7 PM COMPILATION

1st and 2nd week April, 2026

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Pradhan Mantri Awaas Yojana-Gramin (PMAY-G): Impact and Challenges- Explained Pointwise

India's rural housing mission has completed a decade of transformation, with Pradhan Mantri Awaas Yojana-Gramin (PMAY-G) growing into one of the most ambitious social welfare programmes in the country's history. With a cumulative target of 4.95 crore houses by 2029, rural housing has become a cornerstone of India's Viksit Bharat vision.

This article examines PMAY-G's background, key achievements, implementation framework, impact on rural households, AI-driven monitoring innovations, and the way forward.

Source- PIB

What is PMAY-G? What is its background and basic features?

PMAY-G is a centrally sponsored scheme launched on 1st April 2016 by the Ministry of Rural Development. It replaced the erstwhile Indira Awaas Yojana (IAY), which had well-documented weaknesses in beneficiary targeting, fund management, and construction quality.

Objective- The scheme aims to provide a pucca (permanent) house with basic amenities to all houseless households and those living in kutcha or dilapidated structures in rural India, advancing the mission of "Housing for All."

Basic Features of PMAY-G

1. Minimum house size-Each house must be at least 25 sq. m., including a dedicated area for hygienic cooking. This is an improvement over the earlier 20 sq. m. norm under Indira Awaas Yojana (IAY).

2. Target Beneficiaries- It selects beneficiaries using housing deprivation parameters in the Socio-Economic and Caste Census (SECC), 2011, which is to be verified by the Gram Sabhas. The scheme prioritises landless beneficiaries and mandates that a minimum of 60% of targets are earmarked for SC/ST households at the National level.

3. Funding Pattern- Cost is shared between the Central and State governments in a 60:40 ratio for plain areas (90:10 for North Eastern and Himalayan states; 100% for UTs).

4. Financial assistance- Beneficiaries receive Rs. 1.20 lakh in plain areas and Rs. 1.30 lakh in hilly, difficult, and Integrated Action Plan (IAP) districts. Funds are released in instalments directly through DBT.

5. Beneficiary-led construction- Households themselves build their homes, ensuring a sense of ownership and ground-level quality control that top-down construction models often lack.

6. Phased implementation- Phase I and II target 4.15 crore houses, with a cumulative Phase III target of 4.95 crore houses by 2029.

7. Convergence-driven approach- Every PMAY-G house is intended to come bundled with a toilet (Swachh Bharat Mission- Grameen), an LPG connection (PM Ujjwala), piped water (Jal Jeevan Mission), electricity (Saubhagya/PM Surya Ghar), and wage employment (VB: G RAM G/MGNREGA), making the scheme a genuine platform for holistic rural development.

What are the key achievements of PMAY-G so far?

As of 26 March 2026, the following milestones have been recorded under Phase I and II:

Targets and completions	Out of a total allocation of 4.15 crore houses, 3.90 crore have been sanctioned and 2.99 crore have been completed, reflecting a strong pace of ground-level delivery sustained over a decade.
Fund transfers	A cumulative Rs. 4,03,886.12 crore has been transferred directly to beneficiaries' bank accounts through DBT, making it one of the largest direct benefit transfer exercises in any social welfare programme globally.
Convergence benefits delivered	Beneficiaries have simultaneously received toilets (Rs. 12,000 from SBM-G), 90–95 person-days of MGNREGA wages, LPG connections under PM Ujjwala, and electricity and piped water connections. It turns each house into a multi-amenity package rather than just a roof over the head.
Skill development	The Rural Mason Training programme, supported by the National Skill Development Corporation (NSDC), has enrolled 3,75,265 candidates and certified 3,02,377 masons as of November 2025, meaningfully building local construction capacity.
Women's ownership	House ownership is encouraged in women's names or jointly with spouses, an initiative that goes beyond housing to contribute to SDG 5a on gender equality and women's land rights.

What is the implementation framework and governance reforms under PMAY-G?

PMAY-G has introduced several systemic reforms that go well beyond conventional scheme delivery:

1. Direct Benefit Transfer (DBT)- Financial assistance is released in tranches directly into the beneficiary's bank account. This eliminates middlemen, reduces leakage, and has helped deepen financial inclusion in rural India.

2. Geo-tagging of houses – Time and date-stamped photographs are uploaded at every stage of construction, from the foundation to the lintel to the roof. This creates a verifiable digital record for real-time monitoring. For ex- any deviation from construction norms can be flagged immediately through the uploaded geo-tagged image.

3. Village-level functionaries- Every sanctioned house is tagged to a specific local functionary who provides hands-on support and follows up with the beneficiary to ensure timely completion.

4. Block and district inspections- Block-level officers physically inspect around 10% of houses at each construction stage, while district officers cover around 2%, adding a layered institutional quality check to the digital monitoring.

5. Social audits- Every Gram Panchayat conducts a formal social audit at least once a year. This community-led review covers beneficiary selection, fund utilisation, and construction quality, reinforcing accountability from the ground up.

6. National-level monitoring- Officers and national-level monitors from the Ministry of Rural Development conduct periodic field inspections to verify beneficiary selection and confirm that procedures are followed correctly.

7. AwaasSoft MIS platform- This bilingual, web-based platform integrates all scheme functions, from beneficiary identification and sanction orders to fund release and construction tracking, into a single source of information for all stakeholders.

What has been the impact of PMAY-G on rural households?

1. Improved living conditions- Families have moved from weather-vulnerable kutcha homes to durable, weather-resistant pucca structures, bringing stability and dignity to millions of households. **For ex** Taid, a widow from flood-prone Jorhat district in Assam, built a permanent home under PMAY-G in 2016-17 that now protects her family from annual floods.

2. Access to sanitation- Convergence with SBM-G has provided PMAY-G beneficiaries Rs. 12,000 for toilet construction, directly improving hygiene and contributing to ODF (Open Defecation Free) status across villages.

3. Employment generation- The scheme ensures 90–95 person-days of unskilled labour wages under MGNREGA (now VB: G RAM G) per house, providing livelihood support to rural workers during the construction period itself.

4. Clean cooking energy- Linkage with PM Ujjwala Yojana has enabled households to shift away from traditional biomass fuels to LPG, reducing indoor air pollution and meaningfully improving women's health outcomes.

5. Electricity and water access- Beneficiaries gain access to electricity through Saubhagya and PM Surya Ghar, and piped drinking water through Jal Jeevan Mission, reducing daily drudgery especially for women and girls.

6. Renewable energy integration- Solar lanterns and rooftop solar systems have been introduced in PMAY-G homes, promoting sustainable energy use in off-grid rural communities.

7. Women's empowerment- As per the National Institute of Public Finance & Policy (NIPFP) Study Report (2019) , encouraging house ownership in women's names contributes to property rights, improved social standing, and India's SDG 5a commitments on gender equality.

8. Skill creation- The Rural Mason Training programme has directly addressed the shortage of trained construction workers in villages, creating a steady pipeline of certified masons while generating dignified rural livelihoods.

How is AI-driven technology being used in monitoring PMAY-G?

PMAY-G has become a pioneer in deploying **Artificial Intelligence (AI) and Machine Learning (ML)** for social sector monitoring:

1. AI-based photo recommendation system- AI models scan uploaded house photographs to detect attributes such as walls, roofs, doors, and windows. Based on this analysis, the system recommends the most suitable final photograph for approval, ensuring that only genuinely complete houses are certified as finished.

2. Anomaly detection and fraud prevention- ML algorithms compare a house photograph with others in the same locality. If suspicious similarities are detected, the system raises an alert to prevent duplication or fraudulent reporting. **For ex** identical photographs submitted for two different beneficiaries in the same village would trigger an automatic flag.

3. Aadhaar face authentication and e-KYC- Beneficiaries are verified through AI-enabled, Aadhaar-based face authentication before receiving funds, ensuring that only eligible households benefit and that the database remains credible.

4. Awaas+ 2024 mobile app- Developed in collaboration with the Central Building Research Institute, this app combines Aadhaar face authentication with 3D house designs, helping beneficiaries visualise and plan their homes while maintaining full accountability in benefit delivery.

5. Liveness detection- Eye-blink and motion detection features during biometric verification confirm that the authentication is live and genuine, guarding effectively against impersonation and proxy verification.

What are the challenges in rural housing delivery under PMAY-G?

1. Gap between sanctioned and completed houses- As of March 2026, nearly 91 lakh sanctioned houses remain incomplete. Delays stem from beneficiary migration, land disputes, inadequate local support, and financial constraints that the scheme's assistance alone cannot fully address.

2. Shortage of skilled labour- Quality rural construction demands trained masons. Despite the Rural Mason Training programme's progress, certified mason supply continues to fall short of demand in several states, affecting both construction speed and quality.

3. Power supply constraints- Stable electricity is essential not only for post-occupancy use but also for construction activities. In many remote areas, unreliable power supply disrupts timelines and limits the usability of completed homes.

4. Land and legal hurdles- Homestead land is a state subject, and a large number of eligible beneficiaries, especially SCs, STs, and women-headed households, lack clear land titles. This creates avoidable delays even when beneficiaries are willing and ready to build.

5. Last-mile digital exclusion- The scheme's dependence on geo-tagging, Aadhaar authentication, and the AwaasSoft platform poses real challenges in areas with poor internet connectivity or low digital literacy, risking exclusion of the most marginalised households.

6. Intra-state variations- Implementation quality varies significantly across states. Chronic underperformers often suffer from administrative capacity gaps, delayed fund utilisation, and weak panchayat-level oversight.

7. Quality of construction- Despite technological monitoring, ensuring structural durability in flood-prone, cyclone-prone, and seismic zones remains difficult without sustained on-ground technical guidance to individual beneficiaries.

What should be the Way Forward?

1. Accelerate completion of pending houses- A time-bound saturation campaign with district-wise targets must be launched for the 91 lakh incomplete houses. States with high incompletion rates need focused technical and administrative hand-holding rather than just financial pressure.

2. Expand Rural Mason Training- The NSDC-supported certification programme must be scaled up substantially, with deliberate inclusion of women masons and tribal communities as part of a broader inclusive skilling agenda.

3. Resolve land rights as a pre-condition- States must be incentivised to complete homestead land allotments to landless beneficiaries, particularly SCs, STs, and single women, before house sanction rather than as an afterthought.

4. Strengthen digital infrastructure in remote areas- Offline-capable versions of AwaasSoft and Awaas+ must be made available in aspirational districts to ensure that poor connectivity does not compromise the integrity of monitoring.

5. Deepen convergence monitoring- Mandated convergence with Swachh Bharat Mission- Grameen [SBM(G)], Jal Jeevan Mission, and Ujjwala must be verified on the ground through a unified dashboard that tracks whether these amenities are actually functional in completed homes, not merely approved on paper.

6. Focus on disaster-resilient design- In flood-prone states like Assam and Bihar, cyclone-prone states like Odisha and Andhra Pradesh, and seismic zones, PMAY-G house designs must mandatorily incorporate disaster-resilient features, supported by technical expertise from CBRI and state institutions.

7. Harness AI for predictive governance- Beyond fraud detection, AI tools should be used to identify likely non-completion early in the construction cycle, enabling proactive intervention before houses slip into long-term stagnation.

Conclusion

A permanent home is the first step out of poverty. PMAY-G has proven that large-scale welfare delivery is achievable in India. As 2029 approaches, the focus must shift from ambition to execution, ensuring no eligible rural household is left behind.

Read More: PIB
UPSC Syllabus: GS 2 – Government Policies and Interventions | GS 3 – Inclusive Growth and Issues Arising from It

Tribunals in India- Explained Pointwise

The Supreme Court recently directed 19 appellate tribunals – headed by former Chief Justices and High Court judges to adjudicate pleas related to voter inclusion and exclusion during West Bengal's Special Intensive Revision (SIR) of electoral rolls, with over 60 lakh objections filed.

This highlights the critical role tribunals play in upholding democratic processes and brings renewed focus on the debate over tribunal efficiency and independence in India. This article examines the constitutional framework, historical evolution, significance, challenges for tribunals in India.

What are the tribunals?

- Tribunal is a specialized, quasi-judicial body established to resolve specific disputes, such as administrative or tax-related issues. It adjudicates disputes, determines rights, and reviews administrative decisions.
- They serve as alternatives to traditional courts and specialize in providing faster, cost-effective, and expert resolutions for particular kinds of cases.
- **Objective:** Tribunals reduce the burden on regular courts and provide specialized dispute resolution that is swift, efficient, and accessible.
- As of early 2026, the number of pending cases in India has exceeded 5.5 crore (55 million), with over 4.5 crore pending in district courts alone. According to the Tribunals Reforms Act, 2021, the Government has merged and rationalized several tribunals, aiming to improve efficiency.

Key Characteristics:

- **Specialization:** They deal exclusively with matters requiring specific, domain-based expertise (e.g., tax, telecom, or electricity).
- **Faster Disposal:** They aim to offer a quicker and more efficient resolution mechanism than the regular civil courts.
- **Less Formal:** Procedures are generally simpler and less rigid than those followed by civil courts, though principles of natural justice must always be adhered to.

- **Composition:** They typically include both judicial members (retired judges or lawyers) and **administrative/technical members** who possess specialized knowledge in the relevant field.

What are the constitutional and legal provisions related to Tribunals in India?

The original Constitution did not include provisions related to tribunals. However, the 42nd Amendment Act of 1976 introduced Part XIV-A, titled "Tribunals," which consists of two articles:

- **Article 323A** – Pertains to administrative tribunals.
- **Article 323B** – Covers tribunals for other specific matters

Provisions	Description
Article 323A	Grants Parliament the power to establish administrative tribunals for resolving disputes related to recruitment and service conditions of individuals employed in the Central and state governments, local bodies, public corporations, and other public authorities
Article 323B	Authorizes both Parliament and state legislatures to create tribunals for various matters, including industrial and labor disputes, foreign exchange, land reforms, elections, rent and tenancy rights, and more.

Administrative Tribunals Act, 1985

To implement Article 323A, Parliament enacted the Administrative Tribunals Act, 1985, empowering the Central Government to establish:

- **Central Administrative Tribunal (CAT)** for central government employees.
- **State Administrative Tribunals (SATs)** for state government employees.

What are the landmark judgement's related to tribunals in India?

S.P. Sampath Kumar v. Union of India (1987)	Recognized tribunals as substitutes for High Courts and upheld their constitutional validity.
L. Chandra Kumar v. Union of India (1997)	Declared that tribunals cannot act as substitutes for High Courts and must be subject to judicial review under Article 226 and 227.
Madras Bar Association v. Union of India 2014	Administrative support for all tribunals should come under the Ministry of Law and Justice.

Rojer Mathew versus South Indian Bank Limited & ors, 2019	The impact of amalgamation of tribunals should be analysed with judicial impact assessment.
Madras Bar Association versus Union of India, 2020	National Tribunals Commission should be set up to supervise appointments, as well as functioning and administration of tribunals.
Madras Bar Association versus Union of India, 2021	Struck down various provisions in tribunal reforms that undermined judicial independence.

What are the key developments in the Indian tribunal system?

Pre-Independence Era (Before 1947)	The Income Tax Appellate Tribunal was established as India's first tribunal to reduce court workload and expedite tax dispute resolution
Post-Independence Era (1947–1980)	**1950**: Industrial Disputes (Appellate Tribunal) Act provided for an appellate tribunal to handle industrial disputes. **1969**: The First Administrative Reforms Commission recommended Civil Services Tribunals at national and state levels for service-related disputes. **1974**: The Sixth Law Commission suggested high-powered tribunals to reduce High Court case backlogs. **1976**: The Swaran Singh Committee recommended setting up: **a. Administrative Tribunals** ((both at national level and state level) for service-related cases. **b. All-India Appellate Tribunal** for labor disputes. **c. Sector-specific tribunals** for revenue, land reforms, and essential commodities. **d**. Supreme Court oversight for tribunal decisions.
Golden Era of Tribunalization (1980–2000)	Establishment of several tribunals, including: **a. Central Administrative Tribunal (CAT)** – for administrative matters. **b. Securities Appellate Tribunal (SAT)** – for financial sector disputes. **c. Film Certification Appellate Tribunal** – for film certification disputes. **d. Appellate Tribunal for Electricity** – for tariff-related cases.

2000–2016: Expansion of Tribunals	**2000**: **Debt Recovery Tribunal (DRT)** – for resolving disputes between banks and borrowers. **2002**: **Competition Commission of India (CCI)** and **Competition Appellate Tribunal (COMPAT)** – to regulate fair competition. **2010**: **National Green Tribunal (NGT)** – for environmental disputes. **2016**: **National Company Law Tribunal (NCLT)** & **National Company Law Appellate Tribunal (NCLAT)** – for corporate and insolvency matters.
2017- Merger of COMPAT with NCLAT	The Finance Act, 2017 reduced the number of tribunals from 26 to 19 based on functional similarity. It gave the central government authority to define qualifications, appointments, and service conditions for tribunal members.
Tribunal Reforms Act, 2021	The Tribunals Reforms (Rationalization and Conditions of Service) Bill, 2021 aimed to streamline the tribunal system. Nine tribunals were abolished, transferring their functions to existing judicial bodies, mainly High Courts.

Why are tribunals important, and what is their significance?

1. Speedy Justice: Tribunals are designed to offer faster dispute resolution compared to traditional courts**. E.g.** The Consumer Disputes Redressal Commissions resolve cases within 3-6 months, NCLT expedited cases under the Insolvency and Bankruptcy Code (IBC), 2016, ensuring faster debt recovery.

2. Specialized Expertise: Tribunals were designed to handle complex, sector-specific disputes requiring technical expertise. **E.g**. Power sector (APTEL), taxation (ITAT), corporate law (NCLAT), copyright (IPAB).

3. Reducing Court Burden: By handling specialized cases, tribunals reduce the workload of high courts and the Supreme Court. **E.g**. The Central Administrative Tribunal (CAT) has significantly reduced litigation burden in service-related disputes.

4. Economic Governance: Tribunals like the NCLT and DRT play a critical role in ensuring economic stability and ease of doing business. **E.g.** Creditors have recovered approximately Rs 3.55 lakh crore by resolving 1,068 insolvency cases under the IBC, 2016, as of September 2024 since 2016**.**

5. Environmental Protection & Protecting Fundamental Rights: The National Green Tribunal (NGT) has played a pivotal role in environmental protection cases like the Vizag Gas Leak (2020)**.** It is also instrumental in addressing environmental issues, such as the Yamuna pollution case and illegal mining in Aravalli Hills.

6. Access to Justice: Tribunals provide a cost-effective and accessible forum for resolving disputes, especially for marginalized groups**.**

7. Alternative Dispute Resolution (ADR): Tribunals provide an alternative dispute resolution mechanism, which can be less adversarial and more conducive to finding mutually agreeable solutions.

What are various challenges faced by Tribunals in India?

1. Case Backlogs Rising: As of 2023, the Debt Recovery Tribunal (DRT) has over 215,431 pending cases, with an asset recovery rate of just **9.2%** in 2022-23, far below the desired efficiency.

2. Mergers and Abolitions Causing Hindrance: The merger of tribunals like COMPAT with NCLAT has led to overburdened benches and loss of specialization.

3. Lower Vacancies and Poor Infrastructure: Tribunals like APTEL face chronic vacancies and lack adequate infrastructure, leading to delays. NCLT operated at 50% capacity in 2023**,** delaying crucial insolvency resolutions. Many tribunals lack digital case management systems, affecting efficiency.

4. Judicial Overreach: The Supreme Court's intervention in the Telecom Disputes Settlement and Appellate Tribunal (TDSAT) ruling on the Adjusted Gross Revenue (AGR) dispute has raised questions about the legal standing of tribunals.

5. Appointment Concerns: The trend of appointing retired judges and bureaucrats raises questions about post-retirement placements and expertise. **E.g.** The Ministry of Law and Justice controls appointments and budgets which reduces the administrative independence.

