



# Weekly Current Affairs

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## INDIA-RISING POWER THROUGH HUMANITARIAN AID

### WHY IN THE NEWS?

India has launched Operation Brahma to provide urgent humanitarian aid to Myanmar following a devastating 7.7-magnitude earthquake. Two C-17 aircraft carrying a 118-member Indian Army Field Hospital Unit and 60 tonnes of relief material have landed in Myanmar. A second C-130 aircraft also arrived with 38 NDRF personnel and additional aid. The Indian Army is setting up a 60-bed Medical Treatment Centre to assist the injured. With the death toll rising to 694 and over 1,670 injured, India’s swift response reinforces its role as a first responder in regional crises.



### WHAT IS HUMANITARIAN ASSISTANCE/AID?

Humanitarian assistance (or aid) is aid and action aimed at saving lives, alleviating suffering, and preserving human dignity during and after crises caused by natural disasters or human-made conflicts. It also includes efforts to prevent and prepare for such emergencies. Humanitarian assistance is guided by the principles of humanity, impartiality, neutrality, and independence, ensuring that aid is provided solely based on need, without discrimination or political influence.

### INDIAN RISING’S ROLE IN HUMANITARIAN AID

Operation Name	Country	Year	Support Provided
Operation Maitri	Nepal	2015	Earthquake relief – rescue teams, medical aid, relief supplies
Operation Insaniyat	Bangladesh	2017	Aid for Rohingya refugees – food, medical supplies
Operation Sahayata	Mozambique	2019	Cyclone Idai relief – food, water, medical supplies
Operation Vanilla	Madagascar	2020	Cyclone Diane relief – food and medical aid
Operation Samudra Setu	Multiple (Indian Ocean Region)	2020	COVID-19 evacuation – repatriation of stranded Indians
Vaccine Maitri	Global (100+ countries)	2021	COVID-19 vaccine supply – Covaxin and Covishield distribution
Operation Devi Shakti	Afghanistan	2021-2022	Evacuation of Indian nationals, humanitarian aid (wheat, medicine)
Operation Ganga	Ukraine & Poland	2022	Evacuation of stranded Indian students during the Ukraine war
Operation Dost	Türkiye & Syria	2023	Earthquake relief – medical teams, relief materials
Operation Kaveri	Sudan	2023	Conflict evacuation – rescue of stranded Indians, food aid
Operation Uphaar	Sri Lanka	2022	Economic crisis support – fuel, medicine, financial assistance

Operation Name	Country	Year	Support Provided
Operation Samudra Prahari	Maldives	2024	Water crisis – emergency drinking water supply
Operation Brahma	Myanmar	2024-2025	Earthquake relief – medical teams, field hospitals, relief supplies

## APPROACHES TOWARDS HUMANITARIAN AID

Approach	India	Western Powers (US, EU, UK, etc.)
Aid Philosophy	“Neighbourhood First” & South-South Cooperation – Focus on regional and Global South assistance	Western-led Global Humanitarian Framework – Extensive aid worldwide
Response Mechanism	Rapid response via military & diplomatic channels (e.g., Indian Navy, Air Force, MEA coordination)	UN-led interventions, NGOs, and military involvement
Focus Areas	Disaster relief, economic aid, medical support, and evacuation missions	Development aid, conflict resolution, refugee assistance, and peacekeeping
Execution	Direct government-to-government aid, bilateral agreements	Primarily channelled through multilateral organizations (UN, WHO, NGOs)
Political Influence	Humanitarian aid with non-interference policy, prioritizing sovereignty	Aid is often linked to geopolitical interests and foreign policy objectives
Major Initiatives	Operation Maitri, Vaccine Maitri, Operation Ganga, Operation Dost	USAID, European Civil Protection and Humanitarian Aid Operations (ECHO), UN-led programs
Financial Assistance	Grants, concessional loans, infrastructure aid (e.g., building schools, hospitals)	Large-scale financial grants, loans, and investments through IMF, World Bank
Military & Disaster Relief	Indian Armed Forces-led disaster response (e.g., Indian Navy’s HADR missions)	NATO and Western military-led interventions in crises
Healthcare & Vaccine Aid	Vaccine Maitri – COVID-19 vaccine supply to 100+ countries	WHO-backed global vaccine initiatives (e.g., COVAX program)
Long-term Commitment	Sustained development assistance & regional capacity-building	Often project-based, with conditional financial aid or political expectations

## WHAT IS THE ISSUE WITH HUMANITARIAN AID

- Political Manipulation:** Aid is sometimes used as a political tool, restricting access to marginalized groups.
- Corruption & Mismanagement:** Funds and resources can be misused, preventing aid from reaching those in need.
- Dependency:** Long-term reliance on aid discourages local self-sufficiency and development.
- Security Risks:** Aid workers face attacks, kidnappings, and restricted access in conflict zones.
- Unequal Distribution:** Some crises receive more attention and funding than others
- Delays & Bureaucracy:** Excessive red tape slows aid delivery, worsening crises
- Funding Gaps:** Many operations remain underfunded due to declining donor interest.
- Economic & Environmental Impact:** Aid can disrupt local markets and create waste.
- Diversion by Armed Groups:** Militants steal or control aid to fund their activities.
- Lack of Long-Term Solutions:** Short-term relief often overshadows sustainable development.

## HUMANITARIAN AID IS A REAL AID IN THE SPIRIT

Humanitarian aid is the purest form of support, driven by the principles of humanity, neutrality, and solidarity. It provides lifesaving assistance to those affected by conflicts, natural disasters, and health crises, ensuring their survival, dignity, and recovery. Despite challenges like political interference, security risks, and funding shortages, humanitarian aid remains a lifeline for millions. When delivered with impartiality and efficiency, it empowers communities, restores hope, and reflects the true spirit of humanity—helping people in their darkest hours without discrimination or self-interest.

## CONCLUSION

Humanitarian aid stands as a beacon of hope, reflecting the true spirit of compassion and solidarity. India's proactive approach through operations like Brahma, Maitri, Ganga, and Dost highlights its commitment to regional stability and global welfare. While humanitarian aid plays a crucial role in saving lives and rebuilding communities, it is often hindered by political agendas, funding challenges, and logistical barriers. To make humanitarian assistance more effective, impartial, and sustainable, nations must prioritize transparency, long-term development, and local empowerment. True humanitarianism lies not just in emergency relief but in fostering resilience, dignity, and self-sufficiency for affected populations. Aid should transcend politics and focus on humanity, ensuring no one is left behind.

## PRELIMS QUESTIONS

**Q. With reference to humanitarian aid, consider the following statements:**

1. India's humanitarian aid policy is primarily based on the principles of "Neighborhood First" and "South-South Cooperation."
2. Operation Dost was launched by India to provide humanitarian relief to Türkiye and Syria after a devastating earthquake.

3. The United Nations Office for the Coordination of Humanitarian Affairs (OCHA) is responsible for overseeing all global humanitarian aid operations.

**How many of the above-given statements are correct?**

- A. Only one
- B. Only two
- C. All three
- D. None

**Answer: B**

## MAINS QUESTIONS

**Q. Discuss India's approach to humanitarian aid and compare it with that of Western powers. (250 words, 15marks)**

## VULNERABLE SECTIONS: TRIBAL EDUCATION IN INDIA

### WHY IN THE NEWS?

The National Education Society for Tribal Students (NESTS) is set to celebrate its 7th Foundation Day on April 1, 2025, at Akashwani Bhawan, New Delhi. The event will be attended by key dignitaries, including Union Minister of Tribal Affairs, Shri Jual Oram, and Minister of State for Tribal Affairs, Shri Durgadas Uikey. The celebration will feature keynote speeches, cultural performances, student felicitation, and a special screening highlighting NESTS' contributions to tribal education. Since its inception, NESTS has played a transformative role in expanding Eklavya Model Residential Schools (EMRS), improving infrastructure, and enhancing learning opportunities for tribal students. The Foundation Day will underscore its achievements and reinforce the government's commitment to providing quality education, skill development, and cultural preservation for tribal communities.



## WHAT IS NESTS?

The National Education Society for Tribal Students (NESTS) is an autonomous organization under the Ministry of Tribal Affairs, Government of India. It was established to implement and manage Eklavya Model Residential Schools (EMRS), which aim to provide quality education to tribal children across the country. NESTS plays a crucial role in ensuring that tribal students receive the necessary educational support, infrastructure, and opportunities for holistic development.

## KEY FEATURES OF NESTS:

1. Manages over 700 EMRS schools nationwide, aiming for 1 school per block with 50% ST population.
2. Provides free residential education to ST students, covering tuition, food, and accommodation.
3. Focuses on STEM education, sports, and skill development for tribal students.
4. Ensures teacher training and digital learning initiatives in tribal areas.
5. Works in collaboration with state governments to enhance education accessibility.

## STATUS OF TRIBAL EDUCATION IN INDIA

1. **Data on Tribal Education:** As per the National Sample Survey (NSS) and Census 2011, the literacy rate among Scheduled Tribes (STs) in India stands at 59%, which is significantly

lower than the national literacy rate of 77.7% (as per NSO survey 2021). The female literacy rate among STs is even lower, around 49%, highlighting the gender disparity in education. The Annual Status of Education Report (ASER) 2022 suggests that dropout rates among tribal students remain high, especially at the secondary level. Around 70% of tribal students drop out before completing high school. Only 4% of ST students pursue higher education.

2. **Schools and Infrastructure:** The government has established Eklavya Model Residential Schools (EMRS), Ashram Schools, and Kendriya Vidyalayas in tribal regions, but their reach is still limited. Poor infrastructure, lack of basic amenities like electricity, potable water, and digital resources continue to affect tribal education. The Pupil-Teacher Ratio (PTR) in tribal schools is often higher than the recommended 30:1, leading to inefficiencies in learning. Many tribal schools lack science labs, libraries, and sports facilities. Digital connectivity remains a challenge in remote tribal areas.
3. **Student Enrollment and Dropout Rates:** The Gross Enrollment Ratio (GER) for ST students is improving at the primary level but drops significantly at the secondary and higher education levels. Dropout rates among ST students are high due to economic constraints, child labor, cultural barriers, and migration of tribal families for livelihood. The lack of mother-tongue-based education in many states discourages tribal children from continuing their studies. Seasonal migration of tribal families disrupts students' education. Girls face higher dropout rates due to social norms and early marriages.



## CHALLENGES IN EDUCATING TRIBALS

The Indian government has introduced several initiatives to improve education among tribal communities:

- 1. Eklavya Model Residential Schools (EMRS):** Established in tribal-dominated areas to provide quality education. Aim to be at par with Navodaya Vidyalayas. Focus on STEM, skill development, and sports. Free education, boarding, and lodging for ST students. Over 700 schools planned across India.
- 2. Pre-Matric and Post-Matric Scholarships:** Financial assistance to ST students to reduce economic barriers. Covers tuition fees, hostel fees, and living expenses. Special provisions for girl students. Encourages higher education among tribal youth. Available for both school and college students.
- 3. National Fellowship and Scholarship for Higher Education of ST Students:** Supports ST students pursuing MPhil and Ph.D. courses. Offers monthly stipends and research grants. Encourages participation in STEM and humanities research. Aims to increase ST representation in academia. Implemented under the Ministry of Tribal Affairs.
- 4. Ashram Schools:** Residential schools providing free education, meals, and lodging. Designed for economically weaker tribal students. Focuses on vocational training alongside academics. Encourages cultural integration with modern education. Located in remote tribal regions for better access.
- 5. Digital and Vocational Initiatives:** Schemes like SWAYAM, DIKSHA, and Skill India Mission aim to integrate digital learning and vocational training for tribal students. Smart classrooms and online resources are being developed. Focus on coding, digital literacy, and online education. Partnerships with private ed-tech companies for outreach. Skill development centers for job-oriented learning.

## CHALLENGES IN EDUCATING TRIBALS

- 1. Language Barrier:** Most tribal students speak indigenous languages, whereas education is predominantly in Hindi or English, leading to comprehension issues. Lack of multilingual textbooks in tribal languages. Low teacher proficiency in tribal dialects. Parents' illiteracy makes home-based learning difficult. Absence of trained translators and educators.
- 2. Poor Infrastructure and Accessibility:** Remote tribal villages often lack proper roads, schools, and internet connectivity, making education inaccessible. Dilapidated school buildings discourage attendance. Limited transport facilities for students. Lack of drinking water and sanitation facilities. Power shortages affect digital education efforts.
- 3. Economic Constraints:** Many tribal families depend on daily wages, forcing children to drop out and work for financial support. Lack of financial aid awareness among parents. Cost of books, uniforms, and travel adds to dropout rates. Scholarships do not cover all expenses adequately. Seasonal migration disrupts education cycles.
- 4. Cultural and Social Barriers:** Early marriages and gender norms restricting girls' education. Dependence on traditional occupations, making formal education less appealing. Discrimination and social stigma discourage tribal students from mainstream education. Lack of tribal representation in curricula, leading to alienation. Absence of role models from tribal communities in professional fields.
- 5. Teacher Shortages and Quality of Education:** Insufficient trained teachers familiar with tribal cultures and languages. High teacher absenteeism due to difficult working conditions. Lack of continuous teacher training in culturally sensitive pedagogy. Rigid curricula that fail to integrate tribal knowledge systems. Limited access to digital learning tools, restricting modern education methods.

## WAY FORWARD

### 1. Mother-Tongue-Based Education:

- Implementing multilingual education at the primary level can improve comprehension and retention. More textbooks and digital content in tribal languages. Recruitment of bilingual teachers. Inclusion of tribal folklore and history in curricula. State-specific policies for regional dialects.

- ### 2. Strengthening Infrastructure:
- More investments in schools, hostels, digital learning facilities, and sanitation facilities are required. Better connectivity and road networks. Improved solar-powered digital classrooms. Provision of bicycles and transport for students. Community-driven maintenance programs.

