NAMAN SHARMA
IAS ACADEMY

# Monthly CURRENT AFFAIRS

**May** , 2025

**Offline Centre Location:**
SCO 173-174, Sector 17C, Chandigarh

# CONTENTS

## POLITY AND GOVERNANCE



News in shorts



## INTERNATIONAL RELATIONS



News in shorts



## ECONOMY



News in shorts



## HISTORY

# CONTENTS

## GEOGRAPHY AND ENVIRONMENT



News in shorts



## SCIENCE AND TECHNOLOGY



News in shorts



## SOCIAL ISSUE

# POLITY AND GOVERNANCE

## 1. Digital access is part of the basic rights and freedoms of life: Supreme Court.

### Why in the news?

The Supreme Court in India has stated that digital access is an internal part of the basic right to life and freedom under Article 21 of the Indian Constitution. This pronunciation confirms the state's role in ensuring similar digital inclusion and brings problems such as digital classification, access and inclusion under the constitutional lens.


The reigning digital came in the form of a case related to its customer (KYC) verification process, where second-backs, including acid attacks, left and visually impaired, faced challenges in reaching digital services due to systemic obstacles.

### Background: Development of Article 21

Article 21 of the Indian Constitution has guaranteed that "no person will be deprived of his life or personal freedom under the procedure laid down by the law." Although the judiciary was originally interpreted, it has expanded its scope through the advancement of forensic science, encompassing a wide range of rights necessary for living with dignity.

### Large legal extension of Article 21:

- Maneka Gandhi vs India Union (1978) presented the idea of "fair, fair and appropriate" law; Expanded the meaning of life and freedom.
- Sunil Batra against the Delhi Administration (1978) increased the right to health and human treatment of prisoners.
- Bandra Mukti Morcha vs. Union of India (1984), affiliated with Article 21 with instructions, secured protection against forced labour.
- Aruna Shanbag Case (2011) recognised the right to die with dignity.
- Subramaniam Swami vs India Union (2016) included reputation in the right to life.

The most important features of the Supreme Court's decision
Digital access as a constitutional right: The court said that digital access is not a privilege, but a perfect internal to live with dignity in a digital age.

**Reduce Digital Department:** Accepted the digital division as a constitutional challenge that violates the principles of equality and dignity. In particular, the government urged taking positive steps to ensure digital inclusion for groups on the margins.

**Accessible Digital KYC**: To make the KYC process more inclusive, 20 specific instructions were issued, the people who were abandoned of acid attacks and the visually impaired. Towed the use of alternative biometric systems and subsidiary technologies.
Inclusive rule: It was emphasised that digital exclusion produces results in social and economic boycott, thus preventing access to welfare schemes, financial services and opportunities.

## Challenges

- **Digital Divide:** A multi-dimensional trouble regarding infrastructure gaps, low digital literacy, affordability, and linguistic limitations. Rural India nonetheless has confined net penetration, with urban areas appreciably greater related.
- **Lack of Accessible Technology**: Most virtual systems are not disability-friendly. There is a dearth of content in local languages and a lack of assistive tech tools like display readers.
- **Exclusion from Welfare Benefits:** Dependence on digital systems for welfare delivery (e.g., ration, banking, schooling) excludes those without get admission to.
- **Implementation Gaps:** Policies like Digital India have made progress, however, their reach remains choppy. Issues like network disasters, cybersecurity worries, and lack of neighbourhood content material nevertheless persist.

## Way Forward

- **Digital Infrastructure Expansion:** Enhance rural connectivity through optical fibre networks, 5G rollout, and public Wi-Fi hotspots. Encourage PPP fashions to deliver personal investment into underserved areas.
- **Universal Digital Literacy:** Strengthen packages like PMGDISHA (Pradhan Mantri Gramin Digital Saksharta Abhiyan). Embed digital schooling in school curricula and vocational training.
- **Inclusive Design and Accessibility**: Enforce accessibility requirements (consistent with the Rights of Persons with Disabilities Act, 2016) in all government and banking apps. Develop multilingual content and promote textual content-to-speech/speech-to-text tech.
- **Legislative Backing:** Pass a comprehensive Digital Inclusion Act ensuring rights-based access to the net and digital public goods. Define virtual get admission to as a public application, not a marketplace commodity.

## Conclusion

The Supreme Court announced that digital access is part of Article 21, which is a transformational moment in India's constitutional journey. At a time when education, health, governance and trade are quickly going digital, digital exclusion denies effective basic rights. While India wants to become a digital India, the state, civil society, and private actors are gathering to end the digital divide. Only then can the constitutional ideals of justice, equality and dignity be felt for all residents of the digital age.

# 2. The Veeraswami case: When can a sitting judge face an FIR

## Why in the news?

Recently, the Vice President of India has criticised the in-house inquiry as having “no legal sanctity” and called for reviewing the Veeraswami judgment, terming it a “scaffolding of impunity”.
**Constitutional Safeguard for Judges:**
It is fundamental to the independence of the judiciary that judges should be able to decide cases without fear of personal consequences, including criminal prosecution.

The only procedure prescribed in the Constitution is the removal of a judge through impeachment.

- **Article 124:** Removal of a Supreme Court (SC) judge.
- **Article 218:** Removal of a High Court (HC) judge.
- The judge can only be removed by Parliament on two grounds:
- Proven misbehaviour or incapacity.
- Proven misbehaviour and incapacity are not defined in the Constitution.
- The impeachment process requires a motion to be passed in both the Lok Sabha and Rajya Sabha with at least two-thirds of those present and voting, in such a way that it is more than 50% of the total membership of each House, i.e., a special majority.
- If the Parliament approves, the President issues the final removal order. However, no SC Judge has been impeached so far.

## What is an In-house Inquiry?

- The Chief Justice of India (CJI) sets up a panel of judges to verify if there is a prima facie case against a judge.
- The report is sent to the CJI, who may forward it to the President or the executive. If the judge is found guilty of misconduct, the panel can recommend voluntary resignation, withdrawal of judicial work and initiation of impeachment proceedings.
- It is not a legal or statutory proceeding, it is an internal fact-finding process. It cannot lead directly to an FIR or prosecution. The CJI himself has limited powers to deal with errant judges beyond transferring or withdrawing work from the judge.

## Veeraswami Case (1991): When can a sitting judge face an FIR?

In the Veeraswam case, Justice K. Veeraswami, former Chief Justice of the Madras High Court, was accused of possessing assets disproportionate to his known sources of income.

The central legal question was whether a sitting judge could be prosecuted under the Prevention of Corruption Act, and if so, who had the authority to sanction such prosecution.

## The SC held that:

A sitting judge of a High Court or the Supreme Court can be prosecuted under the Prevention of Corruption Act, but only with prior sanction from the Chief Justice of India.

While a judge can be considered a public servant for a corruption case to be registered against him, the sanction must come from the CJI.

Ordinarily, the sanction is granted by the authority that has the power to appoint the public servant. But the SC emphasised that there is no master and servant relationship or employer and employee relationship between a Judge and the President of India.

The judgment aims to maintain a balance between Judicial independence and judicial accountability.

In 2019, for the first time, then CJI Ranjan Gogoi permitted the CBI to register an FIR against Justice S N Shukla of the Allahabad High Court for alleged favours to a private medical college for MBBS admissions.

## Removal process of a Judge of the High Court

A judge of the High Court can be removed from his/her office by an order of the President. The President can issue the removal order only after an address by the Parliament has been presented to him/her in the same session for such removal.

The address must be supported by a special majority of each House of the Parliament (i.e., a majority of the total membership of that House and a majority of not less than two-thirds of the members of that House present and voting).

- The grounds for removal are two:
- Proven misbehaviour or incapacity. Thus, a judge of the High Court can be removed in the same manner and on the same grounds as a judge of the Supreme Court.
- The Judges Enquiry Act (1968) regulates the procedure relating to the removal of a judge of a **High Court by the process of impeachment:**
- A removal motion signed by 100 members (in the case of Lok Sabha) or 50 members (in the case of Rajya Sabha) is to be given to the Speaker/Chairman.
- The Speaker/Chairman may admit the motion or refuse to admit it. If it is admitted, then the Speaker/Chairman is to constitute a three-member committee to investigate the charges.
- The committee should consist of

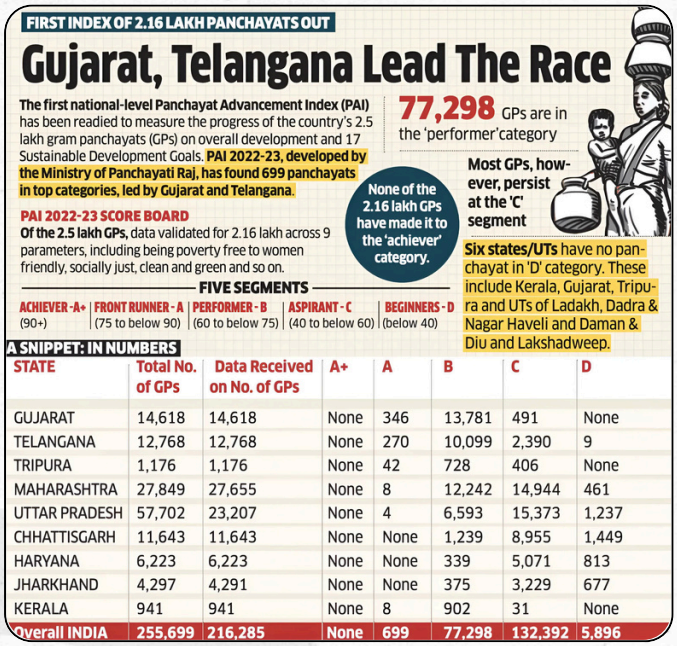
(a) the Chief Justice or a Judge of the Supreme Court,
(b) the Chief Justice of a High Court, and
(c) a distinguished Jurist.

- If the committee finds the judge to be guilty of misbehaviour or suffering from an incapacity, the House can take up the consideration of the motion.
- After the motion is passed by each House of Parliament by a special majority, an address is presented to the President for the removal of the judge.
- Finally, the President passes an order removing the judge.

# 3. Panchayat Advancement Index

## Why in the news?

The Ministry of Panchayati Raj recently organised a two-day national write-shop in New Delhi to officially roll out the Panchayat Advancement Index (PAI) Version 2.0 for the financial year 2023-24. This new version aims to better assess and support the holistic development of Panchayats across India, advancing the localisation of Sustainable Development Goals (SDGs).



FIRST INDEX OF 2.16 LAKH PANCHAYATS OUT

**Gujarat, Telangana Lead The Race**

The first national-level Panchayat Advancement Index (PAI) has been readied to measure the progress of the country's 2.5 lakh gram panchayats (GPs) on overall development and 17 Sustainable Development Goals. PAI 2022-23, developed by the Ministry of Panchayati Raj, has found 699 panchayats in top categories, led by Gujarat and Telangana.

77,298 GPs are in the 'performer' category

Most GPs, however, persist at the 'C' segment

None of the 2.16 lakh GPs have made it to the 'achiever' category.

PAI 2022-23 SCORE BOARD

Of the 2.5 lakh GPs, data validated for 2.16 lakh across 9 parameters, including being poverty free to women friendly, socially just, clean and green and so on.

FIVE SEGMENTS

| ACHIEVER - A+ (90+) | FRONT RUNNER - A (75 to below 90) | PERFORMER - B (60 to below 75) | ASPIRANT - C (40 to below 60) | BEGINNERS - D (below 40) |
|---|---|---|---|---|

Six states/UTs have no panchayat in 'D' category. These include Kerala, Gujarat, Tripura and UTs of Ladakh, Dadra & Nagar Haveli and Daman & Diu and Lakshadweep.

A SNIPPET: IN NUMBERS

| STATE | Total No. of GPs | Data Received on No. of GPs | A+ | A | B | C | D |
|---|---|---|---|---|---|---|---|
| GUJARAT | 14,618 | 14,618 | None | 346 | 13,781 | 491 | None |
| TELANGANA | 12,768 | 12,768 | None | 270 | 10,099 | 2,390 | 9 |
| TRIPURA | 1,176 | 1,176 | None | 42 | 728 | 406 | None |
| MAHARASHTRA | 27,849 | 27,655 | None | 8 | 12,242 | 14,944 | 461 |
| UTTAR PRADESH | 57,702 | 23,207 | None | 4 | 6,593 | 15,373 | 1,237 |
| CHHATTISGARH | 11,643 | 11,643 | None | None | 1,239 | 8,955 | 1,449 |
| HARYANA | 6,223 | 6,223 | None | None | 339 | 5,071 | 813 |
| JHARKHAND | 4,297 | 4,291 | None | None | 375 | 3,229 | 677 |
| KERALA | 941 | 941 | None | 8 | 902 | 31 | None |
| Overall INDIA | 255,699 | 216,285 | None | 699 | 77,298 | 132,392 | 5,896 |

### Background

## What is the Panchayat Advancement Index (PAI)?

- The PAI is a comprehensive multi-domain and multi-sectoral index designed to assess the overall development, performance, and progress of Panchayats (village-level local self-government institutions).
- **Purpose:** To track and measure how Panchayats contribute to achieving the Sustainable Development Goals (SDGs) locally by evaluating socio-economic indicators that reflect the well-being and development of their communities.
- **Previous Version:** PAI 1.0, launched earlier, served as the baseline index covering 2.16 lakh Gram Panchayats across 29 states and union territories.

## Features of PAI Version 2.0

- **Improved Framework:** PAI 2.0 is a significant upgrade from Version 1.0, with sharper and more practical indicators that enhance usability, reliability, and efficiency.
- **Indicators and Data Points:** The index uses 435 unique local indicators (331 mandatory and 104 optional) comprising 566 unique data points across 9 themes aligned with the National Indicator Framework (NIF) of the Ministry of Statistics and Programme Implementation (MoSPI).

- **Themes:** These themes relate to the localisation of SDGs and cover diverse socio-economic dimensions impacting Panchayats.

## Based on their scores, Gram Panchayats are categorised as:

- **Achiever:** 90+
- **Front Runner:** 75 to below 90
- **Performer:** 60 to below 75
- **Aspirant:** 40 to below 60
- **Beginners:** below 40
- **Evidence-based Planning:** By identifying development gaps and strengths through these scores, Panchayats can adopt evidence-based planning to prioritise interventions.

## Challenges

- **Data Collection & Quality:** Collecting reliable and timely data from grassroots Panchayats can be difficult due to varying capacities and infrastructure.
- **Capacity Building:** Panchayat-level officials may need training to understand and use the index effectively for planning and implementation.
- **Harmonising Indicators:** Ensuring that the selected indicators comprehensively cover local needs while remaining aligned with national frameworks requires continuous refinement.
- **Technology and Accessibility:** Ensuring that the index platform is accessible and user-friendly across diverse geographies with differing levels of digital penetration.

## Way Forward

- **Capacity Strengthening:** The Ministry will likely focus on training Panchayat representatives to interpret PAI scores and integrate findings into local development plans.
- **Continuous Refinement:** Regular updates to the index to include emerging local priorities and improve indicator relevance.
- **Integration with SDG Monitoring:** Using PAI as a critical tool for real-time monitoring and feedback to track India's progress towards the SDG 2030 agenda at the grassroots level.
- **Incentivising Panchayats:** Encouraging higher performance through recognition, funding, and technical support for top-performing Panchayats.
- **Collaborative Approach:** Involving state governments, local bodies, and civil society for data validation and localised problem-solving.

# 4. How the judiciary maintains accountability

## Why in the News?

Recent comments by the Vice-President of India, who is also the Chairman of the Rajya Sabha, describing judges as part of a "super parliament," have sparked nationwide debate. These remarks question the legitimacy and constitutional role of the judiciary, raising critical concerns about the separation of powers and public trust in judicial independence.

## Background

India follows a constitutional scheme based on the separation of powers between the legislature, executive, and judiciary. The judiciary is entrusted with the power of judicial review, enabling it to interpret the Constitution and invalidate laws or executive actions that contravene its provisions.

Landmark cases like Kesavananda Bharati v. State of Kerala (1973) and Minerva Mills v. Union of India (1980) have entrenched the judiciary's role as the guardian of the Constitution, particularly through the basic structure doctrine.
However, tensions occasionally arise between organs of the state, especially when judicial pronouncements affect legislative or executive actions. The Vice-President's recent comments fall in this recurring context of institutional friction.

## Features of Judicial Role in Indian Democracy

Judicial Review as a Constitutional Duty
The judiciary is empowered under **Articles 13, 32, 136, and 226** to strike down unconstitutional laws and executive orders.

- **Basic Structure Doctrine:** Established in Kesavananda Bharati, this doctrine restricts Parliament from amending the Constitution in ways that destroy its fundamental features like judicial review, federalism, secularism, etc.
- **Checks and Balances:** Judicial decisions have consistently upheld the constitutional balance. In Rojer Mathew v. South Indian Bank Ltd. (2019), the court clarified that judicial review complements rather than challenges parliamentary supremacy.

## Independence of the Judiciary

- Provisions such as secure tenure (Article 124), financial autonomy, and a strict impeachment procedure (Article 124(4)) safeguard judicial independence.
- Challenges Arising from the "Super Parliament" Remark.
- Undermining Judicial Authority
- Referring to the judiciary as a "super parliament" distorts its constitutional mandate. For instance, the courts' directive to Governors on timely assent to Bills is framed as overreach rather than a constitutional interpretation.
- Erosion of Constitutional Balance.
- Such comments upset the careful equilibrium between the organs of government. As seen in Minerva Mills, judicial review acts as a corrective mechanism, not a rival authority.
- Weakening Public Trust
- Statements by high-ranking officials may signal political antagonism toward the judiciary, undermining citizens' confidence in its impartiality.

## Misconception of Judicial Activism

- The remarks blur the line between judicial activism and judicial overreach, even when courts act within their mandate, such as in L. Chandra Kumar v. Union of India (1997), which reaffirmed the centrality of judicial review.
- Irrational Claim of Judges Being "Above the Law"
- Judges operate within a well-defined constitutional framework. Article 124(4) allows for removal on grounds of misbehaviour, and past attempts like the 1993 case involving Justice V. Ramaswami prove accountability mechanisms are in place.

## Way Forward

- Respect Institutional Boundaries
- All constitutional functionaries should exercise restraint and respect the doctrine of separation of powers. Remarks that undermine other institutions can harm the credibility of the entire democratic framework.
- **Promote Constructive Dialogue:** Institutional dialogue, not confrontation, should guide the resolution of inter-branch disagreements. This ensures a healthy democracy without diluting institutional autonomy.
- **Judicial Transparency and Accountability:** The judiciary must continue internal reforms related to transparency in appointments, judicial conduct, and court management to sustain public faith.

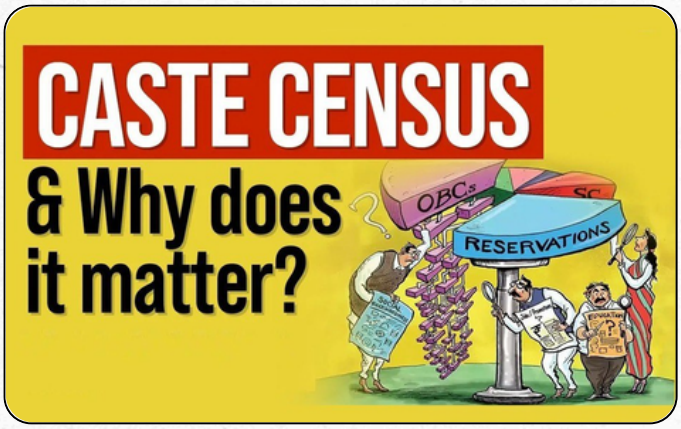
- **Civic Education on Constitutional Roles:** Awareness among citizens about the distinct and complementary roles of each organ can counter populist narratives and promote constitutional literacy.
- Balance Popular Sovereignty and Constitutional Morality
- While Parliament reflects the will of the people, it must act within constitutional limits. The judiciary's role in upholding these limits must be acknowledged, not politicised.

## Conclusion

The recent "super parliament" remarks reflect deeper tensions between democratic institutions. However, constitutional governance requires mutual respect and understanding of the distinct roles of each organ. The judiciary, as the guardian of the Constitution, plays a non-negotiable role in ensuring that the rule of law prevails over majoritarian impulses. Rather than diminishing its role, public discourse should focus on strengthening all democratic institutions within their constitutional mandates.

# 5. Why India must get the Caste Census right

The Government's recent decision to include caste enumeration in the upcoming Census marks a transformative moment in Indian policymaking.




Far from being a concession to identity politics, caste enumeration is an act of acknowledgement, a mirror reflecting the socio-economic realities of India. It is a foundational step towards evidence-based policymaking in pursuit of a more equitable and inclusive society.

## Historical background

- **Post-Independence India adopted a dual strategy:** abolishing caste-based discrimination while pursuing social justice through reservations. This contradiction, often described as policy schizophrenia, stemmed from a refusal to officially acknowledge caste.
- The exclusion of caste enumeration, except for Scheduled Castes (SCs) and Scheduled Tribes (STs), reinforced a flawed ideal of caste-blind governance, which neglected the lived realities of millions. While the Constitution mandates social justice through affirmative action, including reservations in education, employment, and politics, implementing these policies effectively requires precise, disaggregated caste data.
- The Supreme Court has consistently affirmed that caste is a legitimate proxy for identifying social and educational backwardness.

## Learning from Past Failure

- The failed Socio-Economic and Caste Census (SECC) of 2011 is a cautionary tale. Conducted without legal authority and technical expertise, the SECC produced an unusable dataset listing 46 lakh castes due to methodological flaws. Open-ended questions, untrained enumerators, and the absence of standardised caste classifications led to chaos.
- In contrast, Bihar's 2022 caste survey offers a successful model. By using a vetted list of 214 State-specific castes and structured enumeration methods, the survey achieved clarity and credibility.

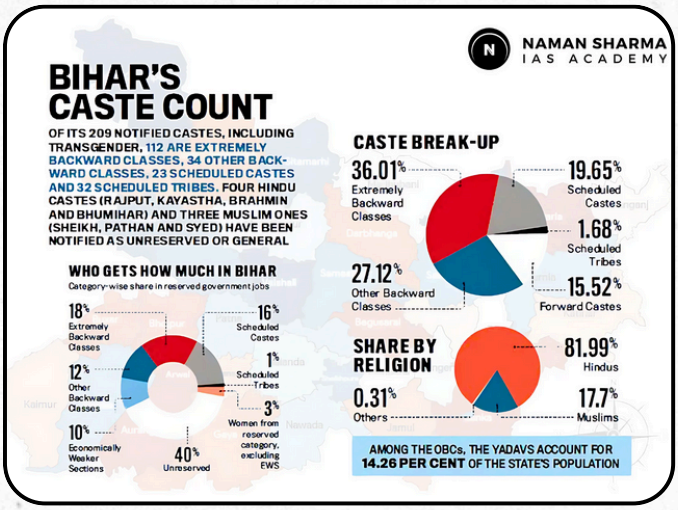
- This proves that a well-planned and legally backed caste census is feasible.

## The Case for Caste Data:

- Caste enumeration is not merely a political gesture; it is a legal and administrative necessity. The **73rd and 74th Constitutional Amendments,** which mandated OBC reservations in local governance, require granular, area-specific caste data.
- Furthermore, the inclusion of Economically Weaker Sections (EWS) among upper castes in reservation policies in 2019 further underlines the need for comprehensive data covering all caste groups. The current reservation system operates in an evidence vacuum, making it susceptible to manipulation by dominant groups.
- Limited existing data shows stark disparities: a small number of OBC castes dominate reservation benefits, while many receive little or nothing.
- For example, **just 10 OBC castes receive 25% of all reserved benefits, while 38% of OBC castes receive only 3%, and 37% are entirely excluded.**
- Such inequities underscore the need for accurate data to prevent elite capture, enable rational **sub-categorisation, and refine the definition of the "creamy layer."**

## Rohini Commission

- It was constituted in 2017 under Article 340 of the Constitution with the approval of the President of India.
- Article 340 empowers the President of India to appoint a commission to investigate issues concerning OBCs and make recommendations to improve their situation.
- Before constituting the Rohini Commission, the Centre had granted the National Commission for Backwards Classes (NCBC) constitutional status by the 102nd Amendment Act, 2018.




## Highlights on Caste Census Decision

**Digital Mode & Drop-Down Caste Directory**

- For the first time, the Census will be conducted in digital mode, using a mobile app.
- A new "Other" column with a drop-down caste code directory will be included beside the SC/ST column. The software is currently being tested to ensure smooth implementation.

## About 30 lakh government officials will need retraining for the new digital format.

**The Census will occur in two phases:**

**Phase 1:** House listing & housing schedule (31 questions; already notified in 2020).

**Phase 2:** Population enumeration (28 questions; tested in 2019, yet to be officially notified).

**Directory Development & Testing**

The Central OBC list (2,650 communities), SC list (1,170), and ST list (890) will be merged with State OBC lists to form a comprehensive codebook. A pre-test will be conducted to iron out glitches before the actual enumeration.

**Major Policy Shift After Decades:** The CCPA's approval to include caste data in the upcoming census marks the first comprehensive caste enumeration since 1931 (excluding SC/ST data).

## Inconsistent State-Level OBC Lists

Different states have varying OBC lists and sub-categories like Most Backwards Classes, complicating efforts to create a standardised national caste database.

## Significance for Delimitation & Women's Reservation

**The new Census findings will be used to:**

- Redraw Lok Sabha constituencies (delimitation).
- Implement a 33% women's reservation in Parliament and State Assemblies.

# 6. Jharkhand Completes OBC Data Collection for Urban Local Body Quotas under Supreme Court's "Triple Test"

- Recently, Jharkhand has completed its data collection on **Other Backwards Classes (OBCs).** This initiative aims to establish quotas for OBCs in urban local bodies.

## About Triple Test

**The triple test consists of three steps.**

- First, a dedicated commission must empirically **investigate backwardness** in local bodies.


This ensures that **reservations do not exceed legal limits.**

- Third, the total reservation for **Scheduled Castes (SCs), Scheduled Tribes (STs),** and OBCs **combined must not surpass 50% of total seats.**

The "triple test" is a legal framework laid down by the Supreme Court in **Vikas Kishanrao Gawali vs State of Maharashtra (2021)** to ensure that OBC reservations in local bodies are fair, evidence-based, and within constitutional limits.

## Jharkhand's Commission and Data Collection

- The Jharkhand OBC Commission was constituted in June 2023.

Commission members studied Madhya Pradesh's implementation of the triple test as a model.

- **Data collection timeline:** Data collection completed (between December 2023 - March 2024) and submitted (recently, several districts missed their submission deadlines) to the Commission.

## Verification and analysis:

- For socio-economic and educational analysis, data will be handed to empanelled institutions like **IIM, Xavier School of Management (XLRI) and Xavier Institute of Social Service (XISS)**.
- A final report will be submitted to the state government post-verification. Based on this, Jharkhand will determine **OBC quotas in the 48 ULBs across the state.**

## OBC Classification in Jharkhand

- In Jharkhand, OBCs are divided into two categories.
- **BC-I (Backwards Class I):** More socially and educationally backwards; includes 127 castes.
- **BC-II (Backwards Class II):** Relatively better-off; includes around 45 castes.

- The Kudmi community, a subgroup of the **Mahato/Mahto caste, is the largest OBC** group, representing about **15% of the electorate.**

## Survey Focus and Methodology

- The survey aimed to identify OBC voters and estimate their share in urban local bodies. It differed from the nationwide caste census, focusing solely on urban areas.
- The survey gathered data on the political representation of OBCs across various government tiers.
- It included mayors, panchayat committee members, and the caste affiliations of Jharkhand's MPS and MLAs.

## Credible Caste Census

- **Legal Framework:** Amend the Census Act, 1948, to explicitly authorise caste enumeration and protect it from political interference.
- **Institutional Expertise:** Assign responsibility to the Registrar General and Census Commissioner, not to non-specialist ministries.
- **Standardised Questionnaire:** Employ closed-ended, drop-down-based forms with coded caste identifiers to avoid ambiguity.
- **State-Specific Lists:** Collaborate with State governments, sociologists, and communities to prepare caste lists, followed by public feedback.
- **Enumerator Training:** Ensure region-specific training with practical guidance on caste identification.
- **Digital Tools:** Use handheld devices preloaded with validated options to minimise manual errors.

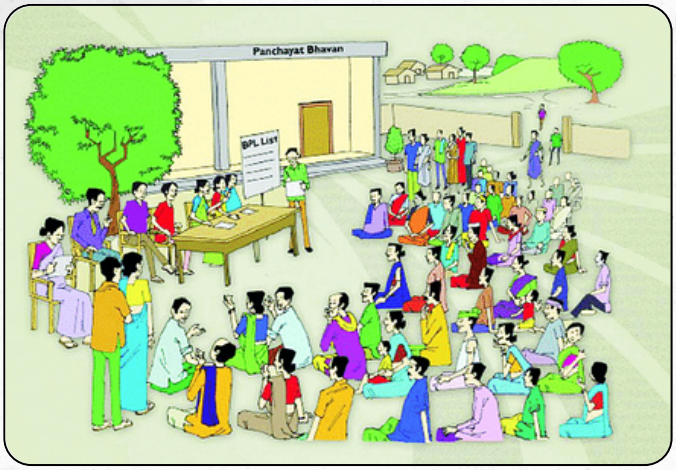
## Conclusion

- India has enumerated nearly 2,000 SC and ST castes since 1951 with consistency and accuracy.
- Extending this enumeration to the remaining OBC and upper-caste groups, estimated to be around 4,000 and mostly State-specific, is not only manageable but also essential.
- The delayed 2021 Census offers a unique opportunity to close this long-standing data gap, and without caste data, the promise of social justice remains unfulfilled, and policy continues to drift in darkness.
- The moment for delay has passed. The time for a credible, comprehensive caste census is now.

A credible caste census is essential not just for ensuring social justice but also for improving the effectiveness of governance." In light of this statement, critically examine the significance and challenges of conducting a comprehensive caste enumeration in India.

# 7. Getting the 'Micropicture' at the Panchayat Level: A Grassroots Governance

Recently, the Ministry of Panchayati Raj launched (PAI), Panchayat Advancement Index **(PAIBaseline Report 2022-23),** which represents a speech change.



For the first time, more than 2,16 Lakh Gram Panchayats have been evaluated using 566 data points in line with the location of sustainable development goals (LSDGS) in India.

- India's vision for decentralised governance has constantly fought with contradiction: While Gram Panchayats (GP) act as the first line of democratic administration for the countryside, they have largely operated in a computer-based system.
- Politics is often designed from above, informed by the "macrolinsen" that glows on complex and highly localised challenges on the ground.

## Panchayati Raj Institution

- The 73rd Constitutional Amendment Act, 1992, also known as the Panchayati Raj Act, is a landmark legislation in India that aims to provide a three-tier system of decentralised self-governance in rural areas. The main provisions of the Act are outlined in Part IX of the Indian Constitution, which consists of Articles 243 to 243-O

## Provisions of the 73rd Constitutional Amendment Act, 1992 :

- **Three-tier system:** Establishing a three-tier system of panchayats (local self-governments) in rural areas, comprising the gram panchayat (village council), panchayat samiti (block council), and Zilla parishad (district council).
- **Population:** Providing for the establishment of a panchayat at the village level for every village having a population of at least 500 persons.
- **Elections:** Mandating regular elections to panchayats and the conduct of elections following the provisions of the Act and the rules made thereunder.
- **Reservation:** Providing for the reservation of seats for scheduled castes, scheduled tribes, and women in panchayats at all levels.

As well as the reservation of the office of the chairpersons of panchayats at the village and intermediate levels for Scheduled Castes, Scheduled Tribes, and women.

- **State Finance Commission:** Providing for the constitution of finance commissions to review the financial position of panchayats and to make recommendations for the devolution of funds, grants-in-aid, and taxes to panchayats.
- **Power and Functions:** Providing for the powers, authority, and responsibilities of panchayats, including the preparation of plans for economic development and social justice and the implementation of schemes for the development of agriculture, cottage and small-scale industries, education, health, and other sectors.

## Evidence-based policy and its limitations

- Making evidence-based decisions has become a catch in the control circuits. However, the practical reality of India is inconsistent. Bureaucracy decisions often rely more on intuition and administrative experience than hard data.

## Reasons for this disconnection:

- **Delayed or inaccessible census data:** Census in 2021. Delays and concerns about the changed function of national surveys have affected the continuity and reliability of time series data.
- **Heavy and bad fantasy data:** Government portals such as Data.gov.in House Huge amounts of information. However, this data is often difficult to interpret, even for researchers, let local representatives or citizens go alone.

- **Top-down data architecture:** Most computer systems are designed for state and national bureaucracy, not for local governance structures. This means that ground-level actors often lack the analytical equipment required for local planning and execution.
- Panchayat Advancement Index (PAI) is a revolutionary effort for the democratisation of ground-level data. It focuses on hyperlocal development indicators from macroeconomic calculations, which allows fine tracking of performance at the level of the Gram Panchayat.