6. Lack of Uniformity: Different tribunals follow varying procedures, leading to inconsistency. For instance, the Armed Forces Tribunal (AFT) and Central Administrative Tribunal (CAT) have different rules for evidence submission.

7. Ineffective Implementation: The appointment process for tribunal members is slow and opaque, leading to prolonged vacancies. **E.g.** The Law Commission's 272nd Report (2017) recommended a central nodal agency**,** but no progress has been made.

8. Economic Impact: Delays in tribunal decisions have significant economic consequences. **E.g.** unresolved tax disputes worth ₹12 lakh crore are pending before various tribunals, affecting government revenue and investor confidence.

What is the Way Forward?

1. Establish an Independent Tribunal Oversight Body: Inspired by the National Judicial Appointments Commission (NJAC), a Tribunal Commission should oversee appointments, funding, and administration. **E.g.** The Law Commission's 162nd Report suggested a National Administrative Appellate Tribunal above High Courts—an idea that needs revisiting.

2. Structured Tribunal Management System: A Central Tribunal Division within the Ministry of Law and Justice should be implemented to streamline operations**.** Case management technology and AI-based analytics should be deployed to track tribunal performance.

3. Implement a Double-Shift System to Expedite Disposal: To clear the backlog, tribunals should operate in two shifts, a proposal discussed in 2011 but never implemented. This would increase case disposals without increasing infrastructure costs.

4. Strengthen the Specialization and Independence of Tribunals: Instead of appointing retired bureaucrats**,** tribunals must have domain-specific technical panels to ensure subject matter expertise. Reduce judicial interventions by strengthening tribunal autonomy under the Tribunals Reforms Act**.**

5. Digital Transformation of Tribunals: Fully digitalize tribunal processes through an e-Tribunals initiative, ensuring real-time case tracking. Integrate online dispute resolution (ODR) mechanisms to reduce case inflow into traditional tribunals. **E.g.** The UK's HM Courts & Tribunals Service.

6. Minimizing Executive Control: The legislature should reduce bureaucratic control over tribunal functioning, as recommended in Rojer Mathew (2019) case.

7. Enhancing Judicial Autonomy: Ensure tribunals operate with minimal interference from higher courts, as emphasized in the L. Chandra Kumar vs Union of India (1997) case.

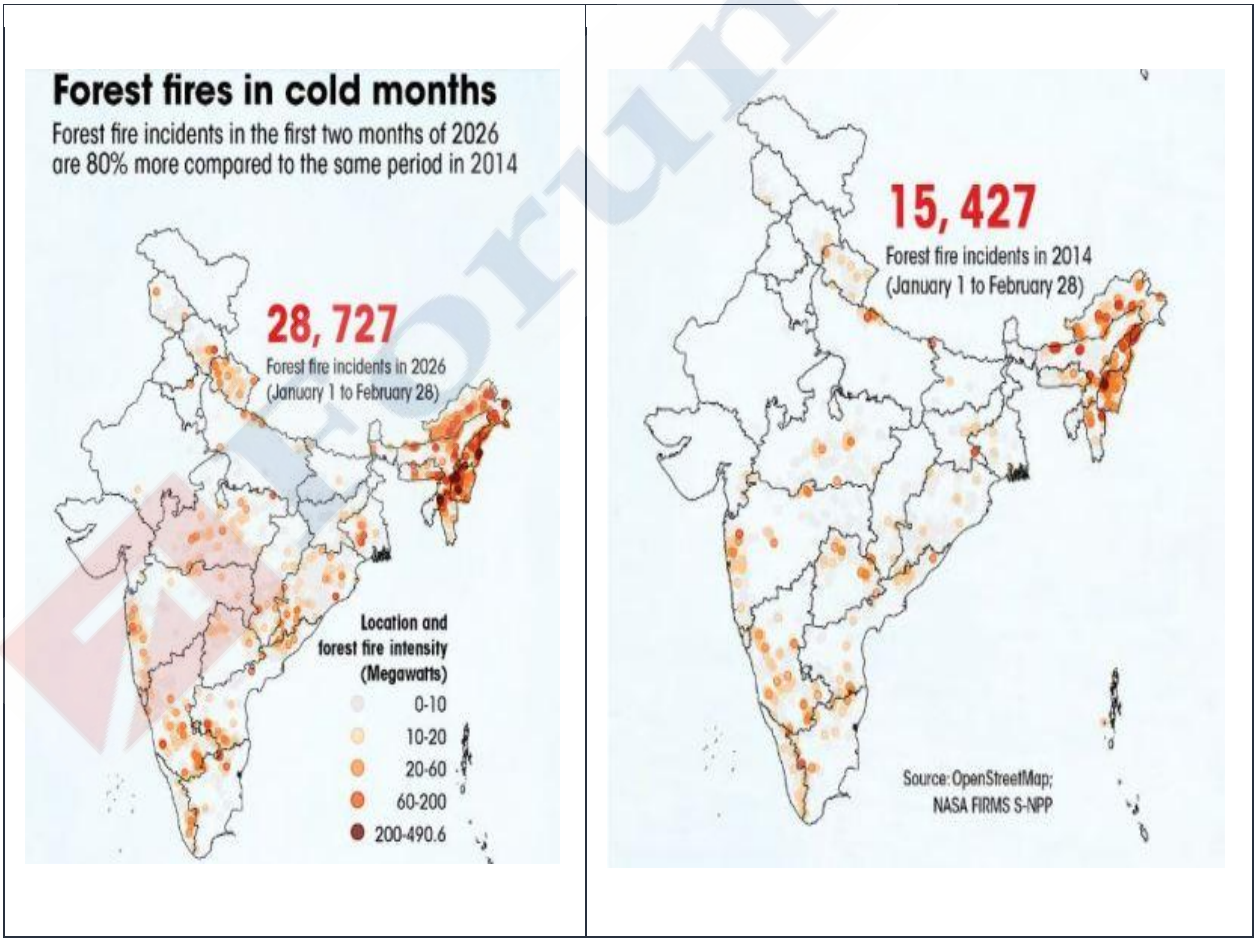
Conclusion: Tribunals thus play a critical role in India's legal system by combining judicial powers with technical expertise to resolve disputes efficiently in domains requiring specialized knowledge. The decisions of these tribunals are generally subject to judicial review by the relevant High Court, and ultimately the Supreme Court. They serve as essential pillars of an effective governance system that requires specialized mechanisms for complex regulatory issues.

Read more: The Print
UPSC Syllabus- GS 2– Quasi-judicial bodies

Forest Fires in India- Explained Pointwise

Forest fires in India in the first two months of 2026 have increased by more than 80% compared with trends over the past decade since 2014. When compared with 2024, the warmest year on record, fire activity in forested regions was over 50% higher in early 2026.

The concern is not limited to the number of fires alone; the intensity of fires, measured by the rate of thermal energy released by burning vegetation, has also increased compared with previous years.



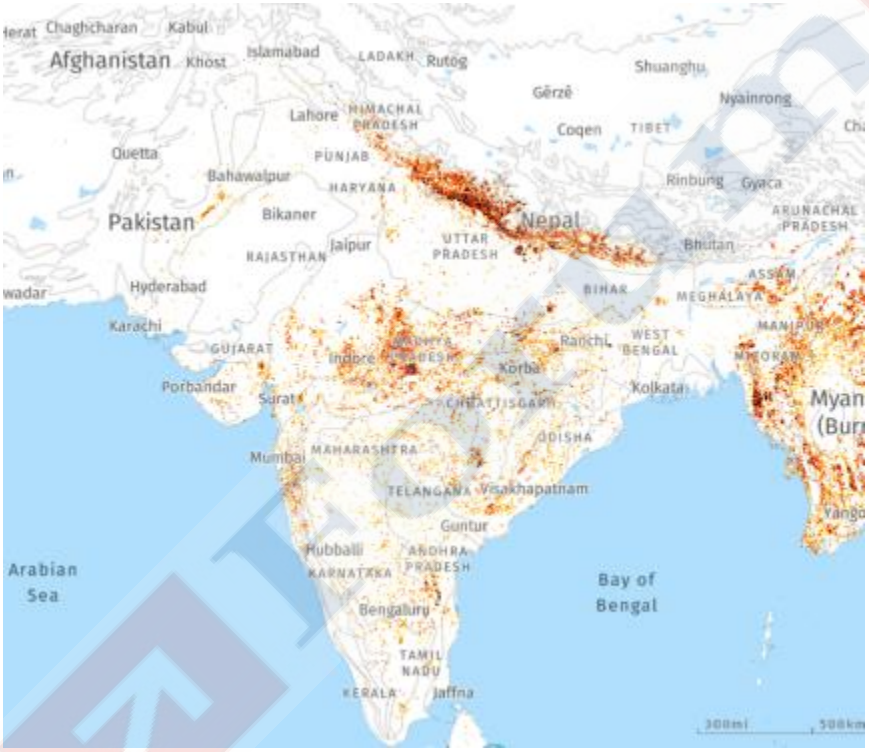
	Source- DTE

What is Forest Fire? What is the Status of Forest Fires in India?

Forest Fire- A forest fire is an uncontrolled fire that destroys large parts of the forest. November to June is considered to be forest fire season in India. The Peak fire season typically begins in late February and spans about 12 weeks.

Forest Fire Prone Regions:

Historically identified fire-prone areas: According to the India State of Forest Report (ISFR) 2023, India's total forest cover is 7,15,343 sq km, which constitutes 21.76% of the country's geographical area. Forests in Assam, Mizoram and Tripura have been identified as 'extremely fire-prone'. Dry deciduous forests are highly susceptible to severe fires.



New fire hotspots in 2026: While North East India has consistently seen the most intense fires, 2026 has seen notable spikes in additional regions – Himalayan states of Himachal Pradesh and Uttarakhand, Odisha in the east, and the Rayalaseema region in southern India.

What are the reasons behind Forest Fires in India?

There are both natural and anthropogenic causes of forest fires in India. These are mentioned below-

Natural Causes

a. Lightning- A lightning strikes power cables, trees, or rocks can produce a spark trigerring forest fires.

b. Volcanic eruption- Hot magma in the earth's crust is usually expelled out as lava during a volcanic eruption. The hot lava then flows into nearby fields or lands to start wildfires.

c. Heat patterns- Increased temperatures due to global warming make the forests more vulnerable to forest fires. Rising atmospheric temperatures and dryness (low humidity) make favourable circumstances for a fire to start.

d. Lack of soil moisture- The dryness in the soil triggers fire in forests. **For ex-** The recent Uttarakhand wildfires have been caused due to this.

e. Natural availability of materials trigerring forest fire- In India, availability of large quantities of dry wood, logs, stumps, dead leaves, dry grass and weeds in forest lands are also reasons of forest fires.

Anthropogenic Factors

a. Smoking- Smoking is the leading cause of forest fires globally. Throwing away the cigarette butts without completely extinguishing them can lead to wildfires.

b. Campfires- During camping or outdoor activities, people normally leave lit fires or combusting materials unattended. This ignites wildfires.

c. Burning Debris- Wastes and trash on several occasions are burned to ashes as a way of reducing the accumulation of rubbish. This also leads to forest fires in India. **For ex-** The recent Simlipal Forest fire.

d. Slash and Burn Cultivation- This is one of the major reason for the fire in India's Northeastern region.

Why peak forest fires occur during the spring?

Spring in India occurs between March and April. In India, the occurrence of wildfires will be at peak during spring season. The reasons are as follows-

a. Less rainfall during the winter months- Less rainfall during winter months reduce the soil moisture in forests. The forest soil loses the capacity to control the fire on its own. **For ex-** The recent Uttarakhand forest fires.

b. Large availability of combustible materials- The large availability of combustible materials like dry wood, logs, stumps, dead leaves, dry grass and weeds, increase the intensity of forest fires. Further, strong winds enhance the intensity of forest fires.

What is the Impact of forest fires in India?

a. Loss of Ecosystems and Biodiversity- Forest fires destroy the habitats and the intricate relationships of diverse flora and fauna, leading to loss of ecosystems and biodiversity. **For ex-** Extinction of wildlife in India.

b. Forest Degradation- Forest fires reduce the quality of certain forest features like soil fertility, biodiversity, and ecosystems.

c. Impact on livelihood- According to the 2011 census, 1.70 lakh villages in India have proximity to forests. The livelihood of several crores of people is dependent on fuelwood, bamboo, fodder, and small timber. Forest fires directly impact their livelihood.

d. Air Pollution- Forest fires reduce carbon sequestration, and instigate huge clouds of smoke leading to massive air pollution.

e. Soil Degradation- Forest fires kill beneficial soil microorganisms that are responsible for breaking down the soil and promoting soil microbial activities. Further, the wildfires also make soils vulnerable to soil erosion.

f. Destruction of Watersheds- Forest fires lead to the destruction of wetlands of forest, which are protected by the forest.

What are the Government initiatives for forest Fires in India?

Forest Fire Alert System(FFAS)	Forest Survey of India(FSI) developed a Forest Fire Alert System (FFAS). This system has been developed to monitor wildfires in real-time.
MODIS (Moderate Resolution Imaging Spectroradiometer) Sensors	Using these sensors, the real time information on forest is collected and sent to the Forest Survey of India. The FSI forwards the data by email to state, district, circle, division, range and beat levels. People in the locality receive SMS alerts.
National Master Plan for Forest Fire Control	The government prepared the National Master Plan for Forest Fire Control. Under this, the government aims to introduce a coordinated and integrated fire-management programme.

What should be the Way Forward to reduce Forest Fires?

a. Capacity Development- Capacity development of forest departments' officials at different levels (national, regional, local) to reduce the vulnerability of Indian forests fire.

b. Forest Control Manuals- Creation of forests fire control manuals for field staff helps in early detection, reporting and controlling the fires.

c. Comprehensive forest fire policy- A cohesive policy or action plan should be formulated to set forth the guiding principles and framework for wildfire Management. The policy should also incorporate the dimension of climate change.

d. Indigenous knowledge- Using indigenous knowledge and techniques of local and tribal people in comprehensive wildfire management.

e. Infrastructure creation- Improving the Staffing and capacity of firefighters in the country. **For ex-** Construction of watchtowers and crew stations, hiring seasonal fire watchers to spot fires etc.

f. Development of Technology- Modern firefighting techniques such as the radio-acoustic sound system for early fire detection and Doppler radar should be adopted. We must also aim at developing a National Fire Danger Rating System (NFDRS) and Fire Forecasting System for faster detection and control of fire.

g. Expanding Monitoring to Emerging Hotspots: With new fire-intensity spikes recorded in Himachal Pradesh, Uttarakhand, Odisha, and Rayalaseema in 2026, monitoring infrastructure and response capacity must be extended beyond the historically identified Northeast-centric zones

Read More– DTE
UPSC Syllabus- GS 3– Disaster Management

India's Multi-Hazard Early Warning Decision Support System (MHEW-DSS)- Explained Pointwise

India faces frequent extreme weather events, with over 75% of districts vulnerable to multiple hazards. To address gaps in forecasting, the India Meteorological Department (IMD) has developed the Multi-Hazard Early

Warning Decision Support System (MHEW-DSS) under Mission Mausam, enabling proactive, impact-based early warnings.

This article examines the objectives of MHEW-DSS, its key features, sectoral impact, and limitations.

What is MHEW-DSS and what are its core objectives?

MHEW-DSS is an advanced digital forecasting platform developed entirely in-house by the **India Meteorological Department (IMD)** using open-source technology and domestic expertise. It operates in real time using tools such as Geographic Information System (GIS) maps to quickly analyse and share weather information.

It was officially launched in January 2024 under **Mission Mausam** – the Union Cabinet-approved initiative to modernise India's weather forecasting infrastructure.

Background– India is highly vulnerable to climate hazards. Floods affect around 40 million hectares of land each year, heatwaves are increasing, and cyclones cause major losses. Earlier forecasting systems were fragmented, slow, and dependent on foreign vendors, reducing timely warnings.

Core Objectives of the MHEW-DSS

Source- PIB

1. Integrated multi-hazard forecasting-To build a single, unified platform covering all major hazards including cyclones, floods, heatwaves, thunderstorms, droughts, and landslides, replacing the earlier fragmented, hazard-by-hazard approach.

2. Speed and accuracy-To significantly cut forecast preparation time and improve forecast accuracy so that warnings reach communities when they can still act, not after the event has already begun.

3. Self-reliance and indigenisation-To eliminate dependence on foreign meteorological technology vendors and build a fully indigenous system, aligned with India's broader Atmanirbhar Bharat vision.

4. Universal reach-To ensure that timely, location-specific weather information reaches every household, farmer, fisherman, and emergency responder, embodying the national philosophy of "Har Har Mausam, Har Ghar Mausam."

What are the salient features of the MHEW-DSS?

1. Automated weather data processing- Over 90% of weather data collection, quality checks, and integration are now automated, eliminating manual bottlenecks and enabling near-instant detection of emerging weather threats.

2. Greater use of forecast models- More than 95% of numerical weather prediction (NWP) model inputs are used in forecasting, a sharp improvement over earlier systems where large volumes of model data went unused due to manual processing limitations.

3. Extended forecast lead time- Lead time has been stretched from 5 days to 7 days, giving state governments, district administrations, and communities meaningfully more time to prepare and act.

4. Faster forecast preparation- Time to prepare a forecast has been cut by roughly half, from 6 hours to about 3 hours, enabling warnings to reach the public faster when every hour matters.

5. Impact-based forecasting- Rather than just predicting weather parameters, the system assesses how a weather event will affect sectors like agriculture, health, energy, and transport. Colour-coded risk levels make this information instantly understandable even for non-specialists.

6. Wide population coverage- Impact-based, location-specific warnings now reach nearly 80% of India's population, including communities in neighbouring regions across the North Indian Ocean.

7. Cost savings and self-reliance- The system has generated approximately Rs. 250 crore in cost savings and has fully ended India's dependence on foreign meteorological vendors.

8. Reduced evacuation costs- Improved cyclone landfall forecasting has brought evacuation costs down to one-third of their 1999 levels, a direct result of better 3–5 day ahead predictions by IMD.

What is the institutional framework supporting the MHEW-DSS?

Three institutions form the operational backbone of the MHEW-DSS:

1. Ministry of Earth Sciences (MoES)- It is the nodal ministry responsible for all weather and climate services in India. It oversees IMD and allied research institutions, providing both the policy mandate and scientific oversight that underpin the MHEW-DSS.

2. India Meteorological Department (IMD)- Established in 1875, IMD is India's principal meteorological agency. Under the **MHEW-DSS**, IMD plays a central operational role by generating real-time forecasts and alerts through integrated digital systems.

3. Mission Mausam- It is the overarching policy and funding framework approved by the Union Cabinet in September 2024. It upgrades observation networks, data assimilation systems, and modelling capabilities that feed directly into MHEW-DSS operations.

> **Value Addition:**
> *Mausamgram is a hyper-local forecasting portal launched in January 2024 that delivers 10-day, location-specific forecasts across 1.5 lakh pin codes and 6.2 lakh villages. Accessible via the Mausam app, SACHET, and e-Panchayat Seva, it reaches farmers, Krishi Sakhis, and panchayat functionaries through a coordinated inter-ministerial network, ensuring weather information travels from the IMD server to the village chaupal.*

How does the MHEW-DSS work? What is its operational architecture?

MHEW-DSS functions through an integrated digital pipeline:

Data collection	Real-time data from radars, weather stations, satellites, ships, and buoys is unified on a single platform.
Analysis & visualisation	The Weather Analysis and Forecast Enabling System (WAFES), a GIS-based tool, helps analyse data and track hazards in real time.
Model integration	Multiple Numerical Weather Prediction (NWP) models are compared, with best outputs selected using ensemble methods for accuracy.
Impact-based warnings	Forecasts are converted into colour-coded, sector-specific alerts (cyclones, heatwaves, rainfall, etc.).
Dissemination	Alerts are shared via SMS, apps, APIs, Doordarshan, All India Radio, and more.

