space resource utilisation and future exploration missions**.

# PROTOTYPE FAST BREEDER REACTOR (PFBR) & INDIA'S THREE-STAGE NUCLEAR PROGRAMME

## Why in News?

India achieved a major milestone as the **Prototype Fast Breeder Reactor (PFBR) at Kalpakkam attained first criticality**, marking the start of sustained nuclear reaction. This development signifies India's transition into **Stage-II of its three-stage nuclear programme**, strengthening long-term energy security.

## What is Prototype Fast Breeder Reactor (PFBR)?

### 1. Basic Features

- PFBR is a **500 MWe advanced nuclear reactor** developed by IGCAR and operated by BHAVINI.
- It uses **fast neutrons (without moderators)**, making it more efficient than conventional reactors.

### 2. Concept of Criticality

- Criticality refers to the stage where a **controlled and sustained nuclear chain reaction begins**, ensuring stable power generation.
- Achieving criticality marks the transition from **construction phase to operational readiness**.

### 3. Fuel and Working Mechanism

- Uses **Mixed Oxide (MOX) fuel**, made of uranium and plutonium recovered from spent fuel.
- Surrounded by a blanket of **Uranium-238**, which converts into **Plutonium-239**, thus producing more fuel than consumed.

### 4. Breeding Capability

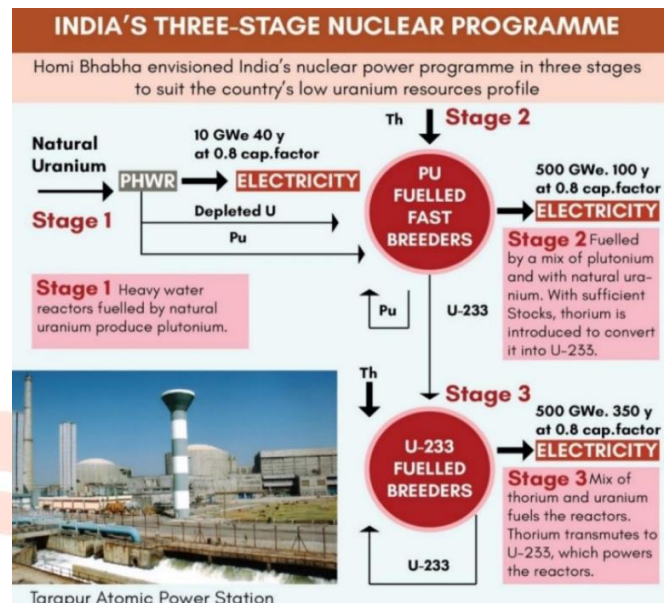
- PFBR is called a "breeder reactor" because it **generates more fissile material than it uses**, increasing fuel efficiency manifold.

### 5. Closed Fuel Cycle

- Spent fuel is **reprocessed and reused**, reducing nuclear waste and improving sustainability.

### 6. Global Significance

- India is among the few countries (along with Russia) capable of **operating fast breeder reactor technology**, highlighting technological advancement.



## India's Three-Stage Nuclear Programme

### 1. Stage I – PHWRs

- Uses **natural uranium** in Pressurised Heavy Water Reactors.
- Produces plutonium as a by-product.

### 2. Stage II – Fast Breeder Reactors (FBRs)

- Uses plutonium from Stage I.
- Generates more plutonium and prepares for **thorium utilisation**.

### 3. Stage III – Thorium-Based Reactors

- Uses **Uranium-233 derived from thorium**, ensuring long-term energy independence.

## Importance of PFBR for India

### 1. Efficient Resource Utilisation

- Extracts **up to 60 times more energy from uranium**, addressing resource scarcity.

### 2. Unlocking Thorium Potential

- India holds **~25% of global thorium reserves**, which PFBR helps convert into usable fuel.

### 3. Enhancing Energy Security

- Reduces dependence on Imported fossil fuels and External uranium supplies

### 4. Supporting Climate Goals

- Nuclear energy is **low-carbon**, aiding India's **net-zero target by 2070**.

### 5. Waste Reduction

- Closed fuel cycle reduces Volume and Radiotoxicity of nuclear waste

## Current Status of Nuclear Power in India

- Installed capacity: ~**8.78 GW**
- Contribution: ~**3% of total electricity generation**
- Target: **22.38 GW by 2031–32 and 100 GW by 2047**

### Challenges in Fast Breeder Reactor Development

#### 1. Technological Complexity

- Handling **liquid sodium coolant** requires advanced safety systems due to its reactive nature.

#### 2. Project Delays

- PFBR faced delays of over a decade due to Safety requirements and Supply chain constraints

#### 3. High Capital Cost

- FBRs are more expensive than conventional reactors, affecting scalability.

#### 4. Security and Proliferation Concerns

- Use of plutonium requires Strict safeguards and raises international scrutiny.

#### 5. Supply Chain Dependence

- Reliance on global partners creates vulnerability to Geopolitical disruptions

#### 6. Limited Skilled Workforce

- Expansion requires a large number of **trained nuclear engineers and technicians**.

### Way Forward

#### 1. Strengthen Indigenous Technology

- Invest in R&D and Domestic manufacturing ecosystem

#### 2. Promote Nuclear as Green Energy

- Include nuclear in **green taxonomy** to attract climate finance.

#### 3. Develop Nuclear Parks

- Pre-approved sites to reduce Land acquisition delays and Project uncertainties

#### 4. Expand Private Participation

- Implement reforms under **SHANTI Act** for Investment and Innovation

#### 5. Integrate with Hydrogen Economy

- Use nuclear energy for green hydrogen production to Enhances economic viability

#### 6. Ensure Skilled Workforce Development

- Strengthen training programmes in Technical institutions

### Conclusion

**The successful commissioning of PFBR marks a crucial step in India's journey towards energy security and sustainable nuclear power.** With continued innovation, policy support,

and investment, nuclear energy can become a cornerstone of India's clean energy future.

# SECURITY

## BORDER MANAGEMENT

### RADICAL SECURITY SHIFT IN JAMMU & KASHMIR

SOURCE: THE HINDU

#### Why in News?

The first anniversary of the **Pahalgam terror attack** has triggered a reassessment of security strategy in Jammu and Kashmir.

#### Background: The Pahalgam Terror Attack

- The attack occurred in **Baisaran meadows near Pahalgam**, a popular tourist destination.
- Militants emerged from forest cover and **targeted tourists using automatic weapons**, causing significant casualties.
- This incident disrupted the narrative of **normalcy and rising tourism**, forcing authorities to reassess security preparedness in remote zones.