## Main features: 2.16 Lakh Gram Panchayats, with 435 unique indicators.

- **Structure:** 331 Mandatory and 104 Alternative indicators spread over nine LSDG subjects, in alliance with the national indicator infrastructure (NIF).
- **Availability:** Portal (pai.gov.in). A simple constituency report allows for generations.
- Data is not just input-based. It is associated with real consequences, so that stakeholders can monitor real improvements in areas such as health, education and infrastructure. A simple constituency report allows for generations.

## Mega to Micro: Democratization data

- The main performance of pie is its axis, which ranges from total "megadata" to a useful "micropike" at the Panchayat level. It also includes:
- **Transparent data at home:** When presented in simple, visual formats, individual families can also understand what their panchayat price is.
- **Action-oriented target card:** Pie does not stop at the diagnosis. This suggests treatment and provides a roadmap for adjusted improvement with LSDG.

## Challenges in the implementation

- **Problems with computerisation:** Conditions that Uttar Pradesh presented data for only 23,207 of its 57,702 GPs. Such intervals are in the use of a nationwide index and raise concerns about data integrity.
- **Lack of analytical capacity locally:** While data is available, most GPs lack trained personnel to explain and act on it. Educated data analysts are required to be distributed at the block and district levels.
- **Technology interval:** Poor internet connection, older computers and low digital reading skills still bother many rural offices.
- **Political desire:** A good working cake system can highlight the unpleasant truth. The success depends on political leaders who are ready to work with these disclosures, rather than suppressing them.

## Financing and policy integration

- Corporate Social Responsibility (CSR)
- District Mineral Foundation (DMF) Grant
- Member of Parliament Local Area Development (MPLADS)and MLALADS (Members of Legislative Assembly Local Area Development Scheme)
    - Under the scheme annual MPLADS fund entitlement per MP constituency is Rs. 5 crore.
    - Lok Sabha Members can recommend works within their Constituencies.
    - The Rajya Sabha Members of Parliament can recommend works in one or more districts in the State from where he/she has been elected.
    - The Nominated Members of the Lok Sabha and Rajya Sabha may select any one or more Districts from any one State in the Country for implementation of their choice of work under the scheme.

- MPs are to recommend every year, works costing at least 15 per cent of the MPLADS entitlement for the year for areas inhabited by the Scheduled Caste population and 7.5 per cent for areas inhabited by S.T. population.
- In case an elected MP wishes to contribute MPLADS funds outside the constituency or the State/UT, they can recommend work up to Rs 25 lakh in a financial year.

MPs do not directly receive funds under MPLADS. The Centre directly transfers the sanctioned amount in two instalments of Rs. 2.5 crore to the district authorities of the concerned MP's nodal district after a recommended project gets approval.

## Way forward

- **Capacity building:** Training programs for local authorities, especially data analysts, should be given institutional form.
- **Regular reporting:** PAI should not exercise a time at a time. Continuous updates and public dashboards are required.
- **Public awareness campaign:** The more people know about the score for the Panchayat, the more pressure there is for improvement.
- **Urban Adaptation:** A similar index for urban local bodies will be developed to track and promote municipal governance.
- Integration with the scheme: Local development plans (LDP) must be informed by PAI findings.

## Conclusion

Panchayat Advancement Index is more than just one dashboard; This is a clear call for democratic decentralisation in a harder sense. By distributing "microproprikk" in a digestible, actionable form, it enables India's 2.5 million grams of panchayats to graduate from passive implementation of schemes to active planners and evaluators of development.

# News in shorts


## 1.1 Supreme Court Collegium recommends transfer of HC CJs

### Why in the News?

The Supreme Court Collegium has recommended the transfer of 4 Chief Justices from the High Courts of Madras, Rajasthan, Tripura, and Jharkhand.

### About the Collegium System:

- **Definition:** It is used in India for the appointment and transfer of judges to the Supreme Court and High Courts.
- **Non-Constitutional Origin:** It is not mentioned in the Constitution or any law passed by Parliament. It developed through Supreme Court judgments to protect judicial independence.
- **Judicial Primacy:** The system ensures that senior judges, not the government, have the main say in judicial appointments.
- **Evolution:** It arose in response to executive interference during the 1970s, when the government tried to influence and supersede senior judges:
- First Judges Case (1981) – S.P. Gupta v. Union of India:
- Held that the Chief Justice's opinion was only consultative.
- Gave the executive primary control over appointments and transfers.
- Second Judges Case (1993) – Advocates-on-Record Association v. Union of India.
- Overruled the First Judges' Case.
- Declared that "consultation" with the CJI means "concurrence", making the CJI's view binding.
- Introduced the Collegium system, involving the CJI and two senior-most judges.
- Affirmed that judicial independence requires judicial primacy in appointments.

### Third Judges Case (1998) – Re: Presidential Reference:

- Expanded the Collegium to include the CJI and four senior-most Supreme Court judges.
- Emphasised institutional decision-making, not personal preferences of individual judges.
- How does the Collegium System work?
- For Supreme Court Judges:
- The Collegium includes the CJI and four senior-most SC judges.
- It recommends names for appointments to the SC and appointments/transfers of High Court judges and Chief Justices.
- The Law Ministry processes these names and sends them to the Prime Minister, who advises the President for final approval.

### For Appointing the Chief Justice of India:

- The sitting CJI recommends the senior-most SC judge.
- This practice has been followed since the 1970s supersession controversy.
- **For High Court Judges:** Recommendations start from the Chief Justice of the High Court, who consults two senior colleagues.
- The proposal goes to the state government, then to the Supreme Court Collegium (CJI and two senior-most SC judges), and finally to the President.
- **For Transfers of Judges:** Article 222 of the Constitution allows the transfer of High Court judges.
- The Collegium recommends transfers, often for administrative needs or public interest.
- Consent is not needed, but the CJI must consult the Chief Justice of the concerned High Court and other senior judges.

- No High Court can have an Acting Chief Justice for more than a month, so transfers and new appointments are usually done together.

## 1.2 Justice B.R. Gavai takes charge as the 52nd CJI.

**Why in the News?**
Justice B.R. Gavai has been sworn in as the 52nd Chief Justice of India (CJI).

### About the Chief Justice of India:

- The CJI is the head of the Supreme Court and the highest-ranking judicial officer in the country.
- As the "Master of the Roster," the CJI has the exclusive authority to:
- Constitute benches
- Allocate cases among judges
- Decide on the schedule of hearings
- The CJI leads the judicial and administrative functions of the Supreme Court.
- Holds administrative control as recognised in State of Rajasthan v. Prakash Chand (1997).
- The CJI is referred to as "first among equals" among Supreme Court judges.
- Powers and functions of the CJI:

### Judicial Functions:

- Assigns judges to the Constitution Benches. (Article 145)
- Handles interpretation of important legal and constitutional matters. (Article 145)
- Exercises judicial leadership by steering jurisprudential direction. (Article 145)
- Exercises judicial authority in matters of national significance. (Article 136)
- Protects fundamental rights through the Supreme Court's original and appellate jurisdiction. (Article 32)

### Administrative Functions:

- Maintains court roster and case listing. (Derived from judicial precedent and administrative conventions)
- Supervises court staff and administration. (Based on the administrative authority of the CJI)
- Ensures the smooth functioning of the Supreme Court. (Supreme Court Rules, 2013)
- Holds disciplinary authority over subordinate judicial officers. (Administrative powers acknowledged in precedents)
- Engages in the administration of justice at the highest level. (Overarching responsibility under Article 145)

### Advisory Function:

- Provides advisory input when consulted by the President. (Article 143)
- Appointment and Terms:
- Article 124 of the Constitution empowers the President of India to appoint the CJI.
- Traditionally, the senior-most judge of the Supreme Court is appointed.
- Exceptions to this practice:
- **1973:** Justice A.N. Ray appointed over 3 senior judges.
- **1977:** Justice M.H. Beg appointed over Justice H.R. Khanna.

### Qualifications as outlined in Article 124(3):

- Must be a citizen of India, and:
- Served at least five years as a High Court judge, or
- Practised for at least ten years as a High Court advocate, or
- Deemed a distinguished jurist by the President.

### Selection Procedure:

- Governed by the Memorandum of Procedure for Appointment of Supreme Court Judges.
- The Union Law Minister seeks the outgoing CJI's recommendation.
- The recommendation is processed as follows:
- Sent to the Prime Minister by the Law Ministry.

- Prime Minister advises the President.
- The President of India appoints the new CJI.
- No specific timeline is defined — the recommendation must be made at the “appropriate time”.
- Tenure and Removal:
- CJI serves until the age of 65 years.
- Can only be removed through removal under Article 124(4):
- Requires approval by both Houses of Parliament.
- Must be supported by:
- A majority of the total membership, and
- A two-thirds majority of members present and voting.
- Grounds for removal: Proven misbehaviour or incapacity.

## 1.3 Presidential Reference

**RecentlyPresident Droupadi Murmu referred 14 questions to the Supreme Court under Article 143.**

- A Presidential Reference is a constitutional mechanism under Article 143 of the Indian Constitution, wherein the President of India seeks the advisory opinion of the Supreme Court on important questions of law or fact. This power enables the executive to seek judicial clarity on complex constitutional matters without initiating litigation.

### Global comparisons:

- Canada: Allows similar advisory references to the Supreme Court of Canada.
- United States: It does not permit advisory opinions, and it respects the strict separation of powers.

### There are two components of Article 143:

- Article 143(1) allows the President to refer any question of law or fact of public importance to the Supreme Court for its advisory opinion.
- Article 143(2) pertains to disputes mentioned in Article 131, i.e it relates to federal disputes.
- **Nature of Opinion:** The Supreme Court’s opinion is not binding on the President. It does not carry precedential value but holds strong persuasive authority and is usually followed by the executive and judiciary.
- **Historical origin:** The provision originates from the Government of India Act, 1935, which empowered the Governor-General to refer legal matters to the Federal Court.
- **Procedure for Reference:** The President refers to the advice of the Supreme Court, and as per Article 145, a minimum 5-judge Bench of the Supreme Court must hear the matter.
- **The court's discretion:** The Supreme Court may choose whether or not to answer the reference in case article 143(1). It can refuse to respond if the question is vague, hypothetical, or outside judicial purview. However, in case of article 143(2) Supreme Court is bound to advise, but it is not binding on the President.

## 1.4 Elections to the Rajya Sabha

### Why in the News?

The Election Commission of India has announced biennial elections for eight Rajya Sabha seats, including two seats from Assam and six seats from Tamil Nadu.

### About Elections to the Rajya Sabha:

- Rajya Sabha members are indirectly elected by the elected members of the State Legislative Assemblies and Union Territory electoral colleges (Delhi and Puducherry).
- The elections follow the proportional representation system through the Single Transferable Vote (STV) method.
- Voting is done using an Open Ballot to ensure transparency and party discipline.

## Composition of the Rajya Sabha:

- It can have a maximum of 250 members.
- Out of these, 238 members are elected, and 12 are nominated by the President of India for contributions to art, literature, science, and social service.
- As of now, the RS has 245 members - 233 elected and 12 nominated.
- One-third of RS members retire every two years.

## Voting Requirements and Process:

- A candidate must be proposed by at least 10 members of the State Legislative Assembly or 10% of the party's strength in the Assembly.
- Voters rank candidates by preference under the Single Transferable Vote system.
- If a candidate is eliminated or elected, their votes are transferred to the next preference on the ballot.
- Voting is done using an Open Ballot system to promote transparency.

## Quota for Election:

- To win, a candidate must secure a vote quota, calculated as:
- (Total valid votes / (Number of vacancies + 1)) + 1.
- Tenure of Members:
- RS is a permanent body and cannot be dissolved.
- However, one-third of its members retire every two years, and new members are elected.
- Each Rajya Sabha member serves a six-year term.

## Chairmanship and Leadership:

- The Vice President of India is the ex-officio Chairman of the Rajya Sabha.
- A Deputy Chairman is elected by the Rajya Sabha members from among themselves.
- Eligibility (as per Article 84):
- A candidate must be a citizen of India.
- The minimum age required is 30 years.
- The candidate must also meet other qualifications specified by the Constitution or law.

## Disqualification of Members:

- A member can be disqualified for defection under the anti-defection law.
- Disqualification can also happen due to criminal convictions, bankruptcy, or being declared of unsound mind.

## Administrative and Historical Details:

- The first sitting of the Rajya Sabha was held on May 13, 1952.
- The Secretary General of the Rajya Sabha acts as the chief executive and administrative head of the Rajya Sabha Secretariat.

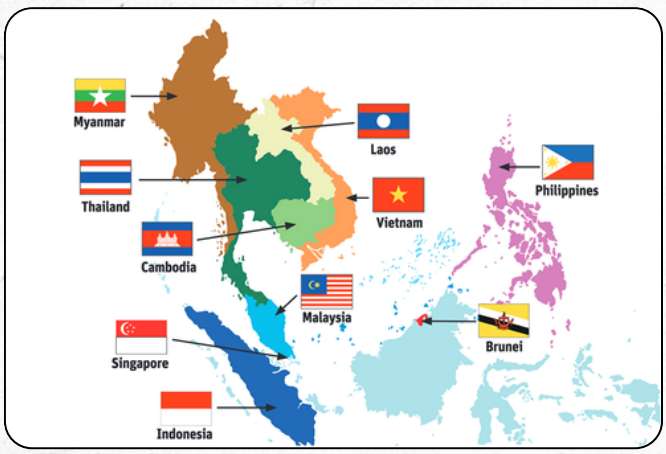
# INTERNATIONAL RELATIONS

## 1. Northeast to be gateway for trade with Southeast Asia: Modi

**Why in the News?**
The Prime Minister said on Friday that the eight states of India's Northeast are now leading in development and growth, and he encouraged investors to explore opportunities there.

**What did the Prime Minister describe the Northeast region as, and why?**

- **Frontrunner of Growth:** PM described the Northeast as no longer a "frontier region", but a "frontrunner of growth". E.g., Hosting of the Rising Northeast Summit to attract investment and highlight regional potential.
- **Gateway to Southeast Asia:** This aligns with the idea of the Northeast as a growth leader because its strategic location makes it a natural gateway for trade with Southeast Asia. E.g., Projects connecting Northeast with Myanmar, Thailand, Laos, and Vietnam under the Act East Policy.




- **Powerhouse of Energy:** It is a frontrunner because it is rich in natural resources, making it a "powerhouse of energy". E.g., Assam's tea industry and Arunachal Pradesh's hydroelectric potential.
- **Cultural and Economic Diversity:** The region leads in development because its cultural and economic diversity fosters innovation in tourism, crafts, and trade. E.g., Nagaland's Hornbill Festival promotes both culture and economic activity.
- **Ashta Lakshmis (Eight Goddesses of Wealth):** PM called the eight states "Ashta Lakshmis" because each contributes uniquely to India's prosperity, reinforcing its status as a growth frontrunner. E.g., Government initiatives like NESIDS aim to unlock each state's economic strengths.

**Why did the Directorate General of Foreign Trade order the closure of land ports with Bangladesh?**.

- **To Provide a Level Playing Field for the Northeast:** Goods entering via Bangladesh were bypassing local supply chains, hurting Northeast producers and manufacturers. E.g. Cheaper Bangladeshi products are undercutting Assam's handicrafts and processed food sectors.
- To Boost Internal Supply Chains and Manufacturing, the Closure of land ports encourages the development of local industries and competitive manufacturing within the Northeast. E.g., Promoting local textile and bamboo industries in Tripura and Mizoram to supply regional demands.

- **Strategic Economic Repositioning:** Part of a broader effort to reorient the Northeast as a commercial and trade hub within India and toward Southeast Asia. E.g., Integrating Northeast into projects like the India-Myanmar-Thailand trilateral highway for long-term trade advantage.
- Which sectors are identified as key economic strengths of the Northeast region?
- **Bio-economy and Natural Resources:** The region is rich in bamboo, tea, and petroleum resources. E.g., Assam is a major hub for tea production; Arunachal Pradesh is emerging in bamboo-based industries.
- **Tourism and Eco-tourism:** Scenic landscapes, cultural diversity, and biodiversity promote sustainable tourism. E.g., Meghalaya's living root bridges and Sikkim's eco-tourism model attract both domestic and international tourists.
- **Sports and Youth Potential:** High sports participation and talent make it a centre for sports development and allied industries. E.g., Manipur and Mizoram produce national-level athletes in football, boxing, and weightlifting.

**How is India planning to connect the Northeast with Southeast Asia?**

- **Infrastructure Development Projects:** India is building roads and highways to enhance cross-border connectivity. E.g., the India-Myanmar-Thailand Trilateral Highway aims to link the Northeast to Southeast Asia by road.
- **Multilateral and Bilateral Linkages:** Strategic projects are underway to connect Northeast India with ASEAN countries. E.g., Projects to directly connect Myanmar, Thailand, Vietnam, and Laos to India are in progress.

**Transforming the Region into a Trade Gateway:** The Northeast is being positioned as the "gateway for trade" with Southeast Asia. E.g., Investment in border trade hubs and logistics parks in states like Manipur and Mizoram supports trade facilitation.

### Way forward:

- **Accelerate Infrastructure & Connectivity Projects:** Ensure timely completion of highways, rail links, and trade corridors to integrate the Northeast with ASEAN markets and boost regional trade.
- **Promote Local Industries & Skill Development:** Strengthen regional supply chains by supporting local entrepreneurship, MSMEs, and skill training aligned with emerging sectors like eco-tourism, agri-business, and clean energy.

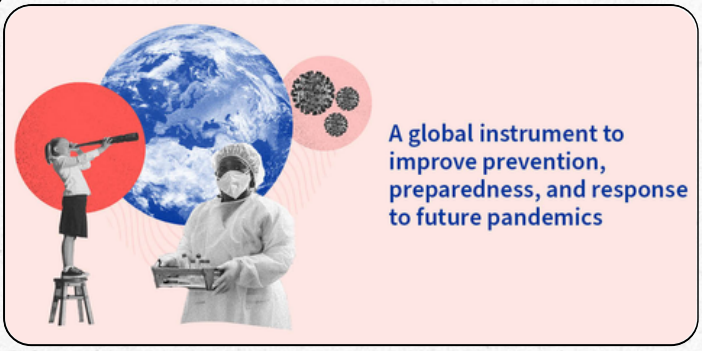
## 2. WHO members adopt 'Pandemic Agreement'

### Why in the News?

At the 78th World Health Assembly held in Geneva, the World Health Organisation (WHO) adopted a new Pandemic Agreement that aims to make the global response to future pandemics more equitable and effective.

### About the WHO Pandemic Agreement:

- **Adoption:** It was unanimously adopted at the 78th World Health Assembly in Geneva after 3 years of negotiation since the COVID-19 pandemic.
- **Legal Basis:** It was adopted under Article 19 of the WHO Constitution, making it only the second such legally binding agreement after the WHO Framework Convention on Tobacco Control (2003).
- **Primary Goal:** To ensure fair and timely access to vaccines, medicines, and diagnostic tools during future pandemics.




- **Stakeholders:** It promotes collaboration among countries, the WHO, pharmaceutical firms, civil society, and other stakeholders.
- **Next Steps:** It will come into force once ratified by at least 60 countries; the final annexe is expected by May 2026.
- **Irritant:** The US has not joined, raising concerns about the agreement's global effectiveness.

### Key Highlights of the Agreement:

- **Pathogen Access and Benefit Sharing (PABS):** A new system will ensure quick virus sample sharing with companies, who must give 20% of vaccines and medicines to the WHO, 10% as donations and 10% at affordable prices.
- **Global Supply Chain and Logistics Network (GSCL):** A WHO-managed network will ensure emergency access to critical supplies during pandemics.
- **Coordinating Financial Mechanism:** A funding system will support countries in pandemic preparedness and response.
- **Sustainable Local Production:** Countries are encouraged to build vaccine and medicine production capacity to ensure rapid and equal access.
- **Technology and Knowledge Transfer:** Supports technology sharing with developing nations using licensing, financing, and regulatory tools, coordinated via WHO-managed hubs.
- **Pandemic Prevention and Surveillance:** Countries must improve early detection, routine vaccinations, and address lab safety, antimicrobial resistance, and zoonotic threats.
- **Respect for Sovereignty:** The WHO will not enforce national policies like lockdowns, vaccine mandates, or travel bans; countries retain full control over responses.

## 3. Trial run for cargo movement from Kolkata to the northeast

India is planning a new highway from Shillong (Meghalaya) to Silchar (Assam) as part of a broader multi-modal transport project connecting Myanmar, which will create a sea route to Kolkata that bypasses Bangladesh. This move is seen as a strategic response to Bangladesh's interim leader Muhammad Yunus, who recently claimed that Northeast India is "landlocked" and relies on Dhaka as its only ocean gateway.

### Kaladan Multi-Modal Transport Project (KMTTP)

- The KMTTP is a strategic infrastructure initiative undertaken by India, aimed at enhancing connectivity between the eastern Indian seaport of Kolkata and the landlocked North-Eastern states via Myanmar, bypassing Bangladesh.

**The project is jointly developed by India and Myanmar and is a key component of India's Act East Policy.**

### Different Legs of the Project

- Sea Leg
- From Kolkata Port (India) to Sittwe Port (Myanmar) via the Bay of Bengal.
- Distance: ~539 km by sea.
- Sittwe Port has been constructed by India.

### Inland Waterway Leg

- From Sittwe to Paletwa via the Kaladan River in Myanmar.
- Distance: ~158 km.


## Road Leg

- From Paletwa to Zorinpui (on the India-Myanmar border in Mizoram).
- **Distance:** ~110 km.
- Indian Leg (Planned Extension) A 166.8-km four-lane high-speed highway is being constructed from Mawlyngkhung (near Shillong) to Panchgram (near Silchar) along NH-6.
- It is the first high-speed corridor in the North-East and the first such project in a hilly region, to be completed by 2030.
- The project is implemented by NHIDCL for MoRTH and was approved by the Union Cabinet for Rs 22,864 crore.

## Benefits

- **Bypasses Bangladesh:** Reduces dependency on access through Bangladesh for North-East connectivity.
- **Improves Connectivity:** Offers an alternative route to the Siliguri Corridor (Chicken's Neck), the narrow strip that connects North-East India with the rest of the country.
- **Boosts Trade & Commerce:** Enhances trade flow between India and South-East Asia.
- **Strategic Significance:** Strengthens India's presence in the Bay of Bengal and deepens ties with Myanmar.
- **Economic Development:** Spurs infrastructure development and economic activities in India's underdeveloped North-Eastern region.
- **Part of the Act East Policy:** A critical step in India's efforts to improve connectivity with ASEAN countries.

## Significance

- The highway will reduce travel time between Shillong and Silchar from 8.5 hours to 5 hours.
- It will connect Silchar, a key entry point to Mizoram, Tripura, Manipur, and the Barak Valley - and act as a major regional link.
- It supports India's Act East Policy by enhancing connectivity to Myanmar and beyond.
- The project is expected to reduce dependence on the Siliguri Corridor (Chicken's Neck) and bypass Bangladesh, offering an alternative route via the Kaladan Multi-Modal Transport Project.

## Infrastructure Details

- The project will be executed in Hybrid Annuity Mode (HAM) under the PPP model. HAM is a project delivery model used in India, particularly for national highway development.
- It combines elements of both the Engineering, Procurement, and Construction (EPC) and the Build, Operate, and Transfer (BOT) models. It involves the government providing a portion of the project cost (40%) as construction support, while the remaining 60% is financed by the private developer through a pre-fixed annuity payment. This model aims to reduce financial risk for developers and speed up project execution.

## CONCLUSION

- The trial cargo movement marks a critical milestone in India's long-term plan to integrate its North-Eastern region more seamlessly with the rest of the country and with South-East Asia.
- By operationalising the Kaladan route and constructing the Shillong-Silchar high-speed corridor, India is not only reducing reliance on Bangladesh but also asserting strategic autonomy in regional connectivity.

# 4. The fragmentation in the global fight against terror

- The Pahalgam terror attack on April 22 has highlighted the division in the global response to terrorism, particularly concerning Pakistan's actions against India.
- While international condemnation was widespread, calls for restraint were equally prevalent, underscoring the fragmented nature of the global fight against terror.


## International Reactions and Concerns

- U.S. officials, including Secretary of **State Marco Rubio and Vice President J.D. Vance,** emphasised the need for a peaceful resolution and warned against regional conflict.
- Russian Foreign Minister Sergey Lavrov advocated for political and diplomatic solutions between India and Pakistan.
- The European Union showed reluctance to label the Pahalgam incident as a "terror attack," reflecting a shift away from zero tolerance towards terrorism.
- Some countries demanded proof of Pakistan's involvement in terror activities, ignoring past events like the Pulwama and 26/11 attacks.

## Unified Anti-Terror Front

- In the aftermath of the Pahalgam attack, global powers issued statements that were, at best, diplomatically cautious and, at worst, morally ambiguous.
- Calls from the United States, the European Union, and Russia for restraint from both sides effectively equated the victim (India) with the perpetrator (Pakistan), diluting the moral clarity necessary for a resolute stand against terrorism.
- This marks a stark departure from the early 2000s, when the global community, galvanised by the 9/11 attacks, stood united in a 'zero tolerance' approach to terrorism.
- The erosion of this collective will is partly due to shifting global priorities.
- With ongoing wars in Ukraine, Gaza, and broader West Asia, the appetite for new conflicts, particularly in Asia, is limited.
- In this climate, India's security concerns are often subordinated to broader fears of regional escalation, especially given Pakistan's use of its nuclear status as a deterrent against decisive international action.

## Return of My Terrorist vs. Your Terrorist

- The global fight against terrorism has reverted to a selective, interest-based approach.
- Western nations focus on right-wing extremism or REMVE (**racially and ethnically motivated violent extremism),** while the Organisation of Islamic Cooperation (OIC) often turns a blind eye to Islamist terrorism, citing Islamophobia.
- Canada's refusal to act against anti-India elements operating from its soil, under the **guise of free expression, is emblematic of this hypocrisy.**

- Similarly, China's consistent use of its veto power in the **United Nations Security Council (UNSC) to shield Pakistan-backed terrorists** underlines how geopolitics trumps principle.
- Africa, too, is facing a surge in terrorist activity, especially in the Sahel region. However, the international response remains muted, with terrorism in Africa and Asia increasingly regarded as someone else's problem.

## Religious Implications

- The Pahalgam attack itself, in which Hindus were allegedly targeted based on religion, reveals another dimension of global apathy.
- While Islamophobia, anti-Semitism, and Christianophobia are widely and rightly condemned, acts of Hinduphobia, such as this attack, receive little to no acknowledgement.
- This silence is compounded by incidents such as U.S. presidential candidate Vivek Ramaswamy being vilified for his Hindu faith, highlighting the marginalisation of non-Abrahamic religions in global discourses on religious freedom.
- One notable exception came from the U.S. Director of National Intelligence, Tulsi Gabbard, who explicitly recognised the religious nature of the Pahalgam attack, describing it as a horrific Islamist terrorist attack. Her stance stands in contrast to the broader diplomatic hedging seen elsewhere.

## Challenges at the United Nations

- Pakistan, now a non-permanent member of the UN Security Council (UNSC), has used its position to influence discussions and block actions against terrorists operating from its soil.
- Efforts by India to bring attention to these issues have been met with mixed responses due to geopolitical interests.

## India's Strategic Response

- India remains steadfast in its attempt to hold Pakistan accountable, while facing diplomatic challenges at international forums like the UNSC.
- India aims to leverage its geopolitical strategies through strategic autonomy and multi-alignment policies.
- Continued efforts to address religiophobia against non-Abrahamic faiths on international platforms are crucial.

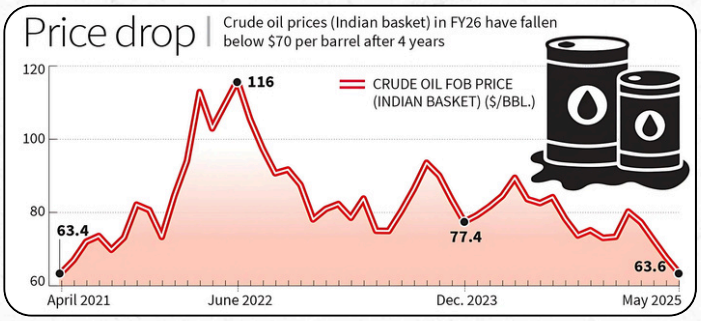
## Conclusion

- The **Pahalgam terror attack** is not just an **isolated act of violence;** it is a stark reminder of the international community's selective moralism and India's growing isolation in the global fight against terrorism.
- As collective resolve against terror diminishes, India must prepare to go it alone, **diplomatically, strategically, and ideologically.**
- By asserting its geopolitical autonomy and refusing to be constrained by international double standards, India can shape a more secure future for itself, while also highlighting the urgent need for a renewed, truly global consensus on combating terrorism in all its forms.

# 5. The ongoing oil price tensions

## Why in the News?

In May 2025, Saudi Arabia led OPEC+ to reverse previous production cuts, sparking a full-fledged oil price war, a new form of global conflict fought aggressively over barrels of crude oil rather than through military aggression



## What led OPEC+ to increase oil production in May 2025?

- **Ineffectiveness of previous cuts:** Despite voluntary output cuts of 2.2 million barrels per day (bpd) by eight members in 2023 (including a collective cut of 5 million bpd earlier), oil prices kept declining.
- **Oversupply & competition:** New producers (e.g., Brazil, Guyana, shale oil players) increased their market share, reducing OPEC+'s control.
- **Saudi frustration:** Overproduction by OPEC+ members like Kazakhstan, Iraq, UAE, and Nigeria undermined collective output discipline.
- **Market flooding strategy:** To discipline overproducers and regain market share, Saudi Arabia led a reversal in strategy, increasing output (411,000 bpd) starting in June 2025.
- **Preemptive move:** Anticipating the return of major sanctioned producers (Iran, Venezuela, Russia), OPEC+ may be frontloading production before supply increases further.
- Why is Saudi Arabia called a "swing producer"?
- **Large spare production capacity:** It can increase or decrease output swiftly to influence global oil prices.
- **Stabilising role:** Prefers stable and moderately high prices to ensure consistent oil revenue.
- **Historical precedence:** Has previously launched price wars (1985–86, 1998, 2014–16, 2020) to discipline the market and punish overproducers.
- **Current context:** Took the largest voluntary cut (3 million bpd) in 2024, but shifted to increasing output as a strategic move to reassert influence.

## What is OPEC+?

OPEC+ is a group consisting of the Organisation of the Petroleum Exporting Countries (OPEC) plus several non-OPEC oil-producing countries that coordinate their oil production policies to manage global oil supply and influence prices

**Key points about OPEC+:**
**OPEC:** A cartel of 13 major oil-exporting countries, including Saudi Arabia, Iraq, Iran, UAE, Nigeria, and others.
The "+": Includes major non-OPEC producers like Russia, Mexico, Kazakhstan, Oman, and others.

## How does the oil price war affect India's economy?

- **Lower Import Bill and Fiscal Savings:** Falling oil prices reduce India's import costs significantly. E.g., In 2024–25, India spent $137 billion on crude imports. A $1 drop in global oil prices can save India roughly $1.5 billion annually.
- **Reduced Export Earnings from Petroleum Products:** India exports refined petroleum products, a top export item. Lower crude prices reduce global demand and margins for these exports. E.g.: Refinery margins decline, affecting companies like Reliance Industries and Indian Oil Corporation, and reducing foreign exchange earnings.
- **Negative Impact on Gulf Economies and Remittances:** Gulf countries face revenue drops, leading to reduced infrastructure spending and job losses for Indian expatriates. E.g., Over 9 million Indians work in the Gulf, sending home more than $50 billion in remittances annually. Job losses or salary cuts can hurt India's balance of payments.
- **Lower Tax Revenues from Oil Sector:** As oil prices drop, the government earns less in excise duties, royalties, and other taxes from oil and gas sales. E.g.: The petroleum sector contributes significantly to India's tax baselower prices reduce collections, affecting fiscal planning and public spending.
- **Strained Bilateral Economic Ties with Oil Exporters:** Economic decline in oil-exporting countries (like Saudi Arabia, UAE, and Nigeria) affects India's project exports, bilateral trade, and inbound investments.

- For example, Indian companies working on infrastructure projects in Gulf countries may face payment delays or cancellations due to budgetary constraints in host nations.

### Way forward:

- **Diversify Energy Sources and Boost Renewables:** Reduce dependency on crude oil imports by accelerating the adoption of renewable energy, energy efficiency, and alternative fuels like hydrogen and biofuels to enhance energy security.
- **Strengthen Economic Resilience and Diplomatic Engagement:** Build strategic petroleum reserves, improve fiscal buffers, and deepen diplomatic ties with diverse energy suppliers to better manage supply shocks and geopolitical risks.