What has been the sectoral impact of the MHEW-DSS?

1. Cyclone and marine safety- Special pre-emptive alerts are issued for fishermen when wind speeds are forecast to exceed 45 kmph or seas are expected to turn very rough. During Cyclone Biparjoy (Gujarat) and Cyclone Dana (Odisha), accurate MHEW-DSS forecasts enabled mass evacuations that resulted in zero casualties in both states.

2. Public health- Heatwave forecasts feed directly into Heat Action Plans, enabling early activation of cooling centres and hospital preparedness. Weather data also supports advance prediction of vector-borne diseases such as dengue and malaria, helping health authorities pre-position resources before outbreaks peak.

3. Agriculture and farmer incomes- Twice-weekly agromet advisories guide farmers on sowing, irrigation, and harvesting decisions. Farmers who adopted these advisories reported 52.5% higher annual income than those who did not. If crop-weather advisories reach all rain-fed districts, the estimated annual economic benefit is Rs. 13,331 crore.

4. Energy sector- Forecasts for solar radiation, wind speed, and temperature directly support renewable energy production planning. Automation within the system has also cut energy consumption, saving approximately 2,10,240 kWh annually.

5. Water resource management- Accurate monsoon prediction and rainfall forecasting support reservoir operations, flood control scheduling, and irrigation planning at the state level. Digital workflows have additionally saved approximately 63 kilolitres of water annually by eliminating paper-based chart production.

6. Environment- Digital forecasting has ended manual chart-plotting across 40 IMD offices, saving 23.4 tonnes of paper annually and avoiding 2.57 tonnes of CO_2 emissions, with associated annual cost savings of approximately Rs. 1.40 crore.

7. Governance and institutional efficiency- Over 200 organisations including NDMA, NDRF, and State Disaster Management Authorities use IMD's applications. Annual manpower savings from digital transformation have reached approximately Rs. 57.6 crore.

What is the national and international significance of the MHEW-DSS?

National significance

1. Atmanirbhar forecasting- MHEW-DSS is India's first fully indigenous, end-to-end digital forecasting system, eliminating foreign vendor dependence in a domain critical to national disaster preparedness and food security.

2. Sendai Framework alignment- The system directly operationalises India's commitments under the Sendai Framework for Disaster Risk Reduction (2015–2030), particularly the goal of universal early warning coverage, with India now reaching nearly 80% of its population.

3. Scalable and replicable design- Built on open-source standards, the system can be extended to cover new hazards, new regions, and new sectors without structural overhaul, making it a long-term platform rather than a one-time project.

International significance

1. Regional early warning leadership- As a Regional Specialized Meteorological Centre (RSMC), IMD uses MHEW-DSS to provide severe weather advisories and tropical cyclone forecasting to countries including Bangladesh, Sri Lanka, Myanmar, Oman, and the UAE, making India a first responder for South and South-East Asian climate disasters.

2. Global institutional recognition- The system supports frameworks under the World Meteorological Organization (WMO) and the Economic and Social Commission for Asia and the Pacific (ESCAP)/WMO Panel on Tropical Cyclones, cementing India's role in global early warning architecture.

3. Awards and recognition- MHEW-DSS has received the UN Office for Disaster Risk Reduction (UNDRR) Sasakawa Award for Disaster Risk Reduction 2025, the Award of Excellence at the Digital Transformation Summit 2026, and the Economic Times GovTech Award 2026, establishing India as a globally credible innovator in disaster risk reduction technology.

What are the challenges and limitations of the MHEW-DSS?

1. Last-mile connectivity gaps- In remote tribal, hilly, and deep coastal areas, poor internet penetration and low smartphone ownership limit the reach of digital channels like Mausamgram and the Mausam app, risking exclusion of the very communities most vulnerable to climate hazards.

2. Low weather literacy- Colour-coded alerts and sector-specific advisories are only useful if recipients understand them. A large share of farmers and fishermen still lack the weather literacy needed to translate a warning into a timely, appropriate action.

3. Observational network gaps- MHEW-DSS outputs are only as reliable as the data feeding them. Gaps in radar coverage, automatic weather station density, and ocean buoy networks, particularly in the North-East, central India, and the deep Indian Ocean, can degrade forecast quality in critical situations.

4. Uneven state-level implementation- The system delivers warnings efficiently at the national level, but converting those warnings into ground-level preparedness action depends on state and district administrative capacity, which varies enormously across India.

What should be the Way Forward?

1. Fill data gaps- Expand radar, automatic weather stations, and ocean buoys in under-monitored regions like the North-East, central India, and the Arabian Sea.

2. Promote weather literacy- Run awareness programmes for farmers, fisherfolk, and panchayats through Krishi Sakhis, Common Service Centres, and Gram Sabhas.

3. Enable offline access- Develop offline versions of Mausamgram and the Mausam app for low-connectivity areas.

4. Integrate with disaster plans- Link MHEW-DSS warnings with State Disaster Management Plans for automatic local action.

5. Use data for adaptation- Share data with local bodies for long-term climate planning.

6. Global outreach- Promote MHEW-DSS in developing countries via platforms like Coalition for Disaster Resilient Infrastructure (CDRI) and Global South initiatives.

Conclusion

Weather warnings matter only if they lead to action. MHEW-DSS shows India can build and scale world-class, indigenous forecasting systems. The key challenge now is last-mile delivery-ensuring farmers, fishermen, and local leaders receive and act on warnings in time, as this will determine India's climate resilience.

Read More: PIB
UPSC Syllabus: GS 3 – Disaster Management; Science and Technology- Developments and their Applications

Buffer Stock – Significance & Challenges – Explained Pointwise

The buffer stock is a core component of India's food management policy, acting as an economic safety net for both farmers and consumers. It represents the strategic reserve of food grains held by the government to manage shortages, stabilize market prices, and ensure adequate food supply, particularly for vulnerable populations.

Introduction:

- Buffer stock refers to a reserve of a commodity that is used to stabilize price fluctuations and unforeseen emergencies. The concept of buffer stock was first introduced during the 4th Five Year Plan (1969-74).
- In India, buffer stocking of foodgrains is conceptually seen as a method to deliver strategic food and agricultural domestic support policies. Through these, the government caters multiple objectives such as providing famine relief, ensuring food security to consumers and providing production incentives to farmers.
- The responsibility for procuring, storing, and distributing the buffer stock lies primarily with the Food Corporation of India (FCI).

Buffer Stock Norms in India:

- The cabinet committee on Economic Affairs fixes the minimum buffer norms on quarterly basis: i.e as on 1st April, 1st July, 1st October and 1st January of every financial year.
- It is estimated that as on 1st of July 2025, approximately 358 LMT wheat and 377 LMT rice is available in the central pool, against the buffer norms of 275 LMT of wheat and 135 LMT of rice (LMT = Lakh MT).
- The central pool includes Operational Stocks and Strategic Reserves. Operational stocks meet monthly requirements under TPDS. Strategic reserves/food security stocks meet any shortfalls in future procurement.

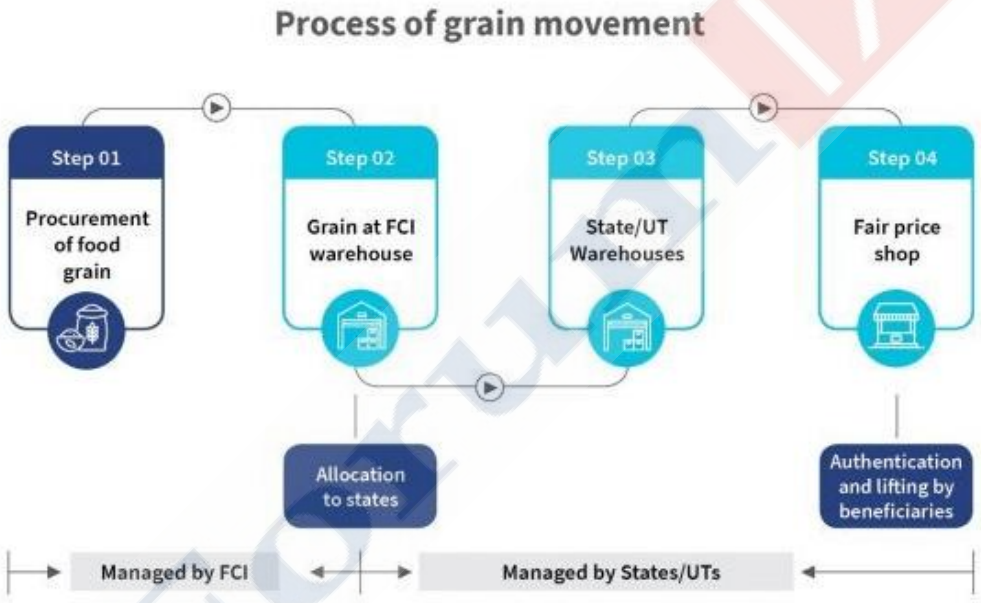
Objectives of Buffer Stock:

Consumption Side	**Food Security and Distribution:** • **Counter Famine/Shortage:** To provide a continuous supply of food grains during periods of crop failure, natural disasters, or other crises where agricultural production falls short. • **Public Distribution System (PDS):** To supply grains to the Public Distribution System (PDS) and other welfare schemes (like the National Food Security Act, 2013), ensuring subsidized food reaches the poor.
Production Side	**Price Stabilization:** • **Price Floor for Farmers:** To provide stability by purchasing grains from farmers at the Minimum Support Price (MSP). This guarantees a remunerative price, preventing distress sales and encouraging production.

	• **Price Ceiling for Consumers:** To control market prices. If open market prices rise too sharply, the government releases grains from the buffer stock to increase supply and bring prices down

Procurement Process:

1. **Minimum Support Price (MSP):** Before each cropping season (Kharif and Rabi), the government announces the MSP for key crops, including paddy (rice) and wheat.
2. **FCI Purchases:** Farmers sell their produce to the FCI and state agencies at the MSP. This assures farmers of a guaranteed income.
3. **Stock Accumulation:** The procured stock is stored in godowns (warehouses) across the country, managed by the FCI, and is rotated regularly to prevent spoilage.



Significance of Buffer Stock:

1. **Price stabilization:** Buffer stock aims to stabilize the prices of food grains, by regulating their supply in the market. The government intervenes in the market during periods of production fluctuations, natural disasters, or price volatility.
2. **Consumer Protection:** When necessary, the FCI releases stock into the open market through schemes like the Open Market Sale Scheme (OMSS) to cool down inflationary pressure on food prices.
3. **Food security:** Maintaining buffer stocks ensures a sufficient supply of foodgrains to meet the nutritional needs of the population and prevent food shortages. The government releases minimum buffer stock norms to ensure food security. It mitigates the adverse effects of production failures, natural calamities, or unforeseen events on the availability and prices of essential commodities.
4. **Welfare scheme:** The buffer stock serves as the backbone of India's social welfare system. The government utilizes this buffer stock to disperse the foodgrains to more vulnerable segments of the

general public through a public distribution system, at lower than the market value which is otherwise called the issue cost.

5. **Increase farmers income:** By procuring grains at Minimum Support Prices (MSP), buffer stocks provide assured income to farmers, especially during years of excess production. This guarantees that farmers are shielded from price crashes in the open market.
6. **Market Intervention/ Supply Management:** Buffer stocks enable the government to intervene in markets and correct imbalances by releasing grains during supply shortages or surplus production, thereby preventing extreme price fluctuations that can harm consumers or farmers.
7. **Export Opportunities:** Buffer stocks, when managed efficiently, can also create opportunities for exporting surplus grain during years of good harvests, enhancing foreign exchange earnings and ensuring optimal use of excess production for e.g. Surplus wheat from buffer stocks was exported in 2021 to countries in South Asia and Africa, boosting India's presence in global grain markets.

Challenges related to Buffer Stock:

1. **Procurement cost:**
    - There are multiple costs involved in the procurement of buffer stock by FCI, which include handling expenses, storage cost, normal loss, administrative cost, rural development cess.
    - MSP is also being increased by the government which is raising the overall cost of procurement. The food subsidy bill is continuously increasing the burden of buffer stock cost.
2. **Storage Infrastructure:** India's current storage infrastructure is inadequate, with over-reliance on conventional godowns that lead to poor handling and spoilage of grains. The lack of modern silos results in significant post-harvest losses.
3. **High Maintenance Cost:** Maintaining large buffer stocks involves high operational costs, including storage, transportation, and procurement expenses, which put a strain on public finances. These rising costs can make the entire process unsustainable over the long term.
4. **Pilferage and Theft:** The buffer stock system faces challenges of pilferage and theft due to poor security measures and leakages in the distribution network. This results in substantial losses and reduced effectiveness of stock management.
5. **Quality Degradation:** Grains stored for extended periods under poor conditions often suffer from quality degradation, leading to reduced nutritional value. This is particularly an issue with traditional godowns, which lack proper ventilation and protection against pests.
6. **Logistical Challenges:** The transportation and movement of buffer stocks, especially across remote regions, present logistical hurdles. The delay in moving grains from one region to another leads to bottlenecks and mismanagement, affecting timely availability.
7. **Environmental Concerns:** The storage and movement of large buffer stocks also have environmental impacts, including carbon emissions from transportation and the use of non-eco friendly materials in storage.

Way Forward:

1. **Modernization of Storage Facilities:** India should modernize its storage infrastructure with climate-controlled silos to reduce post-harvest losses and maintain grain quality over time for e.g. The government has initiated a pilot project in 11 PACS under its ambitious grain storage plan, aiming to build 700 lakh metric tons of storage capacity over five years with Rs 25 lakh crore investment.
2. **Improved Inventory and Supply Chain Management:** Leveraging digital tools such as blockchain and IoT for real-time tracking of stocks and distribution can ensure efficient management for e.g. The

Smart Warehouse Management System implemented by FCI aims to streamline grain storage and reduce leakages.

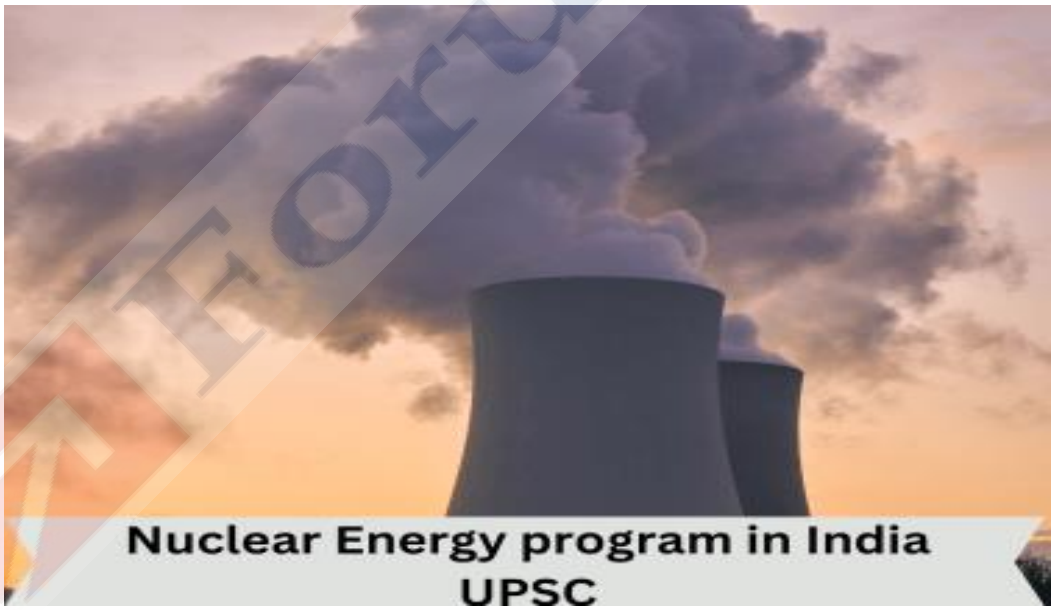
3. **Policy Reforms in Buffer Stock Management:** Reforming PDS and buffer stock norms, introducing decentralized procurement and localized storage will enhance the efficiency of stock utilization.
4. **Incentives for Private Sector Participation:** Encouraging public-private partnerships (PPPs) in building modern storage infrastructure and adopting efficient supply chain models can reduce the burden on government agencies and ensure better grain management.
5. **Sustainable and Eco-Friendly Practices:** Adopting green technologies such as solar-powered cold storage and eco-friendly packaging can make buffer stock management more sustainable, reducing its environmental impact.
6. **Enhanced Focus on Regional Disparities:** Addressing regional imbalances in buffer stock storage and distribution is key to ensuring food availability across all parts of India. Establishing regional buffer stock hubs and better connectivity to remote areas will help mitigate logistical challenges.

Conclusion:

The future of India's buffer stock system lies in modernization, digital integration, and sustainability. By focusing on reforms, innovation, and eco-friendly practices, the government can overcome existing challenges and transform buffer stock management into a robust and efficient mechanism.

UPSC GS-3: Agriculture
Read More: Arthapedia

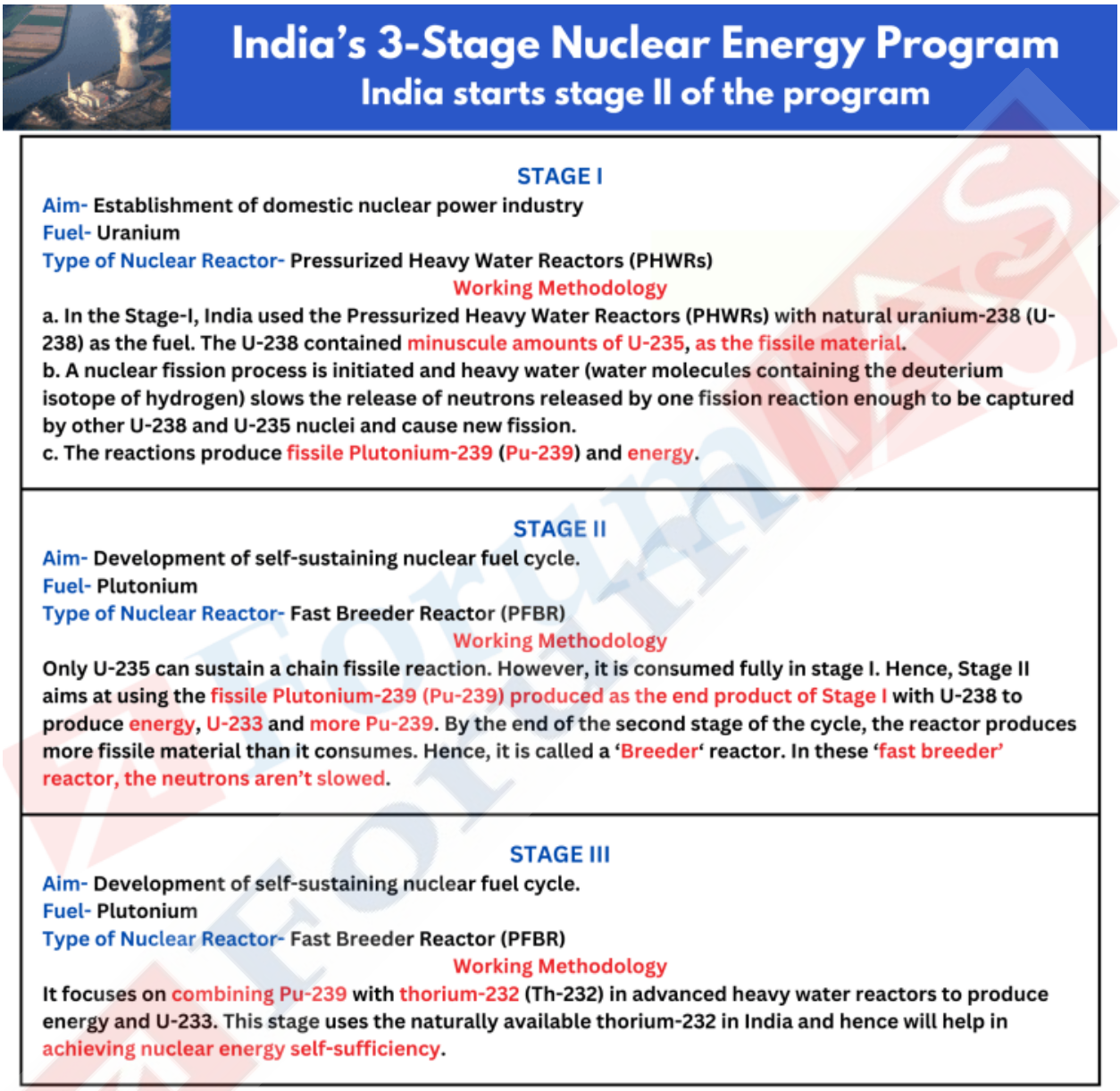
India's Nuclear Energy Program- Explained Pointwise



On April 6, 2026, India achieved a major milestone in its nuclear programme as the Prototype Fast Breeder Reactor at Kalpakkam, Tamil Nadu reached criticality-successfully sustaining a controlled nuclear fission chain reaction for the first time.