#### Key Features of the Security Shift

##### 1. From Urban Containment to Terrain Dominance

- Earlier focus was on **towns and highways**, but now emphasis is on **controlling high-altitude ridgelines and forest corridors**.
- This prevents militants from moving freely from infiltration routes to populated areas.

##### 2. Expansion of High-Altitude Deployment

- Establishment of **Temporary Operating Bases (TOBs)** in elevated areas (3,000–9,000 feet).

- Enables continuous monitoring and denies militants safe hideouts.

##### 3. Intelligence-Driven Operations

- Shift towards **precision strikes and intelligence-first strategy**, as seen in operations like **Operation Mahadev**.
- Focus on dismantling entire terror networks rather than isolated encounters.

##### 4. Integration of Local Population

- Creation of **Aadhaar-linked, QR-coded databases** for tourism workers such as guides and pony handlers.
- Helps identify **Over Ground Workers (OGWs)** and prevent infiltration into the local economy.

##### 5. Technology-Based Surveillance

- Deployment of:
  - Drones for aerial monitoring
  - Facial recognition systems
- Establishment of **drone corridors** for real-time tracking of movement in remote regions.

#### Security Gaps Revealed by the Attack

##### 1. Soft Targets in Remote Areas

- Expansion of tourism to remote sites outpaced **security coverage**, leaving vulnerable zones exposed.

##### 2. Predictability in Security Planning

- Security forces focused on **urban threats**, overlooking risks in isolated meadows and forests.

##### 3. Terrain Vulnerability

- Traditional infiltration routes in the **Pir Panjal range** remained insufficiently monitored.

##### 4. Surveillance Limitations

- Lack of **all-weather monitoring systems** created blind spots during adverse conditions.

##### 5. Weak Human Intelligence

- Intelligence gathering in forested and mountainous regions was slower compared to urban areas.

#### Measures Taken Post-Attack

##### Short-Term Measures

- Closure of over **50 high-risk tourist locations** for security reassessment.
- Rapid deployment of forces to **high-altitude bases** to secure vulnerable zones.
- Mandatory **identity verification systems** for tourism-related workers.

**Long-Term Measures**

- Adoption of **terrain dominance doctrine**, focusing on controlling infiltration routes.
- Enhanced use of **technology-driven surveillance and intelligence networks**.
- Strengthening inter-state coordination to track terror modules across regions.

**Implications of the New Strategy**

**1. Improved Security and Deterrence**

- Holding strategic heights reduces militant mobility and **prevents attacks before execution**.

**2. Restoration of Public Confidence**

- Gradual reopening of tourist sites reflects **improved security perception**.

**3. Isolation of Terror Networks**

- Integrated intelligence approach disrupts **logistics and support systems of militants**.

**4. Privacy and Civil Liberties Concerns**

- Extensive surveillance and data collection raise concerns regarding **privacy and long-term sustainability**.

**5. Operational Challenges**

- Harsh terrain and weather conditions continue to pose **logistical and operational difficulties**.

**Way Forward**

**1. Strengthen Intelligence Networks**

- Enhance **human intelligence (HumInt)** in remote areas through community engagement.

**2. Improve Technological Integration**

- Deploy **all-weather surveillance systems and satellite monitoring** for better coverage.

**3. Balance Security and Rights**

- Ensure surveillance measures are accompanied by **strong data protection frameworks**.

**4. Capacity Building**

- Train forces in Mountain warfare and Advanced surveillance techniques

**5. Sustainable Tourism Security**

- Develop **integrated security plans** before opening new tourist destinations.

**Conclusion**

The shift in J&K's security strategy reflects a move towards **proactive, intelligence-driven, and terrain-focused counter-terrorism**. Sustained success will depend on balancing technological surveillance, local cooperation, and respect for civil liberties.

**USE OF SNAKES AND CROCODILES IN BORDER SECURITY**

**SOURCE: THE HINDU**

**Why in News?**

The Border Security Force has asked field units to explore using **snakes and crocodiles in riverine border areas**.

**What is the Proposal?**

- The BSF is **examining the feasibility of introducing reptiles like snakes and crocodiles** in vulnerable riverine stretches.
- The aim is to create a **"natural barrier" or deterrent** to prevent:
  - Illegal infiltration
  - Smuggling activities
- The idea is currently at a **discussion and feasibility stage**, with no official implementation yet.



**Background: Border Security Challenges**

**1. Difficult Terrain**

- The India–Bangladesh border is about **4,096 km long**, with nearly **175 km consisting of riverine and marshy areas**.
- Such areas are **unsuitable for fencing due to flooding and shifting river courses**.

**2. Persistent Illegal Activities**

- Border regions face issues like Cross-border infiltration and Smuggling of goods and wildlife
- These activities exploit **gaps in physical barriers and surveillance systems**.

**3. Limitations of Conventional Methods**

- Physical fencing, floodlighting, and patrols are Costly and Ineffective in dynamic riverine zones

**Rationale Behind the Proposal**

**1. Natural Deterrence**

- Reptiles could act as a **psychological and physical barrier**, discouraging illegal crossings.

**2. Cost-Effective Alternative**

- Compared to infrastructure-heavy solutions, biological deterrents may **reduce recurring costs**.

**3. Complementary Strategy**

- Intended to supplement—not replace—existing measures like Drones, Sensors and Surveillance cameras

**Existing Border Management Measures**

**1. Comprehensive Integrated Border Management System (CIBMS)**

- Uses Thermal sensors, Night-vision cameras and Smart fencing

**2. BOLD-QIT Project**

- Focuses on **riverine border monitoring using technology and floating BOPs**.

**3. Technological Surveillance**

- Increased use of Drones, GPS tracking and Infrared systems

**Concerns and Challenges**

**1. Human Safety Risks**

- Deployment of dangerous animals may threaten Local communities and Border residents

**2. Environmental and Ethical Issues**

- Introducing reptiles artificially could Disrupt ecosystems and Harm biodiversity

**3. Practical Feasibility**

- Challenges include Capturing and maintaining reptiles and ensuring they remain within designated areas

**4. Legal and Human Rights Concerns**

- Raises questions about Proportionality of force and Impact on livelihood activities like fishing

**5. Limited Effectiveness**

- Determined infiltrators may still Find alternative routes Reducing long-term effectiveness

**Implications for Internal Security**

**1. Innovation in Border Management**

- Reflects a shift toward **non-traditional and adaptive strategies**.