- ### 3. Financial and Scholarship Support:
- Expanding financial assistance programs for ST students beyond tuition fees. Easier access to student loans and stipends for higher education. Awareness campaigns about scholarships in tribal areas. Vocational training and entrepreneurship programs to ensure employability.

- ### 4. Technology-Driven Learning:
- Satellite education programs for remote tribal areas. Expansion of mobile and internet-based learning initiatives. Establishing smart classrooms and e-learning centers in tribal schools. Partnerships with NGOs and private sectors for digital literacy programs.

## CONCLUSION

Despite significant efforts by the government and NGOs, tribal education in India still faces many hurdles. Bridging the education gap requires targeted policy interventions, cultural sensitivity, and infrastructural improvements. A holistic approach, integrating formal education, skill development, and digital inclusion, can pave the way for a better future for India's tribal communities. Ensuring that education reaches the most vulnerable sections of society is not just a developmental goal but a step toward social equity and national progress.

## PRELIMS QUESTIONS:

### Q. What is the primary objective of the National Education Society for Tribal Students (NESTS)?

- Establishing private schools in urban areas
- Providing quality education to tribal students through Eklavya Model Residential Schools (EMRS)
- Promoting higher education among general category students
- Conducting competitive exams for tribal students.

**ANSWER: B**

## MAINS Questions:

### Q. What are the key challenges in ensuring quality education for tribal students in India? Suggest measures to improve accessibility and learning outcomes. (250 words, 15 marks)

## INSTITUTIONALIZING THE RIGHT FOR INCLUSIVE GROWTH OF TRIBAL PEOPLE: FOREST RIGHTS ACT (FRA) 2006

### WHY IN THE NEWS?

Supreme Court hearing on challenges to the Forest Rights Act (FRA), 114 Adivasi rights bodies and environmental groups have urged Union Tribal Affairs Minister Jual Oram to defend the 2006 law, which protects forest rights of tribal and forest-dwelling communities. The FRA has been contested since 2008 by Wildlife First, an NGO advocating for the eviction of those whose FRA claims were rejected. In 2019, the Supreme Court ordered evictions, but after protests, the Ministry intervened, citing procedural errors and wrongful rejections of claims. The court stayed the eviction and called for detailed data on rejected claims.

### WHAT IS THE FOREST RIGHTS ACT (FRA) 2006?

The Forest Rights Act (FRA), 2006, also known as

the Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, is a landmark legislation in India aimed at recognizing and securing the rights of forest-dwelling tribal communities and other traditional forest dwellers over forest resources. The Act was enacted to address historical injustices that these communities faced due to displacement and denial of their rights to forest land and resources.

### KEY FEATURES OF FOREST RIGHTS ACT (FRA) 2006

- 1. Recognition of Rights:** The Forest Rights Act (FRA) 2006 grants several key rights to forest dwellers: Individual Rights for self-cultivation and habitation, Community Rights for grazing, fishing, and forest management, Habitat Rights for PVTGs to live in their traditional habitats, Nomadic and Pastoral Rights for access to seasonal resources and migratory routes, and Community Forest Rights to protect and manage forest resources sustainably.
- 2. Empowerment of Gram Sabha:** The Gram Sabha (village assembly) plays a key role in determining and protecting the rights of forest dwellers, empowering them to manage forest resources at the local level.
- 3. Prevention of Eviction Without Rehabilitation:** Ensures that tribal populations and forest dwellers are not evicted without proper rehabilitation, aligning with the Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation, and Settlement Act, 2013.
- 4. Protection of Biodiversity:** Forest dwellers are involved in conserving biodiversity and wildlife and maintaining ecological balance.
- 5. Developmental Rights:** Provides rights to allocate forest land for essential infrastructure such as schools, healthcare centres, and community facilities.

### ACHIEVEMENT OF FOREST RIGHTS ACT (FRA) 2006

- 1. Recognition of Rights:** The FRA has successfully recognized the rights of forest-dwelling tribal communities and other traditional forest dwellers, granting them legal ownership of forest land and resources that they have depended on for generations.
- 2. Empowerment of Gram Sabha:** The Act has empowered local communities through the Gram Sabha (village council), allowing them to actively participate in decision-making regarding forest management and resource allocation.
- 3. Prevention of Unlawful Evictions:** The FRA has protected tribal and forest-dwelling communities from unlawful eviction, ensuring that they cannot be displaced without proper rehabilitation and compensation.
- 4. Sustainable Forest Management:** The Act encourages sustainable forest resource management by recognizing the rights of communities to conserve and protect their forests, contributing to biodiversity conservation and ecosystem maintenance.
- 5. Improved Livelihoods:** By granting rights to access forest resources like grazing, fishing, and minor forest produce, the FRA has improved the livelihoods and food security of forest-dwelling communities.
- 6. Protection of Vulnerable Groups:** The Act has specifically addressed the needs of Particularly Vulnerable Tribal Groups (PVTGs), ensuring they retain access to their traditional habitats and resources.
- 7. Inclusive Development:** The FRA has facilitated inclusive development by ensuring that tribal communities have access to basic services like education, healthcare, and infrastructure, promoting social and economic upliftment.

## ISSUE WITH FOREST RIGHTS ACT (FRA) 2006 IMPLEMENTATIONS

1. **Slow and Delayed Implementation:** The process of recognizing and vesting forest rights has been slow due to delays in forming Forest Rights Committees (FRCs) and holding Gram Sabha meetings for verification and approval.
2. **Lack of Awareness:** Many forest-dwelling communities are unaware of their rights under FRA, leading to under-reporting of claims and missed opportunities for recognition.
3. **Bureaucratic Hurdles:** The involvement of multiple government agencies often causes delays and confusion in the implementation process. Bureaucratic inefficiencies can result in prolonged recognition of rights.
4. **Opposition from Forest Departments:** Forest departments sometimes resist the implementation of FRA, particularly in areas where it conflicts with conservation priorities or forest management strategies.
5. **Disputes and Conflicts Over Land:** Land disputes often arise, especially in cases where claims are unclear or contested. These disputes can lead to prolonged legal battles and uncertainty for forest communities.
6. **Evictions Despite Legal Protections:** In some cases, forest-dwelling communities are being evicted despite the legal provision that no evictions should occur until rights are recognized and verified.
7. **Inadequate Monitoring and Enforcement:** There is a lack of independent monitoring and accountability to ensure that the rights of forest communities are upheld and that the FRA is properly enforced.
8. **Conflicts Between Rights and Conservation Goals:** Balancing the rights of forest-dwelling communities with the need for conservation, especially in critical wildlife habitats, has led to conflicts regarding land use and resource management.
9. **Inequities in Beneficiaries:** The process of recognizing rights sometimes favours certain groups over others, leading to inequities in the distribution of forest rights, especially in areas with large tribal populations or diverse communities.
10. **Lack of Support for Implementation:** There is inadequate support, both financially and in terms of capacity-building, for Gram Sabhas and local authorities responsible for implementing FRA.

## WAY TO MAKE THE FOREST RIGHTS ACT (FRA) 2006 TO PROTECT THE RIGHTS

1. **Increase Awareness and Education:** Conduct awareness campaigns to inform forest-dwelling communities, Gram Sabhas, and local authorities about the FRA's provisions and processes. This can help ensure that everyone is informed of their rights and responsibilities under the law.
2. **Capacity Building for Gram Sabhas and Forest Rights Committees (FRCs):** Train local communities, Gram Sabhas, and FRCs to effectively carry out the process of identifying and verifying claims. This includes providing technical assistance and resources to ensure proper documentation and decision-making.
3. **Streamline the Verification and Recognition Process:** Simplify and speed up the process for verifying claims by setting clear deadlines and guidelines. Introduce digital tools and geospatial technology to aid in the efficient verification and mapping of forest rights.
4. **Strengthen Monitoring and Accountability Mechanisms:** Establish independent monitoring bodies to track the implementation of FRA. These bodies should ensure that forest rights are being recognized fairly, that there is no corruption or bias, and that communities are not evicted without due process.
5. **Create a Legal and Institutional Framework for Dispute Resolution:** Set up dispute resolution mechanisms to handle conflicts related to the recognition of forest rights. This can include setting up local tribunals or committees that

can quickly resolve disputes over land claims.

- 6. Ensure Protection Against Forced Evictions:** Strictly enforce the provision that no forest-dwelling community should be evicted until their rights have been recognized and verified. In cases where evictions are necessary, a resettlement package should be provided, ensuring livelihood security.
- 7. Promote Co-Management of Forest Resources:** Encourage co-management of forest resources by forest communities and the forest department. This would ensure that the conservation goals of the state are balanced with the livelihood and cultural needs of forest-dwelling communities, leading to more sustainable forest management practices.
- 8. Strengthen Legal Support and Advocacy:** Provide legal aid and advocacy support to communities facing challenges in claiming or protecting their rights. Collaboration with NGOs and legal professionals can help ensure that forest communities have the resources they need to assert their rights and address any challenges in the process.

## CONCLUSION

The Forest Rights Act (FRA) 2006 represents a critical step in recognizing and protecting the rights of tribal and forest-dwelling communities, addressing the historical injustices they have faced due to displacement and denial of their rights to forest land and resources. The Act aims to provide legal recognition to their rights over forests, ensuring they can continue their traditional lifestyles while contributing to forest conservation and sustainable management. However, despite the significance of the FRA, its implementation has been slow and fraught with challenges. These challenges include bureaucratic inefficiencies, lack of awareness among communities, resistance from forest departments, and issues with land disputes. The legal protections provided by the FRA, such as preventing evictions until rights are verified, have often been violated, leading to further insecurity for the affected communities.

## PRELIMS QUESTIONS

**Q. Consider the following statements about the Forest Rights Act (FRA), 2006:**

1. The FRA grants Individual Rights to forest-dwelling communities for self-cultivation and habitation.
2. The FRA does not provide protection against eviction for forest-dwelling communities.
3. The Gram Sabha is not involved in the recognition of forest rights under the FRA.

**Which of the above statements is correct?**

- A. 1 and 2 only
- B. 1 and 3 only
- C. 2 and 3 only
- D. 1 only

**Answer: A**

## MAINS QUESTIONS

**Q.** The Forest Rights Act (FRA) 2006 has been a significant legislation for forest-dwelling communities in India, but its implementation has faced several challenges. Discuss the issues in the implementation of the FRA and suggest measures to strengthen its enforcement. (250 words, 15marks)

## REVITALIZING INDIA'S FISHERIES: PATHWAYS TO GROWTH AND SUSTAINABILITY

### WHY IN THE NEWS?

Punjab produces over 1.81 lakh tons of fish annually from natural waters, private, and Panchayati ponds, with more than 43,900 acres dedicated to fish farming in the state. The State Fisheries Department has disbursed more than 30 crore rupees in subsidies to 618 families over the past four years under the centrally sponsored Pradhan Mantri Matsya Sampada Yojana to promote the Blue Revolution. During a seminar organized by

the department to educate fish farmers about new technologies, best practices, and innovative methods of fish farming, State Minister of Animal Husbandry, Dairy Development, and Fisheries Gurmeet Singh Khudian highlighted that approximately 14 crore quality fish seed is produced annually at 16 government fish seed farms and distributed to farmers at subsidized rates. Additionally, Punjab is making progress in shrimp farming by utilizing thousands of acres of land that were previously unsuitable for agriculture due to waterlogging and salinity.

Government of India to promote sustainable fisheries and aquaculture development in the country. It was launched in 2020 under the Ministry of Fisheries, Animal Husbandry, and Dairying, with the goal of boosting the fisheries sector and improving the livelihoods of fishers, fish farmers, and workers.

**Key Objectives of PMMSY:**

- 1. Infrastructure Development:** It focuses on developing modern infrastructure for fisheries, such as fish landing centres, cold storage facilities, and processing units.
- 2. Post-Harvest Management:** The scheme aims to improve the value chain from harvesting to processing and marketing, including cold chain facilities, which ensure better quality and reduced wastage.
- 3. Technological Advancement:** Encourages the use of modern and sustainable technologies in fishing, aquaculture, and post-harvest management.
- 4. Fishermen Welfare:** The scheme is designed to uplift the living standards of fishermen and fish farmers by providing them with necessary support, training, and subsidies.
- 5. Sustainability:** Focuses on environmentally sustainable practices and supports the development of climate-resilient coastal villages.