With this, India joins a select group of nations with advanced fast breeder reactor technology, and once fully operational, it will become only the second country after Russia to run a commercial fast breeder reactor.

Nuclear Energy program in India UPSC



Created By Forum IAS

What is India's three-stage nuclear energy program?

Historical Background- The roadmap of India's three-stage nuclear program was envisioned by Dr. Homi J Bhabha. The program had been conceived with the ultimate objective of utilising the country's vast reserves of thorium-232. India hosts roughly a quarter of the world's thorium, and the three stages are expected to make the country completely self-sufficient in nuclear energy.

Three-stage Nuclear Energy Program

Stages	Aim	Fuel	Nuclear Reactor
Stage I	Establishment of domestic nuclear power industry	Uranium	Pressurized Heavy Water Reactors (PHWRs)
Stage II	Development of self-sustaining nuclear fuel cycle.	Plutonium	Fast Breeder Reactor (PFBR)
Stage III	Complete energy independence through domestic thorium resources.	Thorium	Advanced heavy water reactors (AHWRs)

Working of 3-Stages

Source- Yojana

Stage I

a. In the Stage-I, India used the Pressurized Heavy Water Reactors (PHWRs) with natural uranium-238 (U-238) as the fuel. The U-238 contained minuscule amounts of U-235, as the fissile material.

b. A nuclear fission process was initiated and heavy water (water molecules containing the deuterium isotope of hydrogen) slowed the release of neutrons released by one fission reaction enough to be captured by other U-238 and U-235 nuclei and cause new fission.

c. The reactions produce fissile Plutonium-239 (Pu-239) and energy.

Stage II

a. Only U-235 can sustain a chain fissile reaction. However, it is consumed fully in stage I. Hence, Stage II aims at using the fissile Plutonium-239 (Pu-239) produced as the end product of Stage I with U-238 to produce energy, U-233 and more Pu-239.

b. By the end of the second stage of the cycle, the reactor produces more fissile material than it consumes. Hence, it is called a 'Breeder' reactor. In these 'fast breeder' reactor, the neutrons aren't slowed.

Stage III

a. It focuses on combining Pu-239 with thorium-232 (Th-232) in advanced heavy water reactors to produce energy and U-233.

b. This stage uses the naturally available thorium-232 in India and hence will help in achieving nuclear energy self-sufficiency.

What are the important milestone events in India's Nuclear Energy Program?

The establishment of several institutions has played a critical role in driving India's Nuclear Energy Program.

Passive Phase

1945	Tata Institute of Fundamental Research (TIFR) was established by Homi J. Bhabha with the goal of conducting research in fundamental sciences.
1948	The Atomic Energy Commission of India (AEC) was established as a government agency responsible for formulating and implementing the country's nuclear policy.
1954	The Department of Atomic Energy (DAE) was created. It has been engaged in the development of nuclear power technology and applications of radiation technologies in the fields of agriculture, medicine, industry, and basic research.
1957	Atomic Energy Establishment, Trombay (AEET) was established by Dr. Homi Bhabha for a multidisciplinary research program essential for the ambitious nuclear program of India. In 1966, AEET was renamed Bhabha Atomic Research Centre (BARC).
1963	The USA and India sign an accord for the supply of enriched fuel to India's Tarapur nuclear power plant.
1969	Nuclear Power Grid connection was established from the Tarapur Plant.

However, India did not sign the NPT in 1970, did not become a member of the NSG in 1974. After India's first nuclear Test, Smiling Buddha in 1974, there was widespread condemnation from the international community. There was international apartheid against India in supply of nuclear fuel.

Active Phase

1987	Nuclear Power Corporation of India Limited (NPCIL) was established as a public sector undertaking responsible for the generation of electricity from nuclear power.

2003	Bharatiya Nabhikiya Vidyut Nigam Ltd. (BHAVINI) was set up by the Department of Atomic Energy (DAE) as a special-purpose vehicle to implement stage II of the 3-stage nuclear power program.
2022	22 operational reactors in India with a total installed capacity of, 6780 MWe (Megawatts electric). 10 nuclear power reactors with a total of 8000 MW capacity are under construction.
2024	PM Modi witnessed commencement of core loading at the 500 MWe PFBR at Kalpakkam – marking the formal start of Stage II. Atomic Energy Regulatory Board (AERB) subsequently granted permission for the "First Approach to Criticality," approving final fuel loading and Low Power Physics Experiments.
2025	**a**. The SHANTI Act, 2025 received Presidential assent on 20 December, replacing the Atomic Energy Act, 1962 and the Civil Liability for Nuclear Damage Act, 2010, and enabling private sector participation in nuclear power. **b**. The Atomic Energy Regulatory Board (AERB) granted approval for fuel loading of the PFBR at Kalpakkam as part of its commissioning process.
2026	PFBR at Kalpakkam achieved criticality on 6 April, sustaining a controlled fission chain reaction for the first time.

Source- World Nuclear Association

What are the advantages of India's Nuclear Energy Programme?

1. Energy Sovereignty- Fossil-based energy sources contributed about 82% of the primary energy supplied in 2021. India imports a significant part of its fossil fuels (coal and gas) for energy generation. Bulk fuel imports raise economic and strategic vulnerabilities for a developing country like India. Nuclear energy can help India reduce its dependence on imported fuel.

Fuel	Consumption (EJ)	Percentage	Combined Percentage
Oil	184.21	30.95	82.28
Natural Gas	145.35	24.42	
Coal	160.10	26.90	
Nuclear Energy	25.31	4.25	17.72
Hydroelectricity	40.26	6.76	
Renewables	39.91	6.71	
Total	**595.14**	**100.00**	**100.00**

Source- NITI Aayog

2. Decarbonisation of power Sector- Thermal power plants have high carbon footprint as they contribute heavily to global warming, climate change and air pollution. Nuclear power plants will help in decarbonising the power sector.

3. Limitations attached with other renewable energy sources- Solar energy is land intensive, wind energy requires energy storage systems. Also, they require imported technologies and materials such as photovoltaic cells, batteries, and storage equipment. On the other hand, indigenous nuclear reactors have reduced dependency in critical imports.

4. Cheaper to Operate- Nuclear power plants are cheaper to operate than coal or gas plants, despite the cost of managing radioactive fuel and disposal. According to estimates, nuclear plants cost only 33-50% of a coal plant and 20-25% of a gas combined-cycle plant.

5. Reliable and Continuous Power- Nuclear energy provide reliable and continuous base load power, unlike solar and wind energy, which are intermittent and dependent on weather conditions.

6. Resource Base- India has vast thorium reserves which could be exploited using a thermal breeder reactor. A significant amount of thorium reserves are found in the monazite sands of coastal regions of South India.

What are the challenges to India's Programme?

1. Capital Intensive- Nuclear power plants are capital intensive. There have been cost over runs in recently built nuclear power plants.

2. Insufficient Installed Capacity- As of 2025–26, India's installed nuclear power capacity is about 8,780 MW across 24 reactors, against a target of 100 GW by 2047 under the Nuclear Energy Mission.

3. Nuclear Safety- Local communities in India have been resisting nuclear reactors due to fears of nuclear disasters like Chernobyl, 1986 or Fukushima, 2011. **For ex-** Locals protesting against the Mithi virdi nuclear project in Gujarat.

4. Nuclear Liability- Civil Liability for Nuclear Damage Act, 2010 had been a long-standing deterrent to foreign suppliers due to unlimited supplier liability. The SHANTI Act, 2025 now replaces it with a graded, capped liability framework – removing automatic supplier liability and introducing tiered operator caps based on reactor size. However, opposition parties have raised concerns about dilution of supplier accountability.

5. Hurdles created by NSG and NPT- India's non-ratification of NPT and lack of NSG membership, has created diplomatic hurdles in accessing more nuclear fuel and better nuclear technologies.

6. Use of outdated Technology- Currently operational Indian nuclear reactors have become outdated and suffer from multiple operational probles. **For ex-** 6 VVER (water-water energy reactor) design reactors encountering operational problems at Kudankulam.

What should be the way Forward?

1. Small Modular Reactors (SMRs)– Indigenous Small Modular Reactors (SMRs) must be built at coal plant sites which would be retiring in the coming decades. SMRs offer the advantages of being safe, economical, compact and adaptable. Partnerships with NTPC and other thermal plant owners must be explored.

2. Expansion of indigenous PHWR reactors- The Indigenous 700 MWe PHWR, must be expanded in fleet mode to add to the installed nuclear power capacity in India.

3. Scale up the Fast Breeder Reactor programme – With the PFBR achieving criticality in 2026, two additional FBRs must now be constructed at Kalpakkam, followed by four more beyond 2030. This will consolidate Stage II and generate sufficient U-233 from thorium blankets to fuel Stage III reactors.

4. Accelerate Stage III – Advanced Heavy Water Reactor (AHWR) – Design validation and peer review of the AHWR is ongoing. The project must be formally launched at the earliest to utilise India's vast thorium reserves, estimated to sustain energy needs for around 60,000 years.

5. Augmentation of safety of nuclear facilities- There must be constant updation of safety skills of nuclear operators. Further, masses must be comprehensively sensitised about the functioning of nuclear power plants using highly intellectual individuals having mass appeal. **For ex-** Dr. APJ Abdul Kalam sensitizing the masses before the establishment of the Kudankulam nuclear power plant.

6. Ensuring Regulatory Autonomy- The AERB, India's nuclear regulatory body, must be provided functional autonomy by removing its reporting from the Department of Atomic Energy (DAE).

Read More- IE
UPSC Syllabus- GS 3- Science and Technology, Indigenisation of technology

Food Processing Sector-Significance and Challenges- Explained Pointwise

India with its agricultural tradition and diverse climate, holds immense potential for the food processing sector. This industry is not only a cornerstone for the country's economic growth but is also pivotal for ensuring food security, reducing wastage, enhancing farmers' incomes and providing employment opportunities. In order to achieve a developed nation status in the next 25 years, the food processing sector would be crucial in transforming India's primary agriculture sector with enhanced productivity and profitability while ensuring sustainability and resilience.

Source- Yojana

What is Food Processing? What are the reasons behind its growing Demand in India?

Food processing is the **transformation of raw agricultural ingredients – such as crops, livestock, or fish – into food** that is suitable for consumption, cooking, or storage. It extends the shelf life of food, reducing waste and ensuring availability throughout the year.
Food processing sector has been recognized as a 'sunrise sector' and a key priority industry under the '**Make in India**' initiative.

Type of Food Processing: The can be categorized into primary and secondary products:

1. **Primary products** are made from processed raw materials, like fruits and vegetables.
2. **Secondary products** are created by processing primary food items into new products, such as jams, sauces, and butter.

Main reasons behind the Growth of Food Processing sector in India:

1. **Changing Consumer Demographics & Lifestyles:**
    a. **Urbanization:** Rapid urban migration has led to busier lifestyles, increasing the demand for **Ready-to-Eat (RTE)** and **Ready-to-Cook (RTC)** meals.
    b. **Rising Disposable Income:** A growing middle class has more "wallet share" to spend on premium, branded, and packaged health foods.

c. **Health Consciousness:** There is a significant surge in demand for organic, functional (ayurvedic/herbal), and fortified foods.

2. **Strong Agricultural Foundation:**
   a. **Raw Material:** India is a global powerhouse in raw material production, providing a steady supply for processing. India is the world's largest producer of milk and the second-largest producer of fruits, vegetables, cereals, and fish.
   b. **Diverse Agro-Climatic Zones:** India's 15 different agro-climatic zones allow for the cultivation of almost any vegetable or fruit year-round, ensuring a consistent supply of raw ingredients.
3. **Government Policy Support:**
   a. **Sunrise Sector:** The Government of India has classified food processing as a **"Sunrise Sector,"** backed by massive financial outlays.
   b. **PMKSY (Pradhan Mantri Kisan Sampada Yojana):** This "umbrella" scheme focuses on modernizing supply chains and creating "Mega Food Parks" to reduce post-harvest losses.
   c. **PMFME Scheme:** Aimed at the **Micro** level, this scheme helps 200,000 unorganized units transition into the formal sector through credit-linked subsidies and technical training.
   d. **PLI Scheme:** The **Production Linked Incentive (PLI)** scheme, with an outlay of **~₹10,000 crore** rewards companies for increasing their manufacturing output and promoting Indian brands abroad.
   e. **100% FDI:** The government allows 100% Foreign Direct Investment (FDI) under the automatic route for food processing, attracting global giants like Nestlé, PepsiCo, and Danone.
   f. Proactive government policy & assistance with government interventions like **Mega Food Park Scheme**.
4. **Technological & Infrastructure Advancements:**
   a. **Cold Chain Revolution:** Massive investments in integrated cold chains and "Multi-Product Food Irradiation Units" are extending the shelf life of perishables.
   b. **e-Commerce:** The explosion of **Quick-Commerce (Q-Commerce)** and e-commerce platforms has shortened the "farm-to-fork" journey, giving processed food brands direct access to consumers.
5. **Export Opportunities:**
   a. **Global Demand:** There is a high demand for Indian processed foods (like spices, basmati rice, and marine products) in the Middle East, Southeast Asia, and the West.
   b. **Trade Agreements:** Recent trade deals with the UAE, Australia, and the EFTA are opening up duty-free or reduced-tariff access to new markets.

What is the significance of Food Processing Sector?

1. Increased Contribution to GDP: The food processing sector has emerged as an important segment of the Indian economy in terms of its contribution to GDP. During the last 5 years the sector had grown at an average annual growth rate of around 8.3% as compared to around 4.87% in the agriculture and allied sectors (at 2011-12 prices).

Table 1: GVA by Food Processing Industries (FPI) at Constant Prices (2011-12)

(₹ lakh cr.)

Sr.	Economic activity	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21
1	GVA-All India	85.46	90.64	97.12	104.92	113.28	120.34	127.34	132.19	125.85
2	GVA Manufacturing	14.87	15.61	16.84	19.04	20.55	22.09	23.29	22.61	22.48
3	GVA-Agriculture, Forestry, Fishing	15.24	16.09	16.06	16.16	17.26	18.40	18.79	19.82	20.48
4	GVA-FPI	1.30	1.30	1.34	1.61	1.79	1.93	2.36	2.26	2.37

Source: *Annual Report 2022-23, MoFPI, GoI*

Source- Yojana

2. Employment Generation: This sector is a major employment generator in the country. As per the latest Annual Survey of Industries (ASI) for 2019-20, the total number of persons engaged in the registered food processing sector was 20.32 lakhs. Moreover as per the NSSO 73rd Round, 2015-16, the unregistered units of the sector supported employment for 51.11 lakh workers and constituted 14.18% of employment in the unregistered manufacturing sector.

Table 4: Number of Persons Engaged in Food Processing Sector

(lakh persons)

Sector	Food Processing Industry*	All Industries	(%) Share of FP sector
Registered (2019-2020)	20.32 lakh	166.21 lakh	12.22
Un-incorporated	51.11 lakh	360.41 lakh	14.18

Source: *Annual Report- FY 2022-23, MoFPI, GoI, *includes food products and beverage segments*

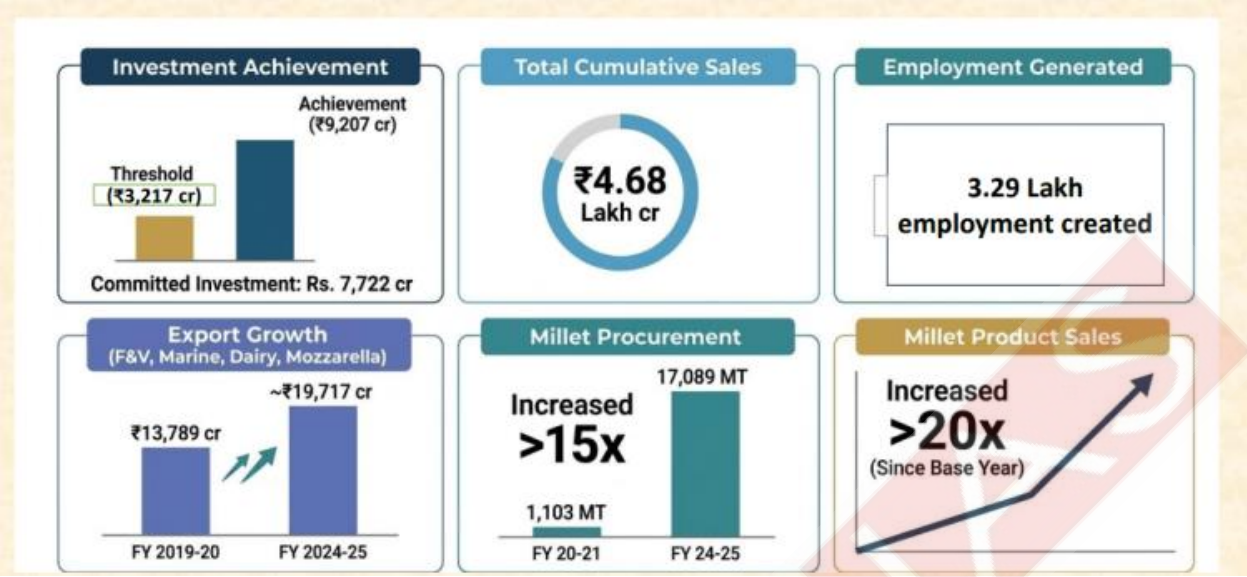
Source- Yojana

3. Large FDI inflow and market size: FDI equity inflows into the food processing sector reached $3.28 billion between 2019-2022. It is the fifth largest sector of the country's economy.

4. Promotes balanced regional development: This industry is a sunrise industry with a consistent demand for locally processed food. This promotes **balanced regional development** in the country.

5. Women entrepreneurship: The sector provides employment opportunities to rural women in India and also serves as a platform for entrepreneurship. **For ex-** Lijjat papad venture.

6. Nutritional Improvement: Processed foods can be fortified with essential vitamins and minerals, thereby addressing **malnutrition** and improving public health outcomes.