## News in shorts


## 1.1 World Military Expenditure Report 2024

According to the **Stockholm International Peace Research Institute report (SIPRI**) 'Trends in **World Military Expenditure 2024',** India's military expenditure grew to **$86.1 billion,** nearly **nine times that of Pakistan.**

### About Trends in World Military Expenditure Report

- It is an annual report published by the leading **Swedish think tank,** the **Stockholm International Peace Research Institute (SIPRI).**
- It provides a comprehensive analysis of **military spending across the globe.**

### Highlights

- The global defence expenditures reached **$2.46 trillion in 2024**, an increase from **$2.24 trillion** in the previous year, bringing the average defence spending to **1.9% of global GDP, up from 1.6% in 2022 and 1.8% in 2023.**
- **India**, the **fifth biggest military spender** in the **world in 2024**, increased its spending to **$86.1 billion**, **up by 1.6 per cent** from 2023 and by **42 per cent from** 2015.
- **60 per cent of the world's military** spending came from only five countries – the USA (37 per cent), **China (12 per cent),** Russia (5.5 per cent), **Germany (3.3** per cent), and **India (3.2 per cent)**
- Military spending increased in all world regions, with particularly rapid growth in both **Europe and the Middle East,** courtesy of the ongoing **Ukraine-Russia war** and **Israel-Hamas conflict.**

- Military spending by the USA rose by **5.7 per cent to reach $997 billion,** which was 66 per cent of total **NATO spending and 37 per cent of world military spending in 2024.**
- Military expenditure in the Middle East reached an estimated **$243 billion in 2024,** an increase of **15 per cent from 2023,** with **Israel and Lebanon** emerging as the biggest spenders in the region.
- India's military spending in 2024 was nearly nine times that of Pakistan's expenditure.

## 1.2 Special 301 Report

The Office of the United States Trade Representative (USTR) released its 2025 Special 301 Report assessing the adequacy and effectiveness of intellectual property rights protection and enforcement by U.S. trading partners.

### About Special 301 Report

- It is an annual report by the United States Trade Representative (USTR) under the Trade Act of 1974.
- The report has been issued every year since 1989.
- It designates countries as “priority foreign country”, “priority watch country”, and “watch list country.
- The report includes both developed and developing countries.
- The targeting of countries in the Section 301 Report is arbitrary.

## 1.3 150 Years of the Metre Convention

### Why in the News?

On May 20, 2025, the Department of Consumer Affairs celebrated World Metrology Day, marking the 150th anniversary of the signing of the Metre Convention in Paris on May 20, 1875.

**About the Metre Convention:**

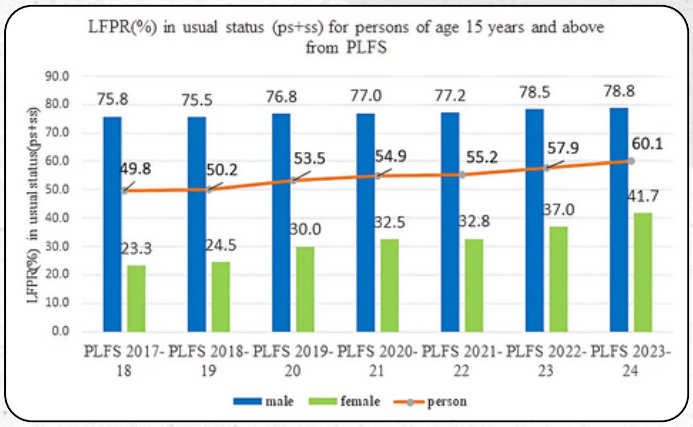
**Inception**: Also called the Treaty of the Metre, it was signed in Paris on May 20, 1875, to establish a global system of standardised measurements.

- **17 Founding Members:** Argentina, Austria-Hungary, Belgium, Brazil, Denmark, France, Germany, Italy, Peru, Portugal, Russia, Spain, Sweden and Norway, Switzerland, Ottoman Empire (Turkiye), USA, and Venezuela.
- **Institutions Created:** The treaty established the International Bureau of Weights and Measures (BIPM), and two governing bodies—CGPM (General Conference on Weights and Measures) and CIPM (International Committee for Weights and Measures).
- **Early Prototypes:** It created international prototypes of the metre and kilogram, stored at the BIPM; member countries received national copies for comparison.
- **Expansion in 1921:** The Convention was extended to cover all physical quantities, forming the basis for the International System of Units (SI).
- **Global Reach:** As of October 2024, there are 64 member states in the Convention.
- **Collaboration:** International Atomic Energy Agency (IAEA), Institute for Reference Materials and Measurements (IRMM), World Meteorological Organisation (WMO), European Space Agency (ESA) participate in the CIPM Mutual Recognition Arrangement (MRA).
- **Membership:** India joined the Metre Convention in 1957 after passing the Standards of Weights and Measures Act, 1956.
- **Participation Benefits:** India gained the ability to participate in BIPM work, align with global systems, and ensure international recognition of its standards.

# ECONOMY

## 1. Centre revamps PLFS, includes rural jobs data

The National Statistics Office (NSO) under the Ministry of Statistics and Programme Implementation (MOSPI) has revamped the Periodic Labour Force Survey (PLFS) from January 2025. The objective is to enhance the frequency, scope, and reliability of labour market indicators and to provide timely and granular employment data for policy making.
Changes in the Periodic Labour Force Survey:
Recently, the Union Government has decided to revamp the Periodic Labour Force Survey (PLFS), which started in 2017, to include employment and unemployment data from rural areas.
PLFS is a large-scale survey conducted by the National Statistical Office (NSO) under the Ministry of Statistics and Programme Implementation (MoSPI).




**About :**
**PLFS was launched in 2017:**

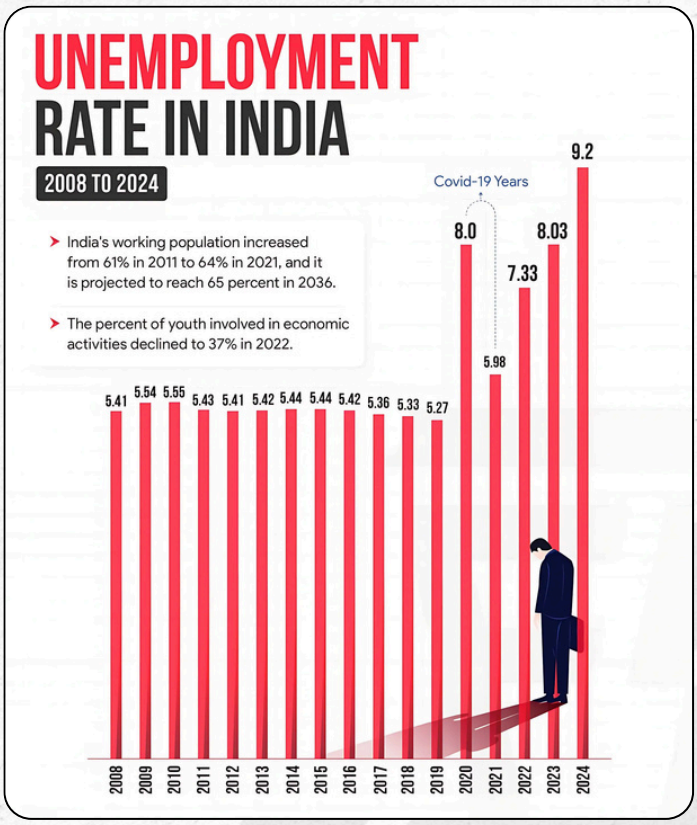
- To generate quarterly estimates of key employment and unemployment indicators for urban areas using the Current Weekly Status (CWS) approach
- To provide annual estimates for both rural and urban areas using both Usual Status (ps+ss) and CWS approaches.
- Usual Status (ps+ss) assesses a person's activity over the past 365 days, while Current Weekly Status (CWS) assesses it over the past 7 days before the survey.
- The National Statistical Office (NSO) under MOSPI is actively enhancing the frequency, scope, and relevance of NSS surveys.
- The revamped PLFS will now provide monthly estimates of key labour market indicators, Labour Force Participation Rate (LFPR), Worker Population Ratio (WPR), and Unemployment Rate (UR) using the Current Weekly Status (CWS) approach. First monthly bulletin (April 2025) to be released in May 2025.
- Enables timely, high-frequency policy insights.

### Objective

- Its main objective is to provide reliable and timely data on:
- Employment and unemployment levels
- Labour force participation rate (LFPR)
- Worker population ratio (WPR)
- Unemployment rate (UR)
- Nature of employment (e.g., regular salaried, self-employed, casual labour)

### Monthly Estimates at All-India Level

- The revamped PFLS will now provide monthly estimates of key labour market indicators, Labour Force Participation Rate (LFPR), Worker Population Ratio (WPR), and Unemployment Rate (UR) using the Current Weekly Status (CWS) approach. First monthly bulletin (April 2025) to be released in May 2025.




- Enables timely, high-frequency policy insights.

## Significance

- India lacks reliable high-frequency employment data — PLFS fills that gap.
- Helps **track labour market trends in real-time or near real-time.**
- Used by government, economists, researchers, and international organisations like the **ILO, World Bank, etc. Aids in assessing the impact of policies, economic cycles, or crises (e.g., COVID-19**) on employment.

## Rural Areas

- Previously limited to urban areas, quarterly estimates will now also be available for rural areas, providing a comprehensive national picture of employment and unemployment.
- First quarterly **bulletin (April–June 2025) to be released in August 2025.**

## Shift to Calendar Year-Based Annual Reporting

- Annual PLFS results will now be aligned with the calendar year (January–December) instead of the earlier July–June cycle.
- Enhances consistency with international labour statistics databases. Household Income Sources: Rent from land/building; Interest from savings/investments; Pension received; Remittances received.
- **Land Ownership:** Land possessed; Land leased out.
- **Vocational/Technical Training:** Nature of certifying body.
- **Education Details (5 new items):** Years of education completed; Months attended in last academic year; Details on secondary education.

## Size and Coverage

- There has been a significant increase in sample size and a shift to a panel design, with households visited four times (First with a full schedule, followed by three revisits). **sample size: ~2.72 lakh households, a 2.65x increase from previous ~1.02 lakh**

## District-Level

- Districts are designated as primary geographical units (basic strata) in most cases.
- Improves spatial representation and reliability of labour market estimates.
- Stratification based on location (e.g., proximity to towns or cities) to better capture variations in labour dynamics.

## Key Changes in PLFS from January 2025

**Monthly Estimates Introduced:** For the first time, monthly estimates of key labour indicators 'Labour Force Participation Rate (LFPR), Worker Population Ratio (WPR) and Unemployment Rate (UR) will be released. These are based on the Current Weekly Status (CWS) for both rural and urban areas at the all-India level.

**Quarterly Estimates Extended to Rural Areas:** From 2025, rural areas will also be included, enabling combined country-level estimates to be made quarterly. (Earlier, quarterly results were limited to urban areas.)

**Annual Results Aligned to Calendar Year:**

- Annual results will now follow the calendar year format (January–December), instead of the earlier **July–June cycle.**
- This will assist in synchronising India's labour statistics with international databases.

### Conclusion

- The revamp of the Periodic Labour Force Survey marks a significant step forward in India's labour market data infrastructure. By introducing monthly estimates, expanding quarterly reporting to rural areas, and shifting to a calendar-year reporting format, the updated PLFS addresses previous gaps in timeliness, rural representation, and international comparability.

## 2. The right to repair movement in India

Recently, the Department of Consumer Affairs (DoCA) announced that a report for a "Framework on Repairability Index (RI) in Mobile and Electronic Sector" had been submitted to the government. Apple's surprising reversal on the "right to repair" movement holds immense significance, considering it was previously among the tech giants opposing the concept. Apple now supports legislation granting consumers and third-party firms the right to fix damaged electronic products. This shift aligns with a broader trend of tech companies adapting to consumer demands for greater control over their devices.

### About Right to Repair Background:

- Earlier, the Union government set up a committee (headed by Nidhi Khare) to develop the "comprehensive framework" on **the Right to Repair. The sectors identified include Farming Equipment, Mobile Phones/ Tablets, Consumer Durables and Automobiles/Automobile Equipment.**
- The framework is an attempt to reduce restrictive practices implemented by some manufacturers in order for consumers to repair goods such as consumer durables, phones, and automobiles on their own.
- The framework will become a "game-changer" for the sustainability of the products and catalyse employment generation. The Right to Repair refers to government legislation that is intended to allow consumers the ability to repair and modify their own consumer electronic devices, where otherwise the manufacturer of such devices requires the consumer to use only their offered services. India has taken a notable step toward empowering consumers and ensuring environmental sustainability through its Right to Repair movement.
- The Department of Consumer Affairs (DoCA) recently accepted a report on the proposed Repairability Index (RI)for mobile phones and electronic appliances, which aims to rank products based on how easy they are to repair. When customers buy a product, it is inherent that they must own it completely, for which the consumers should be able to repair and modify the product with ease and at a reasonable cost, without being captive to the whims of manufacturers for repairs.
- **Origin of the Idea: The idea originally originated from the USA, where the Motor Vehicle Owners' Right to Repair Act 2012 required the manufacturers to provide the necessary documents and information to allow anyone to repair their vehicle.** In the United States, the Right to Repair movement has gained legislative support, especially against practices like:
- Restricting access to spare parts
- Locking devices with proprietary software. Penalising third-party repairs
- Laws have been introduced requiring companies to publish repair costs and ensure access to spare parts. In contrast, Indian policy is still evolving, with more collaboration between the government and manufacturers.

- One notable example is McDonald's in the U.S., where only Taylor Company technicians are allowed to repair the brand's ice cream machines, leading to consumer frustration and regulatory scrutiny. Similar monopolistic repair models in electronics are being questioned globally.
- This framework, aligned with the global right to repair movement, is a response to rising concerns about product durability, electronic waste, and consumer dependence on manufacturers for repairs.

### Repairability Index

- The proposed Repairability Index is a score that evaluates how easy it is to repair a product. It considers criteria such as:
- Availability and pricing of spare parts
- Access to repair documentation
- Cost and time of repairs
- Software support for Consumer electronic products and appliances like smartphones, washing machines, and refrigerators would be rated using this index, allowing consumers to make informed purchase decisions. The idea is to promote long-lasting products and provide transparency regarding repair options.

### Right to Repair Movement in India

Globally, the right to repair refers to the consumer's ability to choose how and where to repair their devices, whether through the manufacturer or independent service providers. **In India, the DoCA launched a Right to Repair Portal, listing: Manufacturer-authorised service centres.**

**Repair manuals and guides**

- Unlike the more confrontational stance in countries like the U.S., India's model currently supports manufacturer-authorised channels, with limited support for third-party repairs. However, the inclusion of consumer rights advocates suggests the framework may not be entirely in favour of manufacturers.
- They emphasised that denying repair services for older products violates the consumer's right to choice and advocated for more repair freedom.

### Global Context and U.S. Comparison

- In the United States, the Right to Repair movement has gained legislative support, especially against practices like: Restricting access to spare parts, Locking devices with proprietary software Penalising third-party repairs.
- Laws have been introduced requiring companies to publish repair costs and ensure access to spare parts. In contrast, Indian policy is still evolving, with more collaboration between the government and manufacturers.
- One notable example is McDonald's in the U.S., where only Taylor Company technicians are allowed to repair the brand's ice cream machines, leading to consumer frustration and regulatory scrutiny. Similar monopolistic repair models in electronics are being questioned globally.

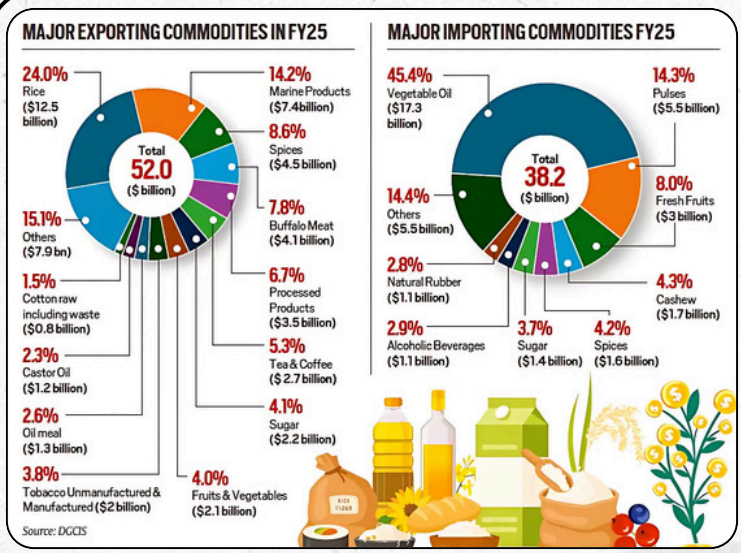
### Conclusion

The Right to Repair movement in India marks a pivotal shift toward consumer empowerment, product sustainability, and environmental consciousness. As India inches closer to a formal framework with initiatives like the Repairability Index, it acknowledges the pressing need.

## 3. India's Record FY25 Export

### Why in the News?

India's total exports (goods + services) reached $820.93 billion, with merchandise contributing $437.42 billion and services $383.51 billion.
Imports surged by 6.85% to $915.19 billion, widening the trade deficit to $94.26 billion, up from $78.39 billion in FY24.
The trade-to-GDP ratio stood at a robust 41.4%, reflecting strong global engagement.




However, agriculture critical employment sectorsaw export growth stagnate due to structural, policy, and environmental challenges.

In FY25, India achieved a milestone in its trade performance, with a record high export of $ 820.93 billion, an increase of 6.5% from FY 2014. However, this performance was angry by the growing trade deficit and agricultural export growth, which increased by 2.3% annually despite the area of the area. Export growth outlines intensive integration into India's global economy, but it also highlights structural weaknesses, especially in agriculture.

## Background: Agricultural Exports and Trade Policy in India

- India's export policy has historically prioritised manufacturing and services. Agriculture, although pivotal for livelihoods, has been plagued by policy volatility, climate risks, and poor value addition.
- During FY05–14, agri-export growth averaged 20% annually.
- This slowed drastically to 2.3% in FY15–25, indicating stagnation.
- In contrast, processed foods and high-value items like seafood have shown potential, especially with access to developed markets.

### Why Did Agricultural Exports Lag Despite the Export Boom?

- Frequent Export Restrictions: Government-imposed bans on rice, wheat, sugar, and onions disrupted international buyer confidence and supply chains.

### Features of India's FY25 Trade Performance

| Metric | Fy 25 |
|---|---|
| Total export | $820.93 |
| Merchandise export | $437.42 |
| Service export | $383.51 |
| Total import | $915.91 |
| Merchandise import | $720.24 |
| Service import | $194.95 |
| Trade deficit | $94.26 |
| Trade to GDP ratio | 41.4% |

### Why Did Agricultural Exports Lag Despite the Export Boom?

- Frequent Export Restrictions: Government-imposed bans on rice, wheat, sugar, and onions disrupted international buyer confidence and supply chains.
- Example: FY24 saw a 27% fall in rice export volume due to restrictions and duties on Basmati and broken rice.
- Global Price Fluctuations
- Commodity price volatility undermined India's export competitiveness.
- Despite lifting restrictions, rice export values fell due to lower global prices, not volume issues.
- Low Productivity and Innovation
- Stagnant yields, outdated farming techniques, and weak R&D hampered agri-export momentum.
- Growth dropped from 20% to 2.3% annually over the last two decades.

### Environmental Challenges of Agri-Exports (Especially Rice)

- Water Depletion
- Rice farming consumes 3,000–5,000 litres of water per kg.
- Punjab and similar regions face severe groundwater stress due to paddy cultivation.
- Methane Emissions
- Flooded rice fields emit methane, a greenhouse gas with 25x the impact of $CO_2$.
- Southeast Asia's rice belts are major contributors to agriculture-linked emissions.
- Soil and Water Pollution

- Excessive agrochemical use degrades soils and pollutes rivers.
- **Example:** Vietnam faces river salinisation and toxicity near paddy zones.
- **Trade Agreements:** A Ray of Hope for Indian Agriculture
- **Access to Stable High-Value Markets:** Trade deals reduce over-reliance on price-sensitive markets and open up demand from Indian diaspora-heavy regions.
- **Example:** The India-UK FTA may boost Basmati rice, spices, and processed food exports.
- **Processed and Value-Added Exports:** Trade agreements reduce tariffs and enhance the
- competitiveness of agri-value chains.
- **Example:** Ready-to-eat meals, seafood, and organic products may find better traction under FTAs.

**Case Study: Rice Export Restrictions and Global Impact**

| Metric | FY 23 | Fy 24 | Change |
|---|---|---|---|
| Export | 22.3 MT | 16.3 MT | -27% |
| Export value | $11.2 Billion | 10.5 billion (est.) | -6% |

Price cushion prevented a proportionate fall in export value despite a major drop in volume.
Global rice prices spiked, showing how Indian policies affect world markets.

**Status of Edible Oil Imports: Still a Major Drain**

- FY23 (Nov–Oct):
- **Imports:** 16.5 MMT, a 17% rise, aided by reduced duties.
- FY24 (Nov–Oct):
- Slight decline to 15.96 MMT (-3.1%), helped by higher domestic production.
- India is still among the top three importers of edible oils globally, posing fiscal and food security risks.
- Challenges in Reducing Edible Oil Imports
- **Low Oilseed Productivity:** Poor seed quality, inadequate irrigation, and limited extension services reduce yields.
- **Post-Harvest Losses:** Lack of cold chains and processing units leads to wastage and low farmer realisation.
- Policy Fragmentation: Frequent changes in MSP, duties, and trade policy reduce predictability for farmers and investors.

## Way Forward

- **Strengthen Oilseed Ecosystem:** Scale up Oilseeds Production Mission with MSP, irrigation, and R&D. Promote drought-tolerant varieties and intercropping systems.
- **Build Agro-Processing Capacity:** Establish decentralised, modern processing hubs in key oilseed and rice belts. Encourage public-private partnerships for logistics and storage.
- **Rationalise Export Policy:** Ensure predictable export policies with buffer stocks to avoid knee-jerk bans. Implement a Commodity Export Stability Framework for rice and wheat.
- **Leverage Trade Deals:** Negotiate FTAs with a focus on agri-market access, sanitary standards, and geographical indications (GIs).
- **Environmental and Climate Resilience:** Invest in water-saving rice technologies (e.g., SRI method), methane-reduction farming, and organic practices. Support climate-smart farming via PM-PRANAM and Mission LiFE initiatives.

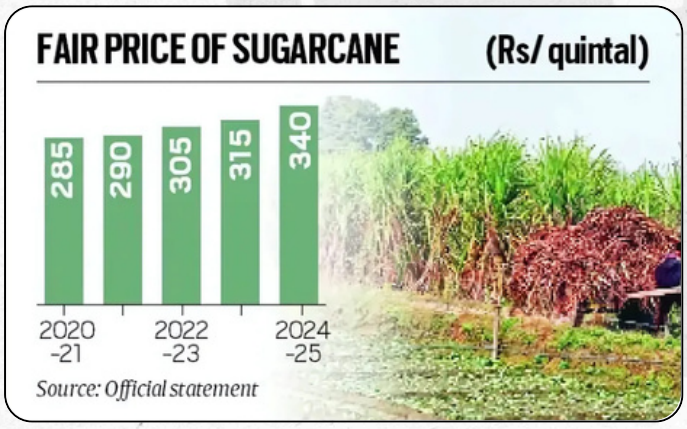
## Conclusion

- India's record export performance in FY25 reflects its growing global status, especially in the services and production sectors. However, this progress is constantly masking structural questions in agriculture, which should not be ignored. A strong, stable and climate-flexible agricultural export can make this challenge feasible, supported by the ecosystem-smart business policy, permanent practice and value. This transformation is fuelled by advancements in research and development (R&D), the growth of complex supply chains, and the need for a highly skilled workforce.

# 4. Centre Hikes Fair and Remunerative Price for Sugarcane

## Why Is It in the News?

- The Cabinet Committee on Economic Affairs (CCEA), chaired by the Prime Minister, recently approved a hike of ₹15 per quintal in the Fair and Remunerative Price (FRP) of sugarcane.
- With this increase, the new FRP stands at ₹355 per quintal for the 2025-26 sugar season beginning in October. This decision is expected to impact nearly 5 crore sugarcane farmers and more than 500 operational sugar mills across the country.
- The announcement is significant given the importance of sugarcane in India's agricultural economy and the persistent challenges faced by both farmers and the sugar industry. It has reignited discussions on price sustainability, regional disparities, and long-term solutions to the issues of payment delays and water-intensive cropping.




## Background

## Fair and Remunerative Price (FRP):

- The FRP is the minimum price that sugar mills are legally obligated to pay to sugarcane farmers. It is fixed by the central government under the Sugarcane (Control) Order, 1966 and replaced the Statutory Minimum Price (SMP) in 2009-10.

The shift to FRP aimed to better align pricing with actual costs and provide a fair return to farmers.

- The FRP is based on recommendations from the Commission for Agricultural Costs and Prices (CACP), taking into account several factors:
- Cost of cultivation
- Productivity of cane
- Recovery rate of sugar
- Value of by-products like molasses, bagasse, and press mud
- Reasonable margins for farmers
- The price is also linked to a base sugar recovery rate (usually around 10%) with additional payments made for every 0.1% increase above this benchmark.
- **Sugarcane Cultivation in India:** Sugarcane is the crop with the highest value of production in Indian agriculture. It is used not only for sugar but also for jaggery (gur), khandsari, and increasingly for ethanol production.

## Key features of sugarcane cultivation include:

- **Climatic Requirements:** It thrives in tropical climates, with optimal temperatures between 21°C and 27°C and rainfall between 75% and 150% of the average.
- **Soil:** Well-drained, fertile alluvial or black soil is ideal.
- **Major Producing States:** Uttar Pradesh (nearly 50% of production), Maharashtra, Karnataka, Tamil Nadu, and Andhra Pradesh.
- **Agronomic Practices:** Ratooning (growing a subsequent crop from the stubble of the previous crop) helps reduce costs.
- India has the second-largest area under sugarcane cultivation after Brazil, making it a pivotal crop for both economic and political considerations.

## Feature of the Latest FRP Hike

- Details of the Hike:
- **New FRP:** ₹355 per quintal
- **Old FRP:** ₹340 per quintal
- **Increase:** ₹15/quintal

- **Applicable Season:** 2025-26 (starting October)
- **Base Recovery Rate:** 10.25%
- **Premium:** Additional payment of ₹3.46/quintal for every 0.1% increase in recovery above the base rate

## Rationale Behind the Hike:

- To ensure better income for sugarcane farmers
- To compensate for rising input costs (fertilisers, labour, irrigation)
- To align with the government's broader agenda of doubling farmers' incomes
- To provide stability in pricing before the sugarcane sowing season begins

## Expected Impact:

- Benefiting approximately 5 crore farmers
- Affecting 500+ sugar mills
- Likely to influence sugarcane sowing decisions and cropping patterns
- Challenges
- While the hike in FRP may appear farmer-friendly, it brings with it several structural and operational challenges:
- Delayed Payments to Farmers
- **Issue:** Despite FRP being legally enforceable, sugar mills often delay payments due to cash flow issues.
- **Data:** At times, arrears owed to farmers run into thousands of crores.
- **Implication:** This defeats the purpose of remunerative pricing and impacts the livelihood of farmers.

## State Advised Price (SAP) vs FRP

- States like Uttar Pradesh, Punjab, and Haryana announce their own State Advised Prices (SAP), which are higher than FRP.
- This leads to a financial burden on mills that struggle to pay SAP without corresponding profits.
- Lack of alignment between central and state policies leads to market distortions.
- Low Profitability of Sugar Mills
- High input costs (around 70% of the cost is sugarcane procurement).
- Sugar price volatility in domestic and international markets
- Limited by-product utilisation in many mills
- Overdependence on a Water-Intensive Crop
- Sugarcane requires 2,500–3000 litres of water to produce 1 kg of sugar.
- Its extensive cultivation in drought-prone states like Maharashtra and Karnataka aggravates groundwater depletion.
- Global Market Pressures
- Indian sugar prices are often non-competitive globally.
- Export restrictions or surplus stockpiling occur due to poor market alignment, impacting mill revenues and payment cycles.
- Ethanol Blending Programme - Slow Integration
- Although ethanol production from sugarcane is a sustainable diversification measure, infrastructural and policy constraints limit large-scale adoption.

## Way Forward

- To address the above challenges and make sugarcane pricing sustainable, a multi-pronged strategy is needed:
- Implement Rangarajan Committee Recommendations
- Revenue Sharing Formula: Link cane prices to 70-75% of revenue generated from sugar and by-products.
- Ensure price parity between mills and farmers.
- Remove SAP or bring it in harmony with FRP to prevent conflicting mandates.
- Enforce Timely Payments
- Introduce a penal interest for delays beyond the 14-day legal payment window.
- Link government incentives/subsidies to mills' compliance with payment schedules.
- Promote Crop Diversification
- Encourage farmers to diversify into less water-intensive crops like pulses, millets, and oilseeds.

- Use Minimum Support Price (MSP) and procurement incentives to drive this shift.
- Improve Irrigation Efficiency
- Promote drip irrigation and sprinkler systems to reduce water use in sugarcane fields.
- Provide subsidies and technical support for water-saving technologies.
- Strengthen Ethanol and Bio-Energy Policy
- Fast-track the ethanol blending programme (target: 20% by 2025).
- Provide financial incentives and ease-of-doing-business norms for mills to set up distilleries.
- Integrate sugar mills with cogeneration units and bio-energy systems.
- Enhance Market Linkages
- Promote contract farming models with fair terms.
- Develop price discovery mechanisms through futures markets or digital platforms.
- Institutional Reforms
- Establish a Sugar Price Stabilisation Fund to buffer market volatility.
- Improve coordination between the Centre and States to align FRP, SAP, and export-import policies.

### Conclusion

The hike in the Fair and Remunerative Price (FRP) of sugarcane to ₹355/quintal for the 2025-26 season reflects the government's commitment to improving farmers' incomes. However, unless accompanied by structural reforms, this increment may burden an already stressed sugar industry and lead to further payment delays.

What is needed is a balanced and holistic approach: ensuring farmers are fairly compensated, while also securing the financial viability of sugar mills.

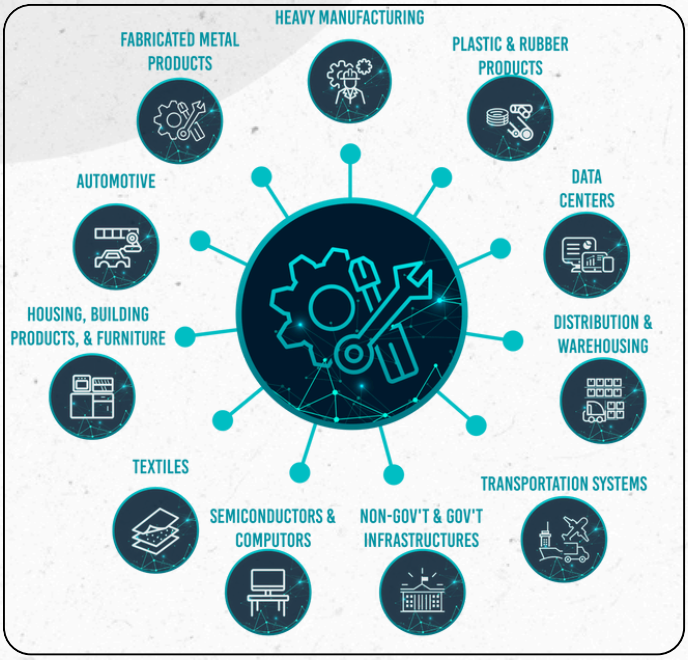
Sustainable water use, pricing reforms, better market linkages, and diversification into ethanol and other by-products can transform India's sugar sector into a more resilient and inclusive growth engine.

The road ahead must be paved with policy coherence, technological interventions, and stakeholder collaboration to make sugarcane cultivation both economically and ecologically sustainable.

## 5. Approaches India Must Adopt to Revive Its Manufacturing Sector

### Why Is It in the News?

- India's push to become a global manufacturing hub amid rising global protectionism and technological shifts has brought the spotlight back on core engineering disciplines.
- Recent developments, such as India's Production-Linked Incentive (PLI) schemes and the emphasis on self-reliance (Atmanirbhar Bharat), have highlighted the need for a skilled workforce grounded in traditional engineering domains like mechanical, civil, electrical, and chemical engineering.
- With global powers such as the US and China recalibrating their industrial strategies, India must urgently strengthen its foundational capabilities to compete in the innovation-driven manufacturing economy.



## Background

- India's industrialisation strategy post-independence focused heavily on heavy industries and core engineering sectors. Institutions like the IITs and PSUs such as BHEL, SAIL, and ONGC were built on the strength of core engineering talent.
- However, since the liberalisation of the 1990s, there has been a gradual shift towards services and IT sectors, which, while economically beneficial, led to a relative neglect of manufacturing and core engineering disciplines.
- Today, the manufacturing sector contributes just over 15% of India's GDP, compared to over 25% in China, largely due to underinvestment in core engineering innovation, inadequate infrastructure, and skill mismatch in the workforce.

## Feature

- Core engineering disciplines- civil, mechanical, electrical, automobile, chemical, textiles, and biotechnology the foundation of any robust manufacturing ecosystem. These disciplines:
- Enable the design and production of complex machinery.
- Drive infrastructure development.
- Support industrial R&D and innovation.
- Anchor high-value export sectors like automobiles, pharmaceuticals, and electronics.
- Despite the rapid rise of AI, automation, and software-led industries, these core areas remain indispensable. Integration of digital technologies should enhance, not replace, core engineering practices.
- **International precedents prove this:** The United States' Silicon Valley success is grounded in strong university-industry linkages in core and applied sciences. East Asian economies like South Korea and Taiwan built their industrial empires on a base of mechanical and electrical engineering excellence, supported by state-led R&D and coherent manufacturing policy.