**WHAT IS PM -MSY?**

The Pradhan Mantri Matsya Sampada Yojana (PMMSY) is a flagship initiative launched by the

**FISHERY SECTOR IN INDIA**

Category	Data
Total Fish Production	Over 13 million metric tons annually (including inland and marine)
Marine Fish Production	3.8 million metric tons (approx.)
Inland Fish Production	9.4 million metric tons (approx.)
Fish Export Value	USD 8.5 billion (approx.) in 2021
Top Fish Exporting States	West Bengal, Andhra Pradesh, Kerala, Tamil Nadu, Gujarat
Total Area under Aquaculture	2.4 million hectares (approx.)
Fish Farming Area (Ponds and Tanks)	1.4 million hectares (approx.)
Number of Fishers/Fish Farmers	14 million people engaged in fishing and aquaculture
Aquaculture Production Growth Rate	7-8% per year
Contribution to GDP	Approx. 1.1% of the Indian GDP from the fisheries sector
Fish Consumption per Capita	10.2 kg per capita per year (approx.)
Fish Seed Production	Over 50 billion seeds annually (for aquaculture)

Category	Data
Marine Fish Export Share	Over 70% of India's fish exports are marine products
Top Fish Species Farmed	Carps, Catla, Rohu, Tilapia, Pangasius, Shrimp (Vannamei)
Fisheries' Share in Agriculture GDP	Approx. 5.23% (of the total agriculture GDP)
Fisheries Infrastructure Investment	Rs 20,050 crore (PMMSY investment over 5 years, 2020-2025)
Number of Fishing Harbors	150+ fishing harbours across India
Fisheries Startups	100+ start-ups promoted under PMMSY
Total Coastal Area	7,500 km of coastline, contributing significantly to marine fisheries

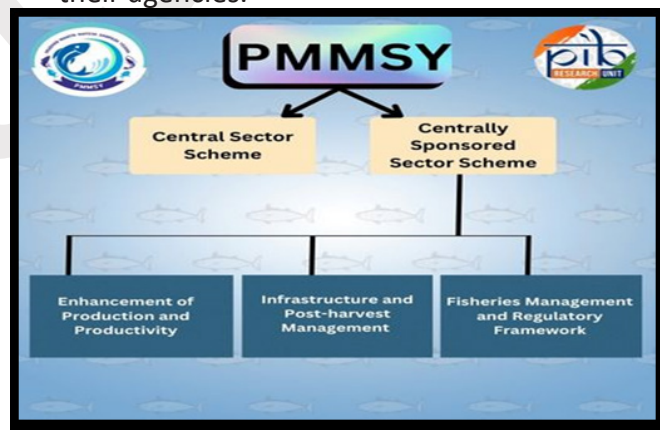
## OBJECTIVES AND COMPONENTS OF PM-MSY

- 1. Increase Fish Production:** Boost both marine and inland fish production to ensure a steady supply of nutritious food and enhance food security.
- 2. Sustainability and Growth:** Promote environmentally sustainable fishing practices, minimize over-exploitation of marine resources, and develop aquaculture in a sustainable manner.
- 3. Infrastructure Development:** Build and upgrade infrastructure like fish landing centers, cold storage, and processing units to support the value chain.
- 4. Technological Innovation:** Encourage the use of modern technologies in fishing, fish farming, and post-harvest management to improve efficiency and reduce wastage.
- 5. Fishermen Welfare:** Improve the livelihoods of fishers, fish farmers, and workers by providing financial support, training, and access to credit and insurance.
- 6. Value Chain Enhancement:** Strengthen the entire fisheries value chain from production, processing, and marketing to enhance economic benefits.
- 7. Climate Resilience:** Develop climate-resilient fishing practices and support coastal villages in adapting to climate change challenges.
- 8. Formalization of the Sector:** Organize and formalize the fisheries sector, especially for small-scale fisheries, cooperatives, and entrepreneurs.

## COMPONENTS OF PMMSY

PMMSY has two major components:

- 1. Central Sector Scheme (CS):** Fully funded and implemented by the central government. Focuses on the development of infrastructure, technology, and capacity building.
- 2. Centrally Sponsored Scheme (CSS):** Partially funded by the central government, with the balance funding provided by the state governments. Implemented by state governments and their agencies.



## WHAT IS AN ISSUE IN INDIA'S FISHERY SECTOR?

- 1. Overfishing and unsustainable practices:** Depletion of marine fish stocks due to overfishing and illegal fishing methods.
- 2. Climate change:** Rising ocean temperatures, acidification, and extreme weather events impacting fish habitats and breeding.
- 3. Poor infrastructure:** Lack of modern fish landing centres, cold storage, and transport facilities leading to post-harvest losses.

4. **Water pollution:** Industrial discharge, agricultural runoff, and plastic pollution degrade water quality and harm fish.
5. **Outdated aquaculture:** Limited access to modern technologies, quality seeds, and efficient farming methods in rural areas.
6. **Limited research:** Insufficient research on sustainable practices, breeding techniques, and fish health management.
7. **Financial constraints:** Inadequate access to credit, insurance, and financial literacy for small-scale fishers.
8. **Livelihood issues:** Low income, poor living conditions, gender inequality, and youth migration from fishing communities.

#### WAY TO MAKE THE FISHERY SECTOR MORE PRODUCTIVE, EFFICIENT AND SUSTAINABLE

1. **Promote Sustainable Fishing Practices:** Implement and enforce sustainable fishing regulations, including setting fishing quotas, restricting illegal fishing, and using eco-friendly gear to prevent overfishing and protect marine ecosystems.
2. **Modernize Aquaculture Practices:** Invest in modern aquaculture technologies such as recirculating aquaculture systems (RAS), better breeding techniques, and efficient feed management to increase production and reduce environmental impact.
3. **Improve Infrastructure:** Develop and upgrade cold storage, fish landing centers, and processing facilities to reduce post-harvest losses, improve the shelf life of fish, and facilitate efficient supply chains.
4. **Enhance Water Quality Management:** Implement better management of water bodies and control pollution through improved waste disposal, agricultural runoff management, and water treatment systems for aquaculture farms.
5. **Adopt Climate-Resilient Practices:** Develop climate-resilient aquaculture and fisheries practices, including using saline or brackish

water for aquaculture and improving disaster preparedness in coastal and fishing communities.

6. **Increase Research and Development:** Focus on R&D for breeding better fish species, improving disease management, and creating innovative farming techniques to boost productivity while reducing environmental degradation.
7. **Strengthen Financial Access:** Provide better access to credit, insurance, and subsidies for fishers and farmers, particularly small-scale producers, to improve their financial stability and enable investment in modern technologies.
8. **Capacity Building and Skill Development:** Organize training programs to enhance the skills of fishers, farmers, and stakeholders in adopting best practices, new technologies, and sustainable farming methods to improve efficiency and profitability.

#### CONCLUSION

The Pradhan Mantri Matsya Sampada Yojana (PMMSY) is a transformative initiative aimed at revolutionizing India's fisheries sector. By focusing on sustainable practices, infrastructure development, technological innovation, and the welfare of fishermen, PMMSY provides a comprehensive framework for addressing the sector's challenges. With an emphasis on increasing fish production, improving the value chain, and ensuring climate resilience, the scheme strives to enhance the livelihoods of millions of fishers and farmers across the country. However, India's fisheries sector still faces significant hurdles, including overfishing, climate change, poor infrastructure, and financial constraints.

#### PRELIMS QUESTIONS

**Q. Consider the following statements regarding the Pradhan Mantri Matsya Sampada Yojana (PMMSY):**

1. PMMSY was launched in 2020 with an investment of Rs. 20,050 crore to develop the fisheries sector in India.

2. The scheme exclusively focuses on improving marine fisheries and excludes inland aquaculture.
3. PMMSY aims to formalize the fisheries sector by supporting small-scale fisheries and promoting technological advancements.

**How many of the statements given above are correct?**

- A. Only one
- B. Only two
- C. All three
- D. None

**Answer: A**

**MAINS QUESTIONS**

**Q. Discuss the objectives and key components of the Pradhan Mantri Matsya Sampada Yojana (PMMSY). How does the scheme aim to address the challenges faced by the fisheries sector in India?**

**(250 words, 15marks)**

**LANDSLIDES: NATURE’S UNPREDICTABLE FORCE**

**WHY IN THE NEWS?**

Six people lost their lives, and three were injured after a massive tree, uprooted by heavy rains and a landslide, fell on parked vehicles near Gurudwara Manikaran Sahib on Sunday. Officials said the tree

**INDIA’S VULNERABILITY TO LANDSLIDE**

Category	Details
Vulnerable Land Area	12.6% of India’s land (excluding snow-covered areas) is landslide-prone.
Most Affected Regions	Himalayas, Western Ghats, Northeast India, Eastern Ghats, Kerala, Sikkim, Arunachal Pradesh.
Key Reports	ISRO Landslide Atlas: Mapped 80,000 landslides in 17 states, 2 UTs. GSI Report: Confirms 12.6% of land area at risk.
Main Causes	<b>Geological Factors:</b> Young, unstable mountains (Himalayas, Western Ghats). <b>Climate &amp; Rainfall:</b> Intense monsoons weaken slopes. <b>Human Activities:</b> Deforestation, unscientific road construction, mining, and farming on steep slopes. <b>Earthquakes:</b> Frequent seismic activity in the Himalayan region triggers landslides. <b>Soil Erosion:</b> Riverbank erosion makes slopes unstable.

collapsed from a mountain opposite the gurudwara due to continuous rainfall. The injured were taken to Jari Hospital for treatment. Kullu SDM Vikas Shukla confirmed that emergency teams, including police and medical personnel, managed rescue efforts. Himachal Pradesh CM Sukhvinder Singh Sukhu directed authorities to provide all possible aid, while Leader of Opposition Jai Ram Thakur expressed condolences.



**WHAT IS A LANDSLIDE?**

A landslide is defined as the movement of a mass of rock, debris, or earth down a slope. Landslides are a type of “mass wasting,” which denotes any down-slope movement of soil and rock under the direct influence of gravity. The term “landslide” encompasses five modes of slope movement: falls, topples, slides, spreads, and flows. These are further subdivided by the type of geologic material (bedrock, debris, or earth). Debris flows (commonly referred to as mudflows or mudslides) and rock falls are examples of common landslide types.

Category	Details
Impacts	<p><b>Loss of Life:</b> High fatalities in densely populated hilly regions.</p> <p><b>Infrastructure Damage:</b> Roads, bridges, power lines, and buildings destroyed.</p> <p><b>Economic Losses:</b> Disrupts agriculture, tourism, and transportation.</p> <p><b>Environmental Degradation:</b> Causes deforestation, loss of biodiversity, and landslide-induced flooding.</p>

**CAUSE OF LANDSLIDE**

- 1. Heavy Rainfall & Flooding:** Excessive water saturates the soil, reducing its strength and triggering landslides, especially during monsoons.
- 2. Earthquakes & Seismic Activity:** Ground vibrations destabilize slopes, leading to rockfalls and landslides, particularly in mountainous regions.
- 3. Volcanic Eruptions:** Lava flows, ash deposits and explosions can weaken slopes, causing sudden landslides.
- 4. Snowmelt & Glacier Movement:** Rapid melting of snow and glaciers increases water infiltration, loosening soil and rock.
- 5. Soil Erosion:** Rivers, wind, and weathering gradually wear down slopes, making them more prone to collapse over time.
- 6. Deforestation:** Cutting down trees removes the root systems that hold the soil together, increasing the risk of landslides.
- 7. Unplanned Construction & Excavation:** Poorly planned buildings, roads, and tunnels disturb natural slopes, leading to instability.
- 8. Mining & Quarrying:** Blasting and excavation weaken the ground, often triggering landslides in hilly and mountainous areas.
- 9. Poor Drainage Systems:** Improper water management causes water accumulation, weakening soil strength and increasing landslide risks.

- 10. Climate Change & Extreme Weather:** Rising global temperatures lead to intense rainfall, glacier melting, and unpredictable weather patterns, making landslides more frequent and severe.

**CONSEQUENCE OF LANDSLIDE**

- 1. Loss of Life & Injuries:** Landslides can bury homes and villages, leading to fatalities and serious injuries.
- 2. Destruction of Property & Infrastructure:** Houses, roads, bridges, and railways can be destroyed, causing severe disruptions.
- 3. Economic Losses:** Damage to businesses, agriculture, and industries results in financial setbacks and loss of livelihoods.
- 4. Displacement & Migration:** Affected communities may be forced to relocate, leading to social and economic challenges.
- 5. Soil Erosion & Reduced Fertility:** Landslides strip away topsoil, making land unsuitable for agriculture and reducing productivity.
- 6. Loss of Vegetation & Biodiversity:** Forests and ecosystems are destroyed, leading to habitat loss and declining wildlife populations.
- 7. Water Contamination & Shortages:** Landslides can pollute water sources and disrupt natural water flow, impacting supply and quality.
- 8. Flash Floods & Landscape Changes:** Blocked rivers can create temporary lakes that may burst, causing devastating floods and altering geography.

## NDMA GUIDELINE ON LANDSLIDE

Category	Key Measures	Details
Landslide Hazard, Vulnerability & Risk Assessment	Identifying High-Risk Areas	Mapping and analyzing landslide-prone zones.
	Assessing Infrastructure & Populations at Risk	Evaluating buildings, roads, and communities vulnerable to landslides.
Early Warning Systems	Continuous Monitoring	Using sensors, satellite data, and geotechnical instruments to detect ground movement.
	Timely Alerts & Data Sharing	Communicating risk data quickly to authorities and the public.
Landslide Risk Mitigation & Remediation	Land Use Planning	Restricting development in landslide-prone areas.
	Enforcing Construction Standards	Implementing safer excavation and building regulations.
	Protective Infrastructure	Installing retaining walls, rock anchors, and other stabilizing structures.
	Slope Stabilization	Improving drainage, vegetation cover, and controlled debris removal.
National Landslide Risk Management Strategy	Landslide Insurance & Compensation	Providing financial support to affected communities.
	Comprehensive Risk Reduction Plan	Integrating hazard mapping, awareness programs, capacity building, and regulations.
	NDMA Task Force	Developing national and local-level strategies for landslide management.
NDMA Guidelines on Landslide & Snow Avalanche Management	Strategy Document	Covering all aspects of landslide risk reduction.
	National Landslide Policy (2009)	Official guidelines for landslide disaster management.
	Landslide Risk Mitigation Scheme (LRMS) – 2019	Financial and technical assistance for landslide-prone states.
	LRMS Key Objectives	Focus on prevention, mitigation, early warning systems, and capacity building.

### CHALLENGES TO REDUCE THE LANDSLIDE

- Lack of Accurate and Comprehensive Data:** Incomplete or outdated landslide hazard maps hinder effective risk assessment and mitigation.
- Unregulated Construction in Vulnerable Areas:** Rapid urbanization and infrastructure development in landslide-prone regions increase risks.
- Deforestation and Environmental Degradation:** Uncontrolled deforestation weakens slopes, making them more prone to landslides.
- Poor Drainage and Water Management:** Inadequate drainage systems increase soil saturation, leading to slope failures.
- Limited Implementation of Early Warning Systems:** Lack of proper monitoring networks and real-time data delays warnings and response efforts.
- Climate Change and Extreme Weather Events:** Intense rainfall, rising temperatures, and unpredictable weather patterns worsen landslide frequency.
- Inadequate Public Awareness and Preparedness:** Communities in high-risk zones often

lack knowledge of landslide risks and safety measures.