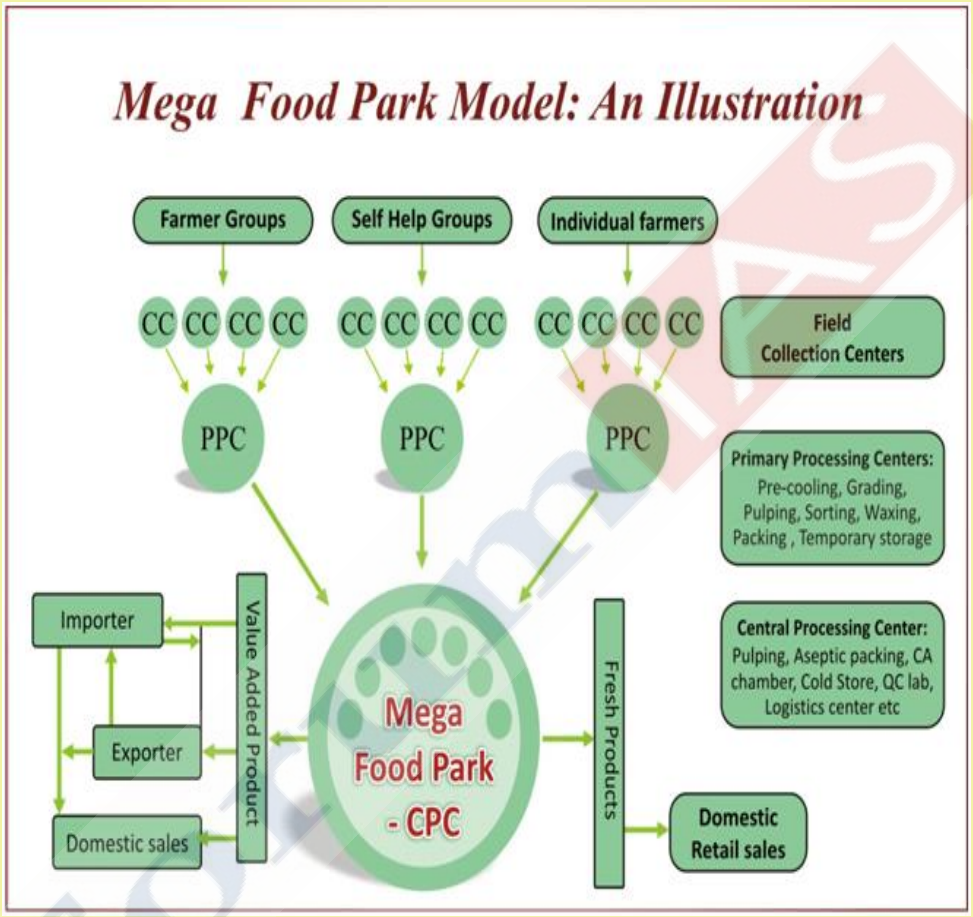


Source: PIB

What are the Government schemes and initiatives for promotion of Food Processing Sector in India?

Pradhan Mantri Kisan Sampada Yojana (PMKSY)	This Central Sector Scheme is being implemented across the country to facilitate the creation of modern infrastructure with efficient supply chain management from farm gate to retail outlet for promotion. **Key Sub-Schemes under PMKSY:** 1. **Mega Food Parks:** Provides state-of-the-art infrastructure for food processing units. Out of 41 approved, **24 are now fully operational.** 2. **Integrated Cold Chain & Value Addition:** Focuses on reducing post-harvest losses. 3. **Agro-Processing Clusters:** Creates modern infrastructure for groups of entrepreneurs. **71 clusters** have been approved to date. 4. **Food Safety & Quality Assurance:** Includes setting up **NABL-accredited food testing labs** to ensure international standards. It has directly benefitted over 53 lakh farmers & >7.6 lakh employment opportunities have been created.

Pradhan Mantri Formalization of Food Processing Enterprises (PM-FME)	It was launched in June 2020 under **Atmanirbhar Bharat Abhiyaan** to encourage 'Vocal for Local' in the sector with a total outlay of Rs. 10,000 crore during the period 2020-2025. The scheme aims to enhance the competitiveness of individual microenterprises in the unorganised segment of the food processing industry and promote formalisation of the sector. This is the first ever Government scheme for Micro Food Processing enterprises and is targeted to benefit 2 lakh enterprises through credit linked subsidies and adopting the approach of 'One District One Product'.
Food Processing Fund	The Government of India instituted the Food Processing Fund (FPF) in NABARD during 2014-15, with a corpus of Rs. 2,000 crore, with the objective of providing affordable credit to public and private players for setting up of Designated Food Parks (DFPs)
Warehouse Corpus Fund	The fund was set up corpus of Rs. 5000 crore to support State governments, State-owned agencies, and Corporates for the creation of scientific warehouse capacity through financial support.
Production Linked Incentive Scheme for Food Processing Sector (PLISFPI)	PLI scheme for Food Processing Sector was launched with the aim to generate employment for approximately 2.5 lakh persons in formal sector. The scheme has led to the creation of 3.3 lakh jobs & added more than 67 lakh metric tonnes of processing capacity.

Mega Food Park Scheme	Mega Food Parks are built on a 'cluster' strategy and focus on the development of cutting-edge support infrastructure in a well-defined agri/horticultural zone for the establishment of modern food processing units.  Source: MoFPI
Union Budget 2024-25	Announced the establishment of 50 **multi-product irradiation units** to reduce post-harvest losses & enhance shelf life, **100 NABL-accredited food testing laboratories** to strengthen quality assurance across the value chain & establishment of **National Makhana Board** – aimed at boosting value addition, branding, and global positioning of Makhana from India.

What are the Challenges faced by the Sector In India?

1. **Low GVA despite high demand:** Despite the increasing demand for processed food and ready-to-eat food in India, the share of the sector in overall GVA has only been 1.88% (2020-21) as against the share of manufacturing at 17.86% and the share of GVA in agriculture at 16.26%.

2. **Lack of skilled manpower and modern technology:** The availability of skilled manpower has been identified as one of the major challenges facing the industry in India. Many processing facilities use outdated technologies, reducing efficiency and product quality.
3. **Infrastructure Bottlenecks:** Inadequate cold storage facilities, transportation systems, and processing infrastructure result in post-harvest losses exceeding 30% of produce. The NITI Aayog estimates annual post-harvest losses close to Rs 90,000 crore.
4. **Informalization and Unorganized Segments:** The sector has a high concentration of unorganized segments, representing almost 75% across product categories. This causes inefficiencies in the production system.
5. **Supply Chain Inefficiencies:** Fragmented supply chains with multiple stakeholders and poor coordination lead to delays, waste, and low quality products. **For ex-** Broken supply chain in the agricultural hinterland of Bihar.
6. **Regulatory Challenges:** Stringent sanitary and phytosanitary (SPS) measures in export markets impede Indian processed food exports. **For ex-** Rejection of Indian processed exports by the EU.

Read More- [Kurukshetra Feb 2024 Summary] Food Storage Infrastructure- Explained Pointwise

What Should be the Way Forward?

1. **Use of Smart technologies:** Internet of Things (IoT), Artificial Intelligence (AI) Applications, Robotics and Automation should be used in the food processing sector to increase productivity and decrease wastage.
2. **Focus on horticulture and animal products:** Special focus must be put on making India a market leader in global trade for at least five value chains- processed fruits and vegetables, processed fish and sea food, meat, dairy products, poultry and eggs by 2047.
3. **Skilled Manpower:** The food sector must employ more professionals trained in food technology, quality control, processing methods, and food safety management.
4. **Better health markers:** It must involve better health markers on the packets. The regulatory mechanism governing food safety must be strengthened and properly governed.
5. **Tapping the popularity of agricultural products:** There is also a need to tap the popularity of various food grains and coarse grains like **millets** which are gaining increasing importance due to their nutritional benefits and adaptability to various climatic conditions.

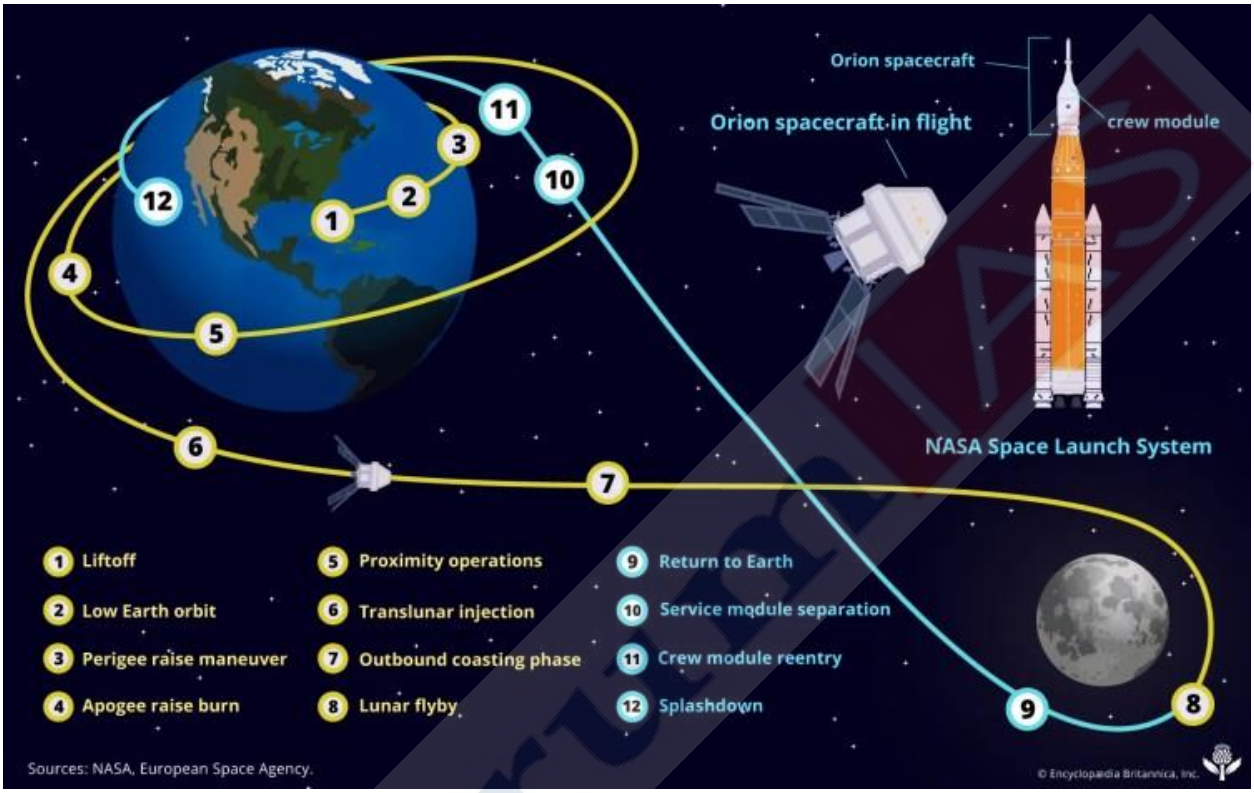
Conclusion:

The food processing sector is pivotal for India's economic transformation, farmer income enhancement, reduction of food waste, and rural employment generation. It has the most profound impact on the rural economy. With sustained focus on infrastructure, technology, formalization, and market linkages, India is well-positioned to unlock the full potential of this "sunrise industry" and emerge as a global food processing hub.

Read More: PIB, Wikipedia
Yojana articles Covered- Article 1, 3, 4, 6, and 7
UPSC Syllabus- GS 3- Indian Agriculture

ARTEMIS PROGRAM – Objective & Significance – Explained Poinwtise

The Artemis-2 Mission sent a crew of 4 astronauts beyond low-earth orbit for the first time since 1972. It aims to prove the whole system works as designed & accelerate plans to land U.S. astronauts on the moon amid increasing competition from China.



What is the Artemis Program?

- The **Artemis Program** is a NASA-led international human spaceflight program designed to return humans to the Moon for the first time since the **Apollo 17 mission** in 1972, and ultimately establish a sustainable presence there as a stepping stone for future missions to Mars.
- Artemis was the name of goddess of Moon in Greek mythology – who is the twin sister of **Apollo**, after whichS NASA's 1960s moon landing program was named.
- **Core Components of Artemis Program:**
    1. **Space Launch System (SLS):** The most powerful rocket ever built by NASA, designed to carry heavy payloads beyond Earth's orbit.
    2. **Orion Spacecraft:** The command capsule where astronauts live and work during their journey.
    3. **Human Landing System (HLS):** NASA has contracted private companies – specifically **SpaceX** (using a modified Starship) and **Blue Origin –** to build the landers that will actually touch down on the Moon.

Artemis Accord:

- The international collaborations under the Artemis program are bound by the Artemis Accord.
- They are a set of **non-binding, practical principles** created by NASA and the U.S. Department of State to guide international cooperation in the civil exploration and use of the Moon, Mars, comets, and asteroids for peaceful purposes.
- The Accords reinforce the **Outer Space Treaty of 1967** and other international agreements. Their goal is to establish a shared political understanding of responsible behavior to ensure a safe, predictable, and sustainable space environment for all.
- Launched on **2020**, with eight founding nations, they now comprise **59 signatories** (including the U.S.) representing nearly 30% of the world's countries.

- **Missions under Artemis Program:**

Mission	Launch	Goal
Artemis-1	2022	Uncrewed lunar orbit and return.
Artemis-2	2026	Crewed lunar flyby
Artemis-3	2027	Crewed test of HLS in low Earth orbit
Artemis-4	Early 2028	Lunar landing
Artemis-5	Late 2028	Begin Moonbase construction

What are the objectives of Artemis Program?

1. **Land the First Woman and First Person of Color on the Moon:** This is a central symbolic and inclusive goal of the program.
2. **Establish a Long-Term Lunar Presence:** Unlike the brief Apollo visits, Artemis aims to build a base camp on the lunar surface and the **Lunar Gateway** (a small space station orbiting the Moon) for extended missions.
3. **Preparation for Mars:** The Moon serves as a proving ground for the deep-space technologies, habitats, and life-support systems needed for future crewed missions to Mars.
4. **Enable Lunar Resource Utilization:** Investigate and use lunar resources (e.g., water ice at the south pole) for oxygen, drinking water, and rocket fuel to make missions more sustainable.

What is the significance of Artemis Program?

1. **Scientific & Resource Discovery:**
    a. **Unlocking Lunar Water Ice:** Previous missions (like Apollo) landed near the equator. Artemis is targeting the **lunar south pole**, where scientists believe there are vast deposits of water ice in permanently shadowed craters. This water can be used for drinking, oxygen, and rocket fuel.

   b. **Understanding Earth-Moon History:** The Moon acts as a "time capsule" for the early solar system. By studying its geology, especially in unexplored polar regions, scientists can learn more about the formation of Earth and the Moon.
   c. **Astronomy:** The far side of the Moon is radio-quiet, free from Earth's interference. Artemis will help deploy telescopes that can "see" the early universe in ways impossible from Earth.

2. **Economic & Technological Significance:**
   a. **Public-Private Partnership:** The program aims to kickstart a new commercial market. NASA is buying services (like lunar landers and rovers) from private companies (SpaceX, Blue Origin, etc.), incentivizing innovation and reducing costs.
   b. **Resource Utilization (ISRU):** For the first time, we will attempt to *live off the land* (In-Situ Resource Utilization). If we can mine lunar ice for fuel, the Moon becomes a **gas station in space**, dramatically lowering the cost of going to Mars and beyond.
3. **Geopolitical & Strategic Significance:**
   a. **Setting the Rules of the Road:** Through the **Artemis Accords**, the U.S. and its allies are establishing norms for peaceful space exploration, resource extraction, and "safety zones" to prevent conflict. This counters other nations' (e.g., China/Russia) visions for lunar governance.
   b. **Preventing a Second "Moon Race" Turned Conflict:** By making Artemis an international coalition (59+ nations), it transforms space into a zone of cooperation rather than confrontation.
4. **The "Stepping Stone" to Mars:** The Moon is a proving ground just **3 days away** from Earth. Mars is **6-9 months away**. Artemis allows us to test everything we need for Mars in a nearby, relatively safe environment:
   a. **Habitation:** Can humans live in deep space for months at a time on the Lunar Gateway?
   b. **Health:** How do we handle radiation and microgravity effects beyond low-Earth orbit?
   c. **Landing:** Can we land heavy payloads precisely on another body?
   d. **Refueling:** Can we make rocket fuel off-world?

Artemis is the essential training ground for the ultimate goal: **putting humans on Mars**

What are the challenges & criticisms faced by the Program?

1. **Significant Schedule Delays**: The program is roughly eight years behind its original targets. The first crewed landing, initially planned for 2024, has slipped to no earlier than 2028, and experts warn that even this date may be optimistic.
2. **Budgetary Challenges:** Between 2012 and 2025, NASA spent approximately $93 billion on the Artemis program. The projected costs through 2030 for the Human Landing System alone exceed $18 billion.
3. **Accelerating a Geopolitical "Race"**:
   a. The Artemis Accords, which govern the program's international cooperation, have been criticized for excluding major space powers like **China and Russia.**
   b. There is a growing push to accelerate the lunar landing timeline to "beat China" to the Moon. Critics argue that this focus on being first – reminiscent of the Cold War-era Space Race – risks repeating the mistakes of the Apollo program, which faded once the political goal was achieved.

4. **Cost Comparison:** Some analysts argue that Starship could eventually launch for a fraction of the cost of the SLS. This has led to political pressure on NASA to justify why it continues to fund its own massive rocket rather than relying entirely on commercial providers.
5. **The "Ownership" Debate:** The **Outer Space Treaty (1967)** states that no nation can claim "sovereignty" over the Moon. Critics and legal experts argue that a permanent Artemis base and the extraction of lunar resources (like water ice) could be seen as a form of illegal "appropriation" or land-grabbing.

Read more: The Hindu, Wikipedia
UPSC GS-3: S&T

Jan Vishwas Bill – Explained Pointwise

The Jan Vishwas (Amendment of Provisions) Bill has recently been passed by the Parliament. The enactment of the Bill has signaled a decisive move from a regime of excessive criminalisation to one rooted in trust-based governance, ease of doing business, and proportional regulation.

Source: Times of India

What is the Jan Vishwas Bill?

- The Bill builds on the earlier Jan Vishwas (Amendment of Provisions) Act 2023 (which decriminalized 183 provisions across 42 Central laws), as decriminalizes 717 provisions across 79 Central Acts.
- The Bill's main objective is to decriminalize minor offences that do not involve harm to public interest or national security, and replace criminal penalties with civil penalties or administrative actions.
- The Bill also introduces amendments aimed at **improving ease of living**, including reforms under the **Motor Vehicles Act, 1988** and the **New Delhi Municipal Council Act, 1994.**
- It **reduces compliance burden for MSMEs** and businesses by introducing graded enforcement such as advisory notices and warnings before penalties.

What are the objectives of the Bill?

1. **Intent Matters:** The Bill seeks a principled separation between conduct that warrants criminal sanction, such as fraud, willful evasion, and threats to public safety, and procedural non-compliance that carries no comparable moral charge.
2. **Equity**: Smaller enterprises & MSMEs are disproportionately exposed to compliance risks, not because they violate laws more often, but because they lack the capacity to absorb the consequences when doing so. The Jan Vishwas Bill aims to make the compliance simpler – especially for MSMEs.
3. **Warning before Punishment:** First-time and minor lapses are addressed through warnings rather than immediate penalties, providing citizens and businesses a fair opportunity to comply.
4. **Proportionate Penalties:** Penalties are calibrated to the severity of the offence, ensuring fair, balanced, and just enforcement.
5. **Faster and Fair Resolution:** Dedicated adjudicating officers and appellate authorities enable swift and transparent resolution, while reducing the burden on courts.

6. **Dynamic Penalty Framework:** Penalties are subject to periodic revision, ensuring that enforcement remains effective, relevant, and responsive over time.

What are some of its important provisions?