**2. Multi-Layered Security Approach**

- Combines Technology and Natural deterrents For comprehensive coverage

**3. Need for Balanced Policy**

- Security measures must balance Effectiveness
  - Human rights
  - Environmental sustainability

**Way Forward**

**1. Prioritise Technology-Based Solutions**

- Expand use of AI-enabled surveillance and Satellite monitoring

**2. Scientific Feasibility Studies**

- Conduct environmental and safety assessments before implementation.

**3. Community Engagement**

- Involve local populations in Intelligence gathering and Border vigilance

**4. Strengthen Infrastructure**

- Improve Floating border outposts and Riverine patrol capabilities

**Conclusion**

The proposal to use reptiles as deterrents highlights the evolving nature of border security in challenging terrains. However, sustainable solutions must prioritise technology, safety, and ecological balance over unconventional experiments.

**PRELIMS POINTERS IN NEWS**

**INS KALPENI**

**SOURCE: THE HINDU**

**Why in News?**

INS Kalpeni visited Maldives, strengthening maritime cooperation and regional engagement.



**INS Kalpeni**

- INS Kalpeni is a **Fast Attack Craft (FAC)** of the Indian Navy, designed for **high-speed coastal operations and maritime security missions**.
- It is part of the **Car Nicobar class vessels**, built indigenously in India.

**Key Features**

- It is a **49-metre-long vessel equipped with waterjet propulsion**, enabling **high manoeuvrability and speed in coastal waters**.
- Commissioned in **2010**, it operates under the **Southern Naval Command based at Kochi**.
- It is named after **Kalpeni Island in Lakshadweep**, reflecting maritime heritage.

**Operational Roles**

- Performs **coastal surveillance and maritime patrol**, ensuring security of India’s coastline.
- Conducts **anti-smuggling and anti-piracy operations**, safeguarding maritime trade routes.
- Engages in **search and rescue (SAR) missions and humanitarian assistance**.
- Executes **boarding, search, and seizure operations for maritime law enforcement**.

**Armament and Capability**

- Equipped with a **30 mm naval gun with advanced targeting systems**.
- Includes **machine guns and IGLA surface-to-air missiles** for aerial defence.
- Designed for **rapid response to threats in shallow and near-shore waters**.

**Strategic Significance**

- Strengthens India’s **maritime domain awareness in the Indian Ocean Region**.
- Supports initiatives like **SAGAR (Security and Growth for All in the Region)**.
- Enhances **defence diplomacy with neighbouring countries like Maldives**.

**PROJECT DANTAK**

**SOURCE: PIB**

**Why in News?**

Project DANTAK recently celebrated its 66th Raising Day in Bhutan.



**Project DANTAK**

- **Project DANTAK** is an overseas initiative of the **Border Roads Organisation (BRO)** aimed at **developing infrastructure in Bhutan**.
- It represents a key pillar of **India-Bhutan bilateral cooperation**.

**Background**

- Established in **1961** through an agreement **between India and Bhutan**.
- Focuses on **building roads and infrastructure in difficult Himalayan terrain**.

**Major Achievements**

- Constructed over **1,500 km of roads, including the East–West Highway**, which is Bhutan’s backbone road network.
- Developed critical infrastructure like **Paro Airport, airfields, and hydropower facilities**.
- Contributed to **education and administrative infrastructure such as Sherubtse College**.

**Strategic Importance**

- Enhances **connectivity in remote and border regions**, aiding development.
- Strengthens **India’s strategic presence and influence in the Himalayan region**.
- Supports **defence logistics and regional stability**.

**TRUCK MOUNTED ATTENUATOR (TMA)**

**SOURCE: THE HINDU**

**Why in News?**

The government has introduced **Truck Mounted Attenuator** to enhance safety in highway construction zones.



**Truck Mounted Attenuator**

- A **Truck Mounted Attenuator (TMA)** is a safety device attached to vehicles to absorb impact during collisions in roadwork zones.

- It is widely used in **traffic management and highway safety systems**.

**Working Mechanism**

- TMAs absorb and **dissipate kinetic energy during a crash**, reducing impact force.
- They act as a **protective barrier between moving traffic and workers ahead**.

**Key Features**

- Equipped with **impact-absorbing structures that deform to reduce collision severity**.
- Includes **high-intensity warning lights that provide early alerts to drivers**.
- Particularly useful in **high-speed highways, night conditions, and low-visibility environments**.

**Benefits**

- Protects **road construction workers and maintenance personnel**.
- Reduces **fatalities and injuries in highway accidents**.
- Improves **traffic discipline and driver awareness in work zones**.

**ASTRA MK-2 MISSILE**

**SOURCE: PIB**

**Why in News?**

India plans to integrate **Astra Mk-2 Missile with Mirage-2000 fighter jets** to enhance long-range combat capability.



**Astra Mk-2**

- **Astra Mk-2 is an indigenously developed Beyond Visual Range (BVR) air-to-air missile** designed by the **Defence Research and Development Organisation**.
- It represents the **next-generation upgrade over Astra Mk-1**, aimed at achieving **longer range and higher precision interception**.

**Key Features**

- It uses a **dual-pulse solid rocket motor**, which allows **better speed control and enhanced manoeuvrability during the terminal phase**.
- The missile has an **extended strike range of about 200–240 km (at high altitude)**, significantly higher than earlier versions.
- It is equipped with an **indigenous active radar seeker developed by Bharat Electronics Limited (BEL)** for precise targeting.
- Incorporates **Electronic Counter-Countermeasures (ECCM)**, enabling resistance against enemy jamming systems.
- Features a **two-way datalink system**, allowing mid-course corrections and real-time updates from the launching aircraft.

**Operational Capabilities**

- Designed to **engage enemy aircraft beyond visual range**, reducing exposure of the launching aircraft to threats.
- Compatible with multiple fighter platforms like **Su-30 MKI, LCA Tejas, and Mirage-2000**.
- Capable of operating in **all-weather conditions and complex combat environments**.

**INS DHRUV**

**SOURCE: PIB**

**Why in News?**

**INS Dhruv was deployed in the Arabian Sea** ahead of regional missile activities.



**INS Dhruv**

- **INS Dhruv is India's first dedicated missile tracking and ocean surveillance ship**, designed to support **strategic defence operations**.
- It is a joint initiative involving **DRDO, NTRO, and the Indian Navy**.

**Key Features**

- The ship has a **displacement of about 15,000 tonnes**, making it a large and stable surveillance platform.
- Powered by **dual diesel engines (CODAD system)**, it can reach speeds up to **21 knots**.
- Equipped with **advanced X-band and S-band AESA radars**, capable of tracking objects over long distances.
- Designed to **monitor ballistic missiles, satellites, and re-entry vehicles with high precision**.