8. **Lack of Strict Policy Enforcement:** Weak enforcement of land-use regulations and construction guidelines allows unsafe development.
9. **Limited Financial and Technological Resources:** Insufficient funding and technology slow down landslide mitigation projects.

### WAY FORWARD

1. **Strengthen Early Warning Systems:** Implement real-time monitoring using sensors, satellite imagery, and AI-based prediction models.
2. **Improve Land Use Planning & Regulations:** Enforce strict zoning laws to prevent construction in high-risk areas. Implement eco-friendly infrastructure development in vulnerable regions.
3. **Enhance Slope Stabilization Measures:** Use retaining walls, vegetation cover, and proper drainage systems to reinforce slopes. Promote bioengineering techniques for sustainable landslide prevention.
4. **Increase Public Awareness & Community Preparedness:** Conduct education campaigns on landslide risks and safety measures. Train local communities in disaster preparedness and evacuation drills.
5. **Leverage Technology & Research for Risk Mitigation:** Encourage research on cost-effective landslide mitigation techniques. Use drones, LiDAR, and GIS mapping for precise hazard assessment.
6. **Implement Sustainable Environmental Practices:** Promote afforestation and soil conservation techniques to stabilize slopes. Control deforestation and unplanned mining activities to reduce environmental stress.
7. **Strengthen National Landslide Policy & Funding:** Expand financial assistance programs like LRMS for high-risk states. Invest in disaster resilience infrastructure and emergency response teams.

### CONCLUSION

Landslides pose a significant risk to lives, infrastructure, and the environment in India. While natural factors like rainfall and earthquakes contribute, human activities such as deforestation and poor urban planning exacerbate the problem. A proactive approach combining scientific research, policy enforcement, community participation, and technological advancements is essential to minimize the impact of landslides. By strengthening risk management strategies, we can build a safer and more resilient future against these disasters.

### PRELIMS QUESTIONS

**Q. With reference to landslides in India, consider the following statements:**

1. The Himalayas are more prone to landslides due to their young fold mountain structure and high seismic activity.
2. The Western Ghats experience landslides primarily due to excessive rainfall and deforestation.
3. The Landslide Hazard Zonation (LHZ) maps are prepared by the Indian Space Research Organisation (ISRO).

**How many of the above-given statements are correct?**

- A. Only one
- B. Only two
- C. All three
- D. None

**Answer: B**

### MAINS QUESTIONS

**Q. "Landslides are a recurrent disaster in India, especially in the Himalayan and Western Ghats regions." Discuss the causes, consequences, and mitigation strategies for landslides in India**

**(250 words, 15marks)**

## THE REVOLUTIONARY NATIONALISM SHYAMJI KRISHNA VARMA

### WHY IN THE NEWS?

Prime Minister Shri Narendra Modi paid tribute to the great freedom fighter Shyamji Krishna Varma on his death anniversary today. Shyamji Krishna Varma was a revolutionary nationalist who played a crucial role in India's freedom struggle, especially through his activities in London. PM Modi acknowledged his contributions and sacrifices in the fight against British rule.



### WHO WAS SHYAMJI KRISHNA VARMA

Shyamji Krishna Varma (1857–1930) was an Indian freedom fighter, nationalist, lawyer, and journalist. He played a crucial role in India's struggle for independence by promoting revolutionary nationalism against British rule.

### KEY CONTRIBUTIONS:

- 1. Founder of India House (1905):** A centre in London that nurtured Indian revolutionaries, including Vinayak Damodar Savarkar.
- 2. Established the Indian Home Rule Society:** Advocated for India's complete independence and self-rule.
- 3. Published The Indian Sociologist:** A monthly journal that criticized British rule and inspired revolutionaries.
- 4. Influence of Swami Dayanand Saraswati:** A disciple of Arya Samaj, he promoted cultural nationalism and Vedic ideals.
- 5. Legal and Political Activism:** Served as Diwan (chief minister) of Ratlam and Junagadh but resigned due to British interference.
- 6. Advocated Armed Resistance:** Believed that "Resistance to aggression is not simply justified, but imperative", inspired by Herbert Spencer.

### CONTRIBUTIONS TO INDIAN FREEDOM STRUGGLE

- 1. Founder of India House (1905):** Established India House in London as a base for Indian revolutionaries. Provided shelter, financial aid, and guidance to leaders like Savarkar, Madan Lal Dhingra, Lala Hardayal, and Virendranath Chattopadhyaya.
- 2. Formation of the Indian Home Rule Society (1905):** Founded the Indian Home Rule Society to demand complete independence (Swaraj) from British rule. Promoted revolutionary nationalism instead of peaceful protests.
- 3. Publication of The Indian Sociologist:** Launched The Indian Sociologist, a radical monthly journal spreading anti-British ideas. Encouraged armed revolution instead of petitions and compromises.
- 4. Support for Armed Struggle:** Rejected moderate approaches of the Indian National Congress. Supported Lokmanya Tilak during the Age of Consent Bill controversy (1890). Encouraged the Chapekar brothers and Madan Lal Dhingra's assassination of British officers.

- 5. Financial Support for Revolutionaries:** Established Herbert Spencer Indian Fellowships to fund Indian students in Europe. Used personal wealth to finance revolutionary activities and Indian independence movements.
- 6. Opposition to British Rule:** Exposed British oppression in India through speeches, writings, and activism. Inspired Indian students and political leaders to fight against colonial rule.
- 7. Exile and Continued Resistance:** Forced to flee London to Paris in 1907 due to British persecution. Later moved to Geneva, Switzerland, and continued supporting Indian revolutionaries. Remained under British surveillance but never stopped his mission.
- 8. Posthumous Recognition & Legacy:** His ashes were repatriated to India in 2003 by Narendra Modi. The Kranti Teerth Memorial in Gujarat was built in his honour. In 2015, he was posthumously reinstated to the Inner Temple, London, from where he was disbarred in 1909.

#### REVOLUTIONARY STREAM OF INDIA'S NATIONAL MOVEMENT

- 1. Early Revolutionary Activities (1870s-1890s):** Influenced by Swami Dayanand Saraswati and Bal Gangadhar Tilak. Chapekar Brothers (1897) assassinated British officer W.C. Rand in Pune, marking early armed resistance.
- 2. Formation of Secret Societies (1900s):** Anushilan Samiti (1902) in Bengal and Abhinav Bharat Society (1904) by Vinayak Damodar Savarkar. Promoted revolutionary ideology and military training among Indian youth.
- 3. Role of India House & Shyamji Krishna Varma (1905-1909):** India House in London became a hub for Indian revolutionaries. Madan Lal Dhingra (1909) assassinated British official Curzon Wylie in London as an act of defiance.
- 4. Alipore Bomb Conspiracy (1908):** Aurobindo Ghosh, Barindra Ghosh, and others planned to overthrow British rule using explosives. Khudiram Bose and Prafulla Chaki attempted to assassinate Judge Kingsford but were captured and executed.
- 5. Ghadar Movement (1913-1917):** Lala Hardayal and Sohan Singh Bhakna founded the Ghadar Party in the USA to instigate an armed revolt in India. The Ghadar Mutiny (1915) was planned but failed due to British intelligence infiltration.
- 6. Hindustan Republican Association (HRA) & Kakori Conspiracy (1925):** Ram Prasad Bismil, Ashfaqulla Khan, Chandrashekhar Azad led a train robbery at Kakori to fund revolutionary activities. The leaders were arrested and executed, inspiring future revolutionaries.
- 7. HSRA & Bhagat Singh's Struggle (1928-1931):** The Hindustan Socialist Republican Association (HSRA) was formed by Bhagat Singh, Rajguru, Sukhdev, Chandrashekhar Azad. Saunders' assassination (1928) and the Central Assembly bombing (1929) were key acts of resistance.
- 8. Azad Hind Fauj & Subhas Chandra Bose (1943-1945):** The Indian National Army (INA) was formed with Japanese support to fight the British. Bose's famous slogan: "Give me blood, and I will give you freedom!" motivated Indians to join the struggle.

#### CONTRIBUTIONS OF REVOLUTIONARY TO INDIA'S NATIONAL MOVEMENT

- 1. Ignited the Spirit of Resistance:** Revolutionaries like Bhagat Singh, Chandrashekhar Azad, and Subhas Chandra Bose infused fearlessness and sacrifice into the freedom struggle.
- 2. Challenged British Rule:** Assassination of British officials (e.g., Curzon Wylie by Madan Lal Dhingra, Saunders by Bhagat Singh) shook British confidence. Bomb attacks and armed resistance (e.g., Kakori Conspiracy (1925), Delhi Assembly Bombing (1929)) demonstrated defiance against colonial rule.
- 3. Formed Revolutionary Organizations:** Anushilan Samiti (1902) and Jugantar (1906) in Bengal spread revolutionary ideology. Hindustan Socialist Republican Association (HSRA) (1928), led by Bhagat Singh, promoted socialism and armed struggle.

4. **Spread Nationalist Ideas:** Newspapers like *Bande Mataram*, *Ghadar*, and *The Indian Sociologist* fueled anti-British sentiment.
5. **Global Influence & Support:** The Ghadar Movement (USA, Canada) and Subhas Chandra Bose's INA sought international backing for independence.
6. **Forced British Repressive Measures:** Their activities led to harsh laws like the Rowlatt Act and the Defence of India Act, exposing British fear.
7. **Radicalized the Freedom Struggle:** Their demand for complete independence (Purna Swaraj) pushed Congress towards a more assertive stance.
8. **Legacy of Sacrifice & Nationalism:** Their martyrdom became a symbol of patriotism, inspiring future generations and post-independence policies.

#### LIMITATIONS OF REVOLUTIONARY NATIONALISM

1. **Lack of Mass Support:** Revolutionary movements were largely confined to urban youth and students, failing to mobilize the broader masses, including peasants and workers.
2. **Absence of a Clear Political Program:** Unlike Congress-led movements, revolutionaries lacked a well-defined long-term strategy for governance post-independence.
3. **Dependence on Armed Struggle:** The focus on assassinations and bombings led to severe crackdowns, making the movement unsustainable in the long run.
4. **Harsh British Repression:** The colonial government responded with brutal measures like executions, deportations, and stricter laws (e.g., the Rowlatt Act), weakening revolutionary networks.
5. **Lack of Unity & Coordination:** Different revolutionary groups like Anushilan Samiti, HSRA, and Ghadar Party operated independently, limiting their collective impact.

6. **Failure to Gain International Support:** Unlike Gandhi's diplomacy, revolutionaries struggled to secure significant foreign backing for India's independence.
7. **Financial & Resource Constraints:** Limited funds and weapons made it difficult to sustain prolonged armed resistance against a well-equipped colonial government.
8. **Overshadowed by Mass Movements:** Non-violent mass movements led by Gandhi, Nehru, and Patel gained wider acceptance, sidelining the revolutionary approach over time.

#### CONCLUSION

Revolutionary nationalism played a crucial role in India's freedom struggle by instilling a spirit of resistance and sacrifice. The contributions of revolutionaries like Shyamji Krishna Varma, Bhagat Singh, and Subhas Chandra Bose created an atmosphere of defiance against British rule. However, due to harsh repression, lack of mass support, and absence of a clear political strategy, it could not achieve independence on its own. Despite its limitations, the revolutionary movement laid the foundation for the demand for complete independence (Purna Swaraj) and remains a source of inspiration for generations.

#### PRELIMS QUESTIONS

**Q. With reference to the Ghadar Movement, which of the following statements is/are correct?**

1. The Ghadar Party was founded in the USA in 1913 to initiate an armed revolt against British rule in India.
2. Lala Lajpat Rai was one of the founding members of the Ghadar Party.

**Select the correct answer using the code given below:**

- A. 1 only
- B. 2 only
- C. Both 1 and 2
- D. Neither 1 nor 2

Answer: A

## MAINS QUESTIONS

**Q. Analyze the role of revolutionary nationalism in India's freedom struggle. Discuss its impact, limitations, and legacy in shaping the independence movement (250 words, 15marks)**

## WOMEN SAFETY: A CRITICAL CONCERN

### WHY IN THE NEWS?

Ensuring women's safety remains a critical priority for the Indian government. The Ministry of Women and Child Development has recently reinforced its commitment to improving women's security through various initiatives. In March, the government highlighted its efforts, including legal reforms, financial initiatives such as the Nirbhaya Fund, and helpline services like Women Helpline 181. New developments such as expanded One Stop Centres (OSCs), the Emergency Response Support System (ERSS), and trauma-informed care under Project Stree Manoraksha by NIMHANS have further strengthened women's safety mechanisms. These initiatives reflect India's multipronged approach to addressing crimes against women and ensuring their dignity, security, and empowerment.



## WOMEN SAFETY IN INDIA

Women's safety remains a pressing issue in India, despite legal frameworks and policy interventions. According to the National Crime Records Bureau (NCRB) report, crimes against women have shown an increasing trend. In 2021 alone, over 4.3 lakh cases of crimes against women were reported, with rape, domestic violence, and sexual harassment being the most prevalent. Shockingly, rape cases were recorded at an alarming rate of 88 per day. Furthermore, workplace harassment, human trafficking, and dowry deaths continue to threaten women's security. As of April 2025, the most recent data on crimes against women in India is available up to the year 2022. According to the National Crime Records Bureau (NCRB), 445,256 cases of crimes against women were registered in 2022, an increase from 428,278 cases in 2021. The NCRB's annual 'Crime in India' report provides detailed statistics on various forms of crimes against women, including domestic violence, sexual harassment, and dowry deaths. However, specific data for 2023 and 2024 have not yet been published.