## Challenges

- **Declining Interest and Enrolment**: With the growing glamorisation of IT and data sciences, fewer students are pursuing core engineering disciplines, leading to a skill vacuum.
- **Outdated Curriculum:** Engineering education in India remains heavily theory-centric, with limited exposure to practical application, live industry projects, and product design innovation.
- **Weak Industry-Academia Linkage:** There is minimal coordination between what is taught in colleges and what industries require, especially in core sectors.
- **R&D Deficit:** India's investment in R&D remains stagnant at around 0.65% of GDP, compared to 2–4% in developed economies. Much of this is skewed towards defence or pharma, leaving traditional engineering behind.
- **Infrastructure Gaps:** Manufacturing parks with modern labs, tool rooms, and design facilities are lacking, especially outside metro regions. This limits opportunities for startups in core engineering areas.
- **Limited Startup Support:** While IT startups have access to incubators, angel investors, and government schemes, engineering startups face higher entry barriers due to capital and equipment requirements.

## Way Forward

- Revamping Engineering Education
- Mandate that at least 50% of the curriculum be based on labs, internships, industrial training, and live projects.
- Promote innovation through design thinking labs, product studios, and tool rooms at technical institutes.
- Restructure entrance exams to test for problem-solving and creative aptitude, not just rote learning.
- Reinvestment in Core Disciplines
- Increase funding and visibility of core departments in IITs, NITs, and state technical universities.

- Provide fellowships and startup grants for research in civil, mechanical, and electrical engineering innovations.
- Develop State-Specific Industrial Clusters
- Establish plug-and-play manufacturing parks with in-house prototype labs, product testing facilities, and R&D zones.
- Encourage the co-location of industries and engineering colleges to enable experiential learning and direct hiring.
- Policy and Incentive Framework
- Raise R&D spending to 2% of GDP and allocate an additional 1% of GDP to industrial infrastructure.
- Offer tax breaks and innovation grants to engineering-focused startups.
- Introduce dynamic policies that adapt to global trends such as green manufacturing, renewable tech, and smart infrastructure.
- Strengthening Supply Chains
- Build a responsive supply chain for core engineering components, machinery, and materials through MSME support and digital integration.
- Incentivise domestic tooling, machining, and fabrication units to reduce import dependence.

### Conclusion

Revitalising India's manufacturing sector necessitates a systemic transformation, beginning with the revival of its core engineering backbone. The nation must reject the false binary of IT versus traditional engineering and instead foster synergy between both. A robust industrial future lies not in chasing trends alone, but in nurturing the time-tested disciplines that build the very foundations of economic and technological progress. India stands at a crossroads. Investing in its engineers, infrastructure, and innovation ecosystems today will determine its global industrial standing tomorrow.

## 6. India's digital diplomacy in Africa: A new chapter in South-South cooperation

### Why in the news?

On May 25, the continent celebrated Africa Day, marking the anniversary of the establishment of an organisation of African unity in 1963. This year, Africa Day gave a deep significance to Indo-African conditions when New Delhi utilised digital diplomacy to create development participation in the continent quickly. India's support for Africa's digital change matches the broad continental strategies of Africa, after South-South cooperation. With initiatives such as Aadhaar-based identification platforms, UPI-operated economic systems and Dixit, India appears as a strategic partner offering scalable, open-source source and inclusive digital public infrastructure (DPI) in African countries.

### Background: The Rise of Africa's Digital Ambition

- Africa is undergoing a significant digital shift. Home to 1.4 billion people, with a median age of under 20, the continent is increasingly positioning digital technology as a central lever of socio-economic development.

**This transition is informed by key challenges and aspirations:**

- Overcoming legacy infrastructure gaps in education, health, banking, and governance.
- Leveraging the potential of the young, tech-savvy population for innovation and entrepreneurship.
- Building resilient and adaptive systems that can work in low-resource settings through mobile-first, open-source, and decentralised platforms.
- Against this backdrop, Africa's Digital Transformation Strategy for 2020–2030, endorsed by the African Union, seeks to accelerate digital access, literacy, and inclusion across sectors. The strategy is backed by continental and regional coalitions such as:
- Smart Africa Alliance: A platform of 30+ countries working to harmonise digital policies and infrastructure.

**What is Africa's digital strategy?**
**The digital transformation strategy of the African Union emphasises a vision:**

- Rapid socio-economic development
- E-control platform for transparent and available service distribution.
- Telemedicine and e-learning solutions to bridge the access gap.
- National Digital Identification Program for Economic Inclusion and Civil Empowerment.
- Inclusive and permanent development: To ensure that no one is left behind.

**Promote digital entrepreneurship among youth and women:** To ensure that technologies comply with ownership and values in Africa, and reject the model that is required.
**Continental coordination**: Adjusting national digital policies with platforms like Smart Africa.The difference between systems in activating boundary services. Collective purchases with global technical players on data management, standards and platform access. This is the place where India finds resonance - both as a digital success story and a development partner who understands the challenges in the global south.

**How does India support Africa's digital change?**
India's approach to digital cooperation with Africa lies in three main principles: strength, inclusion and partnership. Here are the most important columns:

- Digital Public Infrastructure Sharing (DPI)
- India shares open open-source, scalable platform:
- Aadhaar for digital identification,
- UPI for interoperative payment,
- Dixit for digital learning material.

**Example:**
In 2024, Bank of Namibia signed an MOU with NPCI International, such as a UPI-like real-time payment system, which was based on India's experience with Fintech inclusion.
Technical Collaboration and Capacity Building India doesn't just export software—it partners for technical implementation and trains African professionals in deploying and managing these tools.
**Example:** Togo collaborated with IIIT-Bangalore to build a digital ID system using the Modular Open Source Identity Platform (MOSIP) developed in India.
Academic and Institutional Support: India supports human capital development by building institutional partnerships.
**Example:** IIT Madras opened its first overseas campus in Zanzibar (Tanzania) in 2023. The campus offers degrees in AI and Data Science, focusing on digital skilling for African students.
Tele-Education and Telemedicine Platforms: India pioneered the Pan-African e-Network (2009), providing satellite-based digital education and health consultations from top Indian institutions to 50+ African nations.
**Example:** Real-time medical advice from AIIMS and educational lectures from IGNOU were beamed to classrooms and clinics across Africa.
Open-Source and Inclusive Models Unlike proprietary solutions, India offers Digital Public Goods systems that are open-source, cost-effective, and customizable.

**Example:** Ghana integrated its financial system with UPI to enable secure, low-cost, real-time payments, without dependency on Western payment gateways. Technical cooperation and capacity building, India exports not only software, but it also serves as a partner for the technical implementation and training of African professionals.

## How is India's digital diplomacy different?

- India's digital connection to Africa varies rapidly from global powers such as the United States and China, both in philosophy and execution.
- Digital public goods model versus professional system
- India considers its platforms as regular, not objects.
- China's digital system is often linked with surveillance units and depends on Chinese technical companies. India's open-source DPIs, such as Moscip, Beckan and Digilokar, are independent and adaptable, which ensures digital sovereignty for other nations.

Co -development vs. Tech dumping
India creates the solutions and creates local capacity instead of selling the Turny system.

- **Example:** Instead of exporting technology only, India helps to adapt platforms for local languages, political needs and infrastructure realities.
- Non-qualified engagement

India respects local priorities, unlike Western assistance that can provide political conditions or Chinese infrastructure that often leads to a debt trap.

- **Example:** Countries such as Zambia and Ghana chose Volunteer DPI in India due to strength and alignment, not because of geopolitical pressure or debt obligations.

**What Challenges Block Africa's Digital Growth?**

Despite its ambitions, Africa faces multiple hurdles in becoming a digital-first continent:

- Internet data remains prohibitively expensive.
- Devices like smartphones and laptops are out of reach for many.
- **Example:** In 2023, mobile data costs in some African countries exceeded 5% of monthly income, far above the UN-recommended threshold of 2%.

## Digital Divide

- Urban areas dominate in terms of connectivity and services.
- Rural populations and women are disproportionately excluded.
- **Example:** Women in sub-Saharan Africa are 37% less likely than men to use mobile internet, deepening inequality.

Inadequate Energy Infrastructure
Digital platforms depend on stable electricity, which remains patchy.
**Example**: Countries like Nigeria face regular power outages, affecting internet access and data reliability.

## Lack of Local Talent

- Africa needs a digitally skilled workforce.
- Most countries face a shortage of trained engineers, cybersecurity experts, and AI developers.

## Regulatory Fragmentation

- Lack of harmonised laws and standards across African nations delays cross-border digital services and trade.

## Way Forward: Towards a Resilient Digital Africa

India and Africa can deepen their digital cooperation by focusing on the following areas:

## Expand Affordable Access

- Invest in low-cost internet infrastructure.
- Subsidise digital devices for students, women, and rural communities.
- Encourage public-private partnerships for last-mile connectivity.

### Strengthen Energy and Digital Infrastructure

- Integrate renewable energy with digital rollouts.
- Support solar-powered telecom towers and microgrids in rural regions.

### Build Human Capital

- Scale up joint degree programs, online skilling courses, and digital fellowships.
- Facilitate African student mobility to Indian institutions under Scholarship programs.

### Develop Local Innovation Ecosystems

- Support African startups through funding, mentoring, and access to India's innovation networks like Startup India and Atal Innovation Mission.
- Encourage Indian tech companies to invest in Africa not as markets, but as partners in innovation.

### Promote Digital Sovereignty

- Continue to offer DPI as Digital Public Goods.
- Assist African countries in drafting data protection, privacy, and cybersecurity laws based on global best practices.

### Conclusion

India's digital diplomacy in Africa is not just a strategic manoeuvre, is a civilizational partnership rooted in shared development goals. By offering affordable, inclusive, and adaptable digital infrastructure, India is helping African countries craft their digital destiny. Unlike Western or Chinese models that focus on profit or power, India's approach emphasises empowerment, equity, and empathy. On the occasion of Africa Day, it is this spirit of South-South collaboration that must guide the future of India-Africa ties, where digital bridges replace digital divides, and technology becomes the language of partnership, not patronage.

# 7. India Becomes the World's 4th Largest Economy.

### Why in the News?

India has recently overtaken Japan to become the world's fourth-largest economy in nominal GDP terms, as confirmed by the CEO of NITI Aayog in May 2025. This marks a significant moment in India's economic journey, highlighting its growing global stature, increased economic resilience, and evolving role in international financial affairs.

While this is a cause for national pride, it also invites a deeper reflection on what such rankings imply about the actual prosperity of Indian citizens, especially when contrasted with Purchasing Power Parity (PPP) measures and per capita income indicators.

### Background: India's Evolving Economic Position

India's economy has seen a remarkable transformation since liberalisation in 1991. From being an economy plagued by the "Hindu rate of growth" in the 1970s and 80s, it has emerged as a global player in the 21st century. This shift has been powered by structural reforms, demographic dividends, increased digitalisation, a vibrant services sector, and an expanding domestic market.


In Nominal GDP terms (USD), India has now moved ahead of Japan (which is facing a stagnant economy and demographic decline) to rank fourth globally.

In PPP terms, India has been the third-largest economy since 2009, behind only the United States and China.

## Understanding GDP Metrics: Nominal vs. PPP-Based GDP

To fully understand the significance of India's rise in nominal rankings, we must understand the difference between Nominal GDP and GDP at Purchasing Power Parity (PPP).

### Nominal GDP

- **Definition:** It is the total value of all goods and services produced in a country measured using current market exchange rates in USD.
- **Example:** If India's GDP is ₹270 lakh crore and the exchange rate is $1 = ₹75, the nominal GDP = ₹270 lakh crore ÷ 75 = $3.6 trillion.

### GDP at PPP

- **Definition:** It adjusts the GDP to reflect differences in the cost of living and price levels between countries. It captures the real value of goods and services that citizens can buy domestically.
- **Example:** While India's nominal GDP might be $3.6 trillion, due to lower prices in India, PPP-adjusted GDP might be $12 trillion, reflecting greater real consumption.

### Why PPP Matters:

- More accurate for comparing living standards.
- Adjusts for cost differences - a dollar goes much further in India than in the US.
- Used by multilateral institutions like the World Bank and the IMF to measure actual well-being.

### India's Position by PPP GDP

- India became the third-largest economy in PPP terms in 2009, overtaking Japan during the Manmohan Singh-led UPA government.
- Since then, it has retained this spot, despite fluctuations in nominal rankings. The PPP measure reflects India's large population and low cost of living, boosting its effective domestic consumption and production.

### Exchange Rate Effects on Nominal GDP

One of the biggest weaknesses of using nominal GDP is its sensitivity to exchange rates, which are often volatile due to geopolitical events, inflation, trade deficits, and interest rate changes.

### Examples:

- If India's GDP is ₹300 lakh crore and $1 = ₹75, its dollar GDP = $4 trillion. But if $1 = ₹85, the same economy appears to be $3.5 trillion.
- If the yen strengthens, Japan's dollar GDP may increase even without any domestic growth.
- Countries with weak or volatile currencies may seem poorer than they are, distorting global comparisons.

Thus, a nominal GDP ranking can change without any actual change in output, just due to currency fluctuations.

## Per Capita GDP: A Better Lens for Prosperity?

While aggregate GDP gives a sense of a nation's overall size and economic clout, per capita GDP - the GDP divided by the total population - is a more useful indicator of individual prosperity and living standards.

### Why Per Capita GDP Matters:

- **Accounts for Population Size:** India's total GDP may exceed that of the UK, but India has over 20 times more people, reducing per capita income drastically.
- **Reflects Living Standards:** It measures average income per person, giving insight into access to housing, healthcare, education, and public services.

- **Exposes Inequality:** High aggregate GDP can mask internal disparities — a few billionaires may thrive while millions struggle in poverty.

**Comparative Snapshot (2025 Estimates in PPP Dollars):** Thus, despite India being the 5th largest economy by nominal GDP and 3rd by PPP, its low per capita income reflects the urgent need for inclusive and equitable growth.

## Key Challenges Ahead

### Low Per Capita Income

- India's per capita income remains among the lowest in the G20 nations. This restricts access to quality education, healthcare, and housing — all key components of human development.High Inequality
- According to Oxfam reports and recent RBI data:
- The top 10% of Indians own over 70% of the country's wealth.
- Income inequality has worsened post-pandemic, particularly between urban and rural India.
- Unemployment and Underemployment
- Despite rapid economic growth, jobless growth remains a persistent problem. The informal sector still dominates employment, with poor wages and a lack of social security.
- Inadequate Human Capital


- India ranks low on indicators such as learning outcomes, healthcare infrastructure, and digital literacy.
- Public expenditure on health (~2.1%) and education (~2.9%) of GDP is well below global averages.
- Exchange Rate Vulnerability
- Rupee depreciation affects external borrowing, trade competitiveness, and investor confidence. This directly impacts India's nominal GDP rank and can overshadow real growth achievements.

## Opportunities: Leveraging India's Strengths

- Despite these challenges, India has several structural advantages:
- **Young Workforce:** Over 60% of the population is under 35.
- **Large Domestic Market:** Rapid urbanisation and a rising middle class create demand.
- **Tech Ecosystem:** India is a global IT hub and digital innovation leader.
- **Global Supply Chain Shift:** Post-COVID, companies are adopting a China+1 strategy, boosting India's role in global manufacturing.
- **Way Forward:** From Economic Size to Individual Prosperity
- To translate economic growth into real prosperity, India needs strategic policy interventions that focus on human development, inclusiveness, and resilience.

### Invest in Human Capital

- Increase public investment in education, healthcare, nutrition, and sanitation.
- Strengthen institutions like Skilling India, National Health Mission, and PM SHRI Schools.
- Promote digital access and AI/tech literacy to boost productivity. Ensure Equitable and Inclusive Growth
- Promote rural development, agrarian reforms, and support for MSMEs.
- Targeted welfare schemes like PM-KISAN, Ujjwala, and Ayushman Bharat should be expanded with better implementation.
- Focus on urban poor, migrant workers, and women's economic participation.

### Strengthen Formalisation and Job Creation

- Expand formal job opportunities in manufacturing, logistics, renewable energy, and tourism.
- Implement labour reforms with safeguards for worker rights.
- Encourage startups, especially in Tier-2 and Tier-3 cities
- Boost Innovation and Productivity
- Invest in R&D, public-private innovation hubs, and academic-industry collaboration.
- Improve ease of doing business, reduce compliance burdens, and ensure policy predictability.
- Address Exchange Rate Sensitivities
- Build up foreign exchange reserves and diversify exports to stabilise the rupee.
- Encourage local value chains and reduce import dependence in critical sectors like semiconductors, electronics, and defence.

### Conclusion

India's ascent to the position of the fourth-largest economy in nominal GDP terms is undoubtedly a proud moment. However, this should not divert attention from deeper structural issues like low per capita income, high inequality, and unemployment. Aggregate GDP is a measure of national strength, but for real prosperity, the quality of growth matters as much as the quantity.

The challenge for India is clear: To ensure that economic expansion translates into enhanced quality of life for every citizen. That requires bold investments in human capital, infrastructure, and governance reforms. If the nation can meet this challenge, it will not only be a large economy but a truly prosperous and equitable society.

# 8. MSP Hike for Kharif Crops in 2025–26: Balancing Farmer Welfare and Market Efficiency

### Why in the News?

- The CCEA approved MSP hikes for 14 Kharif crops for 2025–26 to ensure fair returns to farmers.
- The hike aims to fulfil the government's promise of providing at least 50% profit over the cost of production.
- The increase in MSP is part of the larger Doubling Farmers' Income (DFI) strategy and comes amidst rising input costs and climatic uncertainties.
- The MSP hike particularly focuses on pulses, oilseeds, and coarse cereals to promote crop diversification and reduce the import dependence on edible oils and pulses.

### Background: Evolution of MSP in India

#### Origins

Introduced during the 1960s Green Revolution to address food insecurity and famineespecially after the Bihar famine (1966–67).

Initially managed by the Agricultural Prices Commission (APC) (est. 1965), which later became the Commission for Agricultural Costs and Prices (CACP) in 1985.

Purpose

- To provide a price guarantee to farmers and insulate them from market fluctuations.
- Encourage the production of strategic crops like paddy and wheat for food buffer stocks.
- Protect against predatory pricing by middlemen and ensure minimum returns.

#### Institutional Framework

- CACP, an expert body under the Ministry of Agriculture, recommends MSPs for 23 crops.

- Final decisions are taken by the CCEA after inter-ministerial and state consultations.

## Features of the MSP Mechanism

Crops Covered

- 23 crops: 7 cereals, 5 pulses, 7 oilseeds, and 4 commercial crops (sugarcane, cotton, raw jute, copra).
- Sugarcane has a Fair and Remunerative Price (FRP), not MSP.

## MSP Calculation Methodologies

- Based on three cost concepts:
- A2: Actual paid-out cost (seeds, fertilisers, fuel, etc.)
- A2+FL: A2 + imputed value of family labour
- C2: A2+FL + rental value of owned land + interest on fixed capital (most comprehensive)
- The Swaminathan Commission (2004) recommended MSP = 1.5 times C2 cost.
- However, the current government formula: MSP = 1.5 times A2+FL, not C2.

## Announcement Timeline

- Declared before the sowing season to help farmers make informed cropping decisions.
- MSPs serve as indicative prices, not legally binding procurement rates (except for crops actively procured).

## Procurement Mechanism

- Food Corporation of India (FCI) and state agencies procure mainly paddy and wheat.
- Limited procurement for pulses and oilseeds due to infrastructure and fiscal constraints.

### Challenges of the MSP Regime

Limited Procurement

- MSP works effectively only for paddy and wheat in select states (Punjab, Haryana).
- Farmers in other regions and for other crops do not benefit due to a lack of procurement infrastructure.

## Regional and Crop Bias

- Skewed procurement towards northern India and rice-wheat monoculture.
- Disincentivises crop diversification and leads to nutritional and ecological imbalance.

## Market Distortion

- Distorts cropping patterns, leading to overproduction of water-intensive crops like paddy.
- Reduces private trade participation due to artificial price floors.

## Fiscal Burden

- Increasing MSPs without matching procurement raises expectations but not delivery.
- High food subsidy bills (₹2-3 lakh crore annually) strain fiscal resources.

## Environmental Concerns

- Incentivises unsustainable farming (e.g., overuse of groundwater in Punjab).
- MSP policy needs alignment with climate-resilient agriculture.

## Discrepancy in Cost Calculation

- Farmers' bodies argue for C2-based pricing, whereas the government uses A2+FL.
- Leads to dissatisfaction and agitation among farmer groups (e.g., 2020-21 protests).

**COST & PROFIT UNDER NEW REGIME**

| Crops | Cost (Rs/Quintal) | MSP (Rs/Quintal) | % return over cost |
|---|---|---|---|
| Bajra | 990 | 1,950 | 96.9 |
| Arhar (Tur) | 3,432 | 5,675 | 65.3 |
| Urad | 3,438 | 5,600 | 62.9 |
| Maize | 1,131 | 1,700 | 50.3 |
| Paddy* | 1,166 | 1,750 | 50.1 |
| Jowar** | 1,619 | 2,430 | 50.1 |
| Ragi | 1,931 | 2,897 | 50 |
| Cotton*** | 3,433 | 5,150 | 50 |
| Sunflower seed | 3,592 | 5,388 | 50 |
| Soyabeen | 2,266 | 3,399 | 50 |
| Sesamum | 4,166 | 6,249 | 50 |
| Nigerseed | 3,918 | 5,877 | 50 |
| Moong | 4,650 | 6,975 | 50 |
| Groundnut | 3,260 | 4,890 | 50 |

*Common variety, ** Hybrid, ***Medium staple

## Legal Guarantee Debate

- Farmers have demanded a legal guarantee of MSP; however, experts warn this could:
- Create market distortions,
- Lead to excessive procurement,
- Crowd out private markets, and
- Increase litigation and administrative costs.

## Way Forward

### Diversified Procurement

- Expand procurement to pulses, oilseeds, and millets.
- Improve storage, logistics, and processing infrastructure in underserved states.

## Regional Equity

- Create decentralised procurement models that include states like Odisha, Madhya Pradesh, and Maharashtra.
- Empower Farmer Producer Organisations (FPOs) to aggregate and sell produce at MSP.

## Transparent Costing

- Shift towards C2-based calculation to ensure genuine profitability.
- Use satellite data and AI to track cost inputs and productivity region-wise.

## Crop Diversification Incentives

- Link MSP hikes with eco-friendly crops such as millets, pulses, and oilseeds.
- Integrate with schemes like PM-KUSUM and Paramparagat Krishi Vikas Yojana.
- Legal Reforms and Consensus Building
- Avoid hasty legal guarantees.
- Initiate multi-stakeholder consultations including farmers, economists, and civil society

## Climate-Resilient MSP

- Align MSP policy with climate adaptation goals.
- Prioritise sustainable agriculture in dryland regions.

## Conclusion

The recent MSP hike for Kharif crops reflects the government's commitment to safeguarding farmers' interests and enhancing their income security. However, the MSP system in its current form faces structural, fiscal, and ecological challenges that undermine its effectiveness and equity.

# News in shorts


## 1.1 Kumbakonam Vetrilai Betel Leaf gets GI Tag

### Why in the News?

The Kumbakonam Vetrilai (betel leaf or paan leaf) has received the Geographical Indication (GI) tag from the Government of India.

## About Kumbakonam Vetrilai

- **Cultivation:** It is grown in the Thanjavur region, especially in Kumbakonam, Thiruvaiyaru, Papanasam, Thiruvidaimarudur, and Rajagiri.
- **Characteristics:** The leaf is heart-shaped, dark to light green, with a strong aroma and pungent taste, thanks to the fertile Cauvery basin soil.
- **Cultural Importance:** It is a main ingredient in paan, a popular post-meal chew in South Asia.
- **Harvest:** The first-year yield, called maaruvethalai, produces the largest and longest-lasting leaves (6–7 days shelf life); Farmers hand-pick leaves, working from early morning until late night due to the labour-heavy process.

## Back2Basics: Geographical Indication (GI) Tag

- A GI is a sign used on products that have a specific geographical origin and possess qualities or a reputation that are due to that origin.

- **Nodal Agency:** Department for Promotion of Industry and Internal Trade (DPIIT), Ministry of Commerce and Industry
- India, as a member of the World Trade Organisation (WTO), enacted the Geographical Indications of Goods (Registration and Protection) Act, 1999 w.e.f. September 2003.
- GIs have been defined under Article 22 (1) of the WTO Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS) Agreement.
- The tag stands valid for 10 years and can be renewed.

## 1.2 UK-India Free Trade Agreement

- India and the UK signed a Free Trade Agreement (FTA) after nearly three years of negotiations. The agreement reduces tariffs on 90% of goods.
- The deal aims to **boost trade, investment, job creation, and innovation**. It comes at a time of global trade uncertainty and marks a major economic collaboration between the world's fifth and sixth largest economies.

### About the UK-India Trade Deal

- **Trade Expansion:** The deal is projected to increase annual bilateral trade by £25.5 billion from 2040 onward.
- In 2024, UK-India trade stood at £42.6 billion, with UK exports at £17.1 billion and imports from India at £25.5 billion.

### India ranked as the UK's 11th-largest trading partner in 2024.

- Tariff Reductions and Market Access

### India's Gains:

- 99% of Indian exports to the UK will enjoy zero-duty access.
- Boost for labour-intensive sectors: textiles, marine products, leather, footwear, sports goods, toys, gems & jewellery, engineering goods, auto parts, and organic chemicals.

EXIM NEWS

**Duty cuts on premium cars, yoga visas, & open bids on the table after India-UK FTA revs.**

India's duty cuts on British automobile imports are largely in the premium segment and the Carbon Border Adjustment Mechanism (CBAM) is not part of the bilateral free trade agreement, a UK official said.

Under the India-UK FTA, tariffs for a limited quota of vehicles will be lowered to 10% from the current more than 100%.

- **UK's Gains:** India to slash duties on 90% of tariff lines, with 85% becoming fully tariff-free within 10 years.
- Lower Indian tariffs on whisky, medical devices, advanced machinery, and lamb to make UK exports more competitive.

### Major Sectors Benefitting:

- **Alcohol:** Tariffs on whisky and gin will drop from 150% to 75% initially, reaching 40% by the tenth year, boosting the UK's Scotch whisky exports.
- **Automobiles:** India will cut auto import tariffs to 10% under a quota system (down from over 100%).
- **Other Goods:** Reduced tariffs for British exports such as cosmetics, aerospace components, lamb, medical devices, salmon, electrical machinery, soft drinks, chocolate, and biscuits.

### Services and Workforce Mobility:

- The deal includes increased quotas for Indian workers to take up employment in specific sectors in the UK, enhancing labour mobility and service trade cooperation.
- Indian workers in the UK will receive a three-year exemption from social security payments, reducing financial burden and improving mobility opportunities.

## Reasons Behind the Push for the Deal

- Supply Chain Disruptions & China Diversification:
- The COVID-19 pandemic exposed the vulnerabilities of global supply chains overly reliant on China.

**Western countries, including the UK, sought to implement a 'China-plus-one'** strategy, diversifying supply chains by partnering with countries like India.

## Post-Brexit Market Realignment

- After Brexit, the UK lost access to the EU's Single Market.
- India, with its large and growing consumer base, emerged as a critical alternative to offset this economic gap.

## Economic Pressures in the UK

- The UK has been grappling with a cost-of-living crisis.
- The FTA is viewed as a timely economic boost and a political win for PM Keir Starmer, who assumed office in July 2024.

## India's Shift from RCEP

- In 2019, India opted out of the China-led Regional Comprehensive Economic Partnership (RCEP), increasing the urgency to find alternative trade alliances like the UK.

## Key Issues During Negotiations

### Limited Trade Gains for India

- According to the Global Trade Research Initiative (GTRI), many Indian exports already benefit from low or zero tariffs in the UK, so the FTA's impact on trade volume may be limited.

### Services and Work Visas

- India prioritised better access for its service professionals, particularly in IT and healthcare.
- However, immigration remains a sensitive issue for the UK post-Brexit.
- Eventually, only about 100 new work visas per year for Indian professionals were agreed upon.
- **Carbon Tax Dispute**
- The UK's proposal to impose a carbon tax on metal imports (based on emissions) raised concerns for Indian exporters, particularly in steel and aluminium.
- Negotiations were needed to address the potential impact on India's competitiveness.
- Beyond Trade, the FTA is seen as a foundation for deeper cooperation in sectors such as: Defence and security; Critical technologies; Education; Tourism and Indian diaspora engagement.
- An Indian official aptly remarked: **"The FTA is the floor, not the ceiling."**

# HISTORY


## 1. The 253rd birth anniversary of Raja Ram Mohan Roy

One of the most influential social and religious reformers of the 19th century, Ram Mohan Roy, born on May 22, 1772, in what was then Bengal Presidency's Radhanagar in Hooghly district, would have turned 253 years today.

### Raja Ram Mohan Roy (1772-1833)

Early life

- Born into a prosperous upper-caste Brahmin family, Roy grew up within the framework of orthodox caste practices of his time.
- Child-marriage, polygamy and dowry were prevalent among the higher castes, and he had himself been married more than once in his childhood.
- The family's affluence had also made the best in education accessible to him.
- The waning of the Mughals and the ascendancy of the East India Company in Bengal towards the end of the 18th century was also the time when Roy was slowly coming into his own.

### Academics

- Roy knew Bengali and Persian, but also Arabic, Sanskrit, and later, English.
- His exposure to the literature and culture of each of these languages bred in him a scepticism towards religious dogmas and social strictures.
- He spent considerable time studying the Vedas and the Upanishads, but also religious texts of Islam and Christianity.
- He was particularly intrigued by the Unitarian faction of Christianity and was drawn by the precepts of monotheism that, he believed, lay at the core of all religious texts.
- He wrote extensive tracts on various matters of theology, polity and human rights, and translated and made accessible Sanskrit texts into Bengali.
- Rammohun did not quite make a distinction between the religious and the secular. He believed religion to be the site of all fundamental changes.
- What he fought was not religion but what he believed to be its perversion.
- Roy, the first among liberals
- Even though British consolidation of power was still at a nascent stage in India at the time, Roy could sense that change was afoot.
- Confident about the strength of his heritage and open to imbibing from other cultures what he believed were ameliorative practices, Roy was among India's first liberals.
- He was simultaneously interested in religion, politics, law and jurisprudence, commerce and agrarian enterprise, Constitutions and civic rights, the unjust treatment of women and the appalling condition of the Indian poor.

### Establishment of Atmiya Sabha

- In 1814, he started the Atmiya Sabha (Society of Friends) to nurture philosophical discussions on the idea of monotheism in Vedanta.
- It aimed to campaign against idolatry, casteism, child marriage and other social ills.
- The Atmiya Sabha would make way for the Brahmo Sabha in 1828, set up with Debendranath Tagore, Rabindranath Tagore's father.
- Abolition of Sati, educational and religious reforms
- He campaigned for the modernisation of education, in particular the introduction of a Western curriculum, and started several educational institutions in the city.
- In 1817, he collaborated with Scottish philanthropist David Hare to set up the Hindu College (now, Presidency University).
- He followed it up with the Anglo-Hindu School in 1822 and, in 1830, assisted Alexander Duff to set up the General Assembly's Institution, which later became the Scottish Church College.
- It was his relentless advocacy alongside contemporaries such as Ishwar Chandra Vidyasagar that finally led to the abolition of Sati under the governor generalship of William Bentinck in 1829.
- Roy argued for the property rights of women and petitioned the British for freedom of the press (in 1829 and 1830).
- His Brahmo Sabha, which later became the Brahmo Samaj, evolved as a reaction against the upper-caste stranglehold on social customs and rituals.
- Perils of non-conformism
- Roy, who was given the title of Raja by the Mughal emperor Akbar II, was no exception to the societal enmity.
- Roy was also often attacked by his countrymen who felt threatened by his reformist agenda, and by British reformers and functionaries, whose views differed from his.

### Conclusion

- Roy's work in the sphere of women's emancipation, modernising education and seeking changes to religious orthodoxy finds new relevance in this time.
- He was among the first Indians to gain recognition in the UK and in America for his radical thoughts.
- Roy was unquestionably the first person on the subcontinent to seriously engage with the challenges posed by modernity to traditional social structures and ways of being.
- Rabindranath Tagore called him a 'Bharatpathik' by which he meant to say that Rammohun combined in his person the underlying spirit of Indic civilisation, its spirit of pluralism, tolerance and a cosmic respect for all forms of life.

## 2. Raghuji Bhosale

- Recently, the Maharashtra government successfully reclaimed Raghuji Bhosale I's historic sword at a Sotheby's auction in London. The 18th-century piece was auctioned with an estimated value of approximately Rs 47.15 lakh after additional costs.