**Functions and Capabilities**

- Plays a crucial role in **tracking ballistic missile launches and gathering electronic intelligence (ELINT)**.
- Provides **early warning of missile threats**, enhancing national security preparedness.
- Supports **Ballistic Missile Defence (BMD) systems** by analysing missile trajectories and performance.
- Capable of **mapping ocean floors**, aiding submarine detection and underwater surveillance.

**EXERCISE DUSTLIK**

**SOURCE: THE HINDU**

**Why in News?**

The Indian Army has participated in the **7th edition of Exercise Dustlik**.



**Exercise Dustlik**

- **Exercise Dustlik** is a **bilateral military exercise between India and Uzbekistan**, conducted annually.
- It focuses on improving **joint operational capabilities in challenging terrains**.

**Key Features**

- Conducted **alternatively in India and Uzbekistan**, strengthening mutual engagement.

- Involves participation from the **Indian Army (MAHAR Regiment) and Indian Air Force personnel**.
- Designed to simulate **semi-mountainous terrain warfare conditions**.

**Objectives**

- Enhance **interoperability between the armed forces of both countries**.
- Develop a **common operational framework for joint missions**.
- Promote sharing of **best practices in tactics, techniques, and procedures (TTPs)**.

**Operational Aspects**

- Includes training in **land navigation, counter-terror operations, and coordinated strikes**.
- Focuses on **capturing enemy-held areas and conducting joint manoeuvres**.
- Improves **command-and-control coordination and decision-making efficiency**.

**Strategic Importance**

- Strengthens India's **engagement with Central Asia**, a region of geopolitical importance.
- Supports India's broader **"Connect Central Asia Policy"**.
- Enhances preparedness for **joint counter-terror and peacekeeping operations**.

# SOCIETY

## VULNERABLE SECTIONS OF SOCIETY

### DOWRY LAWS IN INDIA

SOURCE: INDIAN EXPRESS

#### Why in News?

Recent data indicates that **over 35,000 dowry deaths were recorded between 2017–2022**, highlighting a persistent social crisis.

Despite stringent laws, the **conviction rate remains low (around 10–17%)**, exposing gaps in implementation and justice delivery.

#### Legal Framework Governing Dowry in India

##### 1. Dowry Prohibition Act, 1961

- Prohibits the **giving, taking, or demanding of dowry**.
- Makes the offence **cognizable and non-bailable**, aiming to deter the practice.

##### 2. Section 80 of Bharatiya Nyaya Sanhita (BNS) (earlier IPC 304-B)

- Defines **dowry death** as death of a woman within **7 years of marriage under suspicious conditions linked to dowry harassment**.
- Prescribes punishment from **7 years to life imprisonment**.

##### 3. Section 85 of BNS (earlier IPC 498-A)

- Penalises **cruelty by husband or relatives**, including harassment for dowry.

##### 4. Presumption under Evidence Law

- Courts can presume **guilt of husband or relatives** if dowry harassment is proven before death.
- Shifts burden of proof, strengthening prosecution.

#### Why Dowry Laws Fail in Practice

##### 1. Institutional Apathy

- Police often treat dowry complaints as **family disputes**, discouraging FIR registration.

##### 2. Weak Investigation and Forensics

- Poor documentation, improper **post-mortem procedures**, and lack of evidence collection weaken cases.

##### 3. Witness Vulnerability

- Victims' families face **threats and pressure**, leading to hostile witnesses and case collapse.

##### 4. Social Acceptance of Dowry

- In many regions, dowry is seen as a **customary transfer of wealth**, not a crime.

##### 5. Economic Dependence of Women

- Lack of financial independence makes women **less able to resist abuse or exit marriages**.

##### 6. Delayed Justice System

- Long trial durations reduce deterrence and allow accused to evade punishment.

#### Government Initiatives

##### 1. Fast-Track Courts

- Established to **expedite cases related to crimes against women**, though effectiveness varies.

##### 2. Witness Protection Scheme (2018)

- Provides mechanisms to **protect witnesses**, but implementation remains uneven.

##### 3. Women Empowerment Programs

- Schemes like:
  - Self-Help Groups (SHGs)
  - Livelihood missions

Aim to improve women's **economic agency**.

#### Way Forward

##### 1. Strengthen Investigation Mechanisms

- Standardise procedures for Crime scene management and Forensic evidence collection

##### 2. Ensure Time-Bound Justice

- Enforce strict timelines for Investigation and Trial completion

##### 3. Enhance Witness Protection

- Provide Legal support and Physical security
- From FIR stage till judgment

##### 4. Promote Gender Equality

- Ensure **equal inheritance rights for women**, reducing dependence on dowry as economic security.

##### 5. Use Technology in Evidence Collection

- Preserve Call records and Digital communication to establish patterns of harassment

##### 6. Social Awareness and Behavioural Change

- Conduct campaigns to:
  - Challenge patriarchal norms
  - Promote **dowry-free marriages**

#### Conclusion

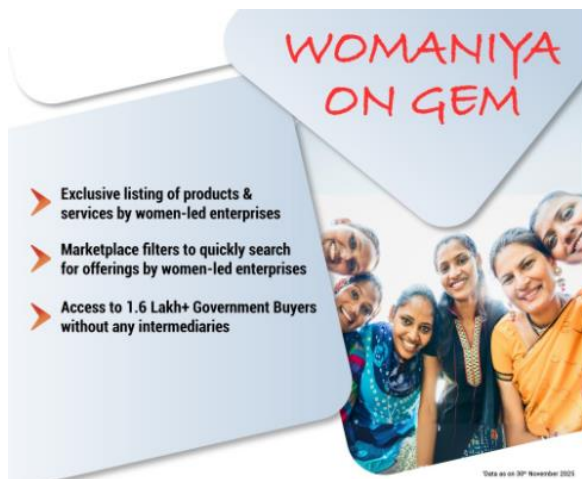
India's dowry laws are robust, but weak enforcement and social norms undermine their effectiveness. Real change requires strong institutions, faster justice, and empowerment of women beyond legal provisions.

## WOMANIYA INITIATIVE

SOURCE: PIB

### Why in News?

The **Womaniya initiative** on the **Government e-Marketplace (GeM)** has enabled over **2.1 lakh women entrepreneurs** to secure government orders worth **₹28,000 crore**.