1. **Decriminalising offences:** The Bill decriminalises several offences, and instead imposes civil penalty for such offences. For e.g. under the **Drugs and Cosmetics Act, 1940,** manufacturing and sale of cosmetics in contravention of the Act is punishable with imprisonment up to one year, a fine up to Rs 20,000, or both. The Bill instead imposes a civil penalty of one lakh rupees or three times the value of cosmetics confiscated, whichever is higher.
2. **Removal of imprisonment term:** In some cases, the Bill removes the imprisonment term for an offence. For e.g. under **Indian Succession Act, 1925**, failure to surrender revoked probate or letters of administration is punishable with imprisonment up to three months, a fine, or both. The Bill instead imposes only a fine, and also increases the maximum amount of fine.
3. **Omission of offences:** The Bill removes several offences. These include offences such as:
    - Giving false alarm of fire under the **Delhi Police Act, 1978**.
    - Failure to give information of births and deaths under the **Delhi Municipal Corporation Act, 1957**.
    - Making false entries in the register of copyrights under the **Copyright Act, 1957**.
4. **Revision of fines and penalties:** The Bill revises the monetary value of fines and penalties for several offences. It further provides that fines and penalties specified by it will increase by 10% of the respective minimum amount every three years.
5. **Warnings on first and second offences:** The Bill amends some Acts to provide for advisories or warnings in the first or second instances of an offence. For e.g. under **Apprentices Act, 1961**, offences punishable with fines include refusing to furnish information, and requiring an apprentice to work overtime. The Bill provides that an advisory will be issued for the first contravention, and a warning will be issued for the second contravention. A civil penalty will be imposed for subsequent contraventions.
6. **Improvement notices:** The Bill introduces improvement notices under the **Legal Metrology Act, 2009**. Under this Act, several offences, such as manufacturing, using, or selling non-standard weights and measures, are punishable with fines. The Bill instead provides that an improvement notice may be issued in case of the first offence. Such notices require rectifying non-compliance within a specified time. In certain cases, a civil penalty will be imposed for the second offence, and subsequent offences will be punishable with a criminal fine.
7. **Adjudication of penalties**: The Bill amends certain Acts to provide for the appointment of adjudicating officers to hold inquiries and adjudicate penalties. It also provides for appointment of appellate authorities to hear appeals against decisions of adjudicating officers.
8. **Property tax and advertisement tax in New Delhi municipal area:**
    - The Bill amends the **New Delhi Municipal Council Act, 1994**. The Act provides for the levy of property tax. The Bill specifies that property tax will consist of a building tax and a vacant land tax.
    - It establishes a **Municipal Valuation Committee** to recommend base value for vacant lands and buildings, and manner of determining and revising property tax.
    - The Bill sets up a **Hardship and Anomaly Committee** to address grievances regarding property tax.
9. **Manner of revision of fines and penalties under Jan Vishwas Act of 2023:** The Jan Vishwas (Amendment of Provisions) Act, 2023 provides for revision of fines and penalties specified by it every

three years. The Bill adds that if any Act already prescribes its own method of revision, the method in that Act will apply.

What is the significance of the Bill?

1. **Ease of Doing Business:** The primary goal is to reduce the "compliance burden" that often stifles entrepreneurship, especially for **MSMEs.**
2. **Reduced Litigation Costs:** Small businesses often spent more on legal fees than the actual fines. Moving these cases to **Adjudicating Officers** instead of criminal courts makes resolution faster and cheaper.
3. **Reducing Burden on Judiciary:** India's district & subordinate courts carry over 4.8cr pending cases (NJDG, 2025) – a significant share of which consists of minor regulatory matters. Thus, decriminalizing such cases will lead to rational reallocation of judicial resources.
4. **Ease of Living**: The Bill introduces several provisions that directly impact the daily lives of citizens:
    - For example, the **Motor Vehicles Act** now includes a 30-day grace period for expired driving licenses, preventing immediate penalties for a minor oversight.
    - Accident victims now have more time (**up to 12 months**) to file for compensation, acknowledging the trauma and medical recovery time families need.
    - It simplifies complex and outdated property tax systems (like in the NDMC area), replacing confusing methods with transparent, modern ones.

Source: PIB

What are some of its challenges?

1. **The "Cost of Doing Business" Problem**: Critics argue that for large corporations, monetary penalties are easily absorbed. If a company budgets for potential fines, the law loses its sting. As one report notes, this could lead to a situation where "illegality becomes a business model".
2. **Shift of Burden on Administration:** By moving cases out of the courts, the Bill creates a massive need for **Adjudicating Officers (AOs)** within government ministries. Most government departments are already understaffed. Expecting mid-level bureaucrats to act as "judges" for hundreds of thousands of minor violations could lead to a massive backlog within the executive branch.

3. **Lack of Legal Training:** Adjudicating officers are often career bureaucrats, not trained legal professionals. There are concerns that they may not always apply the principles of natural justice as effectively as a trained judge would.
4. **Public Health Concerns:** Critics point to the **Drugs and Cosmetics Act**. By decriminalizing the manufacturing of substandard cosmetics or procedural lapses in drug documentation, some fear that unscrupulous players might prioritize profit over safety, knowing they only face a financial penalty rather than a prison cell.
5. **Inconsistency Across Laws:** The Bill amends 79 different Acts, but the treatment of "similar" offenses is not always uniform. For similar procedural lapses, one Act might impose a heavy civil penalty while another retains a criminal fine. This lack of a **standardized scale** across all central laws can lead to confusion and perceived unfairness.
6. **Adjudication Infrastructure:** For many Acts (such as the Road Transport Corporations Act, 1950), the Bill removes imprisonment but fails to clearly define the new appellate mechanism—meaning a citizen might not know where to go if they want to challenge a penalty.
7. **Suspicions of Retroactive Application**: A particularly damaging political challenge emerged in Goa, where the opposition alleged the state's version of the bill was backdated to protect those responsible for a nightclub fire that killed 25 people. Such incidents severely erode public trust, turning "Jan Vishwas" (public trust) into "Jan Avishwas" (public distrust).

What could be the Way Forward?

1. **Specialized Training:** AOs must receive legal training to ensure they understand the principles of "Natural Justice" (e.g., the right to be heard) so their decisions aren't overturned by higher courts later.
2. **Mandate "Faceless" Compliance and Digitisation:** Connect the Bill's provisions with digital governance tools. Automated, faceless assessments would reduce the discretionary power of individual officers, thereby minimizing opportunities for rent-seeking and making the process more transparent.
3. **Reformative Justice:** Instead of just monetary fines, the government could introduce **Community Service** for minor civic or environmental offenses. This ensures the offender contributes to society rather than just paying their way out of a violation.
4. **Proportionality Check:** Penalties should be linked to the **turnover of a business** or the scale of the impact. A ₹1 lakh fine might ruin a small shop but be irrelevant to a multi-national corporation.
5. **State-Level "Jan Vishwas":** The Central Government should encourage State Governments to review their own local laws—such as Shops and Establishment Acts—and decriminalize similar minor offenses to ensure a uniform "Ease of Doing Business" across India.

Conclusion:

The Jan Vishwas Bill is an overdue reform. However, its success will depend on whether the institutions tasked with carrying it forward are genuinely equipped, and held accountable, to do so.

UPSC GS-2: Polity
Read More: The Hindu, PIB

Viksit Bharat Shiksha Adhishthan (VBSA) Bill 2025 – Provisions, Significance & Challenges – Explained Pointwise

The **Viksit Bharat Shiksha Adhishthan Bill, 2025**, which seeks to overhaul the regulation of higher education in India, is under examination of Joint Parliamentary Committee (JPC) for deliberation after its introduction in the Lok Sabha during the winter session. The Bill aims to create a single apex body that replaces UGC, AICTE & NCTE, and aligns the system with NEP 2020.
The Bill will apply to HEIs, including Institutions of National Importance (INIs), such as IITs, IIMs, NITs, IISERs, Central & State Universities , as well as Deemed-to-be-Universities. However, the Bill will not apply to medical, legal, pharmaceutical, dental & veterinary institutions.

Source: Students Islamic Organisation of India

What are some of the important provisions of the VBSA Bill?

Establishment of VBSA	• The Bill establishes **Viksit Bharat Shiksha Adhishthan (VBSA)** as the overarching commission with three vertical councils: **Regulatory Council** (licensing/entry/oversight), **Accreditation Council** (quality grading), and **Standards Council** (academic benchmarks and frameworks). • It repeals **UGC Act, AICTE Act and NCTE Act**, transferring their powers/assets/liabilities to VBSA; excludes medicine (NMC), law (Bar Council) and architecture (COA). • The VBSA's Regulatory Council grants **permission to establish/operate Higher Educational Institutions (HEIs)** based on

	minimum eligibility (land, funds, faculty, infrastructure) via a single-window process. ● VBSA can **withhold/release grants** and recommend funding cuts for non-compliant HEIs; enables performance-linked financing.
Graded Autonomy	It introduces **graded autonomy,** where institutions with high performance scores are granted full freedom over curriculum, fees, and international collaborations without prior government approval, whereas the poor performers face intervention or closure.
National Academic Credit Bank	The Bill mandates a digital inventory for all student credits that will allow: ● **Multiple Entry/Exit**: Students can leave a degree program after one year (earning a Certificate), two years (Diploma), or three/four years (Degree), with their credits stored in the NACB for up to seven years. ● **Cross-Disciplinary Transfer:** Allowing students to transfer credits between STEM & liberal arts disciplines seamlessly.
Mandatory 'Industry-Academia' Interface	The Bill introduces legal requirement for industry participation: ● HEIs are empowered to hire industry experts as full-time faculty without requiring a PhD, provided they have a 15+ years of professional experience. ● Every undergraduate degree must include a mandatory 6 month internship or apprenticeship to qualify for the final degree.
Internationalization of Education	To fulfill the "Viksit Bharat" goal, the Bill focuses on global positioning: ● **Foreign Campus Provision:** Streamlined legal framework for top 500 global universities to open campuses in India. ● **Indian Global Outreach:** Provisions for Indian IITs and IIMs to set up "Offshore Centres of Excellence" with simplified repatriated funding rules.
Technology & AI Integration	● **National Educational Technology Forum (NETF):** A dedicated cell

	within the VBSA to provide AI-driven personalized learning tools to government schools. • **Swayam Plus Expansion:** Recognition of high-quality OER (Open Educational Resources) as equivalent to formal classroom credits for up to 40% of any course.
Language & Cultural Integration	• **Multilingual Pedagogy:** Mandates that all technical and medical textbooks be made available in the 22 scheduled languages of India using AI-translation services. • **IKS Inclusion:** A requirement for all HEIs to dedicate at least 5% of their curriculum to "Indian Knowledge Systems" (IKS), covering ancient Indian contributions to science, logic, and ethics.
Funding & Shiksha Kosh	• **Viksit Bharat Education Bond:** Provision for the government to issue tax-free bonds to private citizens and NRIs to fund school infrastructure. • **Performance-Linked Funding:** Moving away from block grants to a model where 30% of government funding is tied to specific outcomes like graduate employability and research citations.

What is the significance of the VBSA Bill?

1. **Employability of Graduates:** For years, the Indian Higher Education System has been criticized for producing unemployable graduates. The VBSA Bill is significant because it legally mandates shift towards competency-based education:
    a. **Skill-Centricity:** By making internships a degree requirement, it forces the academic system to align with the real-time needs of the global labor market.
    b. **The Professor of Practice:** This breaks the academic "ivory tower" by allowing industry veterans to teach, ensuring that classroom theory is grounded in current industrial reality.
2. **Reversing 'Brain Drain' to 'Brain Gain'**: The Bill addresses the massive outflow of Indian students & capital to foreign universities:
    a. **International Hub:** By allowing top global universities to set up their campus in India, it democratizes access to "world-class" education for students who cannot afford to travel abroad.
    b. **Global Portability:** The National Academic Credit Bank makes Indian credits globally recognizable, facilitating easier exchange and high-level research collaborations.
3. **Structural Economic Transformation:** The Bill acts as an economic instrument rather than just a social one:

   a. **Demographic Dividend:** With India having the world's largest youth population, the Bill provides the legal framework to convert this population into a skilled workforce before the "aging window" begins in the 2040s.
   b. **Performance-Linked Funding:** By tying government grants to research and employability, it introduces a "competitive federalism" in education, forcing institutions to innovate or face budget cuts.
4. **Rural-Urban Divide:** The VBSA Bill is significant in its attempt to bridge:
   a. **Linguistic Liberation:** By mandating technical education in local languages, it ensures that a student's mastery of English is no longer a barrier to becoming an engineer or a doctor.
   b. **AI-Democratization:** The use of the NETF (National Educational Technology Forum) aims to provide rural students with the same quality of AI-driven tutoring as their urban counterparts.
5. **Single Higher Education Regulator:** It operationalises NEP's "single regulator" idea by replacing fragmented bodies (UGC, AICTE, NCTE) with VBSA, enabling a "light but tight" framework that cuts red tape while enforcing quality and outcomes.

What are some of the criticisms of the VBSA Bill?

1. **Erosion of Federalism:** Education is a Concurrent list subject, however, the VBSA Bill erodes the State autonomy by:
   a. **Centralization of Power:** The Bill creates a "super-regulator" (VBSA) that overrides state-level education boards. This centralizes decision-making in Centre, potentially ignoring the unique linguistic and cultural needs of diverse states.
   b. **State Financial Burden:** The Bill mandates expensive technological upgrades and infrastructure changes, but many state governments argue the Centre has not provided a clear roadmap for funding these requirements at the state university level.
2. **Commercialization of Higher Education:** By allowing foreign universities to repatriate the profit & by encouraging 'Professors of Practice' role from the Corporate world, the VBSA Bill is criticized for promoting privatization of knowledge:
   a. **Research vs. Profit:** There is concern that research will shift only toward "profitable" science and technology, neglecting the Humanities and Social Sciences, which are essential for a healthy democracy but often yield lower immediate commercial returns.
   b. **Job Security for Faculty:** The push for contractual and industry-based hiring (Professors of Practice) is seen by some academic unions as an attempt to undermine the permanent tenure system and traditional academic research.
3. **Threats to Academic Freedom:** The Bill introduces rigorous 'National Standards' for curriculum & performance:
   a. **Ideological Homogenization:** A centralized curriculum could be used to push a specific ideological narrative, limiting the scope for critical thinking and dissent in university spaces.
   b. **Surveillance through Data:** The mandatory "Academic Bank of Credits" and digital IDs are viewed by privacy advocates as tools for the state to track the intellectual trajectory and political leanings of students throughout their careers.
4. **Digital Divide:** The VBSA Bill leans heavily on AI-driven learning & digital credits:
   a. **Infrastructure Gaps:** In rural India, where internet penetration is inconsistent and electricity is not always reliable, a heavy reliance on digital education could further marginalize underprivileged students.

   b. **Cost of Implementation:** The move toward "market-linked" education and the entry of foreign universities raise fears of a "two-tier" system: high-quality, expensive private/foreign education for the elite, and underfunded, struggling public institutions for the masses.

5. **Practicality of "Apprenticeship Mandate":**
   a. While the Bill mandates internships for all degrees, skeptics question the capacity of Indian industry to absorb millions of students every year.
   b. Most of India's businesses are micro-enterprises that do not have the administrative capacity to manage structured internship programs, potentially leading to "fake" certificates and a "paper-only" compliance culture.
6. **Funding De-linkage:** Removing grant-disbursal powers from VBSA and placing them directly under the Ministry of Education risks **arbitrary, politically influenced funding**, turning public universities into compliance tools rather than autonomous institutions.
7. **Inequalities due to Graded Autonomy:** Graded autonomy sounds progressive but could widen inequalities, favouring elite central institutions while marginalising rural/minority-serving ones through performance-linked funding and accreditation pressures.

What can be the Way Forward?

1. **Viksit Bharat Shiksha Viniyaman Parishad (Regulatory Council):** Must focus on a "light but tight" regulatory approach, reducing bureaucratic hurdles for starting and running HEIs.
2. **Viksit Bharat Shiksha Gunvatta Parishad (Accreditation Council):** Transitioning from the current NAAC model to a more robust, technology-driven, and peer-reviewed accreditation system.
3. **Viksit Bharat Shiksha Manak Parishad (Standards Council):** Setting global benchmarks for academic curricula that align with Industry 4.0 and multidisciplinary research.
4. **Foreign Universities:** Creating a clear regulatory path for the establishment of foreign university campuses in India.
5. **Credit Transfer:** Formalizing the **Academic Bank of Credits (ABC)** under the VBSA framework to allow global mobility for Indian students.

Read More: The Hindu
UPSC GS-2: Education

CAPF Bill- Explained Pointwise

The **Central Armed Police Forces (General Administration) Bill, 2026** is a major piece of legislation passed by the Parliament in April 2026. Its primary goal is to create a unified legal framework for the service conditions of "Group A" officers across the different Central Armed Police Forces (CAPFs), such as the BSF, CRPF, CISF, ITBP, and SSB.

Source: MSN

What are some of the important provisions of the CAPF Bill & the changes that it introduce?

1. **Unified Umbrella Law:** The Act creates a single legal framework to govern **recruitment, promotion, seniority, and service conditions** for Group 'A' General Duty officers across all five CAPFs (CRPF, BSF, CISF, ITBP, SSB). Earlier, CAPFs were governed by separate Acts and rules for each force (e.g., CRPF Act, BSF Act), leading to inconsistencies and litigation.
2. **IPS Deputation Quotas:** Formally mandates specific quotas for IPS officers on deputation for top leadership positions:
    - **50%** of Inspector General (IG) posts
    - **Minimum 67%** of Additional Director General (ADG) posts
    - **100%** of Special Director General (SDG) and Director General (DG) posts
3. **Overriding Authority:** Grants the central government powers to frame rules under this Act that will prevail over any other existing law, rule, or order, including previous court judgments.
4. **Continuity Clause:** Includes a provision to ensure that all existing rules, regulations, and financial benefits remain valid and in force until they are revised or replaced under the new Act, preventing any immediate disruption.

What was the need for & significance of the CAPF Bill?

1. **Administrative Reform:** By creating a single "umbrella" law to govern recruitment, promotion, seniority, and service conditions for Group 'A' General Duty officers across all five CAPFs the Bill aims to replace the previous fragmented system, reduce litigation, and bring consistency. The government sees this as a major reform to strengthen India's internal security architecture.
2. **Legal Impact:** For years, CAPF cadre officers filed hundreds of lawsuits claiming that IPS "outsiders" were blocking their promotions. The government wanted to end this "litigation trap" by giving the current system a firm legal (statutory) basis that is much harder to challenge than simple government memos.
3. **Strategic Leadership:** The Bill codifies a specific vision: **Internal security is best managed by those with "Pan-India" administrative experience.** By reserving 100% of the Director General (DG) posts for the IPS, the government is signaling that senior leadership requires the political and inter-state coordination skills of the IPS rather than just the tactical combat expertise of the native cadre.
4. **Cooperative Federalism:** The government has defended the law as essential for national security and "cooperative federalism".

What has been the criticisms or challenges of the CAPF Bill?

1. **Overriding Supreme Court:** The Bill nullifies the 2025 SC verdict in ***Sanjay Prakash Vs Union of India*** that granted CAPF officers **Organized Group 'A' Service (OGAS)** status and explicitly mandated to reduce IPS deputation in senior CAPF ranks over two years. Critics argue it doesn't cure the legal defects the court identified.
2. **Formalizes a "Glass Ceiling":** The Bill has been criticized for cementing a permanent "glass ceiling" for CAPF cadre officers, who join the force directly. By reserving the top positions for IPS officers on deputation, it blocks the path for career CAPF officers to ever lead their own organisations. This has led to claims that it will reduce them to "second-class citizens".
3. **Career Stagnation & the "Ladder System"**: While the Bill guarantees four promotions to address pay parity, it doesn't necessarily solve the **bottleneck effect.** In a paramilitary hierarchy, promotions move like a ladder. If the top rungs (IG, ADG, DG) are occupied by outside appointees, the entire ladder below them slows down. Thus, while an IPS officer might get three to four promotions in 16 years, a CAPF cadre officer often remains at the same rank for nearly two decades. Critics argue that "financial upgrades" (NFFU) are a poor substitute for the **authority and respect** that comes with a higher rank and title.
4. **Demotivation & Impact on Morale:** The Bill creates a demoralizing "dual system" where officers who spend their careers in challenging field conditions are denied leadership opportunities. Linked to high suicide rates and voluntary retirements in CAPFs.
5. **"Tactical vs. Generalist" Leadership**: The "bitter irony" that CAPF native officers spend decades in high-conflict zones (Maoist jungles, Siachen, etc.), while IPS officers – who are trained primarily for civilian law and order – are brought in at the last minute to command them creates an **Accountability Gap**. Strategic decisions are made by IPS officers on brief tenures (3-5 years) who then return to their home states, while the long-term consequences are borne by the native cadre and jawans.
6. **Harm to National Security:** Imposing a uniform law on forces with distinct operational cultures and sidelining experienced CAPF officers could weaken institutional autonomy and command structures.