## CONSTITUTIONAL MANDATE FOR WOMEN SAFETY

The Indian Constitution provides several provisions to safeguard women's rights and ensure their safety:

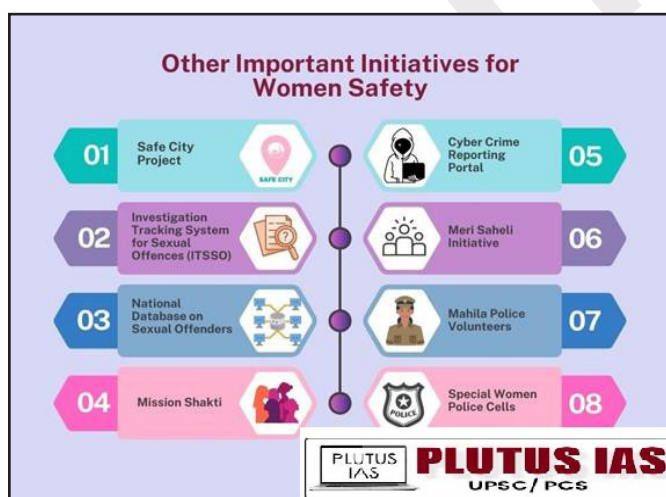
- Article 14:** Guarantees equality before the law.
- Article 15(3):** Empowers the state to make special provisions for women and children.
- Article 21:** Ensures the right to life and personal liberty, interpreted by courts to include the right to dignity and protection from violence.
- Article 39(a) & 39(d):** Mandates equal access to justice and equal pay for equal work.
- Article 51A(e):** Calls for renouncing practices derogatory to women's dignity.

**Several landmark Supreme Court judgments have reinforced women's safety:**

- Vishaka v. State of Rajasthan (1997):** Laid the foundation for workplace harassment laws, leading to the Sexual Harassment of Women

at Workplace (Prevention, Prohibition, and Redressal) Act, 2013.

- Laxmi v. Union of India (2006):** Led to stricter regulation of acid sales to curb acid attacks.
- Nirbhaya Case (2012):** Catalyzed amendments in criminal laws, leading to the Criminal Law (Amendment) Act, 2013, which introduced stricter punishments for sexual offenses. More recently, in *We The Women of India v. Union of India (2023)*, the Supreme Court addressed the implementation of the Sexual Harassment at Workplace (Prevention, Prohibition and Redressal) Act, 2013 (POSH Act). The Court emphasized the need for effective enforcement of the Act and issued directives to ensure its proper implementation. In another significant case, *Bhawna v. Bhay Ram and Ors. (2023)*, the Supreme Court reiterated that appellate courts cannot impose penalties on appellants for not proceeding with the trial, highlighting the importance of fair trial procedures. These constitutional provisions and judicial pronouncements collectively aim to create a legal framework that upholds and protects the safety and dignity of women in India



## GOVERNMENT POLICIES AND MEASURES FOR WOMEN SAFETY

The Indian government has implemented various policies and schemes aimed at ensuring women's safety:

### Legislative Measures

- Criminal Law (Amendment) Act, 2013:** Strengthened laws against sexual offenses by increasing punishment and fast-tracking cases.
- Protection of Women from Domestic Violence Act, 2005:** Provides legal recourse for domestic violence victims, ensuring protection and shelter.
- Sexual Harassment of Women at Workplace Act, 2013:** Ensures a safe working environment for women and mandates Internal Complaints Committees in organizations.
- The Juvenile Justice (Care and Protection of Children) Act, 2015:** Redefined the treatment of juvenile offenders in heinous crimes, allowing stricter penalties.
- The Dowry Prohibition Act, 1961:** Criminalizes the practice of dowry, with stringent penalties for violations.
- The Prohibition of Child Marriage Act, 2006:** Aims to prevent early and forced marriages by imposing legal consequences on offenders.

### Safety Initiatives and Programs

- One Stop Centre Scheme (2015):** Offers integrated support to women facing violence, providing medical, legal, and psychological assistance.
- Beti Bachao Beti Padhao (2015):** Aims to address gender discrimination and improve female welfare by encouraging education and awareness.
- Nirbhaya Fund (2013):** Allocates resources to implement safety measures such as panic buttons in transport and CCTV surveillance in public spaces.
- Mahila Police Volunteers (MPV) Scheme:** Engages community women to act as a bridge between police and society, enhancing safety.
- Safe City Projects:** Implemented in major cities to improve women's safety through

technological interventions such as AI-based monitoring and smart policing.

6. **Sakhi Helpline:** A dedicated helpline for women in distress, providing immediate assistance, shelter, and counseling services.
7. **Cyber Crime Reporting Portal:** A platform for reporting online harassment, blackmail, and other cybercrimes against women, ensuring prompt action.
8. **Women's Helpline (181):** A nationwide toll-free helpline providing emergency support for women in distress, operating 24/7.
9. **She-Box Portal:** A government initiative that allows women to file workplace harassment complaints online, ensuring anonymity and faster redressal.

#### Financial and Economic Empowerment

1. **Stand-Up India Scheme:** Encourages entrepreneurship among women by providing financial assistance and skill development opportunities.
2. **Mahila E-Haat:** A digital marketing platform for women entrepreneurs to showcase and sell their products, promoting economic independence.
3. **Rashtriya Mahila Kosh:** A scheme offering micro-financing options to women to enhance their financial independence and reduce vulnerability.
4. **Ujjwala Yojana:** Provides free LPG connections to empower women and improve their health and safety by reducing indoor pollution and fire hazards.

#### Capacity Building and Sensitization

1. **Gender Sensitization Programs:** Conducted in schools, colleges, and workplaces to promote gender equality and eliminate biases.
2. **Self-Defense Training Programs:** Organized for women in schools and community centers to empower them against physical attacks and threats.
3. **Police Training on Gender Sensitivity:** Law enforcement officers are regularly

trained to handle women's complaints with empathy and efficiency, ensuring justice. By implementing these policies and measures, the government aims to create a safer and more inclusive environment for women in India. However, continuous monitoring, awareness campaigns, and public participation are crucial to ensuring their effective implementation.

#### Legislative Measures

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3. **Sexual Harassment of Women at Workplace Act, 2013:** Ensures a safe working environment for women.
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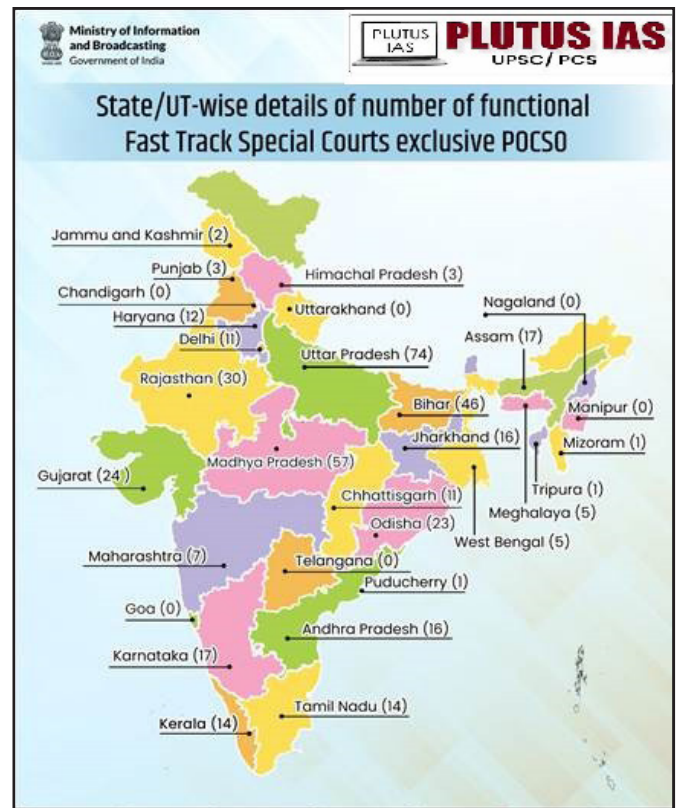
#### Safety Initiatives and Programs

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4. **Mahila Police Volunteers (MPV) Scheme:** Engages community women to act as a bridge between police and society.
5. **Safe City Projects:** Implemented in major cities to improve women's safety through technological interventions.

#### CHALLENGES RELATED TO WOMEN SAFETY

1. **Underreporting of Crimes:** Fear of stigma and lack of trust in law enforcement prevents victims from reporting crimes, leading to a justice gap. Many cases remain unreported due to family and societal pressures.

2. **Delays in Justice Delivery:** Prolonged trials discourage victims from seeking legal recourse, reducing confidence in the legal system. Fast-track courts are often overburdened, delaying verdicts.
3. **Insufficient Policing:** Inadequate representation of women in police forces (only about 10% of total personnel) affects the sensitivity of investigations and response times. Many police stations lack dedicated women help desks or female officers.
4. **Societal Mindset and Patriarchy:** Deep-rooted gender biases hinder the effectiveness of laws and policies, perpetuating discrimination. Victim-blaming attitudes and honor-based restrictions worsen the situation.
5. **Lack of Proper Implementation:** Many government schemes fail due to poor execution and lack of awareness, reducing their impact. Corruption and bureaucratic inefficiencies further hinder the effective utilization of funds.
6. **Cyber Harassment:** Increasing cases of online stalking, revenge porn, and cyberbullying pose a new-age challenge, requiring stronger digital security measures. The anonymity of the internet emboldens perpetrators and makes enforcement difficult.
7. **Workplace Discrimination and Harassment:** Despite legal frameworks, many women still face harassment at workplaces. Fear of retaliation discourages complaints, and internal committees often fail to act promptly.
8. **Lack of Safe Public Spaces:** Poor urban planning, dimly lit streets, and insufficient public transport security make women vulnerable to street crimes. Many cities lack sufficient women-friendly infrastructure, such as well-monitored bus stops and emergency response systems.
9. **Economic Vulnerability:** Financial dependence makes women more susceptible to abuse, as they often lack the resources to leave abusive situations. Gender pay gaps and employment biases further restrict their autonomy.



## RECOMMENDATIONS TO BOOST WOMEN SAFETY

To ensure a safer environment for women, the following measures can be undertaken:

1. **Strengthening Law Enforcement:** Increasing the number of women personnel in police forces. Implementing fast-track courts for speedy trials of gender-based crimes. Ensuring proper training of law enforcement personnel on gender sensitivity.
2. **Enhancing Public Infrastructure:** Installing better lighting and surveillance in public areas. Ensuring safe and reliable public transport with female security personnel. Establishing help desks in police stations dedicated to women's issues.
3. **Education and Awareness:** Conducting gender sensitization programs in schools and colleges. Encouraging bystander intervention training for the public to help prevent crimes. Running awareness campaigns on legal rights and support mechanisms.

4. **Cybersecurity and Digital Safety:** Strengthening cyber laws and enforcement against online harassment. Providing digital literacy training to women for self-protection.
5. **Community Engagement and Support Systems:** Strengthening neighborhood watch programs and self-defense training for women. Encouraging the role of NGOs and women's groups in supporting victims.

## CONCLUSION

Women's safety is an issue that requires a multi-pronged approach encompassing legal, social, economic, and technological interventions. While India has made progress in enacting laws and policies, challenges in implementation and societal attitudes continue to hinder women's security. A collaborative effort involving the government, law enforcement, civil society, and individuals is essential to create a society where women feel safe, empowered, and equal. Only through continued vigilance and commitment can we ensure a future where women's safety is not just a concern but a guaranteed right.

## PRELIMS QUESTIONS

Q. Which landmark Supreme Court judgment laid the foundation for workplace harassment laws in India?

- A. Laxmi v. Union of India
- B. Nirbhaya Case
- C. Vishaka v. State of Rajasthan
- D. Shah Bano Case

**ANSWER: C**

## MAINS QUESTIONS

Q. What are the major challenges hindering the implementation of women's safety laws and policies? Provide real-life examples or case studies to support your answer.

**(250 words, 15marks)**

## FROM FARM TO RETAIL: MAKE IN INDIA'S PUSH FOR FOOD PROCESSING EXCELLENCE

### WHY IN THE NEWS?

India's food processing industry has undergone rapid transformation, driven by its vast agricultural base, rising domestic demand, and supportive government policies. India is poised to emerge as a global leader in the food processing sector, with an impressive growth trajectory. The agriculture sector forms the backbone of India's food processing industry, India being the largest producer of fruits, vegetables, millet, tea, and food grains, as well as milk and livestock globally. The food processing sector is a priority under the Make in India initiative, with the Ministry of Food Processing Industries implementing schemes to attract investment and develop infrastructure. Mega Food Parks with essential utilities and common processing facilities are being established in agriculturally rich areas, offering a plug-and-play model for entrepreneurs. Investment in these parks is recognized under the Harmonized List of Infrastructure Sub-sectors (HLIS), enabling easier access to infrastructure lending.