### What is Womaniya Initiative?

- **Womaniya** is an inclusion-focused feature on **GeM** under the **Ministry of Commerce and Industry**.
- It enables **women-led Micro and Small Enterprises (MSEs)** and **Self-Help Groups (SHGs)** to sell products directly to **government buyers**.
- Covers products like:
  - **Handicrafts and handloom items**
  - **Office supplies and utility goods**
- Provides a **dedicated digital marketplace** for **women entrepreneurs**.

### Key Features of Womaniya

#### 1. Digital Onboarding

- Uses **Udyam registration and training workshops** to onboard women entrepreneurs easily.
- Simplifies entry into formal procurement systems.

#### 2. Standardised Product Listing

- Ensures **uniform cataloguing and clear product descriptions**.
- Improves **visibility and comparability** for buyers.

#### 3. Paperless and Transparent Process

- Entire procurement cycle is **online and contactless**, including bidding and payments.
- Reduces **middlemen and corruption risks**.

#### 4. Timely Payments

- Digitised workflows ensure **faster and reliable payments**, supporting working capital needs.

#### 5. Capacity Building and Outreach

- Provides **training in local languages and awareness programs**.
- Organises **buyer-seller meets** to expand participation.

### Key Achievements and Impact

- Over **2.1 lakh women MSEs** registered on GeM platform.
- Women entrepreneurs received **13+ lakh orders in 2025–26**.
- Total procurement value reached **₹28,000 crore**, showing strong growth.
- Women-led enterprises account for **~5.6% of total GeM procurement**, exceeding the 3% target.

### Significance of Womaniya Initiative

#### 1. Economic Empowerment

- Provides **direct access to large government markets**, increasing income opportunities.

#### 2. Reduction of Middlemen

- Eliminates dependence on **intermediaries**, ensuring better profit margins for women.

#### 3. Strengthening SHGs

- Supports over **10 crore women in SHGs**, promoting collective entrepreneurship.

#### 4. Formalisation of Enterprises

- Encourages transition from **informal to formal sector**, improving financial inclusion.

#### 5. Inclusive Growth

- Enhances **supplier diversity in public procurement**, integrating underrepresented groups.

### Challenges Faced by Women Entrepreneurs

- **Digital Literacy Gap:** Limited familiarity with **online platforms and technology** affects participation.
- **Time Constraints:** Women often balance **household responsibilities with business activities**.
- **Information Barriers:** Lack of awareness about **procurement processes and schemes**.
- **Financial Constraints:** Limited access to **credit due to lack of collateral and formal records**.

- **Limited Decision-Making Power:** Social norms sometimes restrict **independent business decisions**.

### Way Forward

- **Digital and Financial Inclusion:** Promote **digital literacy and access to internet infrastructure**. Use **digital transaction data (UPI, GeM)** for easier credit access.
- **Capacity Building:** Expand **training programs and mentorship support** for women entrepreneurs.
- **Vernacular and User-Friendly Platforms:** Develop **regional language interfaces and voice-based tools**.
- **Strengthening SHG Networks:** Use SHGs as platforms for **collective marketing and capacity development**.
- **Policy Support:** Ensure **better access to finance, markets, and institutional support**.

### Conclusion

Womaniya has transformed public procurement into a powerful tool for women's economic empowerment. It creates a pathway for **inclusive growth, financial independence, and greater participation of women in India's economy**.

## PRELIMS POINTERS IN NEWS

### GOND TRIBE

#### SOURCE: THE HINDU

#### Why in News?

Members of the **Gond Tribe** recently raised concerns in Delhi regarding environmental protection and forest conservation.



#### Gond Tribe

- The **Gond Tribe** is one of the **largest Adivasi communities in India**, belonging to a **Dravidian ethno-linguistic group**.

- They are traditionally known as "**Koitur**" (**people of the land**) and have a deep cultural link with forests and nature.

#### Distribution and Sub-Groups

- The Gonds are widely distributed across **central India**, especially in **Madhya Pradesh, Chhattisgarh, Maharashtra, and Odisha**, with smaller populations in southern and eastern states.
- They are internally divided into major sub-groups such as **Raj Gonds, Madia Gonds, Dhurve Gonds, and Khatulwar Gonds**, each having distinct cultural practices.

#### Language and Culture

- The primary language is **Gondi**, belonging to the **Dravidian language family**, though it is largely **oral and lacks a standard script**.
- Due to interaction with dominant cultures, many Gonds now also speak **Hindi, Marathi, or Telugu**.
- Their rich cultural traditions include **folk songs, dance, and Gond art**, which often depicts nature and mythology.

#### Economic Life

- The Gond economy is primarily based on **subsistence agriculture**, along with **animal husbandry and forest-based livelihoods**.
- Many communities depend on **minor forest produce (MFP)** such as **tendu leaves, honey, and medicinal plants**.
- Some groups still practice **shifting cultivation**, though modern changes have influenced their lifestyle.

#### Beliefs and Traditions

- Their religion revolves around **nature worship, clan deities, and ancestor worship**, reflecting strong ecological ethics.
- Important festivals such as **Madai and Keslapur Jathra** reinforce community bonding and cultural identity.
- Rituals are closely tied to **agricultural cycles and forest ecosystems**.

### SMILE SCHEME

#### SOURCE: THE HINDU

#### Why in News?

The government allocated significant funds for the **SMILE Scheme during 2021–2026 period**.



### SMILE Scheme

- The **SMILE Scheme (Support for Marginalized Individuals for Livelihood and Enterprise)** is a **Central Sector Scheme** launched in **2022**.
- It focuses on **rehabilitation, welfare, and livelihood support for transgender persons and individuals engaged in begging**.

### Key Components

- The scheme consists of two sub-schemes:
  - **Comprehensive rehabilitation for transgender persons**, and
  - **Rehabilitation of persons involved in begging**.
- It adopts a **holistic approach combining welfare, skill development, and social inclusion**.

### Major Features

- Provides **scholarships for transgender students** from school to higher education to improve educational access.
- Includes **skill development and livelihood training** through convergence with programmes like PM-DAKSH.
- Offers **healthcare support including gender-affirmation procedures** through schemes like Ayushman Bharat (PM-JAY).
- Establishes **Garima Greh (shelter homes)** to provide safe accommodation and dignity.
- Introduces **Transgender Protection Cells** to ensure legal protection and grievance redressal.
- Facilitates a **national portal and helpline** for easy access to services and support.

### Significance

- Promotes **social justice and inclusion** by addressing discrimination and marginalization.
- Supports **economic empowerment and skill-building**, reducing dependency.
- Aligns with **constitutional values of equality and dignity under Article 14 and 21**.