### About Raghuji Bhosale I

- Raghuji Bhosale I (1695–February 14, 1755) was the founder of the Bhosale family of Nagpur and an important commander in the Maratha army during the reign of Chhatrapati Shahu Maharaj.
- Chhatrapati Shahu Maharaj had bestowed the title of 'Senasahibsubha' on Raghujiraje for his bravery and war strategy.
- Raghujiraje Bhosale I led military campaigns against the Nawab of Bengal in 1745 and 1755 and expanded the Maratha empire to Bengal and Odisha.
- He also defeated the Nawabs of Cuddapah and Kurnool and established his military and political dominance in South India.

## About Nagpur Bhonsles

- He expanded Maratha influence in central and eastern India, including parts of present-day Madhya Pradesh, Chhattisgarh, Jharkhand, and Odisha.
- The family was one of the royal or Kshatriya clans of the Marathas, and considered itself as the descendants of Udaipur's Sisodia Rajputs.
- The Bhonsles of Nagpur were known as Hinganikar as one of their ancestors, who was probably a contemporary of Maloji, the grandfather of Chhatrapati Shivaji Maharaj, rehabilitated the village Beradi near Hingani in the present district of Pune.
- The Nagpur Bhosales ruled over a mineral-rich region abundant in iron and copper, which were skillfully used to craft both everyday items and formidable weapons.

# 3. Manipur's flower festival starts on a thorny note,

Recently, the Shirui Lily Festival has commenced in Manipur after a two-year gap caused by the ongoing conflict in the state

## About Shirui Lily Festival

- **Organiser:** The festival is conducted by the Department of Tourism, Government of Manipur.
- **Launch:** It was first held in 2017 and is now one of Manipur's two major tourism festivals (the other being the Sangai Festival).
- **Origin:** Named after the Shirui Lily (Lilium mackliniae), the State Flower of Manipur.
- **Location:** The event is held in the Ukhrul district, home to the Tangkhul Naga community.
- **Purpose:** It aims to raise awareness about the Shirui Lily and promote eco-tourism in the hill regions of Ukhrul.
- **Key Activities:** The festival includes cultural performances, music concerts, a beauty pageant, a cooking competition, and a trash collection marathon.

## Shirui Lily

- **Habitat:** The Shirui Lily grows only in the upper reaches of the Shirui Hill range in Ukhrul district, at an altitude of 2,673 metres.
- **Local Name:** It is locally known as 'Kashong Timrawon', named after a mythical hill guardian.
- **Discovery:** British botanist Frank Kingdon-Ward identified it in 1946 and named it Lilium mackliniae after his wife Jean Macklin.

**Conservation Status: Classified as Endangered by the IUCN. (It is not listed by CITES or the Wildlife Protection Act, 1972. Shirui National Park is named after it.**

**Threats:** The flower faces threats from climate change, human encroachment, resource exploitation, and invasion by wild dwarf bamboo.

# 4. Restoration of Rajon ki Baoli

## Why in the News?

The Archaeological Survey of India (ASI), in private collaboration, has completed the restoration of Rajon ki Baoli, a 16th-century Lodi-era stepwell located in New Delhi.

## About Rajon ki Baoli:

- **Location:** Situated in Mehrauli Archaeological Park, Delhi, around 400 meters south of Adham Khan's Tomb.
- **Build year:** Built in 1506 CE by Daulat Khan Lodi, an official under Sikandar Lodi.
- **Name Meaning:** "Rajon ki Baoli" means "Stepwell of the Masons", referring to raj mistris, not royalty.
- **Structure:** The stepwell is rectangular, covering 1,610 sq m, and is 13.4 meters deep.
- **Design:** It is a 4-level structure, with only the topmost tier visible from ground level.

## Architectural Features:

- Includes verandas, arched corridors, 12-pillared arcades, and stucco medallions.
- The complex also has a mosque, a tomb, and a chhatri (pavilion).
- **Purpose:** Served as a water source and resting place, and had social-religious utility.
- **About the Lodi Dynasty:** The Lodi Dynasty ruled the Delhi Sultanate from 1451 to 1526.
- **Founder:** Established by Bahlul Lodi, the first Afghan ruler of Delhi.
- **Territorial Control:** Dominated Punjab, Jaunpur, Gwalior, and the Upper Ganga Valley.

## Key Rulers:

- **Bahlul Lodi (1451–1489):** Annexed Jaunpur and solidified Afghan influence in northern India.
- **Sikandar Lodi (1489–1517):** Founded Agra, introduced agricultural reforms, standardised land with Gaz-i-Sikandari, and patronised literature and music. He imposed jizya and demolished temples in Mathura, reflecting intolerance.
- **Ibrahim Lodi (1517–1526):** Lost the First Battle of Panipat to Babur, ending the dynasty and the Sultanate.
- **Successor:** Their fall marked the shift from the Delhi Sultanate to the Mughal Empire in Indian history.

# GEOGRAPHY AND ENVIRONMENT

## 1 . Zudpi Jungle and Forest Law: A New Chapter in Protection Juris Prize

By providing environmental protection and a significant boost for the forest regime, the Supreme Court in India recently decided that the jungles join the eastern part of Maharashtra qualify as forest land under Indian law. This historical decision is e.g. confirms the inclusive interpretation of the "forest" held in The Godavan confirms the constitutional commitment to the case and ecological protection. While the court protected human settlements before -1996, the ruling took an important step to protect the neglected but often neglected forest tag.

### Why is it in the news?

The Supreme Court in India has admitted that 86,400 hectares with connected forest land in six districts in eastern Maharashtra are considered forest land. The decision was formed with the 1996 Goods Judgment, and ensured the country comes under the Forest (Protection) Act, 1980, and protected them from the turn for use that is not one. However, the court also allowed the continuous existence of the necessary infrastructure, such as houses, schools and cemeteries, which were built before December 12, 1996.

### Background

### What are zudpi forests?

- **Location:** Nagpur, Wardha, Bhandara, Gondia, Chandrapur and Gadchiroli districts were found in Vidarbha, Maharashtra.
- **Vocabulary:** "zudpi" is a local Marathi word that reflects the scrub or bushed terrain.
- **Vegetation and soil:** These areas are characterised by rare vegetation, mainly on the bushes and dry grass, grunting soil, which is gravel, dry and unsuitable for the growth of long trees.

**Ecological significance:** Despite their low biomass, Zudy Skoger is just as important as wildlife corridors, adding large forest patches and enabling animal movement, especially exposed to residential fragmentation. They play an important role in microclimate regulation, supporting biodiversity and soil preservation.

### Administrative history

- Since the 1980s, the Maharashtra government has considered Zudip land as a forest for administrative purposes.
- In 1987, the state asked the Ministry of the Environment and Forests to exempt these countries from forest protection.

- Identify their semi-hundred-year-old status, and also use them for development.
- However, no central notice was given, leaving these lands in a legal grey area before the current SC decision provided clarity.

## Forest Definition: The Godavarman Benchmark

- The T.N. Godavarman Thirumulpad v. Union of India (1996) case fundamentally altered forest jurisprudence by expanding the definition of “forest” to include any land with forest-like characteristics, not just officially recorded forests.
- Applying the Doctrine of Public Trust, recognising forests as ecological assets held in trust by the state. Reinforcing environmental rights under Article 21 (Right to Life) and Article 48A of the Constitution. Bringing millions of hectares of uncategorized lands, including Zudpi Jungles, under legal forest protection.

## Decision-making characteristics and implications

- **Legal clarity:** The reigning Judpi eliminates uncertainty about the forest's legal status, making it qualified for protection under the national forest laws.
- **Human Balance:** 1996 by protecting pre-retardant structures, the court balances ecological protection with human rights and social welfare.
- **Protection of biodiversity:** Recognises that small forest tags aid in decentralised preservation of biodiversity, especially in a fragmented landscape, as fate. Previous for other states: This decision can trigger the reassessment of unchanged forest land in other Indian states.

## The way forward

- **Mapping and delimitation:** The government should do scientific mapping of Zudipi countries using GIS and satellite technology to identify boundaries, biological diversity values and ecological corridors.
- **Sustainable development schemes:** Create specific eco-sensitive zone (ESZ) Guidelines for Zudpi-Land, Balance conservation with social needs, grazing, the collection of NTFP and the use of water. Community engagement: Include local tribal and forest-niwas communities in protection through Joint Forest Management.
- Make sure that the Forest Rights Act (from 2006 is integrated into the honorary and conservation scheme for their rights.
- **Opposition coordination:** Ensure coordination between forests, revenues and tribal development departments for uniform implementation of policy and to prevent over -whole requirements or legal disputes.
- **Replication and legal reform:** Encourage other states to review their forest classification systems, and ensure that all countries with ecological value, reserved under appropriate laws, regardless of canopy density.

**Conclusion**

The Supreme Court's decision on Judpi forests is higher than just legal classification - it represents the broad vision of an inclusive and organic forest regime. While India is struggling with twin challenges of climate change and loss of biodiversity, even identifying the ecological significance of the scrub, dry lands such as Judpi forests is an important step. Through responsible implementation and socially focused policy, this decision can serve as a template for general forest preservation throughout the country.

# 2. Six new sites join FAO's Globally Important Agricultural Heritage Systems (GIAHS)

In a world with climate change, loss of biodiversity and food security, the revival and recognition of traditional agricultural systems provides a lighthouse of hope. Inherent in centuries-old indigenous people's knowledge and organic balance, these systems not only ensure food sovereignty and societal flexibility but also preserve cultural heritage.
In this context, the Food and Agricultural Organization (FAO), recently recognized by the Food and Agricultural Organization (FAO) marks six new places as globally important, a significant progress towards permanent agriculture and inclusive rural development.

## Why in the news?

- FAO has recently nominated six traditional agricultural systems from Brazil, China, Mexico and Spain as globally important agricultural heritage systems (Giahs).
- These inclusions emphasise the relevance of indigenous peoples' agricultural knowledge and its ability to meet modern organic and food challenges.

## Background: Understand Giahs

- **Definition:** Giahs are dynamic agricultural systems that have evolved through joint components in a society with the environment. They maintain agariboodyvarsity, traditional knowledge systems, flexible ecosystems and cultural values.
- **Original:** Launched in 2002 at the World Summit on Sustainable Development in Johannesburg, the Giahs initiative is run by the UN FAO.
- **Objective:** Security and support for the traditional agricultural system. Protection of biodiversity and genetic resources. Sustainable development and promotion of livelihoods in the countryside. Recognise and preserve the cultural landscape and heritage.
- **Global:** Identification and recognition of websites
- National: Politics, Support, and Integration in Development Structure
- **Local:** Empowerment and Empowerment of Communities for Permanent Resource Use bout recently renowned GIAH's sites (2024).
- Decking Pearl Musel Fisheri, China, 800 years 800-year-old system that integrates pearl farming with rice and silk production. Improves water purification, biodiversity and eco-tourism
- Funding White Tea Culture, China Biodiversity is associated with local rituals and livelihoods, 18 tea and 41 botanical variants at home.
- Galan Pear Bagh, China, 600 years old, Drainland Agricultural-Practical with the Yellow River. The native crop produces 2 million kilos of bulbs annually through coordination.
- Erva met Agrophorrestry, Brazil Indigenous farming under Aroucaria - forests ARVA-MATE (YERBA MATE) preserves biodiversity by ensuring economic livelihood through agriculture. re
- Metpantal Terrace, Mexico 3000 -Year - Od Nahua Terrace Farming System Food supports sovereignty and protects more than 140 indigenous species.

- Lanzarote sand farming, Spain: Innovative use of volcano and sea sand for the cultivation of crops without watering. Practised in one of the dry climates in Europe

### India's Contribution to GIAHS

- **Koraput Traditional Agriculture, Odisha:** Practised by tribal communities in the Eastern GhatsConserves over 1,200 indigenous rice varietiesIntegrates millets and pulses with organic and community-driven seed systems.
- Kuttanad Below Sea Level Farming, Kerala.Unique polder-based farming system in the Vembanad wetland.Utilises bunds and rice–fish rotation techniques to grow paddy below sea level.
- **Saffron Heritage of Kashmir, UT of Jammu & Kashmir:** Traditional saffron cultivation on Karewa soils at high altitudes. Renowned for superior quality saffron with high aroma, colour, and crocin content

### Significance of GIAHS Recognition

- **Agrobiodiversity Conservation:** Protects indigenous crops, livestock, and associated flora/fauna.
- **Food and Nutritional Security:** Promotes diverse, local, and climate-resilient food systems.
- **Cultural Identity:** Preserves centuries-old traditions, rituals, and agricultural customs.
- **Sustainable Livelihoods:** Supports rural economies through eco-tourism, local markets, and resilient farming.
- **Climate Adaptation:** Encourages low-carbon, water-efficient, and regenerative practices in harmony with local ecology.

### The way forward

- **Community's participation and capacity building:** Strengthen local authorities and farmer institutions for effective protection. To promote the transfer of knowledge and training across intergenerational.
- **Economic and technical assistance:** CSR, dedicated money dedicated to Giah's websites during climate financing and government programs. Support for market connection, branding and global GI tag recognition.
- **Politics and research support:** Increase political consistency between the ministries for agriculture, the environment, culture and tourism. Encourage educational research, influence assessment and sustainable innovations in traditional systems.
- **Global cooperation:** Strengthen South-South collaboration and knowledge sharing between Giah's websites around the world.

### Conclusion

As the world wants an environmental decline, food security and complex crises of cultural erosion, the traditional agricultural system provides time -written and general models for stability. The recognition of the FAO on the new Giahs websites not only draws global attention to these invaluable heritage systems, but also emphasises the urgent need to keep them safe.

## 3. Microplastics Enter Deep Ocean, Disrupting the Carbon Cycle.

**Why in the News?**

A groundbreaking study published in Nature has shown that microplastics have deeply infiltrated the global ocean substrate, causing significant disruptions to the planet's biogeochemical and carbon cycles. The findings are based on data from 1,885 ocean stations (2014–2024) and highlight the long-term impacts on marine health and climate systems.

### Feature: Major Scientific Insights

- Microplastics (1–100 µm) dominate the subsurface ocean layer, while larger fragments (100–5,000 µm) tend to remain near the surface.

These particles were found as deep as 100 metres, often trapped in rotating ocean gyres that accumulate debris over time. More than 56 polymer types were identified, with buoyant plastics (e.g., polyethene and polypropylene) being the most prevalent.

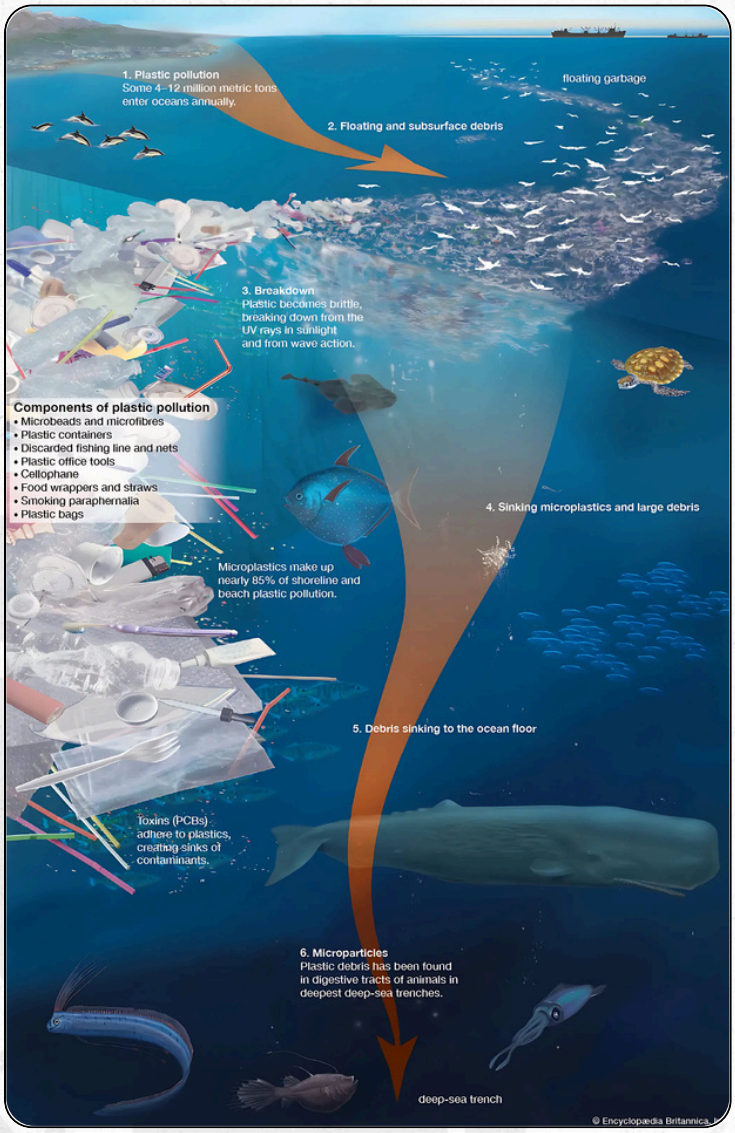
- Fishing gear, especially nylon and polyester, was a major contributor. Some plastic fragments had production origins dating back to the 20th century, indicating extreme durability.
- Atmospheric microplastic deposition contributes between 0.013–25 million tonnes annually, with polyester dominating airborne samples.

## Background

- Microplastics are plastic fragments less than 5 mm in size.
- This study focused specifically on the 1-100 µm range.
- Allochthonous carbon refers to carbon introduced from external sources into an ecosystem. In marine environments, plastic-derived carbon is a major allochthonous input from land-based activities.
- These plastics disrupt the marine carbon pump, altering the distribution and chemical composition of particulate organic carbon (POC).
- Plastic-derived carbon also distorts radiocarbon dating, making marine POC appear up to 420 years older than it is.

## Challenge: Environmental and Scientific Impacts

- Nutrient cycling, especially nitrification and denitrification, is hindered, reducing the biological productivity of marine systems.
- Microbial activity is altered, with marine microbes ingesting plastic carbon, affecting decomposition processes and food chain dynamics.
- The persistence of legacy plastics in deep-sea environments complicates both cleanup operations and carbon dating methods.




## Way Forward: Policy, Research, and Mitigation

- Strengthen international frameworks like the UN Plastic Pollution Treaty to address the infiltration of microplastics into marine ecosystems.
- Invest in deep-sea microplastic mapping, carbon cycle modelling, and plastic biodegradation research.
- Promote circular economy models, reduce single-use plastics, and upgrade wastewater filtration systems. Integrate microplastic tracking into climate models and marine health assessments to understand their role in carbon cycle disruption.
- Foster collaboration among climate scientists, oceanographers, and policymakers to address this emerging ocean–climate nexus.

# 4. "Kaleshwaram at Risk: Structural Failures Threaten India's Largest Lift Irrigation Project"

**Why in the news?**
The National Dam Safety Authority (NDSA) has identified large structural and operational errors in the Kaleshwaram Lift Irrigation Project (Klip) from Telangana, which warns of three important barriers, including Medigda Barrage, to "incomplete damage" to three important barriers.

## Function: What is the Kaleshwaram Lift irrigation Project (clip)?

- It aims to irrigate 45 million acres, supply drinking water to Hyderabad and support industrial use. Cutting the Godavari River in Telangana is the world's largest multi-phase lift irrigation project, inaugurated in June 2019.
- The project plans to lift a total of 240 TMC (thousand million cubic feet) of water, mainly from Medigada (195 TMC), Sripada Yalempalli (20 TMC) and groundwater (25 TMC). Infrastructure includes 7 links, 28 packages, a 500 km lifting buckle, 1800+ channel networks, 20 reservoirs and Asia's largest pump housing in Ramdugu. The estimated cost is between 80,000 crore and £ 1.2 Lakh Crore.

## Background: About the importance of the Godavari River and the project

The Godavari River, known as the South Ganges, is the largest in India, which flows 1,465 km from Maharashtra to Bengalbukta. The pool river includes several states, including Maharashtra, Telangana, Andhra Pradesh, Chhattisgarh, Odisha, Madhya Pradesh, Karnataka and Puducherry. Water security in Telangana is successful for agriculture and industry clips, and utilises Godavari resources through large-scale Lifting irrigation infrastructure.

**Challenge:** Structural and operational problems in October 2023, Pillar No. 20 of the Medigda Barrage triggered the flood loss. NDSA's report from April 2024 revealed the structural crisis because of Medigada, Annaram and beautiful design, insufficient geotechnical studies and safety rounds. Instead of a 2 TMC design, 10 TMC storage of water, the barrier was overloaded, which caused the foundation to fail. The state is facing a huge financial burden, which, despite the criticism of the ongoing project, pays the annual and 16,000 crore in the loan, called the "man-made disaster".

## Way forward :

Immediate structural evaluation and repair or reconstruction of the damaged barrier to prevent further risk. Future upgrading to ensure structural safety includes full soil-technology and hydrological studies. Use strict pond security protocols and monitoring under the supervision of officers such as NDSA. Explore alternative water management strategies to reduce transfer infrastructure. Transparent regime and public audit to ensure efficient use of money and timely solution of problems.

# 5. A Cool and Wet May: Understanding India's Unusual Pre-Monsoon Weather in 2025

## Why in the News?

The month of May 2025 has defied climatic expectations, recording 68.4% more rainfall than average across India. Unlike typical pre-monsoon months characterised by rising temperatures and blistering heatwaves, this year witnessed cooler-than-usual conditions and an almost complete absence of heatwaves. With 27 out of 36 meteorological subdivisions receiving over 20% excess rainfall, this anomaly has triggered widespread interest among meteorologists, farmers, policymakers, and economists alike. The unusual weather pattern has immediate and long-term implications for the Indian monsoon, agricultural prospects, and food inflation.

## Background: What is the reason for the wet and quiet May in India?

- In May 2025, India's weather will be formed by a rare compilation of meteorological systems: UP-Normal rainfall: During May, the rainfall was quite above the long-term average.
- In many regions, including central and eastern India, continuous rainfall was recorded, which may be the most spectacular in recent decades.
- **Repeated moisturised winds:** The recurring western disorders of the Mediterranean region, with moisture from the Bay of Bengal and the Arabian Sea, played an important role. These systems caused widespread intermittent thunderstorms, especially on the Indo-Fetic Plains, Northeast India and Deccan Plateau.
- **Heat wave suppression:** Usually, May is characterised by excessive temperature, especially in the northwest and central India. However, repeated thunder and cloud cover stopped the temperature. As a result, no larger heat wave was reported, a significant departure from climate norms.

## Function: Summer role at the beginning of the monsoon

- The formation of heat climbing over northwest India is an important precursor to the arrival and progress of the southwestern monsoon. The absence of strong heat structures can question the monsoon strength and timing.
- **Stock suction for moist wind:** warms up as a natural vacuum, which draws moist south-west wind in the subcontinent from the Indian Ocean. Their formation is important to introduce monsoon currents.
- **The monsoon circulation drives:** Monsoon Trough - an area with low pressure that facilitates monsoon rain. The shape is further strengthened with these heat climbers. A weak or delayed heat can interfere with the entire lower monsoon system. Affects the intensity and spread of rainfall: the intensity and spatial distribution of rainfall are random

## Challenge:

- El Niño, Indian Ocean Dipole, and the Monsoon Equation
- India's monsoon is shaped by two large-scale oceanic patterns:
- El Niño (ENSO) leads to warmer central and eastern Pacific Ocean waters. Weakens the monsoon circulation by reducing the temperature gradient between land and sea.

## Historical impact:

- The 2015 El Niño resulted in a 14% rainfall deficit, severely impacting agriculture and food inflation.
- **Indian Ocean Dipole (IOD):** A positive IOD means warmer waters near the western Indian Ocean (off Africa) and cooler ones near Indonesia, enhancing monsoon flow. In 2019, a strong positive IOD helped offset the impact of El Niño, leading to above-normal rainfall.
- Currently, climate models are indicating neutral to weak El Niño conditions transitioning toward La Niña and a mildly positive IOD.

- While this bodes moderately well for the monsoon, the weakened heat low formation in northwest India could act as a counterbalance.

### Economic Implications: Monsoon and Food Inflation

- India's food security and price stability are intricately linked with monsoonal performance. A good or poor monsoon impacts:
- **Crop Yields:** Timely and adequate monsoon rainfall boosts sowing of kharif crops (rice, pulses, oilseeds), ensuring healthy harvests and stable food supplies. E.g., In 2022, a normal monsoon ensured a moderate cereal price rise, helping to contain food inflation.
- **Import Dependency:** Good rainfall reduces the need to import staple food items like pulses and wheat. E.g., In 2024, surplus wheat stock following adequate rains helped ease price pressure.
- **Rural Demand and Price Volatility:** Monsoon performance shapes rural incomes, influencing demand and supply chain stability. For example, in 2021, a strong kharif output due to good monsoon led to a fall in vegetable prices. However, if the current wet May delays or distorts the monsoon onset, it may lead to replanting, increased input costs, and eventual food price volatility, particularly for perishables and short-cycle crops.

### Way forward: Preparation for weather deviations and climatic instability

- With the climate pattern quickly uncertain, India should go against flexibility in both meteorological monitoring and agriculture.
- **Strengthen existing climate agriculture:** Promote drought and flood-flexible seed variants. Encourage micro-organisation, especially in rainy areas. Support crop diversification to reduce the risk of monsoon errors.
- **Increase weather forecast and communication:** Invest in real-time satellite-based monitoring systems and block-level forecasts. Farmers strengthen the spread of weather forecasts through mobile-based platforms.
- **Strengthen the radical infrastructure:** Expand cold chains and storage functions to reduce subsequent damage. Use the Food Price Stabilisation Fund to handle instability.
- **Institutional monsoon risk insurance:** Make the access and efficiency of crop insurance schemes. Connect insurance payments with remote measurement data for timely compensation.

### Conclusion

May 2025 has provided a living reminder that climate and weather patterns are no longer estimated in the traditional sense. While the absence of heat waves provides temporary relief to millions of people, long-term results guarantee on the monsoon system, agricultural productivity and food prices active political reactions.

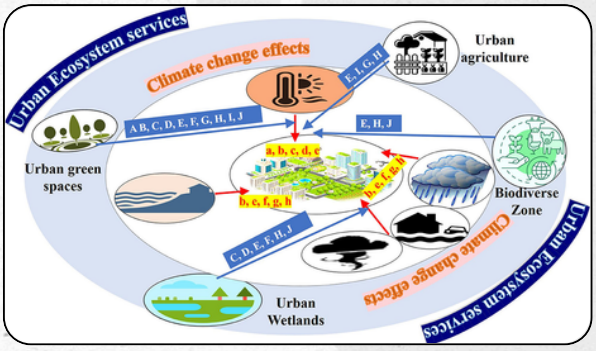
## 6. Development without saving urban biodiversity: a condition of permanent cities

Cities can only be development engines when breathing with lungs of biodiversity. Urbanisation, the identity of modern civilisation, is often observed as a sign of development. With almost half of the population living in cities, estimated that to will affect 70% by 2050, with rapid economic, social and political activity in urban areas. However, this urban spread quickly reaches a severe organic price. Under pressure of unplanned growth and unstable growth, erosion of biodiversity, not only a threat to flora and organisms, but also the very basis for healthy living and sustainable livelihoods.

This year's International Day for Biodiversity, celebrated every year on May 22, bears the subject: "Harmony with nature and sustainable development".
It resonates with a global need to cover the development goals with environmental protection.
Since the world looks at the 2030 Global Biodiversity Framework (GBF) goals and the UN's goal for sustainable development (SDG), especially the goal 11 (fixed cities and society), the integration of conservation of biodiversity in urban planning is no longer an alternative - it is mandatory.

## Urban biodiversity: quiet development of development

Biodiversity is not limited to rainforests or rural landscapes; It is rich - or once wealthy - in urban areas.
From the wetlands to the tree, the plan for the road, from the gardens of the house to the urban lakes, the cities historically coexist with nature. However, this relationship deteriorates rapidly.




## Why does urban biological diversity mean

### Ecological and health benefits

- **Urban-green locations are not decorative luxury** - they are organic requirements. Trees, wetlands and gardens provide important ecosystem services:
- **Climate control:** Trees reduce the effects of the city's heating island, down the temperature in the city, as seen in Frankfurt, where the green belt has reduced the temperature by 3.5 ° C.
- **Pollution control:** Green belts absorb the suspension of particulate matter, trap carbon and reduce noise pollution.
- **Flood restriction:** In the monsoon-exposed regions, such as vegetation aids, Mumbai or Chennai, in water treatment and flood control.
- **Mental and physical health:** By reducing access to green places, improving social health by reducing stress, encouraging physical activity and increasing social harmony.
- **Financial assessment:** According to Professor Theodore Andrane, urban trees offer services priced at $ 967,000 (£ 8 crore) per year. These include energy savings (through shade), stormwater processing, carbon capture and better air quality. Yet, despite such com

## Forest Survey of India (FSI) painted a worrying picture of green cover in Indian cities:

- **Mumbai:** 25.43%
- **Delhi and Hyderabad:** 12.6%
- **Bengaluru:** 6.85%
- **Chennai:** 4.66%
- **Ahmedabad:** 3.27%
- Between 2021 and 2023, Chennai and Hyderabad alone lost 2.6 km and 1.6 km away in forest cover. These disadvantages are not just statistical; They represent the shrinking lungs in our cities.
- Solutions and Strategies for Urban Biodiversity Conservation
- Kunming-Montreal Global Biodiversity Framework (GBF)
- The goal of GBF focuses on increasing urban green and blue spaces directly by 2030. 30% of land and marine biodiversity must be preserved through effective governance. It gives cities a roadmap to integrate biodiversity into urban development. 3-30-300 rules for an-habitat
- This urban planning prescription provides simple, action-rich guidelines:
- View of at least three trees from each house or workplace.30%:
- Minimum of three canopy covers in each neighbourhood.
- **300 meters:** Close to each house for a green place of at least 0.5 to 1 hectares.

- This model ensures equal distribution of green benefits in socio-economic groups and promotes urban-wide biodiversity.
- The city's biological diversity index (CBI)
- The International Council for the Local Environmental Initiative (IICLEI), the index uses 23 indicators to measure biodiversity in three domains:

## Presence of indigenous species

- Ecosystem services provided
- Management and protective efforts
- Cities such as Kochi, Gondia and Nagpur have begun to implement CBI, followed by local biological diversity strategies and action plans (LBSAPS) to guide policies and investments.

**Case Studies:** Learning from the Field

- Coimbedu Bazaar, Chennai: Once a chaotic, crowded area was turned into a biological diversity by Care Earth Trust. Green Initiative LEDs:
- 141 indigenous species
- 35 birds and 27 butterfly species
- This three-story forest model copied natural ecological systems compared to the popular Milwaukee method, which proves the power of indigenous solutions in urban contexts.
- Pallikaranai Marsh: When dismissed as a dump, this Quagmire in Chennai has now received the status of a Ramsar site and a reserved forest. This success emphasises the importance of a social lawyer, ecological restoration and legal protection in reviving urban biodiversity.
- **Gundi Lake Change:** An effort is underway to convert the Madras Race Club country into a lake for charging groundwater. Such measures not only restore ecosystems but also protect important urban resources.

**Challenges for the preservation of urban biological diversity**

- **Interventions:** Wetlands and lake beds, especially in cities such as Bengaluru and Hyderabad, have large illegal constructions.
- **Pollution:** The flow of sewage, plastic waste and industrial discharge reduces the ecological integrity of the water body.
- **Disadvantages of home garden:** When the independent houses cope with multi-floor apartments, coconut, mango, and jackfruit trees disappear.
- **Politics interval:** Urban planning rarely integrates the preservation of biodiversity into core laws or infrastructure projects.
- Political recommendations and forward
- **Legal mandate and planning reform:** Mandate Tree Plantation: Urban authorities such as Greater Chennai Corporation (GCC) should add permission from the building authorities to the requirements for wooden plantation on large plots.
- **Protect blue-green corridors:** Protect natural water bodies through regulatory rules and legal buffers. Restore the wetlands using nature-based solutions: Instead of engineering-ambitious solutions, use wetlands, biotstreams and phytoramnia.
- **Community engagement and consciousness:** Encourage residents' RWAS to gain ownership of green places. Promote roof gardens and kitchen gardens through supplements and training from horticultural departments. Include students, voluntary organisations and companies in biological diversity surveys, plantation stations and clean-up initiatives.
- **Strengthen control and enforcement:** Strict punishment for illegal tree felling and intervention in the water body. Regular monitoring is required when using GIS and remote measurement technologies. To build urban biological diversity cells into municipal organs, and to integrate ecological approaches into each project.
- Legal activity as a catalystRecent decisions from the Supreme Court, such as preventing the destruction of trees in the Gachibowli in Hyderabad, reflect the increasing legal concern for urban ecology.

Such intervention can catalyse systemic reforms when complemented by executive action.

### Conclusion

The idea that the development and preservation of biodiversity are mutually exclusive, a myth for dividends, is long overdue. When climate change is intensified and multiplied by urban health crises, cities should look inward for solutions. Biodiversity is not a beauty secondary - it is scaffolding in life, even in a metropolis.