What can be the way forward?

1. **The "Reciprocal Deputation" Model:** If IPS officers are allowed to lead CAPFs to gain "field experience," then CAPF officers should be allowed to serve in organizations traditionally reserved for the IPS, such as the **Intelligence Bureau (IB)**, **CBI**, or even as **Superintendents of Police (SP)** in

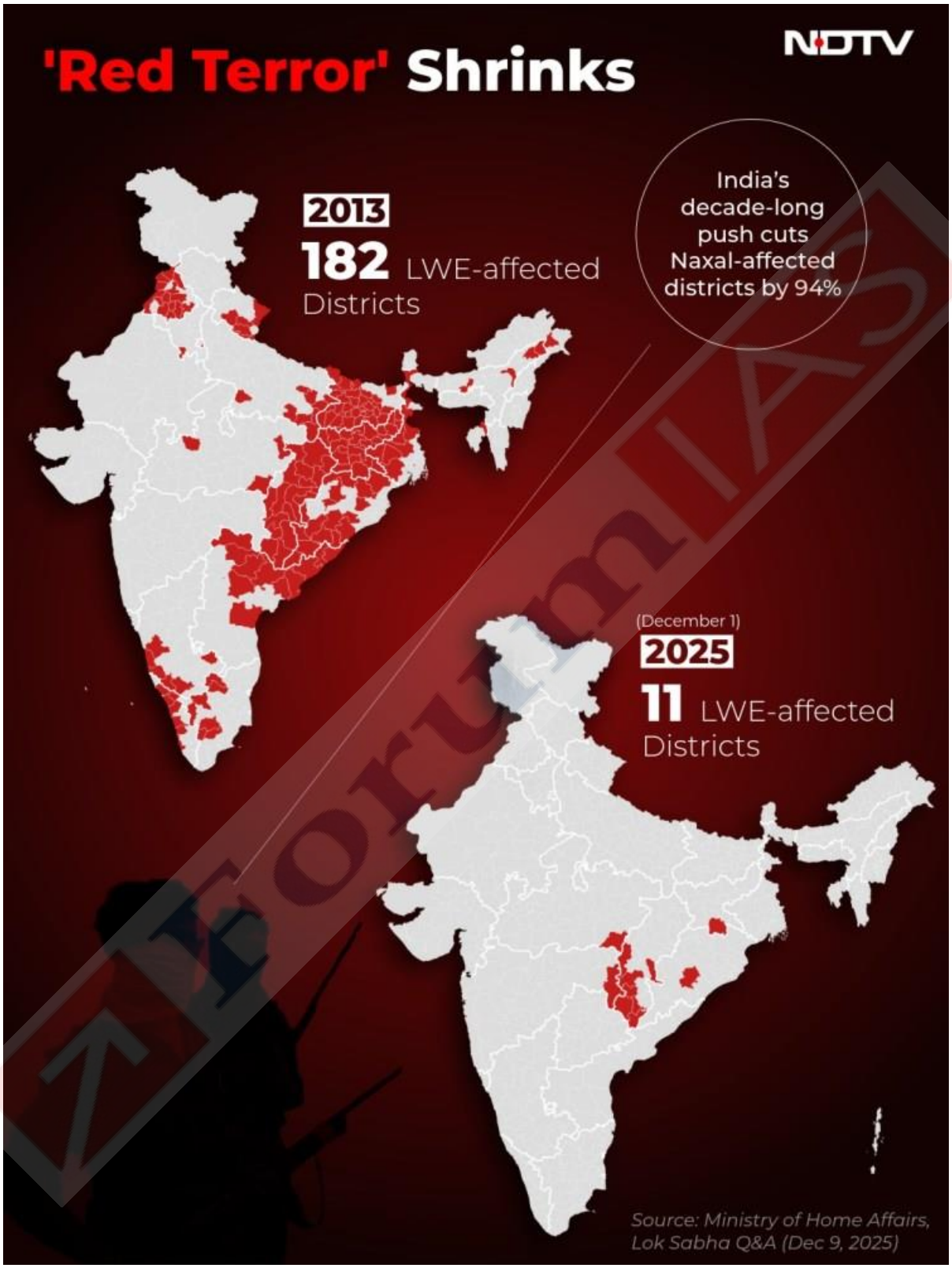
specialized state wings. This will create a truly "integrated" national security cadre where expertise is shared, rather than one service dominating the other.

2. **Progressive "Internalization" of Leadership**: Instead of a 100% block at the top, gradually increase the percentage of native cadre officers in the DG and Special DG ranks over the next decade. For example, moving from 0% to 25%, and eventually 50%. This will allow the forces to "grow their own leaders" while still maintaining the IPS link for center-state coordination that the government values.
3. **Fixing the "Promotion Ladder":** Conduct an urgent, time-bound **Cadre Review** to ensure that a constable or an officer doesn't spend 20 years in the same rank. In a uniformed service, the "rank on the shoulder" often matters more for morale than the "money in the bank."
4. **Specialization-Based Postings:** Not all CAPF roles are the same. A CISF officer guarding an airport has a very different job from a BSF officer on the LoC. Thus, reserve the leadership of **Combat-Heavy Forces** (like BSF and ITBP) for native cadre officers who have spent 30 years in those specific terrains, while keeping **Coordination-Heavy Forces** (like CRPF) open to more IPS deputation. This will ensure that those with the most relevant tactical experience are the ones making life-and-death decisions in the field.

UPSC GS-3: Internal Security
Read More: The Hindu

Naxalism in India – Explained Pointwise

Reflecting the central government's decisive defence strategy against Left Wing Extremism, significant progress has been made in reducing Naxal-affected regions across the country. With decisive interventions, the Naxal-most-affected districts have been brought down from 36 (2014) to only 3 (2025) and total LWE-affected districts from 126 to just 11 by 2025. The Government has adopted a unified, multi-dimensional and decisive strategy against Naxalism.
Operating on the clear principles of **Dialogue → Security → Coordination**, the Government has set the firm target of making every Naxal-affected area completely **Naxal-free by March 2026.**



Source: NDTV

What is Maoist insurgency in India? Where is it prevalent in India?

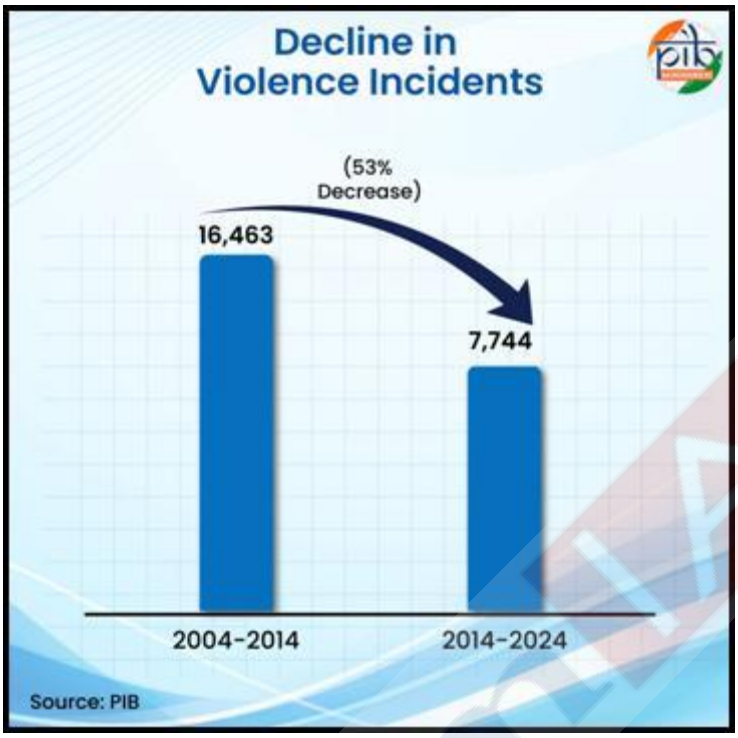
- **Maoist insurgency:** Maoist insurgency, which is also known as Left-wing Extremism (LWE)/Naxalism, is an armed movement rooted in political ideologies that seek to bring about socio-political and economic changes through violent means.
- It is a form of communism developed by **Mao Tse Tung**. It is a doctrine to capture State power through a combination of an armed insurgency, mass mobilization, and strategic alliances.
- Maoists want to bring about a **New Democratic Revolution** in India as part of the world proletarian revolution. They use violence and believe in adopting the military line to capture power.
- These extremists attack the symbols of the country's power such as the police, schools, and other government institutions.

Prevalence of Maoist Insurgency/ Left-Wing Extremism (LWE):

- The Maoist Insurgency/Left Wing Extremism has been a long standing security threat which started in 1967 and gradually spread to different parts of the country. The Maoist insurgency peaked in the early mid-2000s.
- Naxalism in the country was spread across the **"Red Corridor,"** impacting states such as Chhattisgarh, Jharkhand, Odisha, Maharashtra, Kerala, West Bengal, Madhya Pradesh, and parts of Andhra Pradesh and Telangana.
- However, with the government's continued push to end the Maoist insurgency through the mix of anti Naxal Operations and welfare measures for the tribals, has started showing results.
- According to the Ministry of Home Affairs (MHA), Naxal-affected districts slashed from **126** (2014) to **only 11** (2025), with most-affected districts down from **36** (2014) to just **3** (2025), marking the near-collapse of the Red Corridor.
- In 2025 alone, 317 Naxals neutralised (including top leadership), 800+ arrested, and nearly 2,000 surrendered, driving the highest-ever attrition and demonstrating irreversible momentum toward a Naxal-free India by March 2026.

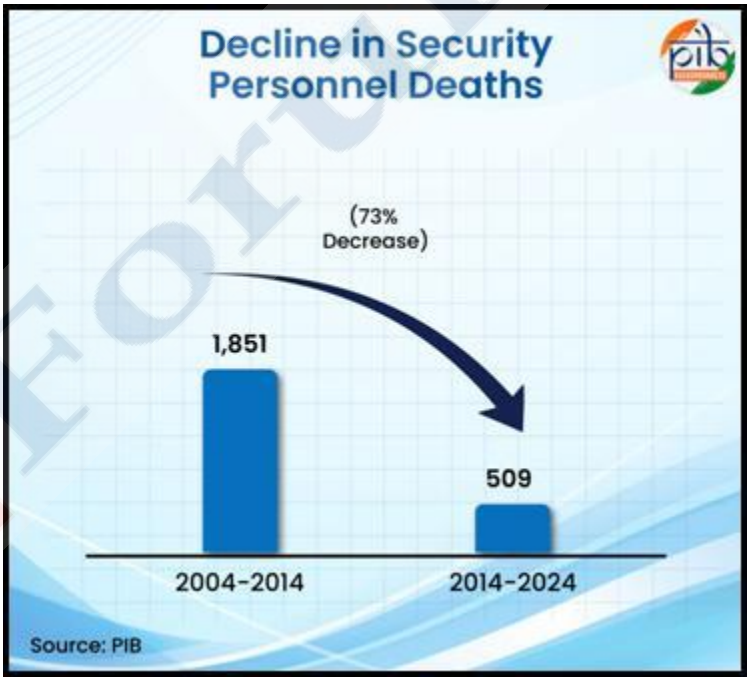
Significant Reduction in Naxal Violence in 10 years:

1. Violent incidents declined **53%** from 16,463 to 7,744:



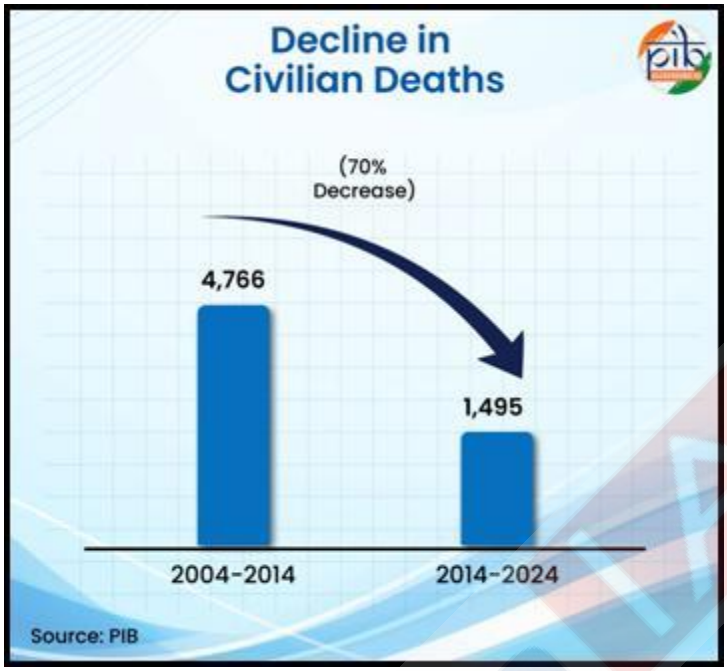
Source: PIB

Security force deaths fell **73%**, from 1,851 to 509:



Source: PIB

Civilian deaths dropped **70%**, from 4,766 to 1,495:



Source: PIB

What are the reasons that led to the growth of Left-Wing Extremism in India?

The **D.Bandopadhyay Committee (2006)** identified governance gaps and extensive discrimination against tribals in economic, socio-political, and cultural spheres as the primary causes of Naxalism's proliferation. Some of the reasons are enumerated below:

1. **Inequitable Socio-economic development:** Increasing socio-economic inequities and unemployment in hinterland region nudge the youth to take up arms. There has been disruption of traditional occupations and lack of alternative work opportunities.
2. **Governance failure:** Governance deficit in the remote parts of Red Corridor regions led to the growth of Left Wing Extremism. There was development apathy and huge corruption in the red corridor area. **For ex-** Lack of food security due to corruption in the PDS scheme.
3. **Political Marginalization:** The tribal groups were politically marginalized by the self-serving dominant groups. This led to political deprivation among the marginalized groups leading to hopelessness and a sense of powerlessness.
4. **Land Alienation and Displacement:** There was failure of land reforms especially in land redistribution after independence. The development projects and acquisition of land for industrial purposes have sometimes led to the displacement of local communities without adequate compensation or rehabilitation. This has been a focal point of Naxalite agitation.
5. **Tribal Discontent:**
    - There has been poor implementation of laws prohibiting transfer of tribal land to non-tribals in the Fifth Schedule areas. Non-regularisation and hasty rejections of land grants of traditional land rights under FRA, 2006 have also led to the growth of Left-Wing Extremism.
    - There has been a huge displacement of the tribal population in the Naxalism-affected states due to development projects, mining operations, and other reasons.

- A huge chunk of the tribal population lives below the poverty line. They are also devoid of basic education and health facilities. Thus, Maoists are easily able to persuade them by offering to take up monetary incentives and a better future.

What are the challenges posed by Left-wing extremism (LWE) in India?

1. **Threat to Internal Security:** Left-wing extremism poses significant internal security threats to India, leading to violent clashes and loss of lives among security forces and civilians. **For ex-** Maoist rebels engaging in deadly attacks on security forces in remote areas like Dantewada.
2. **Social and Economic Disruption:** LWE in India disrupts social and economic development in affected regions, hindering infrastructure and welfare projects. **For ex-** Maoists targeting their roads, schools, and other vital infrastructure to maintain control over their territories.
3. **Forced Recruitment and Child Soldiers:** Maoist groups have been known to force vulnerable individuals, including children, to join their ranks, exploiting them for their cause. This practice violates human rights and disrupts the lives of countless innocent people.
4. **Extortion and Illegal Activities:** LWE groups often engage in extortion and other illegal activities to fund their operations. **For ex-** Demands of 'protection money' from local businesses, leading to economic stagnation in affected areas.
5. **Undermines Credibility of Government:** The survival of LWE shows a failure of governance thereby eroding the faith of masses in governance set up and impacting the unity of the nation. LWE affected regions struggle with governance issues and weakened trust in democratic institutions. This can undermine the overall stability of the country.
6. **Human Rights Violations:** LWE groups have been known to commit human rights violations, including extrajudicial killings, abductions, and torture. These actions not only harm innocent civilians but also tarnish India's international reputation.
7. **Alienation of Tribal Populations:** Maoist insurgents often exploit and alienate tribal population in their stronghold, creating a cycle of violence and mistrust between the communities and the government. This makes it difficult to address the root causes of extremism and to foster long-term peace and stability.

What are the various government policies to control Maoist insurgency in India?

The Indian government has employed various approaches to control Left-wing extremism (LWE), focusing on a combination of security, development, and political initiatives. Some of these approaches include:

Security Schemes & Initiatives for LWE:

National Policy and Action Plan to address Left Wing Extremism 2015	This comprehensive action plan aims to enhance the capabilities of security forces to combat LWE. This action plan ensures that the rights and entitlements of local communities are safeguarded and focuses on socio-economic development in affected regions.

SAMADHAN Doctrine	SAMADHAN Doctrine encompasses the entire strategy of government from short-term policy to long-term policy formulated at different levels. **SAMADHAN** stands for: **S**– Smart Leadership, **A**– Aggressive Strategy, **M**– Motivation and Training, **A**– Actionable Intelligence, **D**– Dashboard Based KPIs (Key Performance Indicators) and KRAs (Key Result Areas), **H**– Harnessing Technology, **A**– Action plan for each Theatre, **N**– No access to Financing.
Security Related Expenditure (SRE) Scheme	Under the Security Related Expenditure (SRE) Scheme, the Central Government reimburses the Security Related Expenditure of 10 LWE affected States. These security related expenditures are related to training and operational needs of security forces, ex-gratia payment to the family of civilians/security forces killed/injured in LWE violence, rehabilitation of surrendered LWE cadres, community policing, village defence committees and publicity materials.
Special Infrastructure Scheme (SIS)	Under this scheme, funds are being provided to States for strengthening the infrastructure related to Security. Under this scheme 250 fortified Police Stations are being constructed.
Separate Vertical in NIA	The National Investigation Agency (NIA) established a dedicated anti-Naxal vertical that investigated **108 cases** and filed charge sheets in **87 cases**, significantly weakening the Maoist organisational structure through accelerated prosecution.
Bastariya Battalion	In 2018 the Central Government raised the Bastariya Battalion comprising **1,143** recruits, including an initial **400 local** youths from the worst-affected districts of Bijapur, Sukma and Dantewada in Chhattisgarh, turning former Naxal strongholds into sources of trained security personnel fighting the insurgency.
Operation Black Forest	Operation Black Forest, which was launched in Narayanpur (Chhattisgarh), led to neutralisation of 27 dreaded Maoists, including the General Secretary of CPI-Maoist & a topmost leader – who is also the backbone of Naxal movement. This is the first time in 3 decades of Bharat's battle against Naxalism that a General Secretary-ranked leader has been neutralised by the Indian security forces.

Development Schemes for LWE:

Road Connectivity Project for LWE affected areas (RCPLWE)	The Government introduced this scheme in 2016 for improving road connectivity in LWE affected States. The roads included under the scheme have been identified by the Ministry of Home Affairs in consultation with the State Governments and the security agencies. From May 2014 to August 2025, the Central Government has constructed **12,000 km of roads** in LWE-affected regions, while projects for a total of **17,589 km** have been approved, ensuring all-weather connectivity and mobility in previously inaccessible areas.
LWE Mobile Tower Project	This project has been launched to improve mobile connectivity in the LWE affected areas. The aim is to improve the communication network for better governance delivery. Under the Aspirational Districts and 4G Saturation schemes, 8,527 (4G) towers have been approved – with over 2500 towers now functional – dramatically improving communication and intelligence reach in core Naxal zones.
Aspirational District Programme	The Ministry of Home Affairs has been tasked with the monitoring of Aspirational districts programme in 35 LWE affected districts. Government has implemented various welfare and development schemes to address the root causes of LWE, such as poverty, unemployment, and social inequality in these aspirational districts.