## MUTHUVAN TRIBE

SOURCE: PIB

### Why in News?

Issues related to ration distribution in tribal areas brought attention to the **Muthuvan Tribe in Kerala**.



### Muthuvan Tribe

The **Muthuvan Tribe** is a **primitive tribal community inhabiting the Western Ghats of Kerala and Tamil Nadu**.

### Distribution and Language

- Primarily found in **Idukki district (Kerala)** and adjoining regions of Tamil Nadu.
- They speak the **Muthuvan language**, belonging to the **Dravidian linguistic family**, with regional dialect variations.

### Social Organisation

- Society is structured into **clans known as "Kootams"**, which regulate marriage and kinship.
- They follow **endogamy at the community level and exogamy at the clan level**.
- Governance is based on the **"Kani System"**, where a headman and council of elders maintain social order and resolve disputes.

### Economic Life

- The tribe practices **shifting cultivation (Virippukrishi)**, growing crops like millets, maize, and vegetables mainly for subsistence.
- Their livelihood is closely tied to **forest resources and traditional farming practices**.
- They possess deep knowledge of **herbal medicine**, which is preserved within the community.

### Beliefs and Culture

- The Muthuvans follow **animistic traditions**, worshipping nature, spirits, and ancestors.
- Over time, **influence of mainstream Hindu practices** has also emerged.
- Their cultural practices reflect **harmony with forests and wildlife**.

## THARU TRIBE

SOURCE: DTE

### Why in News?

The Tharu Tribe approached courts regarding denial of community forest rights in Uttar Pradesh.



### Tharu Tribe

- The Tharu Tribe is an indigenous community inhabiting the Terai plains along the Indo-Nepal border, known for its long historical presence.
- They are considered one of the oldest ethnic groups of the Terai ecosystem, closely adapted to forest and wetland environments.

### Distribution and Identity

- In India, Tharus are mainly found in Uttarakhand, Uttar Pradesh, and Bihar, while a large population resides in Nepal.
- They were officially recognized as a Scheduled Tribe in 1967, ensuring constitutional safeguards.

### Language and Culture

- They speak Tharu (Tharuhati), which belongs to the Indo-Aryan subgroup of the Indo-European language family.
- Their cultural practices include folk songs, dances, and unique housing patterns like "Badaghar", built using mud, bamboo, and thatch.

### Economic Life

- The primary occupation is agriculture, supported by cattle rearing, fishing, hunting, and forest produce collection.
- Their diet largely consists of rice, pulses, and locally grown vegetables, reflecting agrarian dependence.

### Social Structure

- The society follows a patrilineal system, but notably, women enjoy comparatively higher property rights than many mainstream communities.
- The joint family system is common, with extended households living together.

- Local governance operates through a strong Panchayat system, led by a head known as "Pradhan".

### Beliefs and Practices

- Their religion is a syncretic mix of animism, Hindu traditions, and nature worship, reflecting ecological dependence.
- Rituals and festivals are often linked to agriculture and seasonal cycles.

## BAISAKHI FESTIVAL

SOURCE: THE HINDU

### Why in News?

The festival of Baisakhi Festival was celebrated across northern India with cultural and religious significance.



### Baisakhi Festival

- Baisakhi (Vaisakhi) is a major harvest festival of North India, particularly significant in Punjab and among the Sikh community.
- It is celebrated annually on April 13 or 14, marking the beginning of the solar new year.

### Agricultural Significance

- It marks the harvesting of the Rabi crop, especially wheat, symbolizing prosperity and gratitude towards nature.
- Farmers celebrate the occasion with traditional dances like Bhangra and Gidda, reflecting rural joy.

### Religious Importance

- For Sikhs, it commemorates the foundation of the Khalsa Panth in 1699 by Guru Gobind Singh at Anandpur Sahib.
- The event symbolized equality, courage, and collective identity, shaping Sikh religious and social life.

### Cultural Diversity

- The festival coincides with regional New Year celebrations across India, such as:
  - Pohela Boishakh (West Bengal)
  - Vishu (Kerala)
  - Bohag Bihu (Assam)

- Puthandu (Tamil Nadu)
- This reflects India's cultural unity in diversity.

### LANJIA SAORA TRIBE

**SOURCE: THE HINDU**

Changing cultural practices among the Lanjia Saora Tribe have drawn attention to tribal adaptation and preservation.



#### Lanjia Saora Tribe

- The Lanjia Saora Tribe is an ancient tribal community of Odisha, classified as a Particularly Vulnerable Tribal Group (PVTG).
- They are known for their distinct cultural identity and deep connection with nature.

#### Distribution and Language

- Primarily found in Odisha, with smaller populations in neighbouring states.
- They speak the Sora language, belonging to the Munda language family, and uniquely possess a script called Sorang Sompeng.

#### Settlement and Economy

- They live in scattered settlements across hilly terrain, with houses made of mud and thatch.
- Their livelihood is based on shifting cultivation, forest gathering, and subsistence agriculture.

#### Beliefs and Culture

- Their religion is animistic, centered on nature spirits and ancestral worship.
- Rituals involve music, dance, and community participation, forming an integral part of daily life.
- Unique cultural elements include tattoo traditions (Tantangbo) and distinctive jewellery like large ear ornaments.

#### Social Practices

- Their social structure is community-centric, with strong emphasis on customary laws and traditions.
- Village life revolves around guardian deities such as Kitungsum, believed to protect settlements.

## ABORTION LAW IN INDIA

#### Why in News?

The Supreme Court of India recently permitted termination of a 30-week pregnancy, prioritising reproductive autonomy over statutory limits.



#### Legal Framework Governing Abortion

##### 1. Medical Termination of Pregnancy (MTP) Act, 1971

- Legalises abortion under specific conditions to ensure safe and regulated medical procedures.
- Enacted primarily as a public health measure to reduce unsafe abortions.

##### 2. MTP Amendment Act, 2021

- Extended gestation limit from 20 weeks to 24 weeks for special categories like:
  - Survivors of rape
  - Minors
  - Differently-abled women
- Introduced state-level Medical Boards for cases beyond 24 weeks involving fetal abnormalities.

### 3. Judicial Expansion of Rights

- In **2022 (X v. Principal Secretary, Delhi)**, the Court held that **unmarried women are equally entitled to abortion up to 24 weeks**.
- Recent rulings allow termination beyond statutory limits in **exceptional circumstances**, strengthening autonomy.