### Food Processing Industry: An overview

Gross Value Added (GVA) has increased from 1.61 lakh crore in 2015-16 to 1.92 lakh crore in 2022-23	Average Annual Growth Rate (AAGR) of around 5.35% since 8 years until 2022-23	Employment increased from 17.73 lakh in 2014-15 to 20.68 lakh in 2021-22
(as per First Revised Estimates of Ministry of Statistics and Programme Implementation)		As per latest Annual Survey of Industries (ASI) report

### GOVT SCHEME FOR PROMOTIONS OF THE FOOD INDUSTRY

#### 1. PM KISAN SAMPADA YOJANA (PMKSY)

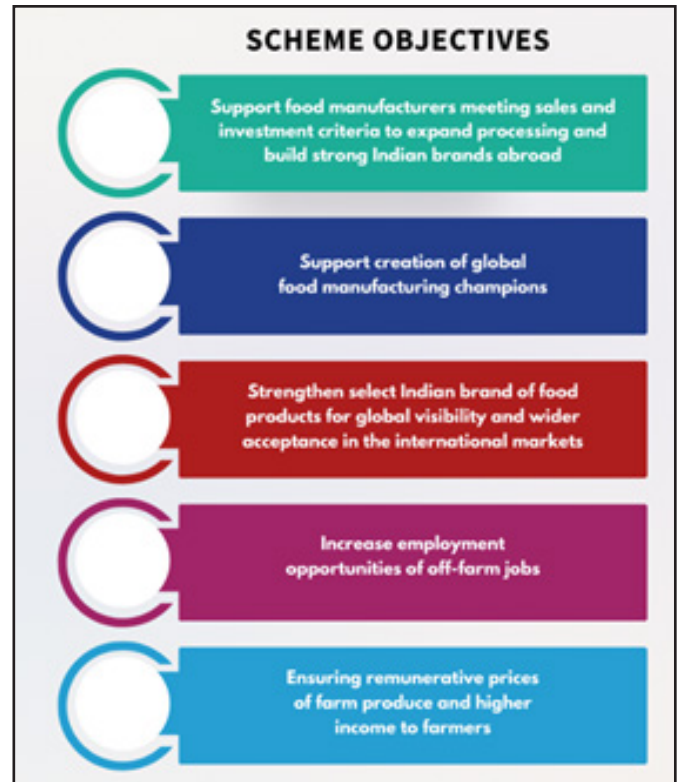
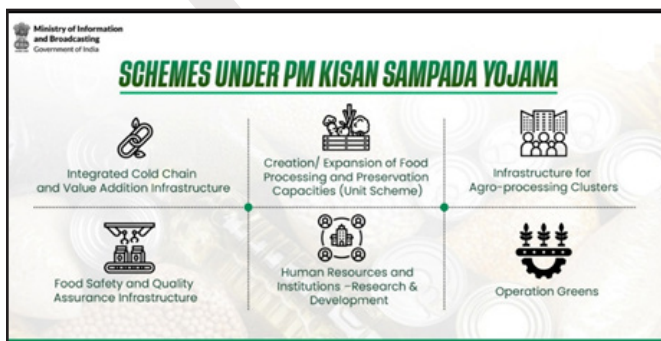
The umbrella Central sector scheme, SAMPADA Scheme for Agro-marine processing and Development of Agro-processing Clusters was approved in May 2017, with a total allocation of Rs.6000 crore for the implementation period. The continuation of the Central Sector Scheme Pradhan Mantri Kisan SAMPADA Yojana (Scheme for Agro-Marine Processing and Development of Agro-Processing Clusters) with an allocation of Rs. 4600 Crore has been further approved until March

31, 2026. As of February 28, 2025, MoFPI has sanctioned 1608 projects, including 41 Mega Food Parks, 394 Cold Chain projects, 75 Agro-processing Clusters projects, 536 Food Processing Units, 61 Creation of Backward & Forward Linkages and 44 Operation Greens projects under corresponding component schemes of PMKSY across the country. A total sum of ₹ 6198.76 crore has been disbursed as grants in aid/ subsidy since the inception of component schemes of PMKSY.

### The PMKSY scheme aims at the following:

1. A comprehensive package for modern infrastructure and efficient supply chain management, from farm gate to retail outlet
  2. Aims to boost the food processing sector in India
  3. Helps farmers get better returns and supports a doubling of farmers' income
  4. Creates huge employment opportunities, especially in rural areas
  5. Reduces wastage of agricultural produce
  6. Increases processing levels of food products
  7. Enhances exports of processed foods
2. PLISFPI- Production Linked Incentive Scheme for Food Processing Industry

The Central Sector Scheme, Production Linked Incentive Scheme for Food Processing Industry (PLISFPI) was approved by the Union Cabinet in March 2021, with an outlay of ₹10,900 Crore. The Scheme is being implemented over a six-year period from 2021-22 to 2026-27.

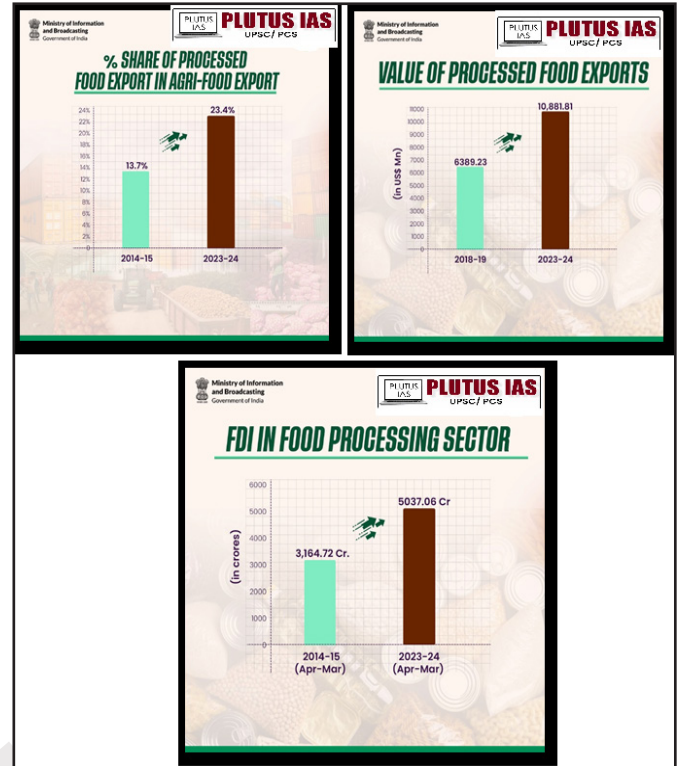


### The components of the Scheme are

1. Incentivising manufacturing of four major food product segments viz. Ready to Cook/ Ready to Eat (RTC/RTE) foods, including Millet based products, Processed Fruits & Vegetables, Marine Products and Mozzarella Cheese (Category I)
2. Production of Innovative / Organic products of SMEs (Category II)
3. The third component related to support for branding and marketing abroad (Category III) to incentivize the emergence of strong Indian brands for in-store Branding, shelf space renting and marketing.
4. From the savings under PLISFPI, a component for the Production Linked Incentives Scheme for Millet Based Products (PLISMBP) was also carved out from the scheme to encourage the use of Millets in RTC/RTE products and incentivise them under the PLI Scheme to promote its production, value addition and sale.
3. PMFME- Pradhan Mantri Formalisation of Micro Food Processing Enterprises Scheme

Launched in June 2020, the scheme aims to encourage ‘Vocal for Local’ in the sector in a total outlay of Rs. 10,000 crore in the period of FY 2020-2025 for this scheme. The scheme has been extended up to FY 2025-26. This is the first ever Government scheme for Micro Food Processing enterprises and is targeted to benefit 2 lakh enterprises through credit-linked subsidy and adopting the approach of One District One Product.

**FOOD PROCESSING INDUSTRY IN INDIA**



Aspect	Details
Economic Importance	Significant contributor to GDP, employment, and exports.
Growth Projections	Expected CAGR of 8.8% from 2023 to 2032.
Sectoral Contribution	8.8% of manufacturing GDP and 8.39% of agriculture GDP.
Market Size (2023)	Valued at US\$ 336.4 billion.
Government Initiatives	MOFPI oversees policies, investments, and regulations.
Expansion	Growth in Tier-2 and Tier-3 cities due to rising incomes.
Exports (FY 2023-24)	Agricultural exports reached USD 48.15 billion.
AAGR (2015-2022)	Average Annual Growth Rate of 7.26%.
Global Ranking	6th largest food processing industry in the world.
Contribution to GVA	9% of Gross Value Added (GVA) in the agriculture sector.
Employment Generation	Provides jobs to over 11 million people.
Foreign Direct Investment	USD 11.79 billion received (April 2000 – March 2023).

Aspect	Details
Food Parks & Infrastructure	23 Mega Food Parks were established for modern processing facilities.
E-commerce & Retail Growth	Online food delivery and retail chains boosting processed food demand.

**CHALLENGES TO INDIA FARM TO RETAIL FOOD**

1. **Post-Harvest Losses:** Around 30-40% of perishable food is wasted due to inadequate storage, poor handling, and transportation issues.
2. **Cold Storage & Infrastructure Gaps:** Limited cold chain facilities lead to spoilage of fresh produce, especially fruits, vegetables, and dairy products.
3. **Middlemen & Price Exploitation:** Farmers rely on intermediaries, leading to low farm-gate prices while consumers pay higher prices.
4. **Logistics & Transportation Issues:** Poor road networks, lack of refrigerated trucks, and high fuel costs increase food wastage and delivery delays.
5. **Regulatory Hurdles:** Complex licensing, food safety laws, and taxation policies create barriers for small businesses and retailers.
6. **Inconsistent Quality & Standards:** Lack of standardized grading and packaging affects food quality, making exports and retail operations challenging.
7. **Limited Food Processing Facilities:** Low investment in food processing reduces value addition and leads to higher food wastage.
8. **E-commerce & Retail Challenges:** Issues like last-mile delivery, perishability, and consumer trust make online food retail difficult to scale.

#### WAY TO STRENGTHENING FARM TO RETAIL CHAIN

1. **Improve Cold Storage & Warehousing:** Invest in cold chains, refrigerated trucks, and modern warehouses to reduce post-harvest losses.
2. **Enhance Logistics & Transportation:** Develop better road networks, rail connectivity, and efficient supply chains to ensure faster delivery of perishable goods.
3. **Promote Farmer Producer Organizations (FPOs):** Encourage FPOs and cooperatives to

help farmers sell directly to retailers, reducing dependency on middlemen.

4. **Increase Food Processing Capacity:** Set up more food processing units to add value to raw produce and extend shelf life.
5. **Adopt Digital & Smart Technologies:** Use AI, blockchain, and IoT for real-time tracking, quality control, and better supply chain management.
6. **Encourage Direct-to-Consumer (D2C) & E-commerce Models:** Strengthen farm-to-fork platforms to help farmers sell directly to consumers and retailers.
7. **Streamline Government Policies & Regulations:** Simplify food safety laws, licensing, and tax structures to encourage private investment and innovation.
8. **Expand Financial Support & Credit Access:** Provide subsidies, low-interest loans, and insurance to farmers and small retailers for better infrastructure development.

#### CONCLUSION

India's food processing industry is undergoing rapid transformation, driven by strong agricultural production, increasing consumer demand, and favourable government policies. With initiatives like PMKSY, PLISFPI, and PMFME, the government is focusing on enhancing infrastructure, boosting investments, and promoting value addition in the sector. Despite challenges such as supply chain inefficiencies, post-harvest losses, and regulatory hurdles, the industry holds immense potential for growth. Strengthening cold storage, logistics, and digital technologies, along with empowering Farmer Producer Organizations (FPOs) and promoting direct-to-consumer models, will be crucial in making the farm-to-retail supply chain more efficient.

#### PRELIMS QUESTIONS

**Q. With reference to India's food processing industry, consider the following statements:**

1. India is the largest producer of fruits, vegetables, and milk globally.

2. The Production Linked Incentive Scheme for Food Processing Industry (PLISFPI) was launched in 2020 to support food processing units.
3. The Ministry of Food Processing Industries (MoFPI) is responsible for implementing the Pradhan Mantri Kisan Sampada Yojana (PMKSY).

**How many of the above-given statements are correct?**

- A. Only one
- B. Only two
- C. All three
- D. None

**Answer: B**

### MAINS QUESTIONS

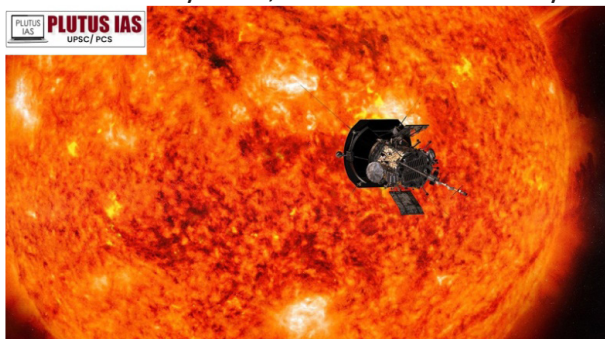
**Q. Analyze the key challenges facing India's farm-to-retail food supply chain and suggest measures to strengthen it.**

**(250 words, 15marks)**

### PARKER SOLAR MISSION (PSM): TOUCHING THE SUN

#### WHY IN THE NEWS?

NASA's Parker Solar Probe made another record-breaking close approach to the Sun on March 22, 2025, coming within 6 million km of its surface. This mission marks a significant milestone in solar exploration, as the probe continues its journey through the Sun's corona, collecting crucial data on solar wind, magnetic fields, and coronal mass ejections. The insights aim to deepen our understanding of space weather and the Sun-Earth relationship, with implications for satellite safety, communication systems, and scientific discovery.



April 2025

#### WHAT IS THE PARKER SOLAR MISSION (PSM)

The Parker Solar Mission (PSM) is NASA's groundbreaking attempt to study the sun up close — so close, in fact, that it's often called the mission to "touch the sun." Named after physicist Eugene Parker, who first theorized the solar wind, the mission is carried out using the Parker Solar Probe — a sophisticated spacecraft built to withstand the harshest conditions in our solar system. Launched in August 2018 aboard a Delta IV Heavy rocket from Cape Canaveral, the probe aims to fly closer to the sun than any spacecraft in history.

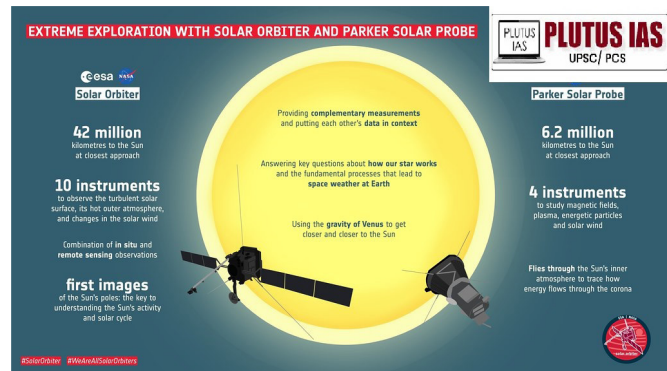
Its primary goal is to explore the sun's outer atmosphere — the solar corona — and gather crucial data that can solve long-standing mysteries of solar physics. The mission is a marvel of engineering and has already revolutionized our understanding of the sun.