## 7. Asiatic Lions in News: A Conservation Success Story Amidst New Challenges

### Why in the News?

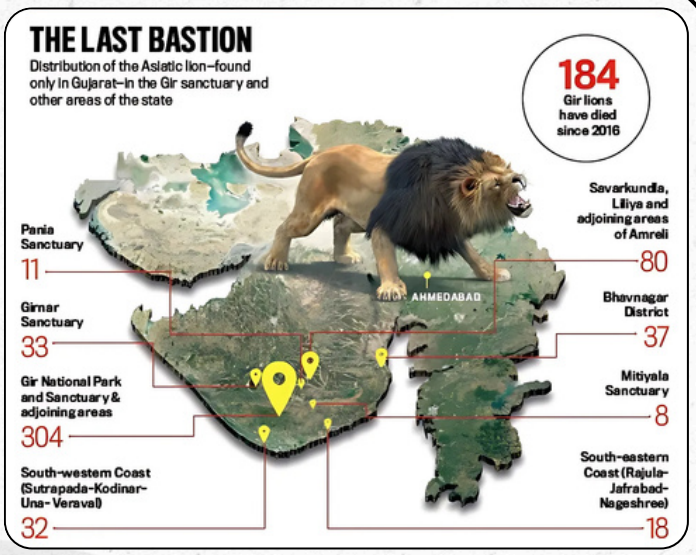
According to a recent report by the Gujarat Forest Department, the population of Asiatic Lions has increased by 32% between 2020 and 2025, reaching 891 individuals. This marks a significant conservation achievement for a species once on the brink of extinction.

### Background

The Asiatic Lion (Panthera leo persica), also known as the Indian or Persian lion, is one of the five big cat species found in India. Historically ranging across Western Asia and the Indian subcontinent, the species is now restricted solely to Gujarat's Gir landscape, making it one of the most geographically limited large carnivores in the world.

Key Milestones:

- **Lion Census:** First conducted in 1936; since 1965, the census has been conducted every 5 years by the Gujarat Forest Department.
- **Project Lion (2020):** A ₹2,900 crore initiative to secure lion habitats and build new conservation areas within Gujarat.




### Features of the Asiatic Lion

- Scientific and Conservation Details:
- **IUCN Status:** Vulnerable (not Endangered as often misreported)
- CITES Appendix I (strictly regulated trade)
- **Wildlife Protection Act, 1972:** Schedule I (maximum legal protection in India)
- Physical and Behavioural Traits:
- Slightly smaller than their African counterparts, with a less prominent mane
- Display territorial marking through roaring and scent-scraping
- **Polyoestrous breeders:** Females can come into estrus every 16 days and stay fertile for 4–8 days.

### Key Developments and Conservation Gains (2020–2025)Habitat Expansion:

| Year | 2020 | 2025 | Change |
|---|---|---|---|
| Lion population | 674 | 891 | +32% |
| Adult female | ~260 | 330 | +27% |
| Lion territory | 30,000 sq. km | 35,000 sq km | +16.67% |

### Spread to nine satellite regions, including:

- **Mityala:** 32 lions
- **New corridor:** 22 lions

### Challenges

- Despite population growth, conservation challenges persist and are evolving:
- Geographic Vulnerability:
- The entire population resides in a single state, making it ecologically fragile.

- A disease outbreak or natural disaster could wipe out the entire species.
- Human-Wildlife Conflict:
- 10% annual increase in villages reporting livestock losses due to lions.
- 15% increase in the number of livestock killed.
- Conflict risk rises as lions venture outside protected reserves.

### Lack of Genetic Diversity:

- A restricted population leads to inbreeding, which can reduce disease resistance and reproductive success.
- Delays in Translocation:
- Kuno-Palpur Wildlife Sanctuary (Madhya Pradesh) was identified by the Supreme Court for lion translocation in 2013.
- The project stalled due to interstate disagreement, delaying genetic diversification efforts.

### Way Forward

- Strengthening Project Lion:
- Accelerate the implementation of habitat corridors and new protected zones.
- Expand conservation zones beyond Gir to other parts of India, in line with Project Lion's goals.
- Scientific Translocation:
- Expedite the relocation of a sub-population to Kuno or other suitable habitats to mitigate extinction risk.

### Community-Based Conservation:

- Scale up compensation schemes for livestock loss.
- Promote ecotourism with local employment incentives to enhance community participation.
- Disease Monitoring and Veterinary Surveillance:
- Set up Rapid Disease Response Units (RDRUs) to counter threats like Canine Distemper Virus (CDV).
- Leverage the IBCA Platform:
- Use India's leadership of the International Big Cat Alliance (IBCA) to:
- Attract global funding
- Promote knowledge sharing
- Build international partnerships for lion conservation.
- Back2Basics: International Big Cat Alliance (IBCA)
- Launched by India in 2023
- Aims to protect all big cat species globally (Lion, Tiger, Leopard, Snow Leopard, Jaguar, Puma, and Cheetah)
- Supports research, conservation financing, and transboundary coordination

### Conclusion

The steady rise in the Asiatic lion population is a beacon of hope for India's conservation efforts. However, this success story must not lead to complacency. Addressing challenges like habitat saturation, disease threats, and human-lion conflict requires proactive policy interventions. The future of the Asiatic lion depends not only on numbers but also on the ecological safety net that India builds around them.

## 8. Operation Olivia

Recently, the Indian Coast Guard, under Operation Olivia, successfully protected a record 6.98 lakh Olive Ridley turtles during their mass nesting at the Rushikulya river mouth in Odisha.

### About Operation Olivia:

- **Launch:** Operation Olivia is an annual conservation mission by the Indian Coast Guard, started in the early 1980s.
- **Main Objective:** It aims to protect Olive Ridley turtles during their nesting season, from November to May.

- **Primary Locations:** The operation focuses on Odisha's coast, especially Gahirmatha Beach, Devi River mouth, and Rushikulya River mouth.
- **Turtle Nesting Scale:** Over 8 lakh turtles arrive annually at these sites to nest.
- **Surveillance Efforts:** The Coast Guard has conducted more than 5,387 surface patrols and 1,768 aerial missions.
- **Community Engagement:** Fishermen are encouraged to use Turtle Excluder Devices (TEDs) that allow turtles to escape fishing nets.

### Features:

- 5,387+ surface patrol sorties and 1,768+ aerial missions since inception.
- Extenstive community outreach, educational awareness, and MoUs with NGOs.
- Use of modern surveillance systems and inter-agency coordination for enforcement.
- About Olive Ridley Turtles:
- **Appearance:** Named for their olive-green shell, or carapace.
- **Diet:** They are Omnivores, though feeding mainly on jellyfish, crustaceans, and molluscs.
- **Nesting Behaviour:** Known for Arribada, a phenomenon where thousands of females come ashore simultaneously to lay eggs.
- **Habitat Range:** Found in warm waters of the Pacific, Atlantic, and Indian Oceans.

### Major Nesting Sites in India

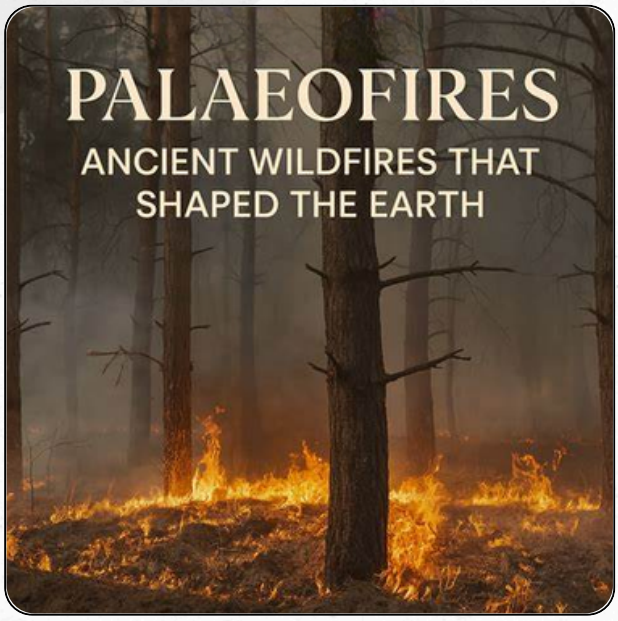
- **Scientific Name:** Lepidochelys olivacea
- **IUCN Status:** Vulnerable
- Habitat & Distribution:
- Found in warm waters of the Pacific, Indian, and Atlantic Oceans.
- Gahirmatha Marine Sanctuary, Odisha (largest site)
- Devi River mouth (discovered in 1981)
- Rushikulya River mouth (discovered in 1994)
- Biological Features.
- Smallest sea turtle species, weighing up to 45 kg, olive-coloured, heart-shaped carapace.
- **Arribada (mass nesting):** Thousands of turtles nest simultaneously, especially from Nov–Apr.
- **Omnivorous diet:** Feeds on crustaceans, jellyfish, algae, and molluscs.

## 9. Palaeofires

Recently, Scientists have traced evidence of palaeofires (ancient wildfires) from the Permian Period (~250 million years ago) in the Godavari Basin.

### About Palaeofires

- Palaeofires refer to wildfire events preserved in geological records, which play a crucial role in understanding Earth's past vegetation, climate evolution, and coal formation.
- The study spanned geological periods from the Late Silurian (443.8–419.2 million years ago) to the Quaternary (from 2.58 million years ago to present), highlighting how wildfires have historically shaped landscapes, vegetation patterns, and coal formation.
- The research combined advanced techniques like Palynofacies analysis, Raman Spectroscopy, Rock-Eval Pyrolysis, and FTIR Spectroscopy to examine microscopic organic matter and fossil charcoal in ancient sedimentary rocks.



- Palynofacies analysis revealed three main types of organic particles:
- Translucent Organic Matter (TrOM) – includes pollen and plant debris.
- Palaeofire Charcoal (PAL-CH) – direct evidence of vegetation burning.
- Oxidised Charcoal (OX-CH) – possibly reworked or transported post-burning.

**Key discovery:**

- The team successfully distinguished between in situ (on-site) and ex-situ (transported) charcoal, helping resolve a long-standing debate in geology regarding the origin of charcoal found in coal-bearing formations.
- Stratigraphic patterns (rock layering) revealed that:
- During regressive phases (sea-level drop), well-preserved, concentrated fire residues were found.
- During transgressive phases (sea-level rise), charcoal was more oxidised and dispersed, indicating environmental mixing and transport.
- High atmospheric oxygen levels in the Permian Period likely made the Earth more fire-prone, intensifying wildfire frequency and scale.
- The Raniganj Coalfield was one of the earliest Indian sites where macroscopic charcoal in coal seams suggested the presence of palaeofires in ancient peat-forming environments (palaeomires).
- These findings help understand how wildfires influence carbon cycling and long-term carbon sequestration, important for modern climate change mitigation strategies.

## 10. Red-Crowned Roofed Turtle

The red-crowned roofed turtle has returned to the Ganga River after nearly 30 years of absence.

- The Red-Crowned Roofed Turtle (Batagur kachuga) is one of the most endangered freshwater turtle species in the world.

- It is native to South Asia, particularly India, Bangladesh, and Nepal.
- Historically found in deep, flowing rivers with sandbar nesting sites, it now survives only in the Chambal River, with fewer than 300 individuals remaining.
- This species plays a crucial role in maintaining river ecosystem balance by controlling aquatic vegetation and contributing to nutrient cycling.
- Under the Namami Gange Mission and Turtle Survival Alliance India (TSAFI) project, 20 turtles (10 males, 10 females) were released into the Ganga River at Haiderpur Wetland and Hastinapur Wildlife Sanctuary.

**Threats:**

- The species is highly susceptible to major hydrological projects and their impacts on river flow dynamics and nesting beaches, and water pollution.
- Since human activities on and along the river are disturbing, the entanglement in fishing nets has led to a significant impact on subpopulations.
- Degradation of habitat due to pollution and large-scale development activities like water extraction for human consumption and irrigation, and irregular flow from the upstream dams and reservoirs are the main threats to these species.
- Sand mining and the growing of seasonal crops along the Ganga River are majorly affecting the sandbars along the river that are used by the species for nesting.

- Overharvesting the animal for illegal consumption and illegal international trade are other reasons for its extinction threat.

Over 11,000 tortoises and freshwater turtles have been seized in India from 2009-2019, according to a study by TRAFFIC, a global NGO working on trade in wild animals and plants and their conservation.

- Red-Crowned Roofed Turtle Conservation Status
- **IUCN:** Critically Endangered
- Wild Life (Protection) Act of 1972: Schedule I
- CITES: Appendix II

### Conservation :

- Protected Areas and Sanctuaries:
- The National Chambal Sanctuary (across Madhya Pradesh, Rajasthan, and Uttar Pradesh) provides a protected riverine habitat.

### Captive Breeding Programs:

- Organisations like the Madras Crocodile Bank Trust and Turtle Survival Alliance (TSA) have established captive breeding and assurance colonies.
- Hatchlings are reared in controlled environments and later released into the wild to boost wild populations.

### Awareness and Community Involvement:

- Local communities are engaged in conservation through education and incentives.
- Sustainable livelihood programs are introduced to reduce dependence on riverine resources.
- Scientific Monitoring and Research:
- Satellite telemetry and tagging programs help track movements and understand habitat use.

## 11. Tragedy in South Africa: 123 Vultures Die After Consuming Poisoned Elephant Carcass

**Why in the news?**

In a major ecological setback, 123 vultures died in Kruger National Park, South Africa, after feeding on an elephant carcass poisoned by poachers using agricultural pesticides. Authorities from SANParks and the Endangered Wildlife Trust have labelled this among the worst poisoning incidents in the park's history.

Kruger National Park is South Africa's flagship wildlife reserve.

Poisoning via agrochemicals is an emerging tool in poaching, affecting both targeted and non-targeted species.

The Convention on Migratory Species (CMS) and the Convention on International Trade in Endangered Species (CITES) offer global protection to vultures.

### What Happened

- The elephant was deliberately poisoned in a remote area of the park to harvest its parts for the illegal wildlife trade.
- As vultures descended to feed on the carcass, they consumed the pesticide-laced flesh, leading to mass mortality.
- 83 vultures were rescued using a "vulture ambulance" and are under treatment
- Ecological Role
- Scavengers that maintain ecosystem health by consuming decomposing carcasses.
- Prevent the spread of diseases like anthrax, rabies, and botulism.
- Decline in vulture population affects trophic balance and increases disease risk.

### Conservation Concerns

Vultures are vulnerable to secondary poisoning when they feed on poisoned carcasses.

- Poachers increasingly use agricultural toxins to kill high-value animals and deter detection by scavengers.
- Similar incidents have occurred in other parts of Southern and East Africa, raising alarms about transnational wildlife crime.

## Vulture Species

| Species | IUCN Status |
|---|---|
| • Cape Vulture | Vulnerable |
| • Lappet-faced Vulture | Endangered |
| • White-backed Vulture | Critically Endangered |
| • Hooded Vulture | Critically Endangered |

## Vultures in India

Vultures, once abundant across the Indian subcontinent, play a critical role in maintaining ecological balance.
They are nature's clean-up crew, helping to prevent the spread of diseases by feeding on dead carcasses.
However, the vulture population in India has seen a devastating decline over the last few decades, largely due to human-induced factors such as poisoning, habitat loss, and the use of veterinary drugs.

## Vulture Species in India:

- **White-rumped Vulture (Gyps bengalensis):** One of the most affected species, with populations declining by over 90% in the last 20 years.
- **Indian Vulture (Gyps indicus):** Another critically endangered species that is facing a sharp decline due to poisoning and habitat destruction.
- **Slender-billed Vulture (Gyps tenuirostris):** Also critically endangered, this vulture has a very restricted population.
- **Himalayan Vulture (Gyps himalayensis):** Found in the northern Himalayan regions, this species is also facing threats.
- **Cinereous Vulture (Aegypius monachus):** This species is considered near-threatened, but its population is also declining due to habitat destruction.


Himalayan Griffon vulture (*Gyps himalayensis*)
Bearded vulture (*Gypaetus barbatus*)
Source : http://19dim-chanion.chan.sch.gr
King vulture (*Sarcogyps calvus*)
(Source: Sandeep Dhumal)
Egyptian vulture (*Neophron percnopterus*)
Cinereous vulture (*Aegypius monachus*)
Eurasian Griffon vulture (*Gyps fulvus*)

## Reasons Behind the Decline

- The decline of vultures in India can be attributed to several human-induced threats:
- Diclofenac Poisoning of the main causes of vulture deaths in India, due to the use of diclofenac, a non-steroidal anti-inflammatory drug (NSAID) commonly used to treat livestock.
- When vultures feed on the carcasses of cattle that have been treated with diclofenac, they suffer from kidney failure and die. Diclofenac has been banned in India since 2006, but the damage has already been significant.
- **Habitat Loss:** Vultures often rely on open forests and grasslands to roost and nest. As urbanisation, agriculture, and deforestation spread, suitable habitats have become scarce. The loss of these habitats further jeopardises the survival of vultures.
- **Poisoning and Hunting:** In some areas, vultures are poisoned deliberately by poachers to prevent them from feeding on carcasses of wildlife that have been killed illegally. Poisoning (either direct or secondary through poisoned carcasses) remains a persistent threat.
- **Food Scarcity:** Vultures primarily feed on animal carcasses, particularly those of large herbivores like cattle. As the practice of culling livestock declines and natural prey populations dwindle, vultures face food shortages.

## Conservation Efforts

- Recognising the ecological importance of vultures, various conservation efforts are underway in India to protect and restore their populations:
- **Ban on Diclofenac:** The Indian government banned diclofenac for veterinary use in 2006, and efforts are underway to promote safe alternatives like Meloxicam, which is not toxic to vultures.

**Vulture Safe Zones (VSZs):** To combat the poisoning threat, several Vulture Safe Zones have been established across India, particularly in regions like Uttar Pradesh, Madhya Pradesh, and Rajasthan. These zones are monitored to ensure that vultures are protected from poisons.

- **Captive Breeding Programs:** Zoos and wildlife organisations have initiated captive breeding programs to create sustainable populations of vultures in the wild. These efforts are supported by global conservation organisations like
- BirdLife International and the Vulture Conservation Foundation.
- **Public Awareness Campaigns:** Environmental organisations are raising awareness about the importance of vultures in ecosystems, encouraging communities to avoid using harmful chemicals and to conserve vulture-friendly habitats.
- **Monitoring and Research:** Intensive research and monitoring of vulture populations are being carried out to understand the causes of their decline and develop better conservation strategies.

## Legal Protection

- Under the Wildlife Protection Act of 1972, vultures, along with other endangered species, are given legal protection. They are listed in Schedule I, which provides them the highest level of protection against hunting and trade.
- India has also signed the Convention on Migratory Species (CMS) and the Convention on International Trade in Endangered Species (CITES) to safeguard vulture populations from international trade and migration threats.

# 12. India's air pollution strategy needs Atma Nirbharata

- India's accomplishments in space technology, the Moon Mission, COVID-19 vaccines, Vande Bharat trains, and the Made in India campaign raised both national morale and technological prowess.
- India lags in combating air pollution - a critical environmental and public health challenge, showcasing the dual face of India's progress.

## Air Quality Monitoring:

- **1984:** National Ambient Air Quality Monitoring Programme (NAAQMP).
- **2010:** India developed its first indigenous air quality forecasting system - SAFAR (System of Air Quality and Weather Forecasting and Research), despite foreign resistance.
- **Delhi's CNG transition:** A landmark policy decision for cleaner urban transport.
- **EV transition:** Some Indian states (Maharashtra, Karnataka, Tamil Nadu) are now taking commendable steps towards rapid EV transition.

## Air Pollution: Global rankings and foreign influence:

Indian cities frequently rank among the world's most polluted, according to various studies. It raises the issues of data dependence, climate justice, and unequal climate sanctions on developing nations.

## Underutilisation of domestic resources:

- Pollution Control Boards often return unspent funds.
- Disproportionate allocation of resources to elite institutions and foreign-aligned collaborations.

## Central Pollution Control Board

**It is a statutory organisation constituted in September 1974, under the Water (Prevention and Control of Pollution) Act, 1974.** Further, CPCB was entrusted with the powers and functions under the Air (Prevention and Control of Pollution) Act, 1981. It serves as a field formation and also provides technical services to the Ministry of Environment and Forests under the provisions of the Environment (Protection) Act, 1986.

## Functions of the CPCB:

- To promote the cleanliness of streams and wells in different areas of the States by prevention, control, and abatement of water pollution. To improve the quality of air and to prevent, control or abate air pollution in the country.
- It advises the Central Government on matters related to the control and abatement of air and water pollution. It also coordinates the affairs of other State Pollution Control Boards, assists them, furnishes guidance, and helps in conflict resolution in case of any disagreement among them.
- **CPCB has delegated its powers and functions under the Water (Prevention & Control of Pollution) Act, 1974, the Water (Prevention & Control of Pollution) Cess Act, 1977,** and the **Air (Prevention & Control of Pollution) Act,** 1981, to the respective regional administration concerning Union Territories.

**CPCB develops Standards for:**

- Water Quality Criteria from different sources
- Standards for Emission or Discharge of Environmental Pollutants from various Industries **(Issued under Environment Protection Rules, 1986)**
- Standards for Treatment and Disposal of Bio-Medical Waste by Incineration
- Emission standard, Noise limits for Diesel Engines
- **Emission and Noise Limits of LPG and CNG Generator Sets**
- CPCB also formulates the Minimal National Standards (MINAS) specific for various categories of industries concerning their effluent discharge (water pollutants), emissions (air pollutants), noise levels, and solid waste.
- These standards are required to be adopted by State Governments as minimal standards.

## Domestic Research and Institutional Gaps:

- **Innovation and missed opportunities: Positive steps**: Anusandhan National Research Foundation (ANRF), which signals the government's commitment to strengthening research and innovation with industrial contribution.
- However, the question is: Why are developed countries, with no direct stake in India's air quality, so keen on studying it? Why are Indian institutes not leading such research?

## Dependence on foreign data:

- The shutdown of climate research in the US under the Trump administration highlighted the risks of relying on foreign datasets.
- **India's need:** Indigenous polar-orbiting satellites for global data to support local modelling.

### Framework:

- **Institutional collaboration and scientific strategy**: For example, India's world-class agencies like the **Earth System Science Organisation (ESSO) and the India Meteorological Department (IMD)** could collaborate with the **Central Pollution Control Board (CPCB)** for setting a global benchmark in air quality management and forecasting.
- **NARFI - Encouraging collaborative governance:** A new model under study - The National Air Quality Resource Framework of India (NARFI) must be designed to act as a catalyst for Inter-organisational collaboration, inter-disciplinary research.

### Evidence-based decision-making.

- **Promoting airshed-level pollution management:** Airshed management enables region-specific pollution control by considering cross-boundary air flow patterns, enhancing the effectiveness of policy interventions.
- According to the **National Institute of Advanced Studies, rethinking air quality strategies by scientifically integrating broader airshed factors** (rather than adopting city-centric approaches) is the need of the hour.
- **Health-centric and food security approach:** Future air quality strategies must align with net-zero goals, public health, and agricultural resilience.

### Conclusion

- True self-reliance requires leveraging India’s scientific talent, decentralising research and funding, developing indigenous data infrastructure, and creating a unified, science-based knowledge hub.
- India's air quality mission must reflect the same ambition as Make in India, with climate resilience, public health, and national innovation at its core.

## 13. Coastline Paradox

The coastline paradox reveals more than a peculiar measurement challenge: it underscores how science evolves with better tools. India's expansion, beach and beach contradictions: Navigation of the geometry of the measurement.

### Why in the news?

- In December 2024, the Union Home Ministry provided a striking announcement in the annual report 2023- 2024: India's coastline has increased from 7,516.6 km to 11,098.8 km, and the new figure is still being considered.
- This update provoked curiosity and debate, especially given some tectonic shift, regional connection or ocean exchange to physically replace the size or border of the Indian subcontinent.
- The clear growth lies in a geometric and cartographic phenomenon known as a "coastal contradiction" - a mathematical insight that suggests that a beach length can grow based on how the length of a beach is dramatically used.
- With high-resolution satellite data and increasing use of better geophysical technology, India's beach is now measured with maximum granularity, thus detecting their correct and accurate, sometimes lengthwise nature.

### Background

- **India’s Coastline: Traditional Understanding**
- For decades, India’s coastline has been recognised as spanning 7,516.6 km, encompassing:
- The mainland coastline (approximately 5,400 km),
- The coastline of the Andaman & Nicobar Islands, and
- The Lakshadweep Islands.
- This figure, derived using relatively coarse mapping techniques in the 1970s, served as the standard in official documents, defence planning, environmental regulations, and disaster management protocols.

## What Triggered the Change?

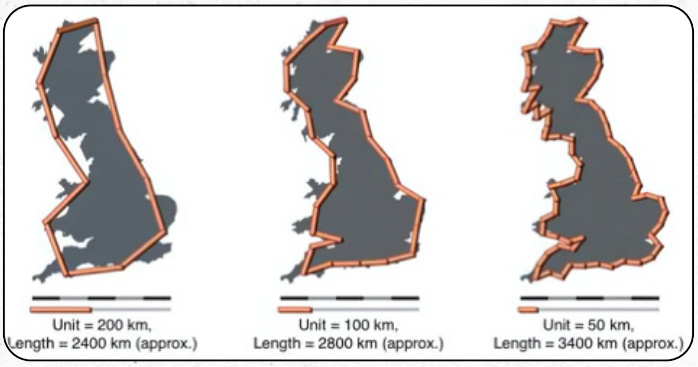
- No new land acquisition or geographical reconfiguration occurred.
- The change reflects a methodological revision - using high-resolution remote sensing, GIS (Geographic Information Systems), and finer-scale measurements.
- The coastline paradox - long a subject of mathematical and scientific curiosity - lies at the heart of this statistical transformation.

## Challenges Arising from the New Measurement

- Legal and Administrative Implications
- Coastal Regulation Zones (CRZ) are defined by high tide lines and distances from the coast. A longer, more detailed coastline could:
- Expand the scope of regulated zones, affecting land use and development.
- Causes disputes in defining jurisdiction between state and central agencies, or even district boundaries.

## Impacts on Maritime Security and Surveillance

- A longer coastline implies more area to monitor, especially in sensitive zones like:
- The Arabian Sea (Western Coast) with rising trafficking and infiltration concerns.
- The Bay of Bengal (Eastern Coast) is vulnerable to cyclones and illegal fishing. This could stretch the capacities of coastal security agencies, the Navy, and the Coast Guard.
- Environmental Governance Complexity
- A longer coastline increases areas under ecological scrutiny, especially mangroves, estuaries, and turtle nesting sites.
- The implementation of Environmental Impact Assessments (EIA) for coastal projects becomes more complex.
- Monitoring sea-level rise, erosion, and habitat destruction becomes resource-intensive.
- Planning and Infrastructure




- Coastal states like Tamil Nadu, Gujarat, Odisha, and Maharashtra may now need to revise:
- Port development plans.
- Blue economy strategies.
- Coastal tourism projects.
- Urban planning in coastal cities (e.g., Mumbai, Chennai, Kochi) may have to account for the revised coastline in hazard zonation.
- Discrepancies in International Data
- India's revision may diverge from data held by international bodies like the United Nations and, World Bank.
- Cross-country comparisons (e.g., with Indonesia, Australia) on maritime length or EEZ may become contentious.

## Way Forward

- Develop a Standardised Coastline Measurement Framework
- The Survey of India, in coordination with ISRO and the Ministry of Earth Sciences, should establish:
- Unified measurement standard, defining which scale/resolution should be used.
- Periodic re-measurement protocols to reflect environmental changes.
- Update Coastal Governance Instruments
- Coastal Regulation Zone (CRZ) Notification, 2019 and Shoreline Management Guidelines should be revised to:
- Reflect updated coastline measurements.
- Account for micro-level ecosystems (mangroves, coral reefs, dunes).
- Enhance Coastal Surveillance Infrastructure.

- Scale-up deployment :
- Integrated Coastal Surveillance System (ICSS).
- Automatic Identification Systems (AIS).
- Collaborate with fishermen communities as force multipliers.
- Use AI and geospatial analytics to manage longer coastline segments.
- Boost the Capacity of Coastal States
- Provide technical and financial support to coastal state governments to:
- Revise land records, disaster management plans, and infrastructure layouts.
- Develop real-time monitoring systems using drone and satellite data.
- Public Awareness and Education

### Promote awareness:

- **Policymakers:** To understand that length changes are methodological, not geographical.
- **General Public:** To avoid myths around "coastline expansion."
- **Students and Academia:** Use the paradox to popularise fractal geometry, GIS, and environmental studies.
- Leverage New Data for Blue Economy Planning
- Use updated coastline data to:
- Better map marine biodiversity hotspots.
- Plan sustainable fishing zones, marine protected areas (MPAs).
- Integrate with the SAGAR (Security and Growth for All in the Region) vision.

### Conclusion

India's modified beach length is not a cartographic error or geographical mystery, but a mathematical truth that appears in the beach contradiction. In the world, depending on accurate geo-sustainable data, the way we measure it shapes our understanding of space, politics and even certainty. An abstract mathematical curiosity acts as a fruit of coastal universal, which is a very real question with widespread implications for the environment, management, safety and development.

Squeezing the beach not only corresponds to scientific accuracy, but also ensures that national planning lies in realism, not in old estimates.

## News in shorts


## 1.1 The world's longest banana inflorescence is found in the forests of the Andaman Islands

- A species of wild banana, Musa indandamanensis, endemic to the Andaman and Nicobar Islands, has set a world record with an infructescence (fruit bunch axis) measuring 4.2 metres, the longest ever recorded among banana species globally.

### About the Musa indandamanensis:

- Musa indandamanensis is a wild banana species that is endemic to the Andaman and Nicobar Islands. It was first discovered in 2012 near the Krishna Nala reserve forest in Little Andaman and officially described in 2014.
- The species was later rediscovered in Campbell Bay, located in the Nicobar Islands.
- The discovery was led by **Dr. Lal Ji Singh, Head of the Botanical Survey of India's Andaman and Nicobar Regional Centre.** Due to its limited natural range and habitat vulnerability, it is listed as **Critically Endangered by the IUCN.**

### Features:

The species holds the world record for the **longest banana inflorescence, measuring 4.2 metres.** The plant typically reaches a height of about 11 metres, with stem girth varying by location: under **100 cm in Little Andaman and around 110 cm in Campbell Bay.**

- It bears **golden-yellow to orange fruits, which ripen into a golden-orange pulp containing many irregular-shaped seeds**.
- The plant thrives in moist tropical forests, typically near waterfalls and streams.
- It is considered a **valuable genetic resource for developing drought-resistant, disease-tolerant, and high-yielding banana varieties.**
- Specimens are showcased in botanical institutions such as the Indian Museum in Kolkata and the **Andaman and Nicobar Regional Centre.**
- For **ex-situ conservation, saplings have been planted in botanical gardens in Howrah, Prayagraj, and Port Blair.**

## 1.2 Mahadayi Water Dispute

Recently, a protest has erupted in Goa after a scientific paper on water availability and diversion in the Mahadayi basin reignited its long-standing dispute with Karnataka.

### About the Mahadayi River

- The Mahadayi (Mhadei) River originates from **Bhimgad Wildlife Sanctuary in the Western Ghats in Karnataka and flows westward to join the Arabian Sea at Panaji, Goa. Its basin is crucial for Goa's water needs,** covering much of North Goa.
- It has several tributaries, namely Rogaro, Kushavati, Nanorem, Nanuz, Valvota, and Mapusa. Kalasa Nala, Surla Nala, Haltar Nala, Poti Nala,
- The Salim Ali Bird Sanctuary is located on the island of Chorao in the Mandovi River.
- The river is central to a decades-long dispute between Karnataka and Goa, primarily over Karnataka's plans to divert water from the Kalasa and Bhandura tributaries to the Malaprabha basin for drinking water needs.
- The Mahadayi Water Disputes Tribunal (MWDT) in 2018 allocated 13.42 tmc (380 Mcum) of water to Karnataka, including permissions for limited diversion from the Kalasa (1.72 tmc) and Bhandura (2.18 tmc) streams.

### Mahadayi Water Dispute:

- **Karnataka's Project:** Proposed the Kalasa-Banduri Nala to divert water to the Malaprabha basin.
- **Tribunal Setup:** The Mahadayi Water Disputes Tribunal (2010) addressed disagreements.
- **2018 Verdict:Karnataka:** 13.42 tmcft (1.72 from Kalasa, 2.18 from Bhandura).
- Goa: 24 tmcft (plus 9.395 tmcft for existing use).
- **Maharashtra:** 1.33 tmcft.
- **Concerns:** Goa feared impacts on Mandovi navigation; the tribunal cited that tidal flow ensures stability.
- **Legal Status:** Both states have challenged the verdict in the Supreme Court.

## 1.3 Chandola Lake

Recently, the Gujarat High Court upheld a demolition drive undertaken by state authorities in Ahmedabad's Chandola Lake area.

### About Chandola Lake

It is an artificial lake located in Ahmedabad, Gujarat.

- It was established by the wife of a Mughal Sultan of Ahmedabad named Tajn Khan Nari Ali.
- The lake covers a land area of around 1200 hectares and is a major source of water for nearby industrial and residential areas.
- It is circular.
- The Kharicut Canal Scheme, which is one of the oldest irrigation schemes of Gujarat, was constructed with the main purpose of providing irrigation to 1,200 acres of rice land near Chandola Lake in Ahmedabad.
- The lake is separated into two parts called the Chota Chandola and the Bada Chandola lake.
- It is also home to cormorants, painted storks, and spoonbill birds.