#### Key Features of Abortion Law in India

##### 1. Tiered Gestational Limits

- Up to **20 weeks** → opinion of **one Registered Medical Practitioner (RMP)** required.
- **20–24 weeks** → requires **two RMP opinions** for specific categories.
- Beyond 24 weeks → permitted in cases of **serious fetal abnormalities or court approval**.

##### 2. Recognition of Mental Health Grounds

- Pregnancy due to **contraceptive failure or distress** is considered a valid ground.

##### 3. Consent Framework

- Only the **woman's consent is mandatory** for adults (18+).
- No requirement for **spousal or family consent**, though often violated in practice.

##### 4. Confidentiality Protection

- The law ensures **privacy of the woman**, penalising disclosure of identity.

#### Significance of the Legal Framework

##### 1. Public Health Protection

- Provides access to **safe abortion services**, reducing maternal mortality caused by unsafe procedures.

##### 2. Advancement of Gender Justice

- Recognises women's **bodily autonomy and decision-making rights**.

##### 3. Progressive Judicial Interpretation

- Courts have expanded the law to include:
  - Unmarried women
  - Late-term cases under exceptional conditions

#### Challenges in Implementation

##### 1. Conflict Between Autonomy and Fetal Viability

- Courts often struggle between **Woman's rights** and **Potential life of the fetus**, especially beyond 24 weeks

##### 2. Institutional Barriers

- Hospitals sometimes demand Spousal consent and Additional documentation Contrary to legal provisions

### 3. Access Issues for Minors

- Mandatory reporting under **POCSO Act** discourages minors from seeking timely medical help.

### 4. Delays Due to Medical Boards

- Requirement of expert boards leads to Procedural delays and Increased health risks

### 5. Inconsistent Judicial Decisions

- Different court rulings create **legal uncertainty**, affecting access to abortion services.

#### Way Forward

##### 1. Move Towards Rights-Based Approach

- Shift from a **doctor-centric model to woman-centric decision-making**.

##### 2. Decentralise Medical Boards

- Establish boards at **district level** to reduce delays.

##### 3. Sensitise Healthcare Providers

- Train doctors to Follow legal provisions and Avoid extra-legal requirements

##### 4. Clarify Legal Guidelines

- Develop clear national protocols on Late-term abortions and Fetal viability

##### 5. Improve Access and Awareness

- Expand availability of Safe abortion services and Reproductive health education

#### Conclusion

India's abortion law reflects a **progressive balance between medical regulation and women's rights, but implementation gaps persist**. Strengthening autonomy, reducing delays, and ensuring uniform interpretation are key to achieving true reproductive justice.

# TELANGANA PARENTAL SUPPORT BILL, 2026

## Why in News?

The Telangana Legislative Assembly has passed the **Employees Accountability and Monitoring of Parental Support Bill, 2026** to ensure financial and social security for elderly parents.



## Ageing Population Trends

Telangana's elderly population (60+):

- Present: ~12% (~48 lakh people)
- Projected: 17% (~68 lakh) by 2036

This reflects a **rapid increase of nearly 20 lakh elderly persons within a decade.**

## Rising Cases of Elder Neglect

- Telangana Human Rights Commission has reported **multiple cases of abandonment**, with elderly people left without food, shelter, or medical care.
- Courts are witnessing **increasing petitions from parents seeking protection and maintenance.**

## Limitations of Existing Law

- The **Maintenance and Welfare of Parents and Senior Citizens Act, 2007** already mandates support for parents.
- However, enforcement has been weak due to:
  - Lack of monitoring
  - Delays in legal processes
  - Absence of direct financial enforcement

## Objectives of the Bill

The Telangana Parental Support Bill aims to:

- Ensure **financial security and dignity for elderly parents**
- Convert **moral duty into legal obligation**
- Provide a **time-bound grievance redressal system**
- Reduce dependency on **government welfare schemes alone**
- Strengthen **family-based social security systems**

## Key Features of the Bill

### 1. Legal Obligation on Children

- The bill mandates that children must provide:
  - Financial support
  - Medical care
  - Shelter and basic necessities

### 2. Salary Deduction Mechanism (Most Important Feature)

- If children neglect parents: **Up to 15% of salary or ₹10,000/month (whichever is lower)** can be deducted
- The deducted amount is **Directly transferred to parents' bank accounts**

### 3. Wide Coverage

- The law applies to Government employees, Private sector employees and Public representatives (MLAs, MPs, local bodies)

### 4. Complaint and Adjudication Mechanism

- Parents can file complaints before the **District Collector**
- The authority must **Hear both parties, Assess financial condition**
- Deliver a decision within **60 days**

### 5. Appeal System

- A **Senior Citizen Commission** is proposed Headed by a retired High Court judge and Has quasi-judicial powers

## Significance of the Bill

### 1. Strong Enforcement Mechanism

Unlike earlier laws, this bill introduces:

- **Direct salary deduction**
- Ensures **compliance without lengthy litigation**

### 2. Social Transformation

- Reinforces traditional Indian values of:
  - **Respect for elders**
  - **Family responsibility**

### 3. Reduces State Burden

- Encourages families to take responsibility

- Reduces pressure on Pension schemes and Welfare programmes

#### 4. Ensures Dignity of Elderly

- Protects fundamental right under **Article 21 (Right to Life with dignity)**
- Prevents Destitution and Social isolation

#### 5. Model for Other States

- Similar law in Assam (2017) had **10% salary deduction**, but Telangana expands coverage and enforcement

### Challenges and Concerns

#### 1. Implementation Issues

- Monitoring compliance across private sector is difficult
- Identifying “neglect” objectively may be complex

#### 2. Family Conflicts

- Legal enforcement may Increase disputes and Strain family relationships

#### 3. Economic Burden on Children

- Low-income earners may struggle with Mandatory deductions

#### 4. Coverage Gaps

- Self-employed individuals may fall outside strict enforcement

#### 5. Social Acceptance

- Law may be seen as Over-interference in personal family matters

### Way Forward

- Strengthen **awareness and legal literacy among elderly**
- Ensure **efficient grievance redressal within 60 days**
- Integrate with Pension schemes and Healthcare services
- Develop **community-based elderly care systems**
- Periodically review deduction limits and coverage

### Conclusion

**The Telangana Parental Support Bill, 2026 introduces a strong enforcement-based model to protect elderly parents in an ageing society.** Its success will depend on balanced implementation, social acceptance, and institutional efficiency.

# ANDHRA PRADESH POPULATION MANAGEMENT POLICY 2026

The Andhra Pradesh government has introduced a **draft Population Management Policy (2026)** to address declining fertility and rising ageing population.