#### FACTUAL DETAILS ABOUT THE PSM

1. **Launch Date and Location:** The Parker Solar Probe was launched on August 12, 2018, from Cape Canaveral Air Force Station in Florida aboard a Delta IV Heavy rocket.
2. **Mission Speed:** Once in space, the spacecraft reached a record-breaking speed of 692,000 km/h, making it the fastest human-made object in history.
3. **Distance from the Sun:** On December 24, 2024, it came within 6.1 million km of the Sun's surface. By March 22, 2025, it made another attempt to get even closer, aiming for around 6 million km.
4. **Flight Path and Gravity Assist:** The spacecraft uses gravity assists from Venus and Earth to gradually spiral closer to the Sun. The original Jupiter flyby idea was dropped due to distance concerns.
5. **Thermal Protection:** The probe is equipped with an 8-foot-wide, 4.5-inch-thick carbon-carbon composite heat shield, capable of withstanding temperatures up to 1,370°C, while keeping the internal instruments at a safe 29°C.
6. **Structure and Materials:** The heat shield

includes a carbon composite foam core and is coated with white ceramic paint to reflect solar radiation. A separate Faraday cup made from a molybdenum alloy operates outside the shield and endures extreme heat to study the solar wind.

- 7. Instruments Onboard:** **FIELDS** (Focusing Optics X-ray Solar Imager): Measures electric and magnetic fields in the Sun's corona. This helps scientists understand how energy and heat move through the solar atmosphere and drive solar eruptions. **ISQIS** (Integrated Science Investigation of the Sun): Detects energetic particles that form solar storms. It provides insights into the acceleration and transport of these particles across the solar system. **WISPR** (Wide-Field Imager for Solar Probe): Captures images of solar phenomena like coronal mass ejections and the solar wind. It offers the first-ever direct views of the Sun's outer atmosphere and helps track solar material as it moves outward. **SWEAP** (Solar Wind Electrons Alphas and Protons): Records solar wind properties such as speed, density, and temperature. This data is crucial to understanding how the solar wind is heated and accelerated. **Faraday Cup**: Measures ion and electron density directly in the solar wind. It operates by collecting charged particles and analyzing their properties to map the solar wind's structure. **Duration and Orbits**: Over the course of its mission, the probe will complete 24 orbits of the Sun and spend more than 2,000 hours flying through the corona.
- 8. Important Discoveries:** Discovery of dust-free zones near the Sun, defying previous assumptions. Observation of magnetic switchbacks in the solar wind: sudden reversals in magnetic field direction. Data supporting the theory that Alfvén waves contribute to the unusually high temperature of the solar corona.



## SIGNIFICANCE OF THE PARKER SOLAR MISSION

- 1. The Parker Solar Mission (PSM) is more than just a technological feat :** it's a window into the secrets of our closest star. Its significance lies in:
  - 1. Understanding Solar Storms:** Parker helps identify the causes, composition, and structure of solar storms, which can severely affect satellites, electric grids, aviation communication, and GPS systems on Earth.
  - 2. Probing the Solar Wind:** The mission provides the first-ever direct evidence of phenomena like magnetic switchbacks and Alfvén waves, which could explain why the corona is mysteriously hotter than the sun's surface.
  - 3. Studying Coronal Mass Ejections (CMEs):** Parker Solar Probe has advanced our understanding of CMEs : massive eruptions of plasma and magnetic field from the sun's corona that can carry billions of tons of solar material into space. These CMEs can collide with Earth's magnetosphere, disrupting satellite systems, communications, GPS, and power grids. Understanding their origin and evolution is key to building better early-warning systems for geomagnetic storms.
  - 4. Space Weather Prediction:** Data from PSM enhances our ability to forecast space weather events, which is vital for astronaut safety, protection of electronic infrastructure, and ensuring uninterrupted satellite operations.
  - 5. Dust-Free Zones Near the Sun:** Parker discovered regions near the sun that are unexpectedly devoid of interplanetary dust,

revising previous assumptions about the solar system's inner environment and its evolution.

6. **Historic Alfvén Surface Crossing:** Perhaps most thrilling is the April 2021 event when the probe crossed the Alfvén surface, officially entering the sun's atmosphere : a historic first in solar exploration.
7. **Extreme Engineering Marvel:** The mission showcases cutting-edge thermal protection systems, including a carbon-carbon heat shield capable of withstanding 1,370°C, and innovative cooling mechanisms that maintain instrument function just meters away from the sun's intense radiation.
8. **Decoding the Sun's Magnetic Field:** Parker's measurements of the sun's electric and magnetic fields provide key insights into the star's complex magnetic topology, helping to understand solar cycles and sunspot activity.
9. **Long-Duration Corona Exposure:** The probe is set to spend over 2,000 hours flying through the sun's corona, enabling unprecedented long-term observations of high-energy particles and plasma behaviors.
10. **International Collaboration and Inspiration:** The mission serves as a global example of scientific ambition and engineering excellence, inspiring similar missions like ISRO's Aditya-L1 to probe solar mysteries from different vantage points.

## CONCLUSION

The Parker Solar Mission represents humanity's boldest step yet towards unraveling the mysteries of our star. By flying into the sun's corona and directly sampling its environment, the Parker Solar Probe has opened new frontiers in astrophysics and space science. Its discoveries not only deepen our understanding of the sun's behavior but also pave the way for better protection of Earth's technological infrastructure. As the probe continues its journey with upcoming flybys — like the one on March 22, 2025, and again in June — the world waits eagerly for the insights it will bring from our blazing celestial neighbor.

## PRELIMS QUESTIONS

**Q. Consider the following statements regarding NASA's Parker Solar Probe (PSP):**

1. It is the first spacecraft to enter the Sun's corona by crossing the Alfvén surface.
2. It uses gravitational assist from Earth and Venus to get closer to the Sun.
3. The spacecraft is powered solely by nuclear energy to withstand extreme solar heat.
4. The Parker Solar Probe was launched aboard a Falcon 9 rocket.

**Which of the statements given above is/are correct?**

- A. 1 and 2 only
- B. 1, 2, and 4 only
- C. 2 and 3 only
- D. 1, 3, and 4 only

**ANSWER: A**

## MAINS QUESTIONS

**Q. Analyze how the Parker Solar Probe has advanced our knowledge of solar wind, magnetic fields, and coronal heating. What role does it play in space weather prediction?**

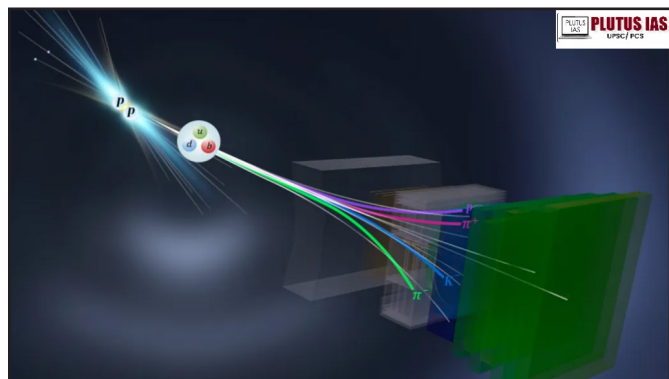
**(250 words, 15marks)**

## MATTER AND ANTIMATTER

### WHY IN THE NEWS?

Physicists at the Large Hadron Collider have discovered a new case of charge-parity (CP) violation, this time in baryons, particles like protons and neutrons. Previously, CP violation had only been confirmed in mesons. The study, focusing on lambda-b baryons, found a slight difference in how these particles and their antimatter counterparts decay, crossing the

five-sigma threshold for discovery. This finding could help explain why matter dominates the universe despite the Big Bang producing equal amounts of matter and antimatter. While it doesn't solve the mystery, it brings scientists one step closer to understanding the imbalance that shaped our universe.



### WHAT IS MATTER VS ANTIMATTER?

Aspect	Matter	Antimatter
Definition	Makes up everything in the universe	The "mirror twin" of matter
Examples	Protons, neutrons, electrons	Antiprotons, antineutrons, positrons
Charge	Normal charge (e.g., proton is +1)	Opposite charge (e.g., antiproton is -1)
Interaction	Stable and forms atoms	Annihilates upon contact with matter
Annihilation	Doesn't naturally annihilate	Matter + antimatter → Energy (gamma rays)
Mystery	Dominates the universe	It should have existed in equal amounts but is nearly absent
Research Focus	Understanding why it dominates	CP violation could explain the imbalance

### RECENT DEVELOPMENTS IN CHARGE PARITY PHENOMENA

- 1. First CP Violation in Baryons:** LHCb observed CP violation in beauty-lambda baryons ( $\Lambda_b$ ), marking the first confirmed instance in baryons.
- 2. Charm Sector CP Violation:** The CMS experiment detected CP violation in charm quark decays, a crucial step in understanding matter-antimatter asymmetry.
- 3. Significant  $B_{s^0}$  Meson Measurements:** New data from LHCb and CMS provide strong evidence of CP violation in  $B_{s^0}$  meson decays, refining theoretical models.

- 4. Neutrino CP Violation Studies:** The NOvA experiment hints at CP violation in neutrino oscillations, which could impact our understanding of fundamental physics.
- 5. Matter-Antimatter Imbalance Insights:** These findings contribute to explaining why the universe consists mainly of matter despite equal production of matter and antimatter in the Big Bang.
- 6. Five-Sigma Discovery Threshold Crossed:** The LHCb results on  $\Lambda_b$  baryons met the statistical requirement for a scientific discovery, solidifying the findings.
- 7. Refinement of the Standard Model:** CP violation studies help physicists test and refine the Standard Model, potentially pointing to new physics beyond it.
- 8. Future Experiments & Theories:** Ongoing and upcoming studies, including upgrades at the

LHC and future neutrino experiments, aim to deepen our understanding of CP violation and the universe's asymmetry.

### SIGNIFICANCE OF THIS NEW DISCOVERY

- 1. Explains the Matter-Antimatter Imbalance:** The universe should have equal amounts of matter and antimatter, but we see mostly matter. CP violation helps explain why matter dominated after the Big Bang instead of annihilating with antimatter.
- 2. First Confirmation in Baryons:** Previously, CP violation was only observed in mesons (particles with one quark and one antiquark). Now, for

the first time, it's confirmed in baryons (three-quark particles like protons and neutrons), broadening our understanding.

3. **Strengthens the Standard Model:** The Standard Model of physics predicts CP violation but doesn't fully explain why matter dominates. This discovery gives scientists new data to refine existing theories.
4. **Opens the Door to New Physics:** If CP violation in baryons behaves unexpectedly, it could hint at new physics beyond the Standard Model, such as new particles or forces.
5. **Validates the Large Hadron Collider's Capabilities:** The LHCb experiment at CERN continues to push the boundaries of particle physics, proving its ability to make groundbreaking discoveries.
6. **Guides Future Research:** Scientists can now study CP violation in more types of particles, especially neutrinos and other undiscovered baryons, to find deeper answers. This is a big step toward solving one of physics' gre.

## CONCLUSION

The recent discovery of CP violation in baryons is a groundbreaking step toward understanding the universe's matter-antimatter imbalance. By confirming this phenomenon in particles like lambda-b baryons, scientists have expanded the scope of known CP violation beyond mesons. This finding strengthens the Standard Model while also hinting at possible new physics. It validates the capabilities of the Large Hadron Collider and opens doors for future research into neutrinos and other subatomic particles. While this discovery doesn't fully explain why matter dominates the universe, it provides a crucial piece of the puzzle, bringing us closer to unlocking one of physics' greatest mysteries.

## PRELIMS QUESTIONS

**Q. With reference to CP violation in particle physics, consider the following statements:**

1. CP violation has been observed in both mesons and baryons.
2. The LHCb experiment at CERN recently confirmed CP violation in lambda-b baryons.
3. CP violation explains the complete matter-antimatter imbalance in the universe.

**How many of the above-given statements are correct?**

- A. Only one
- B. Only two
- C. All three
- D. None

**Answer: B**

## MAINS QUESTIONS

**Q. Discuss the significance of the recent discovery of CP violation in baryons. How does this finding contribute to solving the mystery of matter-anti-matter asymmetry in the universe?**

**(250 words, 15marks)**

## ARMED FORCES (SPECIAL POWERS) ACT (AFSPA) STRENGTHENING INDIA'S INTERNAL SECURITY

### WHY IN THE NEWS?

The Ministry of Home Affairs (MHA) announced the extension of the Armed Forces (Special Powers) Act (AFSPA) for another six months in parts of Manipur, Arunachal Pradesh, and Nagaland, starting Tomorrow. In Manipur, AFSPA will continue in all districts except for those under the jurisdiction of 13 police stations in five districts – Imphal West, Imphal East, Thoubal, Bishnupur, and Kakching. The state has been grappling with ethnic violence since May 2023. The law has also been extended in eight districts of Nagaland and parts of five others, while in Arunachal Pradesh, AFSPA applies to Tirap, Changlang, Land ongoing districts, and certain areas in Namsai district.

## WHAT IS AFSPA?

The Armed Forces (Special Powers) Act (AFSPA), 1958 is a law enacted by the Parliament of India that grants special powers to the Indian armed forces to maintain public order in “disturbed areas.” It is primarily aimed at addressing insurgency, internal disturbances, and threats to national security in regions where the civil administration is unable to function effectively.

## ARMED FORCES (SPECIAL POWERS) ACT (AFSPA) PROVISIONS

- Section 3:** Declaration of Disturbed Area: The Governor, UT Administrator, or Central Government can declare an area as “disturbed” through a notification in the Official Gazette.
- Section 4(a):** Use of Force: Armed forces can use force, even lethal, against individuals violating laws or bearing arms unlawfully.
- Section 4(b):** Arrest Without Warrant: Permits arrest of individuals without a warrant based on reasonable suspicion of unlawful activity.
- Section 4(c):** Search Without Warrant: Enables armed forces to search and seize property or premises without a warrant for expediency in operations.
- Prohibition of Assembly:** Prohibits gatherings of five or more in disturbed areas to prevent riots or unrest.
- Section 6:** Legal Immunity No legal proceedings can be initiated against armed forces personnel without Central Government approval.
- Deterrence Mechanism:** Intended to serve as a deterrent against insurgency and anti-national activities, especially in border regions.
- Six-Month Periodic Review (SC Directive, 1997):** The Supreme Court mandates that disturbed area status must be reviewed every 6 months.