Socio-Political Schemes for LWE:

Panchayat Extension to Scheduled Areas (PESA) Act, 1996	Through this Act government aims to strengthen local governance in LWE-affected areas by promoting democratic participation and empowering local institutions.
Civic Action Programme (CAP)	This Scheme aims to bridge the gaps between Security Forces and local people through personal interaction and bring the human face of Security Forces before the local population. The CAPFs deployed in LWE affected areas are provided funds for conducting civic activities for the welfare of the local people.

Media Plan	Government is implementing this Scheme in LWE affected areas to counter the false propaganda of Maoists. Under this scheme activities like Tribal Youth Exchange programmes are organised by NYKS along with radio jingles, documentaries and pamphlet distribution.
Inter-State Coordination	The government is promoting coordination among states affected by LWE to ensure a unified response. For ex- Regular meeting of Union Home minister with the CMs and DyCMs of all LWE states.
Financial Inclusion	The Central Government has ensured deep financial inclusion in LWE-affected districts by establishing 1,804 bank branches, 1,321 ATMs and 37,850 banking correspondents. It also opened 5,899 post offices across 90 districts with coverage at every 5 km, bringing banking, postal and remittance services directly to remote communities previously under Naxal influence.
Skill Development	The Central Government has launched skill development initiatives in 48 LWE-affected districts by sanctioning **48 Industrial Training Institutes (ITIs)** and approving **61** Skill Development Centres (SDCs). Of these, **46 ITIs & 49 SDCs** are already functional, providing vocational training and employment opportunities to local youth, thereby reducing Naxal recruitment and integrating remote communities into the mainstream economy.
Surrender and Rehabilitation Policies	Government has introduced surrender and rehabilitation policies for LWE cadres willing to renounce violence and join mainstream society. These policies offer financial incentives, vocational training, and support for reintegration into society.

Other initiatives:

1. A **dedicated left-wing extremism division** was established in 2006 under the Ministry of Home Affairs. It aimed to effectively address the LWE insurgency in a holistic manner.
2. **CPI (Maoist) Party is designated as a terrorist organization** under the Unlawful Activities (Prevention) Act, 1967. This gives the forces greater power and autonomy to deal with Maoists.
3. Over **12,000 km** roads, **586 fortified police stations**, **361 new camps**, **8,500+ mobile towers** operational, and **₹92 crore assets** seized have ended geographical and financial dominance of Maoists in core areas.
4. **Naxal's Financial Choking:** The Central Government has effectively choked Naxal financing by forming a dedicated vertical in the NIA that seized assets worth over ₹40 crore, while states seized more than ₹40 crore and the Enforcement Directorate attached ₹12 crore. Simultaneous action has

inflicted severe moral and psychological damage on urban Naxals and tightened control over their information warfare networks.

Areas Freed from Naxals after 3 decades (Success Stories):

- Security forces, through decisive operations such as **Octopus**, **Double Bull** and **Chakbandha**, have liberated long-held Naxal bastions including Budha Pahad, Parasnath, Baramasia and Chakrabandha (Bihar) after three decades of Maoist control, established permanent camps deep inside remote jungles, and reached the hitherto impenetrable Abujhmad (Chhattisgarh) region.
- These sustained offensives forced the PLGA battalion to abandon its core area in Bijapur-Sukma and caused the complete failure of the Naxalites' 2024 Tactical Counter Offensive Campaign (TCOC), marking the collapse of their strategic stronghold and operational dominance.

What had been the issues associated with government measures to control LWE?

1. **Human Rights Violations:** Security operations against Maoist insurgency have sometimes led to human rights violations, including extrajudicial killings, arbitrary arrests, and harassment of civilians. These actions can alienate local communities and create resentment against the government.
2. **Inadequate Implementation of Development Schemes:** Despite numerous welfare and development programs, their implementation in LWE-affected areas is often hampered by corruption, bureaucratic inefficiencies, and a lack of coordination between various agencies. As a result, the intended benefits may not reach the affected communities.
3. **Insufficient Capacity Building of Security Forces:** The security forces sometimes lack specialized training, equipment, and intelligence support to effectively tackle Maoist insurgency. This sometimes leads to operational failures and increased casualties among security personnel.
4. **Reliance on Force:** Excessive focus on security operations overshadows the need for political engagement and dialogue with LWE groups. A purely militaristic approach could prolong the conflict and hinder efforts to find a peaceful resolution.
5. **Incomplete Rehabilitation Programs:** While surrender and rehabilitation policies exist, they are not effectively implemented. There are certain cases of inadequate support for reintegration such as insufficient vocational training or financial assistance.
6. **Lack of Trust and Cooperation:** Mistrust between the government and affected communities hinders the implementation of development initiatives and security operations. Building trust is crucial for fostering cooperation and addressing the root causes of LWE.
7. **Political Instability and Opportunism:** Political instability and opportunism undermines efforts to address LWE. Politicians often exploit the issue for electoral gains. This further complicates the government's response to the problem.

Read More- Tackling the Maoists: On left-wing extremism

What should be done to completely eliminate the Left Wing Extremism in India?

1. **Focus on Development:** The successful implementation of development projects in Andhra Pradesh and Telangana reduced Maoist insurgency. Thus we must focus more on the effective implementation of development projects.

2. **Strengthen Local Governance:** Empowering local governments to address grievances and deliver public services effectively, as seen in the Panchayati Raj system's success in reducing Naxalism in West Bengal, can help build trust between communities and authorities.
3. **Enhance Security Forces' Capabilities:** Provide specialized training and better equipment to security personnel, similar to the **Greyhounds Force** in Andhra Pradesh, which proved effective in countering Maoist insurgency due to their specialized training and local knowledge.
4. **Encourage Dialogue and Peaceful Resolution:** Engage in meaningful dialogue with Maoist groups to address their grievances, similar to the peace talks between the Indian government and Naga insurgents, which led to a ceasefire and reduced violence in the region.
5. **Foster Community Engagement:** Involve local communities in decision-making processes and development projects, as seen in the success of the **Janmabhoomi Program** in Andhra Pradesh, where community participation helped build trust and reduce Maoist influence.
6. **Ensure Accountability and Transparency:** Strengthen measures to prevent corruption and human rights abuses, as demonstrated by the National Human Rights Commission's interventions in cases of alleged human rights violations by security forces, which can help restore public trust in government institutions.

Conclusion: Over the past eleven years, the Central Government's coordinated, multi-pronged strategy-combining calibrated security operations, unprecedented infrastructure push, financial choking, rapid development saturation and an attractive surrender policy has shrunk Left-Wing Extremism from 126 districts in 2014 to just 11 in 2025, with only three remaining **"most-affected".** While pockets of resistance remain and complete eradication demands sustained vigilance till the declared deadline of **31 March 2026**, the trajectory is unmistakable: the ideological and territorial backbone of the Naxal insurgency has been broken, paving the way for lasting peace and development in regions long deprived of both.

Read More: PIB
UPSC Syllabus- GS 3: Security Issues – Linkages between development and spread of extremism.

Heatwaves in India- Explained Pointwise

Heatwaves in India are becoming more severe and frequent, posing serious health risks. The last 2 years recorded unprecedented temperatures, with over 57% of Indian districts now classified as heat-prone. IMD predicts a rise in maximum temperatures and more heatwaves in eastern and southern India in the coming days. India must stay prepared to handle these recurring heatwaves.

What are heatwaves? How are they defined in India?

- **Heatwaves:** Heat waves are prolonged periods of excessively hot weather that can cause adverse impacts on human health, the environment, and the economy.
- **Definition of Heatwave:** In India IMD defines heatwave based on the following criteria:

Physiography of regions	**Plain:** Maximum temperature recorded at a station is 40 degrees Celsius or more. **Coast:** Maximum temperature recorded at a station is 37 degrees Celsius or more. **Hills:** Maximum temperature recorded at a station is 30 degrees Celsius or more.

Departure from Normal Temperature	**Heat Wave:** Departure from normal is 4.5°C to 6.4°C **Severe Heat Wave:** Departure from normal is >6.4°C
Actual Maximum Temperature	**Heat Wave:** When actual maximum temperature ≥ 45°C **Severe Heat Wave:** When actual maximum temperature ≥47°C

*Heat Wave is declared if above criteria are met in at least 2 stations in a Meteorological subdivision for at least two consecutive days.

What is the status of Heatwaves in India?

India has been affected by the Heatwaves since a long time. However, during the last few decades, due to increased instances of climate change, the impact of heat waves has also enhanced quite significantly.

- States like Rajasthan, Gujarat, Uttar Pradesh, Delhi, Haryana, Punjab, Madhya Pradesh have been affected the most by the Heatwaves.
- According to IMD, between 1981 and 1990 there were 413 heatwave days in India. However, the heatwave days have increased to 600 days between 2011 and 2020.
- The number of deaths from heat-related causes increased from 5,457 between 1981 and 1990 to 11,555 between 2011 and 2020.

What are the factors behind the increase in Heatwaves in India?

Heatwaves can be caused by a combination of natural and human-induced factors. The main causes are mentioned below:

NATURAL CAUSES	1. **High Atmospheric Pressure Systems:** Heatwaves occur when high-pressure systems stall over a region. These systems trap warm air near the Earth's surface and prevent the normal movement of air masses, leading to prolonged periods of hot weather. 2. **Climate Variability:** Natural climate variations, such as El Nino and La Nina events, influence weather patterns and increase the likelihood of heatwaves. **For ex-** During El Nino events, warmer ocean waters in the tropical Pacific lead to changes in atmospheric circulation and weather patterns. 3. **Drought and Dry Conditions:** Prolonged periods of drought and lack of precipitation reduces the overall moisture of the soil, causing the land to heat up more quickly during heat waves. 4. **Changes in Wind Patterns:** Shifts in wind pattern transports hot air from one region to another which intensifies heat waves in areas that are not typically prone to such extreme temperatures. 5. **Geography and Topography:** Geographic features and topographical conditions also contribute to the development of heat waves. **For ex-**

	Landlocked valleys and regions surrounded by mountains trap hot air and lead to temperature spikes.
ANTHROPOGENIC CAUSES	1. **Global Warming:** The long-term increase in Earth's average temperature, primarily driven by human activities such as burning fossil fuels, deforestation, and industrial processes, contributes to the frequency and intensity of heat waves. 2. **Urban Heat Island Effect:** Urban areas with high population density, extensive concrete and asphalt surfaces, and limited vegetation tend to absorb and retain more heat, has created localized zones of higher temperatures. This phenomenon, known as the urban heat island effect, has intensified heat waves in cities. 3. **Rapid Land Use & Land Cover (LULC) Changes**: ○ **Deforestation:** The loss of green cover reduces **evapotranspiration**—the process by which plants release moisture into the air to cool the environment. Without trees, the sun's energy goes directly into heating the ground. ○ **Wetland Encroachment:** Many Indian cities have built over traditional water bodies and wetlands. These areas previously acted as "heat sinks," absorbing heat and providing a cooling effect through evaporation. 4. **Air Conditioning:** The widespread use of ACs in urban areas creates a feedback loop. AC units exhaust hot air into the streets, raising the ambient outdoor temperature for those without cooling. 5. **Vehicular & Industrial Emissions:** Heat generated by internal combustion engines and industrial processes adds "sensible heat" directly to the lower atmosphere. 6. **Greenhouse Layer:** A thick haze of pollutants (aerosols) can act like a blanket, trapping outgoing infrared radiation and preventing it from escaping into space at night.

What are the impacts of Heatwaves?

1. **Impact on Human Health:** Rapid rises in heat compromises the body's ability to regulate temperature resulting in a cascade of illnesses, including heat cramps, heat exhaustion, heatstroke, and hyperthermia. When external temperature approaches 37°C, the human body struggles to release internal heat, resulting in heat stress affecting organs like kidneys, liver, and brain. Reducing hospital and emergency room burden improves health system efficiency.
2. **Impact on Energy:** Heatwaves increase the electricity demand for cooling purposes, leading to strain on power grids and potential blackouts.
3. **Impact on the economy:** Heatwaves disrupt economic activities, affecting productivity of workers and labourers, lacking the access to reliable electricity for cooling during heatwaves. According to an ILO study at 34°C, workers can lose up to 50% of their work capacity. Protecting outdoor workers ensures continuity in farming, construction, logistics, and industrial sectors. It reduces loss of working hours, safeguards GDP.

4. **Social Equity and Justice:** The impacts of heatwaves are disproportionately felt by the poor, women, elderly, and migrant workers, making heatwave mitigation a key element in addressing social inequities. For the affluent, heat is an inconvenience managed through private cooling; but for nearly 400million informal workers, it is a systemic violation of the right to life & a driver of **'Thermal Justice'**. For these individuals, even a small rise in temperature causes a significant drop in productivity & a corresponding loss of income.
5. **Impact on Water Resources:** Heatwaves exacerbate water scarcity issues in India due to drying up of water bodies and decrease in the groundwater table. This exacerbates the inter-state conflict over water. **For ex-** Cauvery water Dispute.
6. **Climate Resilience and SDG Goals:** Heatwaves are one of the most direct manifestations of climate change. Addressing them contributes to the global goal of mitigating climate change and reducing carbon emissions. Aligns with SDG 3 (Health), SDG 8 (Decent Work), SDG 11 (Sustainable Cities), and SDG 13 (Climate Action).
7. **Impact on food security:** The rise in heat waves increase the probability of droughts, enhance demand of irrigation water, which impacts agricultural production and increases food insecurity.

What are the challenges in addressing heatwaves?

1. **Early and Unpredictable Onset of Heatwaves:** Heatwaves are now starting earlier in the year, catching authorities and populations off-guard. In 2025, severe heatwaves struck North and Central India 20 days earlier than in 2024, before HAP protocols were activated.
2. **High Vulnerability of the Informal Workforce:** Nearly 75% of India's workforce (~400 million), especially in agriculture, construction, and street vending, is directly exposed to outdoor heat. In Odisha and Gujarat, many daily wage workers continued working in peak heat hours due to lack of income alternatives or workplace protections.
3. **10% Trap:** Since heatwaves are not currently on the Nationally Notified Disaster List, States are restricted by the '10% Trap', where they can only utilize a small fraction of their State Disaster Response Fund for relief efforts.
4. **Economic and Productivity Losses:** As per ILO and World Bank estimates (2023) heatwaves have a tangible economic cost, including loss of 3–5% of GDP and up to 6% of annual work hours. In sectors like agriculture and construction, heat-induced fatigue reduced work output and delayed infrastructure projects in Rajasthan and Telangana.
5. **Unequal and Disproportionate Impacts:** Marginalized groups—women, elderly, migrants, and the urban poor—face higher exposure with fewer coping mechanisms. Migrant families living in tin-roofed shelters in Delhi reported extreme indoor heat and health issues during April 2024.
6. **Partial and Uneven Implementation of Heat Action Plans (HAPs):** While 140+ cities and 23 states have HAPs, many lack funding, inter-agency coordination, and local customization. A 2023 CEEW analysis found that only a handful of HAPs included cooling centres, outreach in local languages, or inter-departmental response mechanisms.
7. **Insufficient Public Awareness and Risk Communication:** Awareness about heatwave risks and protective behavior remains low, especially in rural and low-income urban areas. In Bihar, despite IMD warnings in 2024, many communities continued outdoor weddings and festivals in peak hours, leading to heat-related illnesses.

Read More- Protecting the most Vulnerable due to Increasing heatwaves in India

What steps have been taken by the government to address the issue of heatwaves?

Heat Action Plans	The Indian government has updated Heat Action Plans across 23 states, aiming to strategically combat and manage heatwaves.
Public Health Preparedness	The Union Health Ministry reviews the preparedness for managing Heat-Related Illnesses (HRIs) periodically indicating a proactive approach to address the health impacts of heatwaves.
Focus on Vulnerable Groups	The government initiatives prioritize protecting high-risk groups like children, pregnant women, the elderly, and people with chronic diseases.
Awareness Campaigns	About 100 districts have initiated campaigns to raise awareness about heatwave risks and precautions.

What should be the Way Forward?

1. **Heatwaves as National Disaster**: Accept 16th Finance Commission's recommendation to include heatwave & lightening in the Notified National Disaster List for the 2026-31 period. Such a move would unlock the National Disaster Response Fund, bypass current spending restrictions, and convert early warnings from simple advisories into binding mandates for district admin.
2. **Heat Index**: Ministry of Labour & IMD must transit towards Heat Index – a metric combining temperature & humidity to reflect true human feel – as the primary legal trigger for declaring heatwaves. This is essential to ensure that coastal areas, which face the lethal combination of heat & humidity, are not at a disadvantage in national safety protocols.
3. **Effective implementation of Heat Wave Action Plan:** Effective implementation of the Heat wave action plan with the State playing a leading role and sharing responsibility with other stakeholders is now the need of the hour. Update HAPs in every State based on local vulnerability assessments. Include humidity, nighttime temperatures, and thermal comfort indexes for long term planning.
4. **Improve Early Warning and Forecast Systems:** Introduce Heat Health Alert (HHA) systems as in the UK. Use predictive analytics for work timing adjustments in schools, factories, and offices.
5. **Build Heat-Resilient Infrastructure:** Promote cool roofs, white rooftops, reflective paint, better urban ventilation, and green corridors. Adopt heat-resilient building codes and zoning laws.
6. **Sustainable Cooling:** Passive cooling technology like construction of ventilated buildings and the use of porotherm bricks, can be a vital alternative to address the urban heat island for residential and commercial buildings.
7. **Heatwave Mitigation Plans:** Heatwave mitigation plans which includes access to drinking water, oral rehydration solutions (ORS), shade at public places, flexible working hours in workplaces must be effectively designed and implemented.
8. **Protect Informal Workers:**
    - Allow staggered/shifted work hours.
    - Provide financial support and insurance for wage losses during heatwaves.

- Govt must exercise its powers under Sec 23 of OSHWC Code (Occupational Safety, Health & Working Conditions) to notify binding heat safety rules – such as provision of specialized PPE (Personal Protective Equipment) as a non-negotiable employer obligation.

9. **Creation of more Green Spaces:** According to the UN, investment of US$ 100 million in street trees globally can bring 1°C temperature reduction. India must scale up its reforestation and tree plantation efforts. **For ex-** Haritha Haram project of Telangana Govt to increase the green cover in Telangana from the current 24% to 33%.
10. **Adoption of energy efficient solution:** The masses should be encouraged to adopt more energy efficient solutions like using desert coolers in place of air conditioners in dry areas.
11. **Data-Driven Decision Making:** Collect granular, real-time heat morbidity and mortality data. Map hotspots within cities to identify intra-urban heat inequality.
12. **Encourage Behavioral and Institutional Change:** Public awareness campaigns, climate literacy, and workplace heat safety protocols.
13. **Long-Term National Policy:** Integrate heatwave resilience in National Disaster Management Plan, Smart Cities Mission, and urban master plans. Incentivize tree plantation, wetland conservation, and urban greening.

Conclusion: The battle against heatwaves must move beyond token advisories and aim for science-based, people-centric, and equity-focused long-term planning. As the cost-effectiveness of heat adaptation is well-established, prioritizing this agenda is not only a climate responsibility but also a development necessity. Hence, heat governance must be reimagined as a core component of the social contract where thermal safety is a non-negotiable mandate of constitutional justice.

Read More: The Hindu
UPSC Syllabus:
GS Paper 3: Environment – climate change
GS Paper 1: Geography – Important Geophysical phenomena such as Heatwaves.