## Demographic Trends in Andhra Pradesh

### Decline in Fertility Rate

The most important factor driving this policy is the sharp decline in fertility:

- Total Fertility Rate (TFR) in Andhra Pradesh has fallen from **2.2 in 2003 to 1.5 in 2023**.
- The **replacement level fertility is 2.1**, meaning the current rate is insufficient to sustain population levels in the long run.

This indicates that, over time, the population will begin to shrink unless corrective measures are taken.

### Comparison with National Trends

- India's TFR has also declined from **3.0 (2003) to around 1.9 at present**.
- However, Andhra Pradesh's decline is **steeper than the national average**, placing it among low-fertility regions globally.

### Regional Variation

- Southern states such as Tamil Nadu, Kerala, Karnataka, and Andhra Pradesh show **low fertility (1.3–1.5)**.
- Northern states like Bihar and Uttar Pradesh still have **higher fertility (above 2.5)**.

This reflects differences in **education, healthcare, urbanization, and socio-economic development**.

### Ageing Population Concern

- Median age in Andhra Pradesh is **32.5 years**, higher than India's average of **28.4 years**.
- The population above 60 years is currently about **10%**, and is projected to increase to **23% by 2047**.

This means the state is moving toward an **ageing society**, which can increase dependency and reduce productivity.

### Objectives of the Policy

The Andhra Pradesh Population Management Policy aims to:

- Increase fertility towards **replacement level**
- Maintain a **balanced age structure**
- Strengthen **maternal and child healthcare systems**
- Improve **female workforce participation**
- Enhance **elderly care and social security systems**
- Ensure long-term **economic sustainability**

## Andhra Pradesh Announces Population Management Policy

Strategic Initiative To Boost Fertility Rate In The State Announced By **Chief Minister N. Chandrababu Naidu**



**Policy Implementation**  
**1 April 2026**  
Official Starting Date Of The Program

**Additional Benefits**  
**₹1,000 / Month**  
Financial Support For 3rd Child  
Provided continuously for a duration of 5 years

### Key Features of the Policy

#### 1. Incentives for Childbirth

The policy encourages families to have **two or three children** through financial support:

- ₹25,000 **cash incentive** for second or third child
- ₹1,000 per month for five years for the **third child's nutrition**

These measures aim to reduce the financial burden associated with raising children.

#### 2. Education Support

- The government will provide **free education in government institutions up to 18 years** for second and third children.

This ensures long-term human capital development and reduces parental hesitation.

#### 3. Fertility Assistance

- Subsidised **IVF (In-Vitro Fertilisation)** treatment through public-private partnerships.

This addresses infertility issues and supports couples who wish to have children.

#### 4. Healthcare Reforms

The policy emphasizes improving public health outcomes:

- Reduction of **C-section deliveries from 67.5% to below 40%**
- Reduction in **teenage pregnancies**
- Strengthening maternal and child healthcare services

#### 5. Workforce Development

- Training of **10,000 healthcare assistants annually** to support healthcare services for children and elderly.

This helps build a **healthcare workforce** suited to demographic changes.

#### 6. Elderly Welfare Measures

- ₹50,000 support and leave for retiring government employees for preventive health check-ups
- Strengthening systems for **elderly care and support**

#### 7. Increasing Female Workforce Participation

- Female workforce participation in AP is about **31%, lower than national average (37%)**
- The policy aims to improve women's participation through employment and support measures.

#### 8. Five Pillars of the Policy

The policy is structured around five key components:

- **Matrutva:** Focus on maternal health and well-being
- **Shakti:** Enhancing women's participation in the workforce
- **Kshema:** Welfare of elderly population
- **Naipunyam:** Skill development, especially in healthcare
- **Sanjeevani:** Strengthening digital public health systems

#### Political Implications

##### Delimitation Issue

Population changes have implications for political representation:

- Parliamentary seats are allocated based on population.
- Southern states with lower population growth may lose representation compared to northern states.

This makes population trends not only an economic issue but also a **political concern**.

#### Significance of the Policy

- It represents a **paradigm shift** from population control to population stabilization.
- It aims to preserve the **demographic dividend** by maintaining a healthy workforce.
- It integrates **health, education, and economic policies** into a unified demographic strategy.
- It addresses both **fertility decline and ageing simultaneously**.

#### Challenges

- **Fiscal burden:** Continuous financial incentives may strain government finances.
- **Behavioural resistance:** Urban families may still prefer smaller families.
- **Implementation gaps:** Effective targeting and monitoring are essential.
- **Equity concerns:** Benefits must reach all socio-economic groups equally.

#### Way Forward

- Adopt a **balanced approach** combining incentives with social awareness
- Strengthen **public health infrastructure**
- Promote **gender equality and women empowerment**
- Use **data-driven monitoring systems**
- Periodically review policy effectiveness

#### Conclusion

The **Andhra Pradesh Population Policy** signals a **strategic shift toward sustaining demographic balance in a low-fertility context**. Its success will depend on effective implementation, fiscal sustainability, and social acceptance.



# EKAM IAS ACADEMY

Let's Work Together, We Hard, You Smart



**Ready to Shape Your Future? Join EKAM Today!**

 **Call us @ 81210 17337**



**FOLLOW US**



**SUBSCRIBE**



**EKAMIASACADEMY.COM**



**LOCATION**



1-10-237, 2nd Floor, Near Sub-Registrar  
Office, Ashok Nagar, HYD-500020



Find us online  
@www.ekamiasacademy.in



# EKAM IAS ACADEMY

Lets Work Together, We Hard, You Smart



## PARISHRAM

1 YEAR ONE TO ONE

## MENTORSHIP PROGRAM

Prelims & Mains Syllabus Covered Comprehensively

Weekly Test Followed by Personal Counselling

Live evaluation & Feedback

Offline Explanation Classes For Each Test

Free Offline Classes Ethics & Essay

## ADMISSIONS OPEN

Offline & Online | English Medium

FOR REGISTRATION

# 77020 37337



EKAM IAS ACADEMY  
Ashok Nagar X Roads, Hyderabad- 20



# EKAM IAS ACADEMY

Lets Work Together, We Hard, You Smart



**Ready to Shape Your Future? Join EKAM Today!**

 **Call us @ 81210 17337**



**FOLLOW US**



**SUBSCRIBE**



**EKAMIASACADEMY.COM**



**LOCATION**



**1-10-237, 2nd Floor, Near Sub-Registrar  
Office, Ashok Nagar, HYD-500020**



Find us online  
[@www.ekamiasacademy.com](http://www.ekamiasacademy.com)