# 1.4 Schistura densiclava: Meghalaya's New Cave-Dwelling Fish

**Why is Shistura Deniclava in the news?**

A new species of cave-dwelling loach, named Schistura densiclava, has been discovered from the Krem Mawjymbuin cave in the East Khasi Hills district of Meghalaya.

## Background

- **Species information:** The Shistura Dansiclava family belongs to Namecheyidae, a group of freshwater crayfish living at the bottom of the streams.
- **Housing:** At 18 ° C with low oxygen, a cool, fast liquid subtrain current was found inside the cave, about 60 meters inside the cave.
- **Physical functions:** a thick deep bandage near the yellow-yellow body and back springs with vertical black colours (hence the name "Deniclava" which means "thick strip"). Sexual duality is observed, with different body and tag patterns in men and women.
- **Endemism:** This species is spatially for a single cave system, which makes it vulnerable to environmental changes.

## Challenges

- **Housing specificity and vulnerability:** Being limited to a cave system means that species are exposed to housing disorders, pollution or climate change effects.
- **Low oxygen environment:** Adaptation for low oxygen water fish makes it unsafe for changes in water quality.
- **Lack of consciousness:** Cave ecosystems are often minor studies and are not known, which reduces neglect of care in the conservation efforts.
- **Human effects:** mines, tourism and pollution in Meghalaya threatened the delicate cave ecosystem.

## The way forward

- **Protection and conservation:** NEP cave and the surrounding area as a protected habitat to prevent the decline of the habitat. Further research: conduct organic and genetic studies to understand the size, reproduction and adaptability of the nature of species.
- **Environmental monitoring:** Monitor water quality and cave status regularly to detect and prevent organic dangers.

- **Awareness and community engagement:** Education of local communities and stakeholders, which is about the importance of preserving subterranean biodiversity.
- **Sustainable tourism:** Regulation of cave tourism to reduce disorders and environmental effects.

### Conclusion on Schistura densiclava:

The discovery of Schistura densiclava in Meghalaya's Krem Mawjymbuin cave highlights the rich and unique biodiversity of underground ecosystems. This fish's ability to live in low-light, low-oxygen cave environments while retaining pigmentation and eyesight makes it special among cave species.

## 1.5 Indian Grey Wolf

Indian grey wolves, apex predators and ecological regulators of grasslands, are facing rapid population decline due to rising threats from feral dogs.

### About the Indian Grey Wolf (Canis lupus pallipes):

- The Indian Grey Wolf is a subspecies of the Grey Wolf, found in India, Southwest Asia, and parts of the **Middle East.** It has a brownish-grey coat with black and white markings and is less vocal, living in **small packs of 2 to 6 members**.
- This wolf is nocturnal, meaning it hunts mainly at night, preying on small animals like **chinkaras (gazelles), rodents, and sometimes livestock.**
- It lives in scrublands, grasslands, and semi-arid regions, and prefers warm climates. As an apex predator of the grasslands, it plays a vital role in the ecosystem by controlling the population of herbivores and smaller predators.
- The species is under threat due to habitat loss, **disease from stray dogs, crossbreeding, and human conflict.**


**Distribution:** From Israel in the west to the Indian subcontinent in the east.

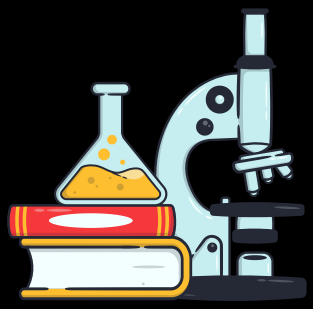
### Conservation status

- **IUCN:** Endangered
- **CITES:** Appendix I (highest international protection)
- **Wildlife Protection Act, 1972:** Schedule I (maximum legal protection)

### Kadbanwadi Grassland

- Located in Indapur tehsil, Pune, the Kadbanwadi grassland spans over 2,000 hectares and supports species such as the Bengal fox, striped hyena, Brahminy kite, and Indian grey wolf.

# SCIENCE AND TECHNOLOGY



## 1. Operation Sindoor: From HAMMER to BrahMos, the precision-guided long-range Weapons in the Indian military's arsenal

### Operation Sindoor

- India successfully conducted Operation Sindoor, a joint military operation involving the Army, Navy, and Air Force, targeting terrorist camps at nine locations in Pakistan and Pakistan-occupied Kashmir (PoK).
- The strikes were a response to the April 22 terrorist attack in Pahalgam, attributed to ISI-backed militant groups. Precision munitions were used to hit four targets in Pakistan (Bahawalpur, Muridke, Sialkot, Sarjal) and five in Pok, to dismantle terrorist infrastructure operating with impunity.

### Operation Sindoor

- Redefining the Causal Link Between Pakistan and Terrorism
- India framed Operation Sindoor as a response not just to the recent Pahalgam attack, but to a two-decade-long pattern of Pakistan-sponsored terrorism since the 2001 Parliament attack.
- It highlighted the role of groups like Jaish-e-Mohammed (JeM) and Lashkar-e-Taiba (LeT), both UN-designated terrorist groups.
- Cited examples like Sajid Mir and the FATF's role in forcing Pakistan to take symbolic actions without dismantling terror networks.
- Targeting key sites like Markaz Subhan Allah, Markaz Taiba, and Mehmoona Joya undermines Pakistan's narrative that newer proxy groups (like TRF) are disconnected from Islamabad.
- Targeting Terror, Not the Pakistani Military
- India continues its doctrine of hitting terrorist infrastructure without targeting Pakistan's conventional military.
- The strikes were labelled as "non-military" and "preemptive", similar to the approach in the 2016 surgical strikes and 2019 Balakot airstrike.
- However, Sindoor marks an escalation in depth and scale, striking targets deep within Pakistan, not just in PoK.
- Calibrated Action with Strategic Restraint
- India emphasised that Sindoor was "focused, measured, and non-escalatory", showing it does not seek full-scale war.
- However, it sent a clear message that Pakistan's nuclear deterrence posture no longer shields its terror infrastructure.
- Future escalations by Pakistan could trigger Indian retaliation on military assets, pushing the threshold higher.

### What Makes Operation Sindoor Different

#### Unprecedented Scale and Reach

Nine locations targeted across Pakistan and Pakistan-occupied Kashmir (PoK), including Muzaffarabad, Bahawalpur, Rawalakot, Jhelum, and more.

- 24 missile strikes launched in a single day — India's largest single-day strike so far.
- Over 70 militants were killed and 60 were injured, sending a powerful deterrent message.
- Unlike Balakot (2019) and Uri (2016), which targeted one or a few sites, Sindoor reflects a massive, coordinated offensive.
- Wider Target Spectrum and Deep Strikes
- India signalled that no part of Pakistan is off-limits, targeting deep inside the Pakistani heartland.
- Shows a clear shift in policy — from reactive to pre-emptive and assertive.
- Military analysts noted this operation crossed previous thresholds in terms of both geography and intensity.

## Tri-Services Coordination and Advanced Weaponry

- Indian Army, Navy, and Air Force all took part, demonstrating joint operational strength.
- Strikes were highly coordinated, time-bound, and used real-time UAV confirmation to verify destruction, marking a new benchmark in precision warfare.
- Strategic Red Line Shift
- India refrained from hitting Pakistani military installations to avoid conventional escalation, but the depth and scale of the strikes altered the red line.
- The operation has redefined the costs Pakistan may have to bear for continuing cross-border terrorism.
- India hits with Nari Shakti, Human-Centric Messaging Named "Sindoor" to honour the victims of the Pahalgam attack, particularly widows of the 26 slain.
- India carried out Operation Sindoor, targeting 21 terror camps across nine locations in Pakistan and Pakistan-occupied Kashmir (PoK) in response to a recent terrorist attack in Pahalgam.
- The Indian Armed Forces used precision strikes with niche-technology weapons and carefully chosen warheads to minimise collateral damage.
- Although specific weapons were not disclosed, the military's arsenal now includes advanced precision-guided long-range weapons and drones, such as loitering munitions.
- Precision Guided Munitions (PGMs)
- PGMS, also called smart weapons or smart bombs, are missiles or bombs designed to accurately strike specific targets while minimising collateral damage.

## Features of PGMs

- **Advanced Guidance Systems:** PGMs use GPS, laser guidance, infrared sensors, or radar to track and hit targets precisely.
- **Mid-Flight Course Corrections:** They can adjust their trajectory mid-air to account for weather, wind, or targeting errors.
- **Reduced Collateral Damage:** By targeting with precision, PGMs limit harm to civilians and nearby infrastructure.
- **Increased Accuracy:** They offer greater accuracy than unguided munitions, with a much smaller margin of error.
- **Versatile Deployment:** PGMs can be launched from aircraft, ships, ground platforms, or UAVs, enhancing their operational flexibility.
- Cutting-Edge Precision Weapons in India's Military Arsenal
- Two weeks after Pakistani terrorists killed 26 civilians in Pahalgam, India launched Operation Sindoor, conducting airstrikes on nine locations in Pakistan and PoK targeting terrorist infrastructure.
- The Indian Air Force (IAF) deployed Rafale jets, which used SCALP missiles for deep strikes and HAMMER missiles for medium-range precision targets.

## HAMMER:

- Highly Agile and Manoeuvrable Munition Extended Range (HAMMER) air-to-ground precision-guided weapon system for the Rafale fighter aircraft has a range of up to 70 km and can also be fitted to bombs and various guided systems.
- Built by the French aerospace, defence, and security corporation Safran, the HAMMER weapon system is highly versatile and can be used for precision strikes against a range of targets in medium-range tactical operations.
- According to the Safran Group, the system is autonomous and insensitive to jamming and can be launched from a low altitude over rough terrain.

## SCALP

- SCALP-EG (Système de Croisière Autonome à Longue Portée — Emploi Général), also known as Storm Shadow in the UK, is an air-launched cruise missile designed for long-range deep strike missions with stealth features.
- Manufacturer and Range
- Developed by MBDA, a European multinational defence company, SCALP has a range of around 450 km and is capable of low-altitude flight, making it hard to detect.
- Operational Versatility
- It can be deployed at night and in all weather conditions, providing the Indian Air Force with high operational flexibility.
- Advanced Navigation and Targeting
- SCALP uses a combination of INS, GPS, and terrain referencing for navigation, allowing it to penetrate heavily fortified targets like bunkers and ammunition depots with high precision

## BRAHMOS: India's Supersonic Cruise Power

- These supersonic cruise missiles, which have been operationalised in all three defence services, are built by BrahMos Aerospace, a joint venture between India's Defence Research.
- Development Organisation (DRDO) and Russia's NPO Mashinostroyeniya.
- BrahMos missiles operate at close to Mach 3 speed in the cruise phase, which ensures reduced flight time, lower dispersion of targets, and quicker engagement time and non-interception.
- The missile operates on a 'Fire and Forget Principle', adopting various flight paths on its way to the target. As per its website, cruising altitude could be up to 15 km and terminal altitude as low as 10 metres. The missile carries a conventional warhead weighing 200-300 k.g.

## METEOR: Next-Gen Air-to-Air Superiority

- The Meteor is a Beyond Visual Range Air-to-Air Missile (BVRAAM) developed by MBDA, effective even in dense electronic warfare environments.
- It uses a solid-fuel 'ramjet' motor, providing continuous thrust and enabling the largest 'No Escape Zone' among air-to-air missile systems.

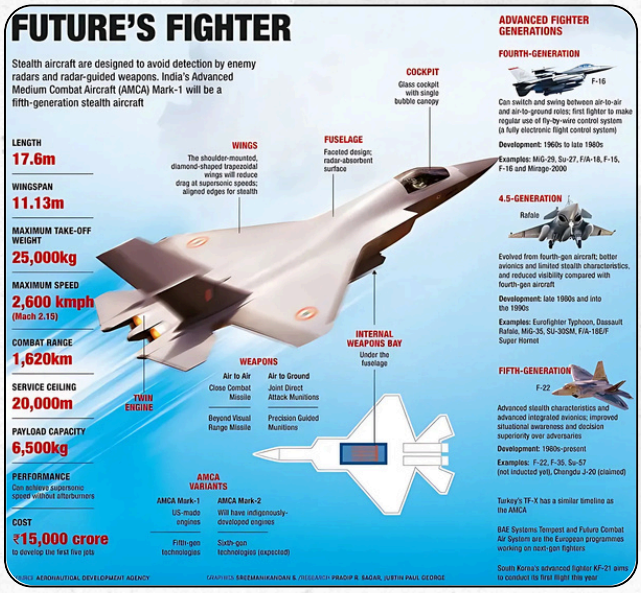
## Loitering Munition

- A notable aspect of Operation Sindoor was the deployment of loitering munitions, also known as 'suicide drones.'
- These unmanned aerial vehicles are designed to hover over a target area, identify threats, and engage them precisely.
- Unlike traditional missiles, loitering munitions can wait for the optimal moment to strike, reducing the risk of collateral damage. Once they lock onto a target, they crash into it and explode.
- These weapons are often called suicide drones, kamikaze drones, or exploding drones.
- Global Space Exploration Summit GLEX 2025
- India will host the 12th edition of the Global Space Exploration Conference (GLEX 2025) from 7th to 9th May 2025 in New Delhi.

# 2. India's AMCA Stealth Fighter Jet: A New Dawn in Indigenous Airpower

## Why It Is in the News

- India's ambition to join the elite club of nations fielding fifth-generation fighter aircraft received a significant boost when Defence Minister Rajnath Singh approved the execution model of the Advanced Medium Combat Aircraft (AMCA) programme.
- This long-anticipated move officially sets in motion the country's most sophisticated indigenous military aviation initiative to date.
- Backed by a budget exceeding ₹15,000 crore and a vision to deliver operational capability by 2035, the AMCA marks India's definitive leap into stealth-era air combat.




## Background: From Light Fighters to Stealth Machines

- India's journey toward a fifth-generation fighter aircraft began with its experience in the Light Combat Aircraft (LCA) Tejas programme.
- While the LCA helped establish indigenous competence in jet design and avionics integration, the AMCA project is an evolutionary jump rather than a linear progression.
- Approved in principle by the Cabinet Committee on Security (CCS) in early 2024, the AMCA builds upon decades of experience gathered by institutions like the Aeronautical Development Agency (ADA) and Defence Research and Development Organisation (DRDO).
- In contrast to the LCA Mk I/II, which were fourth-generation aircraft with limited stealth and performance envelopes, AMCA aims to match or rival cutting-edge platforms like the F-35 (USA), Sukhoi Su-57 (Russia), and Chengdu J-20 (China).

## Key Features and Capabilities

The AMCA is envisioned as a twin-engine, stealth-capable, multi-role fighter optimised for air superiority, deep-strike, and electronic warfare. Here are the standout features:

Stealth Design and Reduced Radar Signature

- Internal weapons bay to avoid external radar reflections
- Special radar-absorbent material (RAM) coating
- Angular, faceted surfaces for radar deflection

### Advanced Digital Architecture

- **Sensor Fusion:** Integrated display of radar, infrared, and electronic intelligence
- **AI-Driven Electronic Pilot:** Decision-aid systems for reduced pilot workload
- **Integrated Vehicle Health Monitoring (IVHM):** Predictive diagnostics and real-time maintenance updates

## High Survivability and Combat Efficiency

- **Supercruise Capability:** Sustained supersonic flight without afterburners
- **Net-Centric Warfare Suite:** Seamless coordination with UAVs, AWACS, and ground stations
- **Internal Weapon Load:** Up to 1,500 kg of long-range air-to-air missiles and smart munitions

- Internal Fuel Capacity: 6.5 tonnes for enhanced combat radius

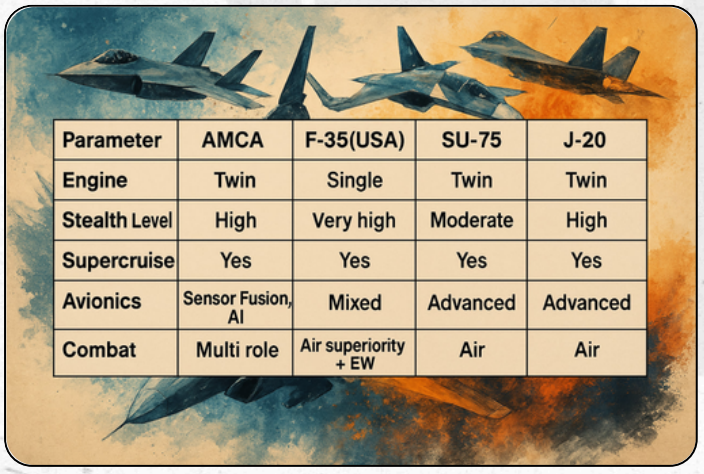
With these specifications, AMCA will offer deep-penetration strike ability, rapid engagement, and survivability in contested airspace.

## Strategic Significance

The AMCA is not just another military project-it's a strategic enabler for India's broader objectives:

- **Atmanirbhar Bharat in Defence:** Reduces reliance on foreign fighters like Rafale, Su-30 MKI upgrades, or F-21 deals
- **Aerospace Ecosystem Development:** Encourages public-private partnerships and boosts the domestic manufacturing base
- **Force Multiplication:** Operates alongside Tejas Mk II, Su-30MKI, and Rafale to create a potent multi-layered air combat grid
- **Geopolitical Signalling:** Positions India as a technologically advanced power with indigenous stealth capability

## Comparison with Global Fifth-Gen Fighters



| Parameter | AMCA | F-35(USA) | SU-75 | J-20 |
|---|---|---|---|---|
| Engine | Twin | Single | Twin | Twin |
| Stealth Level | High | Very high | Moderate | High |
| Supercruise | Yes | Yes | Yes | Yes |
| Avionics | Sensor Fusion, AI | Mixed | Advanced | Advanced |
| Combat | Multi role | Air superiority + EW | Air | Air |

While the AMCA may initially fall short of the F-35's scale or the J-20's deployment numbers, its design philosophy aligns well with India's unique strategic and economic needs. Its compact, stealth-optimised design makes it suitable for operations over diverse terrains-from the Himalayas to the Indian Ocean.

## Challenges Ahead

### Engine Development

- India currently lacks a powerful, stealth-compatible jet engine. The indigenous Kaveri engine was shelved due to performance shortfalls.
- Currently, a joint venture with a foreign OEM (potentially Safran, Rolls-Royce, or GE) is being explored. The required engine must deliver high thrust, low infrared signature, and high reliability.

## Timeline Pressure

- With the prototype delivery aimed for 2035, the AMCA faces a tight 10-year development window. Previous delays in the Tejas program serve as a cautionary tale; timely component development and vendor integration are critical.

## Industrial Collaboration

- Ensuring synergy between ADA, DRDO, HAL, and private sector players like L&T, Tata Advanced Systems, and Bharat Forge is crucial. Supply-chain bottlenecks and technology transfer hurdles could pose a delay.

## Way Forward

- Strategic Partnerships for Engine and Avionics
- Fast-tracking negotiations with global OEMs for engine and radar technologies
- Ensuring technology transfer clauses that support future indigenous upgrades
- Strengthening Private Industry Role
- Opening up AMCA production under a public-private partnership (PPP) model
- Establishing Tier-1 and Tier-2 vendor ecosystems for components like composite airframes, AESA radars, and avionics modules
- Dedicated Budget and Oversight
- Ensuring the timely allocation of the ₹15,000+ crore development budget
- Appointing a single-point programme management office for progress tracking and issue resolution.

**Human Capital and Skill Development**

- Training engineers, designers, and pilots for the fifth-generation platform handling
- Involving IAF test pilots from the early stages for continuous feedback.

**Conclusion: A Flight Path Toward Sovereign Airpower**

The AMCA is more than a fighter jet- it represents India's coming-of-age moment in military aviation. It is a product of strategic necessity, technological ambition, and national pride. If executed efficiently, it could make India only the fourth nation after the US, Russia, and China to field a fifth-generation stealth aircraft developed largely in-house. By 2035, as the Indian Air Force retires legacy platforms like MiG-21s and upgrades its Rafale-Su-30 mix, the AMCA will be poised to become the crown jewel of Indian airpower, symbolising.

# 3. New Cambrian sea creature, Mosura fenton, Ii discovered in Canada

**Why in the News?**

Scientists have discovered a new sea creature from the Cambrian period named Mosura fentoni, found in Canada's Burgess Shale, one of the most important fossil sites in the world.

## About Mosura fentoni:

- **Discovery Site:** Mosura fentoni was discovered in Canada's Burgess Shale, a well-known Cambrian fossil site.
- Biological Group: It belongs to radiodonts, an extinct group of marine predators related to insects, crabs, and spiders.
- Size and Structure: The creature is very small (1.5 to 6 cm) but has a long, complex body made of 26 segments.

## Body Zones:

- The neck supports the head.

- The mesotrunk has six paddle-shaped flaps for swimming, like mini propellers.
- The posterotrunk has up to 16 segments with rows of thin gills and small flaps.
- Breathing Adaptation: The gills in the posterotrunk likely acted as a breathing zone, similar to the tails of horseshoe crabs that help collect oxygen.

## Evolutionary Importance

- **Arthropod Evolution:** The find helps explain how early arthropods (like modern insects and crustaceans) evolved diverse forms.
- **Advanced Abilities:** Despite its small size, M. fentoni had specialised swimming and breathing systems.
- **Evolutionary Position:** It is placed near the base of the huriid family in the radiodont family tree.
- **Segment Specialisation:** Its body shows early examples of segment division for specific tasks, a trait common in modern arthropods.
- **Key Insight:** The discovery suggests that complex body planning in arthropods began much earlier than previously thought.

## Back2Basics: Cambrian Period:

- The Cambrian Period is a division of the geologic time scale that lasted from approximately 541 million to 485 million years ago.
- It is the first period of the Palaeozoic Era and follows the Precambrian Aeon.
- It is significant because it marks a time when most major animal groups first appeared in the fossil record.
- This period is characterised by the development of complex, multicellular life, especially in marine environments.

- The Cambrian Explosion refers to a relatively short evolutionary event, occurring around 541 million years ago, during which a vast number of new animal species and body plans rapidly emerged.
- Within about 20 to 25 million years, nearly all major animal phyla (like arthropods, molluscs, and chordates) appeared.
- This explosion of biodiversity is seen as one of the most important evolutionary events in Earth's history.

## 4. 'Golden Dome' Missile Defence System

**Why in the News?**

- US President Donald Trump announced that he has shortlisted a design for a powerful new missile defence shield called the 'Golden Dome'.

### About the Golden Dome Project:

- **Project Launch:** It is a proposed missile defence shield announced by Donald Trump.
- **Development:** It is being led by Michael Guetlein of the US Space Force, with support from SpaceX, Palantir, and Anduril.
- **Timeline:** The system is projected to cost $175 billion and is expected to be operational by January 2029.
- **Purpose:** It aims to protect the US from long-range missile threats, particularly ICBMs from China and Russia.
- **Defence Layers:** The system will combine technologies deployed on land, at sea, and in space for comprehensive coverage.

### Key Features:

- **Space-Based Interceptors:** Thousands of orbiting satellites will carry and launch interceptors from space, offering global missile defence.

- **Missile Tracking:** Real-time detection using space-based sensors will allow the system to track enemy launches within seconds.
- **Altitude and Reach:** Drones and satellites operating at 15,000 meters or more will stay above many conventional air defences.
- **Payload Flexibility:** Capable of deploying surveillance drones, kamikaze UAVs, cruise missiles, and air-to-air missiles depending on mission needs.
- **Modular Adaptability:** The system is designed for multiple applications, including military operations, public security, and maritime surveillance.

### Parallel Examples:

- **Iron Dome (Israel):** A short-range missile defence system using ground-based radar and Tamir interceptors for protection against rockets and UAVs.
- **"Star Wars" Initiative (1980s):** President Ronald Reagan's Strategic Defence Initiative (SDI) aimed to destroy nuclear missiles from space using lasers and interceptors.
- **DARPA's Gremlins Project:** Explored mother ship-launched drones; Golden Dome builds on this idea at a larger and space-based scale.

# News in shorts

## 1.1 About Global Space Exploration Summit (GLEX) 2025

GLEX 2025's theme is “Reaching New Worlds: A Space Exploration Renaissance,” emphasising innovation, inclusivity, and international cooperation in space science.

**GLEX 2025 is jointly organised by:**

International Astronautical Federation (IAF) – the world’s leading space advocacy body.

Indian Space Research Organisation (ISRO) – as the primary host.

Astronautical Society of India (ASI) – as the co-host.

The conference represents a milestone in India’s expanding global space leadership, highlighting its transition from a regional space power to a key international player.


### About the IAF (International Astronautical Federation)

Founded in 1951, the IAF has over 500 members from 78 countries, including major space agencies, private firms, research institutes, and universities.

Its motto, “Connecting @ll Space People,” and vision, “A space-faring world cooperating for the benefit of humanity”, guide its efforts to promote global space cooperation.

The GLEX series, organised by IAF, serves as a platform to share programmatic, technical, and policy insights and facilitate collaborative space missions across nations.

## 1.2 Scientists create the first ‘Pangenome’ of Asian Rice.

**Why in the News?**

Chinese researchers have developed a first-of-its-kind rice pangenome by integrating genetic data from 144 wild and cultivated rice varieties from Asia.

### About the Rice Pangenome:

- A pangenome includes both the core genes shared by all members of a species and the unique genes found in specific varieties, offering a complete view of genetic diversity.
- The rice pangenome was built using data from 144 wild and cultivated rice varieties across Asia, making it the first comprehensive genomic resource for rice.
- Researchers led the project from the Chinese Academy of Sciences to explore rice evolution and domestication.
- Researchers used PacBio HiFi sequencing and advanced computational tools to detect variations, uncovering 3.87 billion base pairs of genetic material previously missing from the standard rice genome.

### Key Findings:

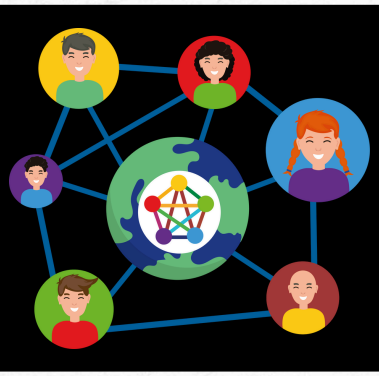
- The study identified 69,531 genes, including 28,907 core genes common to all varieties and 13,728 genes unique to wild rice.
- About 20% of all genes were exclusive to wild rice, offering potential for trait improvement in cultivated varieties.
- The study confirmed that all Asian cultivated rice (Oryza sativa L.) originated from Or-IIIa, a subgroup of Oryza rufipogon.

- Japonica rice was first domesticated in China, while indica rice arose later via hybridisation as japonica spread across Asia.
- Wild-specific genes were linked to environmental adaptation, phenotypic flexibility, and regenerative traits, offering insights for future crop resilience.
- Bridging the genetic gap between wild and cultivated rice could lead to climate-resilient and high-yield varieties.

**India's Contribution:**

- Rice is India's staple food and the main monsoon crop, grown from June to September.
- In 2024–25, India produced a record 220 million tonnes of rice over 51,000 hectares, with an average yield of 4.2 tonnes per hectare.
- The Indian Council of Agricultural Research (ICAR) has developed two genome-edited rice varieties -Samba Mahsuri and MTU 1010 -known for higher yields and drought resistance; these are currently under testing.

# SOCIAL ISSUE



## 1. India's Total Fertility Rate at 2.0: Demographic Dividend

- The Total Fertility Rate in India remains at 2.0; Bihar records the highest count, and Bengal the lowest. The **Sample Registration System (SRS) Statistical Report 2021, released by the Registrar General of India (RGI),** presents a crucial snapshot of India's demographic transition.
- It confirms that the **Total Fertility Rate (TFR), the average number of children born to a woman in her lifetime, stood at 2.0 in 2021, the same as 2020**.

### Highlights:

- **National Average (2021):** 2.0
- **Highest:** Bihar (3.0)
- **Lowest:** West Bengal and Delhi (1.4 each)

### Age Composition Trends:

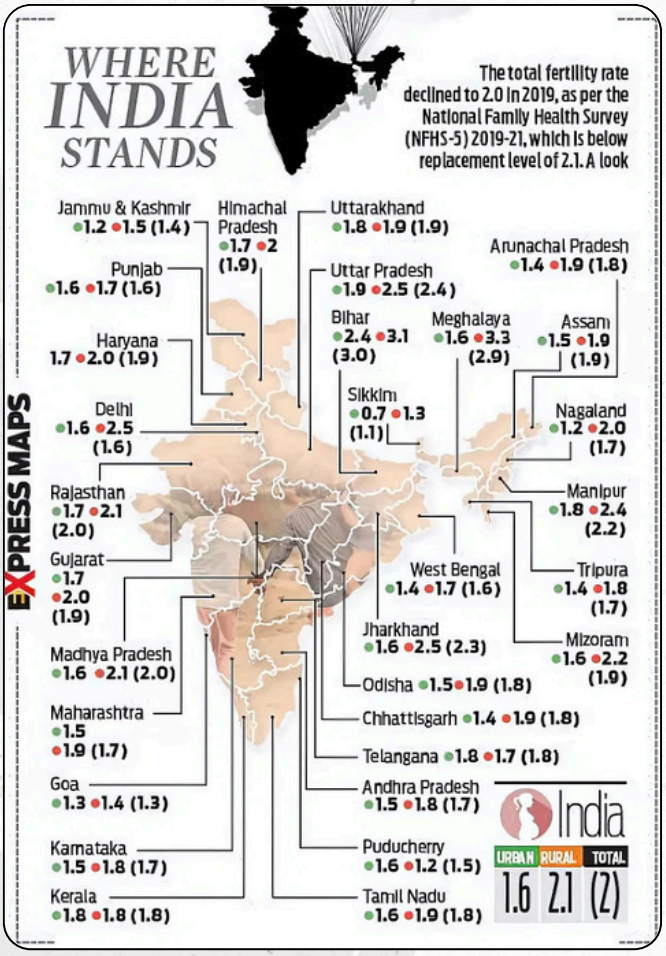
- **0–14 age group:** Down from 41.2% (1971) to 24.8% (2021)
- **15–59 (working-age):** Up from 53.4% to 66.2%
- **60+ (elderly):** Up from 6% to 9%, with 65+ alone rising from 5.3% to 5.9%

### States with the Highest Elderly Populations

- Kerala (14.4%), Tamil Nadu (12.9%), Himachal Pradesh (12.3%)

### States with Lowest Elderly Populations:

- Bihar (6.9%), Assam (7.0%), Delhi (7.1%)




- **(Females):** Rose from 19.3 years (1990) to 22.5 years (2021)

### Implications

- **Demographic Dividend:** India is currently in a **"demographic sweet spot,"** with over 66% of its population in the working-age group (15–59). However, the declining TFR signals a shrinking base of future workers, and this window may close within two decades.
- **Emerging Demographic Divide:** States like Bihar and Uttar Pradesh, with higher TFRs, will continue to grow rapidly, whereas southern and some eastern states with sub-replacement fertility may see population stagnation or decline, posing inter-state resource and representation challenges.

- **Ageing Population:** Kerala and Tamil Nadu are entering a phase similar to that of ageing societies in East Asia and Europe. This implies greater healthcare costs, pension burdens, and the need for elderly care infrastructure.
- **Policy.** While the 2024 interim Budget proposed a high-power committee to tackle "population growth," the SRS data suggests the real challenge is population ageing and regional imbalance, not an uncontrolled rise.
- Census Delay & Data Gaps India has not conducted a Census since 2011. Without updated population data, evidence-based policymaking remains hampered. The SRS provides estimates, but cannot replace the granularity and accuracy of a Census.

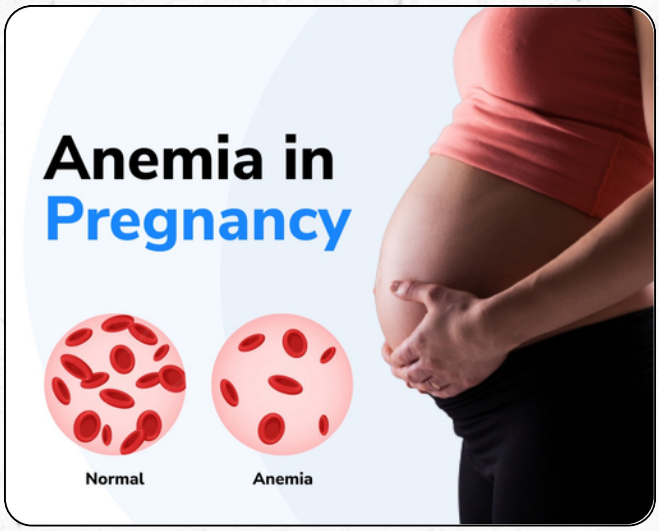
### Conclusion

- India is experiencing an advanced demographic transition, evident in its falling TFR, delayed marriage age, and rising elderly population.
- While policymakers continue to frame concerns in terms of overpopulation, the real challenge is managing the post-replacement-level dynamics, ensuring social security, labour force participation, and inter-generational equity in a rapidly changing demographic landscape.