## ROLE OF AFSPA IN STRENGTHENING INTERNAL SECURITY

- Tackling Insurgency in the Northeast:** Enabled major operations against groups like NSCN-IM

and ULFA, reducing insurgency in Assam and Nagaland.

- Restoring Order in Jammu & Kashmir (since 1990):** Helped suppress militancy from groups like Hizbul Mujahideen and Lashkar-e-Taiba.
- Quick and Decisive Action:** The law provides operational freedom to act swiftly without procedural delays—vital in counter-insurgency.
- Securing Border Regions:** AFSPA aids in controlling cross-border terrorism and smuggling, especially along the India-Myanmar and India-Bangladesh borders.
- Protection for Armed Forces:** Section 6 immunity allows personnel to act in high-risk zones without fear of litigation.
- Stability for Civil Administration:** By reducing insurgency, AFSPA helped states like Assam and Tripura conduct elections and restore governance.
- Curbed Drug Trafficking:** Operations under AFSPA in Manipur have disrupted trafficking from the Golden Triangle.
- Reduction in Violence:** According to MHA data, insurgency-related incidents in the Northeast fell by 80% between 2014–and 2020.

## ISSUE WITH ARMED FORCES (SPECIAL POWERS) ACT (AFSPA)

- Human Rights Violations:** 1,528 alleged fake encounters in Manipur (2000–2012) per SC; seen as widespread misuse of power.
- Lack of Accountability:** Section 6 makes prosecution of armed forces nearly impossible without Central approval, leading to impunity.
- Alienation of Civilians:** Continuous military presence fosters fear and resentment, especially among youth in conflict zones.
- Prolonged Enforcement:** AFSPA has remained in Nagaland since 1958, yet insurgency persists, showing limited effectiveness.
- SC Criticism (2016):** In the Extrajudicial Execution Victim Families Association case, SC said, “Excessive use of force is not justified”.

6. **Mental Health Impact:** Reports of trauma, PTSD, and anxiety among civilians due to militarization of civilian spaces.
7. **International Condemnation:** Groups like Amnesty International and UNHRC have criticized AFSPA as a violation of international human rights norms.
8. **Undermining Federalism:** Central imposition of AFSPA without state consent (post-1972 amendment) raises questions on federal principles.

### RECOMMENDATION

1. **Phased Withdrawal:** Gradually lift AFSPA from peaceful regions—as done in Tripura (2015) and Meghalaya (2018).
2. **Jeevan Reddy Committee (2005):** Recommended repealing AFSPA and replacing it with a more humane, rights-based law.
3. **Institutional Oversight Mechanism:** Establish an independent grievance redressal body to investigate alleged abuses.
4. **Restrict Immunity Clause:** Amend Section 6 to ensure judicial oversight over decisions to prosecute.
5. **Regular Review of Disturbed Area Status:** Ensure genuine 6-month reviews, with input from state governments and civil society.
6. **Promote Political Dialogue:** Engage groups like NSCN and ULFA through peace accords and dialogue (e.g. Naga Peace Accord, 2015).
7. **Increased Investment in Development:** Prioritize economic growth, infrastructure, and employment in conflict-prone regions to tackle root causes.
8. **Training in Human Rights:** Mandatory human rights training for armed forces operating in AFSPA areas, ensuring ethical operations.

### CONCLUSION

AFSPA has played a critical role in maintaining internal security in insurgency-prone and border-sen-

sitive regions like the Northeast and Jammu & Kashmir. It has enabled swift military responses, safeguarded national sovereignty, and helped restore civil governance in conflict zones. However, its prolonged enforcement, allegations of human rights violations, and lack of accountability mechanisms have led to widespread criticism. Balancing national security with constitutional rights is the need of the hour. A phased, region-specific withdrawal combined with political dialogue, developmental initiatives, and enhanced oversight can help India transition from a militarized approach to a more democratic and inclusive conflict resolution model. The future of AFSPA must align with both national integrity and the values of justice and human dignity.

### PRELIMS QUESTIONS

**Q. Consider the following statements regarding the Armed Forces (Special Powers) Act (AFSPA), 1958:**

1. AFSPA can be imposed only with the consent of the state government.
2. The Act empowers armed forces to arrest without a warrant.
3. The declaration of a “disturbed area” under AFSPA is reviewed every six months.

**Which of the above statements is/are correct?**

- A. 1 and 2 only
- B. 2 and 3 only
- C. 1 and 3 only
- D. 1, 2 and 3

**Answer: B**

### MAINS QUESTIONS

**Q. Critically analyze the provisions, significance, and challenges of the Armed Forces (Special Powers) Act. Suggest reforms to ensure a balance between national security and civil liberties.**

**(250 words, 15marks)**

## TRANSFORMING COAL USAGE: INDIA'S VISION FOR GASIFICATION BY 2030

### WHY IN THE NEWS?

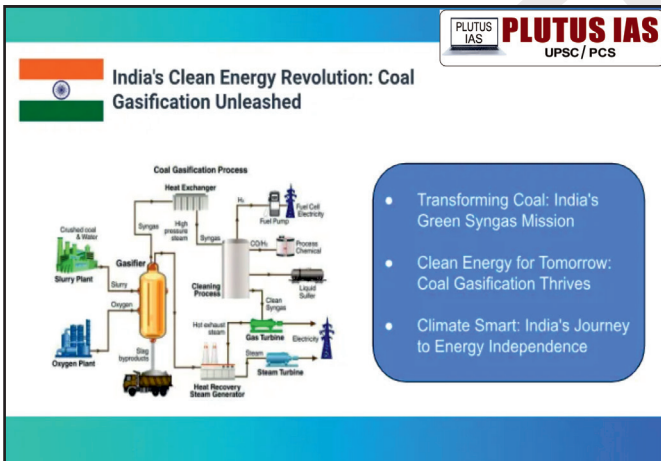
Coal gasification has been making headlines due to the Indian government's push to develop 100 million tonnes (MT) of coal gasification capacity by 2030 as part of its strategy to reduce coal combustion and cut emissions. In recent months: The Ministry of Coal announced financial incentives and policy reforms to promote coal gasification projects. Public Sector Undertakings (PSUs) such as Coal India Ltd. and GAIL have unveiled plans for large-scale gasification units. States like Odisha and Chhattisgarh have identified land for dedicated gasification parks. Global energy firms are exploring joint ventures with Indian companies for technology collaboration and investment. The push for gasification is also seen as an essential component of India's energy transition and carbon neutrality roadmap. Additionally, coal gasification plays a crucial role in reducing fertilizer imports by enabling domestic urea and methanol production.

### WHAT IS COAL GASIFICATION INITIATIVE?

Coal gasification is a process that converts coal into syngas (synthesis gas), which is primarily a mixture of hydrogen (H<sub>2</sub>), carbon monoxide (CO), and carbon dioxide (CO<sub>2</sub>). This syngas can be used for generating electricity, making chemical fertilizers, or as a substitute for natural gas in various industrial processes. Unlike traditional coal combustion, gasification enables cleaner and more efficient utilization of coal. The Coal Gasification Initiative in India is a national effort to promote the adoption of coal gasification technology, particularly to reduce dependency on imported fuels and transition towards cleaner energy alternatives. The Indian government has set a target to gasify 100 million tonnes of coal by 2030. This initiative is part of a broader vision for energy security, economic development, and environmental sustainability.

### COAL IN INDIA:

India holds the fifth-largest coal reserves in the world and is the second-largest producer of coal. The majority of India's coal is non-coking, used primarily for power generation.



State	Type of Coal Found	Estimated Reserves (in billion tonnes)	Notable Features
Jharkhand	Coking, Non-Coking	83+	Major coal mining hub, rich in coking coal
Odisha	Non-Coking, Lignite	84+	Hosts Talcher and Ib Valley coalfields
Chhattisgarh	Non-Coking	57+	Korba and Mand Raigarh key mining regions

West Bengal	Coking	32+	Contains Raniganj coalfield
Madhya Pradesh	Non-Coking, Lignite	29+	Contains Sohagpur and Pench-Kanhan fields
Telangana	Non-Coking	22+	Godavari Valley coalfields
Maharashtra	Non-Coking, Lignite	12+	Wardha Valley and Kamp-tee fields
Tamil Nadu	Lignite	34+	Neyveli lignite reserves
Assam	Lignite, Bituminous	4+	Small but high-quality reserves
Meghalaya	Bituminous, Sub-Bituminous	3+	Unregulated mining concerns
Gujarat	Lignite	9+	Vast lignite deposits in Bhavnagar region

Top coal-producing states: Jharkhand, Chhattisgarh, Odisha, West Bengal, Madhya Pradesh. Major coal companies: Coal India Limited (CIL), Singareni Collieries Company Limited (SCCL). Total coal reserves: Over 319 billion tonnes (as per Geological Survey of India).

### ISSUES WITH COAL GASIFICATION

- 1. High Capital and Operating Costs:** Coal gasification plants are capital-intensive, often requiring significantly more investment than traditional coal plants. Maintenance, gas cleaning systems, and carbon capture technologies further increase operational expenses, making it less attractive for private investment without substantial government support.
- 2. Water Consumption:** The gasification process consumes large quantities of water, which poses a serious concern in water-scarce regions. Water is needed not only for gasification but also for cooling and cleaning, straining local water resources and creating potential conflict in agricultural regions.
- 3. Carbon Emissions:** Although cleaner than direct coal combustion, coal gasification still emits considerable carbon dioxide unless coupled with carbon capture and storage (CCS). Without CCS, the environmental benefits remain marginal, defeating the purpose of moving towards cleaner technologies.

- 4. Technology and Infrastructure Gaps:** India lacks large-scale, proven gasification technologies suited to its variety of coal types. Additionally, infrastructure such as pipelines for syngas transport, CCS networks, and integrated industrial clusters are underdeveloped, delaying project implementation.
- 5. Low Efficiency with Indian Coal:** Indian coal has high ash content and low calorific value, which hampers gasification efficiency. Specialized pre-treatment and advanced reactor designs are needed to overcome this, adding further complexity and cost.
- 6. Regulatory and Policy Uncertainty:** Absence of clear long-term policies and incentives creates hesitation among investors. Frequent regulatory changes, overlapping jurisdiction between central and state governments, and lack of clarity on carbon pricing mechanisms further hinder adoption.
- 7. Environmental Risks:** Improper handling of toxic byproducts such as tars, heavy metals, and wastewater can lead to soil and groundwater contamination. If not managed properly, gasification can pose similar ecological threats as conventional coal use.
- 8. Public Opposition and Land Acquisition:** Like other large-scale industrial projects, coal gasification plants face resistance from local communities due to concerns over pollution

and displacement. Land acquisition delays can stall projects indefinitely and raise legal as well as social tensions.

## ALTERNATIVE SUSTAINABLE ENERGY METHODS

- 1. Solar Power:** India has a vast solar potential, and costs have dropped significantly. Government initiatives like PM-KUSUM and solar parks aim to harness this. With over 300 sunny days in most regions, solar energy offers unparalleled scalability and rural development opportunities.
- 2. Wind Energy:** Particularly in coastal states like Tamil Nadu and Gujarat, wind energy can provide large-scale power generation. India's wind power capacity ranks among the top five globally, indicating huge scope for further expansion.
- 3. Green Hydrogen:** Hydrogen produced using renewable energy (electrolysis) can replace syngas in several industrial processes. It also has potential applications in fuel cells, aviation, and long-haul transportation.
- 4. Bioenergy:** Biomass and biogas plants offer decentralized, renewable solutions in rural areas. These also promote waste-to-wealth initiatives and support sustainable agriculture practices.
- 5. Small Hydro Projects:** Run-of-river hydroelectric projects provide clean energy without major environmental impacts. They can supply remote regions and contribute to regional grid stability.
- 6. Energy Storage:** Battery and pumped storage systems are essential to address the intermittency of renewable sources. They enable load balancing and support uninterrupted power supply during peak demand.
- 7. Improved Grid Infrastructure:** Smart grids and flexible transmission networks are needed to integrate renewable energy efficiently. Advanced monitoring systems can also help manage supply-demand fluctuations in real time.
- 8. Waste-to-Energy:** Converting urban and agricultural waste into energy can address both

waste and energy issues. It reduces landfill burden while generating local energy and creating green jobs.

## CONCLUSION

The Coal Gasification Initiative represents a critical step in India's journey towards a more self-reliant and environmentally conscious energy landscape. While it offers notable advantages such as cleaner utilization of coal, energy security, and industrial development, it also faces serious challenges including high costs, environmental concerns, and technological gaps. To make the initiative successful, India must adopt a balanced strategy. This includes promoting R&D, incentivizing private sector participation, implementing strict environmental safeguards, and developing carbon capture mechanisms. Simultaneously, a robust push for sustainable alternatives like solar, wind, hydrogen, and bioenergy is essential. By aligning economic goals with ecological responsibilities, India can pave the way for a cleaner, secure, and sustainable energy future.

## PRELIMS QUESTIONS

**Q. Which of the following statements best describes the process of Underground Coal Gasification (UCG)?**

- Extraction of coal through deep-shaft mining.
- Direct combustion of coal inside the earth for thermal energy.
- In-situ conversion of coal into syngas by injecting oxidants underground.
- Extraction of methane trapped in coal seams.

**ANSWER: C**

## MAINS QUESTIONS

**Q. How can coal gasification support India's industrial competitiveness, especially in the chemical and fertilizer sectors? Discuss with examples.**

**(250 words, 15marks)**