## 2. Manage anaemia before pregnancy

### Why in the news?

Anaemia is still a quiet public health crisis in India, especially in women of reproductive age. Most Indian women already experience anaemia of pregnancy, establishing a platform for complications in mother and child health.
This perspective corresponds to **Sustainable Development Goal 3 (good health and welfare)** and the immediate need to meet the goal of the National Health Policy 2017, to reduce maternal mortality and improve birth outcomes.




Push for Health as a basis for mothers' welfare now receives traction in India's policy and public health discourse.

### Background

According to NFHS-5 (2019–21), anaemia is defined as a condition characterised by red blood cells or haemoglobin deficiency, affecting more than 57% of Indian women between the ages of 15-49. The condition often occurs unconsciously, because the symptoms -weakness, dizziness are wrong for everyday fatigue.

- Despite the improvement of mother's health indicators, such as the decline in maternal mortality rate (MMR) in 93 per 100,000 live births, an already existing anaemia weakens this progression.
- **The risk of anaemia increases before and during pregnancy:**
  - Before birth
  - Low birth weight
  - Pregnant
  - Postpartum bleeding
  - Intrauterine Growth Restriction (IUGR)
  - Newborn anaemia and neurodevelopmental delay

These complications contribute significantly to mortality and illness and illness. A reactive approach - dealing with and handling anaemia after pregnancy - is insufficient. Pro. The call for a paradigm change to Bellad's advanced perception is therefore both timely and necessary.

## Features of Anaemia Management in India

- **Oral Iron-Folic Acid (IFA) Supplementation**
- The Government of India promotes oral IFA tablets through the Intensified National Iron Plus Initiative (I-NIPI). Weekly IFA is provided to adolescents, and daily IFA to pregnant and lactating mothers.
- **Strength:** Cost-effective, easily available
- **Limitation:** Low adherence due to side effects such as nausea, constipation, and poor absorption
- Intravenous Ferric Carboxymaltose (IV FCM)
- Prof. Bellad highlights IV FCM as a superior option for moderate to severe anaemia. Unlike oral IFA, IV FCM:
- Rapidly replenishes iron stores
- Bypasses gastrointestinal side effects
- Is unaffected by hepcidin, a hormone that inhibits iron absorption
- It is especially beneficial in late pregnancy or severe anaemia cases

**Vitamin B12 and Folate Deficiency**

- Approximately 49% of women of reproductive age are deficient in Vitamin B12, a critical component for red blood cell formation and foetal neural development. Supplementing only iron ignores this essential link, especially in vegetarian populations.
- Combined Vitamin B12 + Folate + IV iron therapy is recommended to combat refractory anaemia.

## Thyroid and Blood Sugar Screening

- Undiagnosed hypothyroidism and gestational diabetes are often silent disruptors of maternal health. These disorders:
- Exacerbate anaemia
- Affect foetal growth
- Contribute to poor pregnancy outcomes
- Hence, screening before conception can prevent complications and ensure timely interventions.

**Community and Health Worker Role**
ASHA and Anganwadi workers are vital conduits for implementing maternal and child health programmes. Integrating preconception counselling and anaemia screening into their existing framework can:

- Improve awareness
- Increase community trust
- Encourage timely check-ups

**Advanced challenges in anaemia management**
Many Indian women do not seek health services until they become pregnant. The term pre -pre-perception -care is not yet mainstream. This ignorance provides lost opportunities for initial intervention.

**Systemic intervals in public health infrastructure:** Despite large programs such as Janani Suraksha Yojana and Pochan Abhiyan, the health system rarely focuses on screening for pregnancy. Most interventions begin only after conception, when anaemia can already worsen.

**Supply chain and logistics:** The availability of IV FCM, injectable vitamin B12 and clinical equipment (eg thyroid panel or serum ferritin test) is limited in rural areas. Inaccurate obstacles to poor storage and incompatible delivery.

**Obstacles and behavioural barriers:** Even where grants are provided, due to side effects or cultural beliefs, non-transport remains. Iron complement, pregnancy diets and use of multivitamins that interfere with multivitamins interfere with myths and clinical protocols around.

**Way Forward: A Blueprint for Preconception Anaemia Control**
**Integrate Preconception Screening into RMNCH+A(Reproductive, Maternal, Newborn, Child Health and Adolescent Health)**

- The existing Reproductive, Maternal, Newborn, Child and Adolescent Health (RMNCH+A) strategy must expand to include routine anaemia screening for all women of reproductive age, not just pregnant women.

- Revamp IEC (Information, Education, Communication) Campaigns.

**A mass awareness drive using TV, radio, and social media should promote:**

- Early anaemia detection
- Importance of folate and B12
- Role of family in supporting women's health
- Nutritional counselling and debunking of myths

Expand the Use of IV Iron and Injectable Nutrients

Government procurement systems should ensure the regular availability of IV FCM, injectable B12 and folate in public health centres. Priority should be given to:

- High-risk women (e.g., those with past pregnancy complications)
- Adolescents in tribal and backwards areas
- Women planning pregnancy in the next 6–12 months

**Incentivise Preconception Health Check-ups:** Much like the Incentive-Based Institutional Deliveries under Janani Suraksha Yojana, cash incentives or vouchers for preconception health visits can enhance uptake, especially among low-income families.

**Digital Tracking and Health Records:** Use of Arogya Setu-type apps or cloud-based health IDs can help track anaemia status, iron therapy response, and follow-ups. These can also link with Mission Poshan 2.0 and Anaemia Mukt Bharat dashboards. Research and Data Disaggregation: Current data lumps all anaemia cases together. We need disaggregated data on IDA, megaloblastic anaemia, B12/folate/thyroid-induced anaemia to tailor policies better. Indian Council of Medical Research (ICMR) and NITI Aayog should invest in longitudinal studies on preconception health outcomes.

- **Train Healthcare Workers and Doctors**: Primary care physicians, ASHA workers, and even private OB-GYNs must be trained to:
- Counsel couples on preconception health
- Identify multiple causes of anaemia
- Switch to IV therapies where oral fails
- Screen for thyroid and blood sugar abnormalities

### Conclusion

- Anaemia is not just a symptom; It is a systemic indicator of neglect, inequality and delayed intervention. Ensuring that a woman comes into pregnancy with optimal health is not a luxury; This is a duty of public health. The ripple effects field is long-term cognitive benefits for complications, healthy children, strong mothers and children.

## 3. Scheme-Based Workers: The Struggle for an Identity

- In the enormous expansion of India's welfare architecture, the front-line worker depends on services on a large scale, but often on invisible, plan-based workers (SBW). Planned under major social welfare programs such as **Integrated Child Development Services (ICDS), National Health Mission (NHM) and the Mid-Day Meal (MDM) scheme,** these workers work as bridges between the state and society, which facilitates the distribution of health, nutrition and educational services. Nevertheless, despite its basic role, SBW is denied regular recognition, fair wages and social security.

## The Backbone of Welfare

- The government of India works with millions with different abilities. While ordinary and contractual employees are recognised under the workplace and are included in the formal wage structure, a significant part of the working group remains outside this safety net.
- Anganwadi workers and assistants, recognised social health workers (Ashas), and meal workers in the middle of the day, who are employed in all major schemes for the social sector, represent this invisible workforce.

## According to Government Data:

- Anganwadi Worker (AWWS): 13.51,104
- Anganwadi Assistant (AWHS): 9,22.522
- Recognised social health worker (Ashas): 10.52,322
- Mid-Day Meal Workers (MDMWS): 25,16,688
- Together, this group forms a formidable section - about 60 million workers of India's social welfare machines.
- AWWS and AWHS provide nutritional help to children and breastfeeding mothers, monitor hair growth and provide education before school.
- Ashas facilitates society's participation in the public health system and plays an important role in mothers' and children's health services.
- MDMW -er prepares and distributes food to millions of schoolchildren daily, a plan that is credited to improve registration, storage and children's nutritional status.

### An Unequal Social Contract: Denial of Rights

- Despite their inevitable contributions, the scheme-based workers are not recognised by the government as formal employees.
- Their commitment is described in nature as "honoured" or "voluntary". They receive a fee, not pay; There are no provisions for minimum wage, social security or services such as Provident Fund or Health Insurance.
- This structural exclusion keeps them in the periphery of labour rights and reinforces their invisibility in political frameworks.

## Three mutual relationships dominate their struggle:

- Legal identity as "workers": Compulsory minimum wage according to the workover
- Extensive social security benefits: This is not just financial requirements, but is an existing argument for recognition in the labour market in India - a recognition that legalises their work, ensures their livelihoods and confirms their dignity.

## The government's reasoning and development

- The primary argument presented by the government is tax controversy. The recognition of SBW as state employees will increase the expenses, especially the extent of welfare schemes. However, this attitude reflects a narrow concept of tax judgment that prefers budget control over social justice.
- In some quarters, attempts are made to privatise welfare schemes - a step that threatens to reduce SBW rights and dilute responsibility in service distribution.
- Proposals to outsource the middle of the day meal regulations for Anganwadi services and private institutions have strong opposition from trade unions and civil society.
- By preparing SBWs as "volunteers" and their remuneration, the state's employers absorb themselves from the responsibility. This semantic manoeuvre effectively provides these workers with formal work data and deprives them of access to legal rights.

## Comparative Approach: Work recognition in informal and gaming economies

- The SBWS match reflects a large working phenomenon in the Indian identity crisis in informal and stage-based employment.

- Whether it is a gigantic worker of digital platforms or volunteers in society, these categories have emerged as a common strategy to ignore the working laws that refuse to recognise these categories as "workers".

### The way forward: politics and ethically weakening

- A transformative change is required to remove the requirements of SBW. This change should be multi-dimensional, including legislative improvement, administrative involvement and moral retribution.
- **Legal recognition and codification:** A statutory recognition of SBW in the form of "workers" is necessary. A separate legislative structure or change (for example, salary and social security code) in the existing workover should cover the scheme workers, guarantee minimum wages, drinking money, pension and health coverage.
- **Structured wage policy:** The current arbitrary system for the fee shall be following the minimum wage law, with a structured and time -time-revised payroll system. Regional inequalities in pay should also be taken up to ensure equal dignity in states.
- **Social Security Provision:** should be included under the Staff State Insurance (ESI) and Provident Fund (EPF) schemes for employees. Where direct integration is unforgivable, with sufficient budget distribution, tailor-made welfare schemes and portability of benefits should be introduced.
- **Representation and dialogue:** An institutional platform should be set up for regular communication between SBW, their unions and the government. The Tripartite model of ILC should be renewed and binding in its recommendations related to informal workers.
- **Stop privatising welfare work:** Public welfare should remain a state responsibility.
- Privatisation dilutes responsibility, increases uncertainty and weakens the state's constitutional mandate as a supplier of socio-economic justice.

**Conclusion: recognised as a right, not a reward**

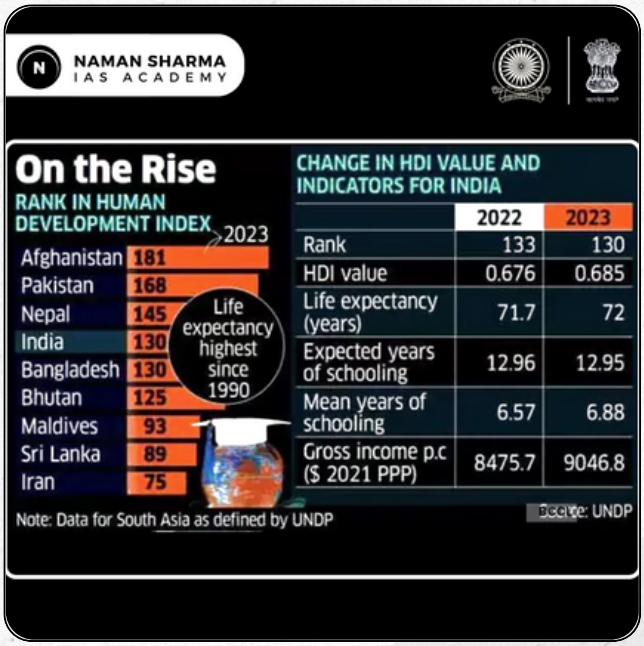
- The struggle for SBWs is not a fleeting resistance. It is a continuous movement for identity, dignity and justice. Their requirement for the status of the employee lies in the constitutional promise of equality and the instructions of state policies that aim to secure vibrant wages and human working conditions.
- As a welfare state, India cannot take the risk of closing an eye to systemic exploitation of those who are ahead in its public service distribution. A democracy honouring the inhabitants should start by honouring its workers, especially those who take care of their children, fix the sick and feed their hungry.

## 4. Human Development Index: UNDP

- India Rises in Human Development Index 2023, But Inequality Remains a **Key Challenge.**
- According to the Human Development Report 2025 released by the United Nations Development Programme (UNDP), **India has climbed three places in the Human Development Index (HDI), ranking 130 out of 193 countries** in 2023.

### Highlights

- **HDI Rank (2023): 130 (from 133 in 2022)**
- HDI Value: 0.685 in 2023 (up from 0.676 in 2022)
- India remains in the ‘medium human development’ category but is nearing the high development threshold of 0.700.




## Economic and Social Progress

- Gross National Income (GNI) per capita: Increased to $9,046.76 in 2023 (from $2,167.22 in 1990).
- **Multidimensional Poverty:** 135 million people exited poverty between 2015-16 and 2019-21.
- Life Expectancy: Improved to 72 years in 2023 (from 58.6 years in 1990), showing resilience post-COVID-19.

**Expected Years of Schooling:** Rose to 13 years (from 8.2 years in 1990). Despite increased enrollment and years of schooling, learning outcomes and education quality need urgent attention.

## Health and Education Interventions

- Progress in social indicators is attributed to key government schemes:
- Health: National Rural Health Mission, Ayushman Bharat, Janani Suraksha Yojana, Poshan Abhiyaan
- Education: Right to Education Act, Samagra Shiksha Abhiyan, National Education Policy 2022

## Challenges

- Inequality reduces India's HDI by 30.7%, one of the highest losses in the Asia-Pacific region. Despite improvements in access, income, and gender-based disparities remain serious concerns.

## Gender Disparities

- Low Female Labour Force Participation and under-representation in politics. However, the recent constitutional amendment reserving one-third seats for women in legislatures offers a path to progress.

# 5. Press Freedom Report 2024–25: Reporters Without Borders (RSF).

- It is an annual report released by the global media watchdog Reporters Without Borders (RSF). The press freedom questionnaire **covers five categories**: **political context**, **legal** framework, **economic** context, **sociocultural** context, and **security**.
- The 23rd Annual South Asia Press Freedom Report 2024–25, titled "Frontline Democracy: Media and Political Churn", has flagged India as part of a wider trend of shrinking press freedom.
- The Annual South Asia Press Freedom Report 2024-25, titled "Frontline Democracy: Media and Political Churn," paints a troubling picture of increasing restrictions, state-sponsored suppression, and growing dangers faced by journalists.

## India's Declining Press Freedom

- The report devotes a specific section to India, titled "India: Propaganda and the Press," highlighting the systematic efforts to control media narratives. Key factors include:

**Legal Suppression of Media Freedom:**

- Increasing use of sedition laws, the Unlawful Activities (Prevention) Act (UAPA), and the Prevention of Money Laundering Act (PMLA) against media organisations and journalists.
- Frequent defamation lawsuits and state-sponsored raids on media houses using the Income Tax Department and the Enforcement Directorate.

## Rise in Self-Censorship:

- A “chilling effect” has led many media outlets to avoid reporting critically on the government.
- Government advertisements are routinely withheld from critical media outlets as a method of financial coercion.

## Manipulation of Information:

- Political IT cells actively spread misinformation and hate speech, making it difficult for independent journalism to thrive.
- According to the Global Risks Report 2024, India is identified as the country with the highest global risk of misinformation and disinformation.

## Press Freedom in Neighbouring Countries

- **Pakistan:** Marked as “the most violent year for journalists in two decades,” with eight journalists killed.
- The government continues to operate under an authoritarian framework, severely curbing media rights.
- **Bangladesh:** Transitioned from the ICT Act to the Cyber Security Act, but concerns remain over its transparency and misuse.
- The Bangladesh Federal Union of Journalists reported nearly 300 attacks on journalists during political protests.
- **Afghanistan:** At least 172 media rights violations were recorded, highlighting the continued assault on press freedom under Taliban rule.
- **Bhutan and Maldives:** Bhutan fell from the 33rd position in press freedom rankings in 2021 to 152nd in 2025.
- The Maldives faces regulatory challenges with its Information Commissioner’s Office, undermining press freedom.

## Economic and Structural Challenges for Media

- Shrinking Job Market and Rising Precarity.


- Across South Asia, media organisations are grappling with layoffs, job insecurity, and a decline in advertisement revenue.
- Gig and freelance journalists face worsening working conditions and limited legal protections.

## Impact of AI and Digital Media:

- Increased reliance on AI for content creation has led to a decline in professional journalism standards.
- Digital platforms such as YouTube and podcasts are rising but lack adequate regulation to maintain journalistic ethics.

## Conclusion:

- Press freedom in South Asia is under acute strain due to state control, legal harassment, and disinformation.
- India must act now to safeguard journalistic integrity, ensure citizens’ right to know, and protect democratic institutions. A free and fair press is the bedrock of participatory governance.

# 6. Analysing poverty levels in India by comparing various surveys

- A recent study titled 'Poverty Decline in India after 2011–12: Bigger Picture Evidence' shows that poverty in India fell from 37% in 2004-05 to 22% in 2011-12. However, poverty declined by only an additional 18% until 2022-23, and officials have not released any poverty estimates after 2011-12.

**How much has poverty declined post-2011–12, and how does it compare with the earlier period?**

- **Sharp slowdown:** Poverty fell from 37% (2004–05) to 22% (2011–12), a 15-point drop, but only to 18% by 2022–23, a mere 4-point reduction in over a decade.
- **Absolute poverty numbers:** The Number of poor declined from 250 million to 225 million in 10 years, a decline of only 10%, compared to a much faster fall earlier.
- **GDP correlation:** GDP growth slowed from 6.9% (2004–12) to 5.7% (2012–23), consistent with slower poverty reduction.

## Why has the poverty reduction slowed since 2011-2012?

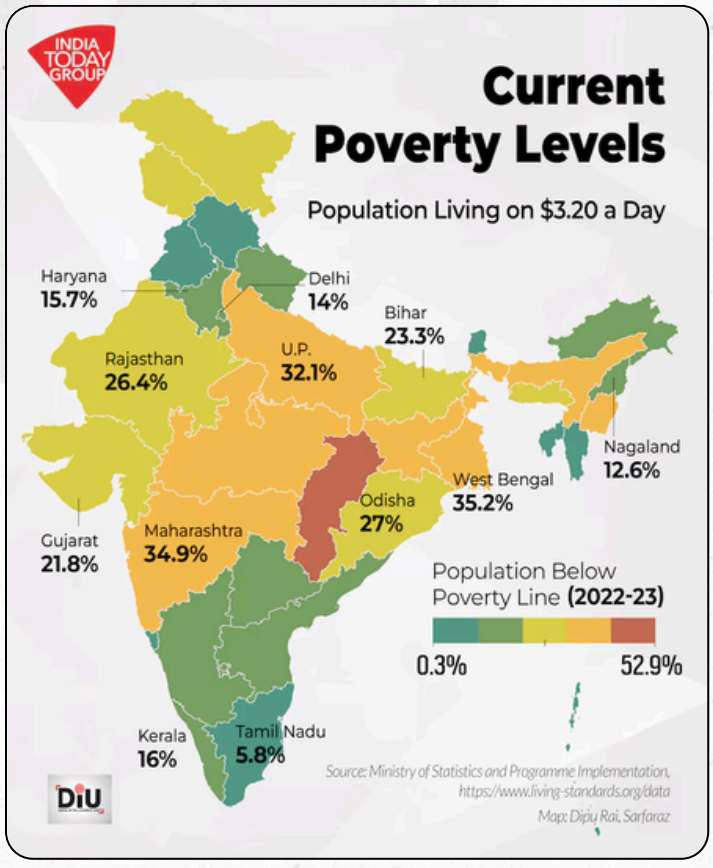
- Slower GDP Growth: Average GDP growth declined from 6.9% (2004-05 to 2011-12) to 5.7% (2011-12 to 2022-23), correlating with slower poverty reduction.
- **Declining Real Wage Growth:** Growth in rural wages slowed down significantly from 4.13% annually before 2011-12 to 2.3% after 2011-12.
- **Rising Agricultural Workforce with Lower Productivity:** After a decline in agricultural workers till 2017-18, 68 million workers joined agriculture post-2017-18, leading to lower agricultural productivity and wages, which hampers poverty reduction.

## Poverty trends vary across Indian States.

- **Significant Poverty Reduction:** Some states have shown marked improvement in reducing poverty levels after 2011-12. E.g., Uttar Pradesh has notably decreased its poverty rate during this period.
- **Slow Progress:** Historically poor states continue to struggle with slow poverty reduction due to persistent socio-economic challenges. E.g., Jharkhand and Bihar have experienced much slower declines in poverty rates.
- **Stagnation:** Several large and economically important states have seen poverty reduction stagnate, with little change over the years. E.g., Maharashtra and Andhra Pradesh show almost no improvement in poverty reduction post-2011-12.

## Government initiative

**Implementation of Social Welfare Schemes:** The government has launched various targeted welfare programs to support the poor and vulnerable groups. E.g., Pradhan Mantri Awas Yojana for affordable housing.



- **Focus on Employment Generation:** Programs aimed at creating jobs, especially in rural areas, to increase income and reduce poverty. **E.g., the Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA).**
- **Financial Inclusion Initiatives:** Efforts to increase access to banking and financial services for the poor. **E.g., Jan Dhan Yojana,** which promotes the opening of bank accounts for the unbanked.
- **Agricultural Support and Reforms:** Policies to improve farmers' incomes and agricultural productivity to support rural livelihoods. **E.g., PM-Kisan Samman Nidhi,** providing direct income support to farmers.
- **Health and Education Programs:** Investments in healthcare and education to improve human capital and break the cycle of poverty. **E.g., the Ayushman Bharat health insurance scheme for poor families.**

## Three Ways to Check Poverty in India After 2011

- **Alternative NSSO Surveys:** Using different socio-economic surveys like the Usual Monthly Per Capita Consumption Expenditure (UMPCE) from NSSO rounds after 2011-12, despite comparability issues with earlier surveys. E.g., Estimates based on UMPCE suggest poverty between 26-30% in 2019-20.
- **Private Final Consumption Expenditure (PFCE) Scaling:** Scaling consumption data from the 2011-12 Household Consumption Expenditure Survey using the growth rate of PFCE from National Accounts Statistics (NAS) to estimate consumption trends. E.g., used by economist Surjit Bhalla and colleagues in 2022.
- Survey-to-Survey Imputation: Filling data gaps by linking related surveys (e.g., consumption surveys with employment surveys) through imputation models, often at the State level for better accuracy.

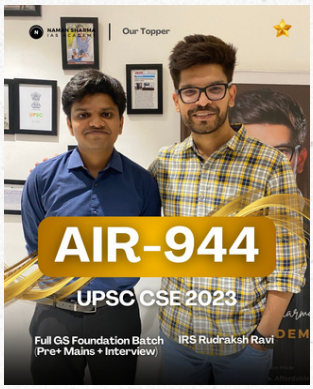
E.g., The recent study titled 'Poverty Decline in India after 2011-12: Bigger Picture Evidence' study using NSSO Employment-Unemployment Surveys with Consumer Expenditure Surveys to estimate poverty decline to about 18% in 2022-23.

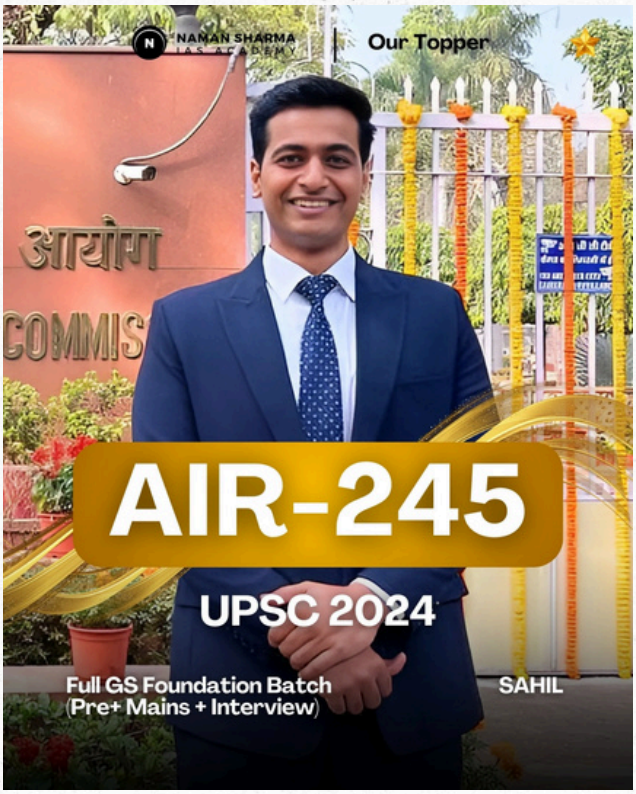
## Conclusion

- India has made significant advances in reducing poverty, especially between 2004 and 2012. However, progress has become quite slow since then.
- **To resume poverty reduction, the government needs:**
- **Promote economic Development.** It is necessary to revive GDP growth with a focus on labour-intensive and rural areas. Increase in wages and employment generation: Actual wage growth should be improved through better employment opportunities, especially in non-agricultural sectors.

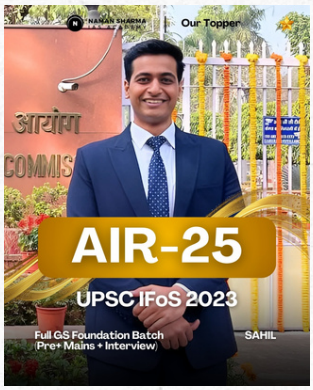
- **Strengthen data transparency:** Regular, high-quality quality and publicly available poverty data is necessary to make informed political decisions. Targeted welfare reforms: Better monitoring of existing welfare schemes must be results in results to reach more efficiently to the poorest.

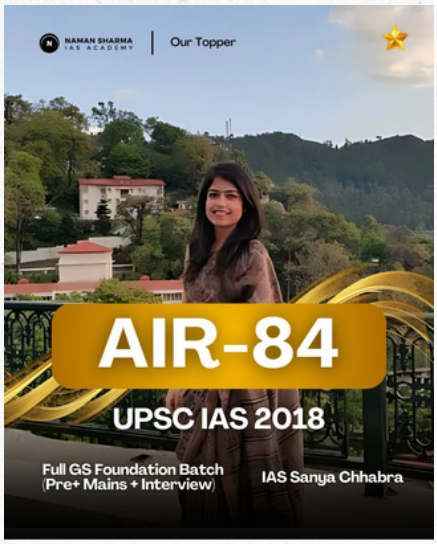
# Our Recent Toppers








**Vipan Kumar**
AIR-4, HPAS 2022

**Anshul Shandil**
AIR-7, HPPCS 2019

**Arshiya Sharma**
AIR-3, HPPCS 2019

**Kirti Sharma**
AIR-35, PCS 2021

**IPS Vineet Ahlawat**
AIR-231, CSE 2020

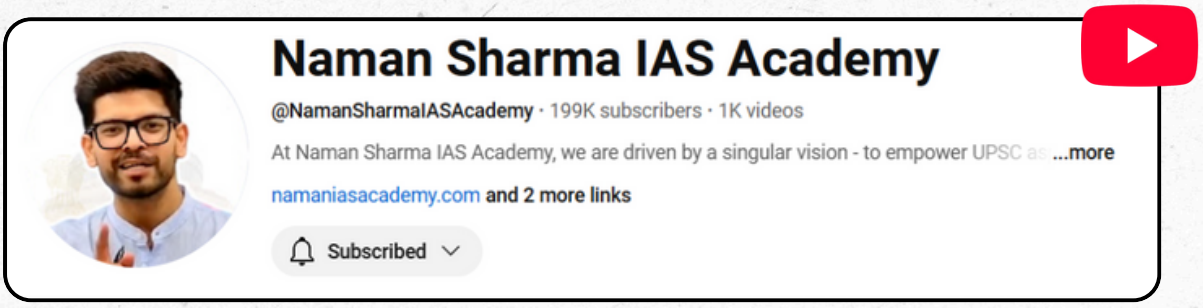
**SDM Himani Sharma**
AIR-2, HPAS 2024

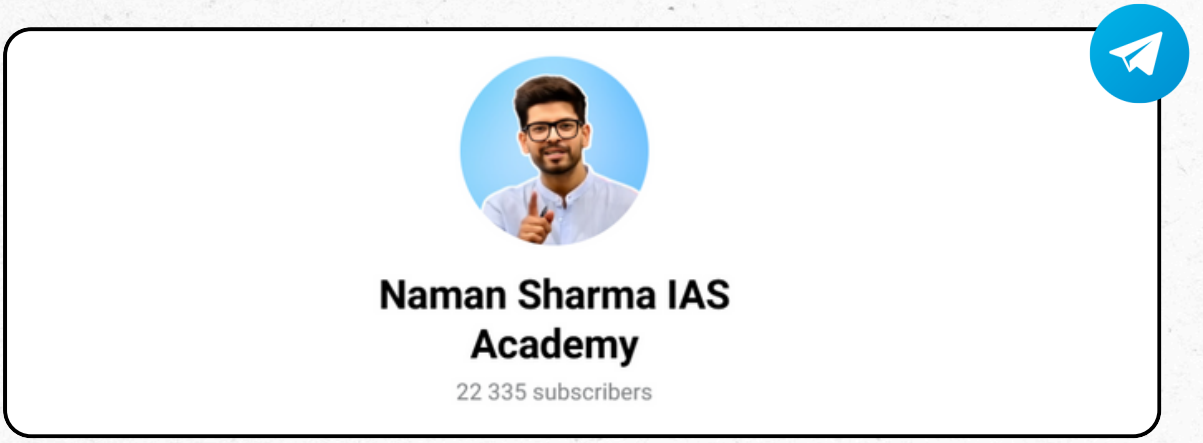
**WhatsApp Now +91-843-768-6541**

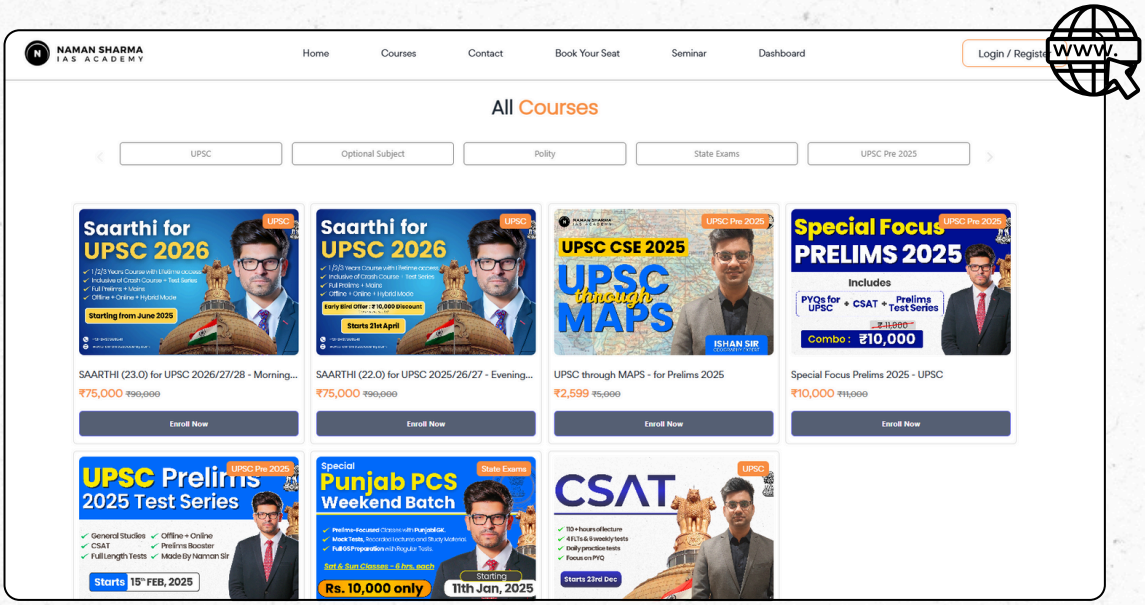
**Offline Centre Location:** SCO 173-174, Sector 17C, Chandigarh

NAMAN SHARMA
IAS ACADEMY

# Join our Communities:


**Offline Centre Location:** SCO 173-174, Sector 17C, Chandigarh

NAMAN SHARMA
IAS ACADEMY

# Admissions Now Open!


**Enroll in just ₹2000**

- Mode: Offline/Hybrid/Online
- Medium: Hinglish (Notes in English)
- Timings:
  - Morning: 9 AM - 1 PM
  - Evening: 4 PM - 8 PM

## Enrollment Process:

- Visit Our Website: ***Naman IAS Academy***
- Call us at **+91-843-768-6541 for Free Seminar**

Free UPSC seminar
**Saturday, 4PM** LIVE zoom

**Offline Centre Location:** SCO 173-174, Sector 17C, Chandigarh