

DAILY **CURRENT AFFAIRS**

SPECIAL FOR UPSC & GPSC EXAMINATION

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Torrential rains and landslides in Darjeeling and other parts of North Bengal have caused the deaths of at least 23 people and severe damage to infrastructure. The incident highlights the increasing frequency of extreme weather events in India's Himalayan region, raising concerns over climate vulnerability, disaster preparedness, and sustainable development in fragile mountain ecosystems.

23 killed in torrential rain in Bengal

Road connectivity to Mirik and Darjeeling badly affected by landslides triggered by the heavy rain

Thousands of tourists are stranded; CM Mamata Banerjee asks them to stay put until rescue arrives

Part of the iron bridge across the Balasan river has collapsed; the IMD issues a red alert till October 6

Shiv Sahay Singh
KOLKATA

At least 23 persons were killed as torrential rain lashed Darjeeling and other northern parts of West Bengal on Saturday night and Sunday morning. Landslides triggered by the rain at various places in Mirik and Darjeeling sub-divisions led to the loss of lives.

Officials of the Gorkhaland Territorial Administration, the regional autonomous body that administers the Darjeeling hills, said that 11 people were killed in Mirik and 12 deaths were reported in Darjeeling.

Road connectivity to Mirik and Darjeeling was badly affected. On Saturday night, a part of the Dudiya iron bridge across the Balasan river collapsed, cutting off communication between Siliguri and Mirik. Several roads connecting the Darjeeling hills and Siliguri in the plains were affected.

Arun Sigchi, executive member of the GTA, said that nine bodies were brought from Mirik to a hospital for post-mortem and two more were on the way. According to GTA members, the tragedy has



A portion of the road connecting Siliguri and Darjeeling, was torn from its moorings after heavy rain triggered landslides on Sunday. PTI

struck the hills during the Dasai festival and the casualties include relatives of the local people who had come from outside, including Nepal.

GTA advisory

The GTA has issued an advisory for suspension of all tourism activities in the Darjeeling hills. Thousands of tourists visiting Darjeeling for Puja vacations have been left stranded as the rain has affected road

connectivity.

The India Meteorological Department has issued a red alert for extremely heavy rain in sub-Himalayan West Bengal, including Darjeeling and Kalimpong, till October 6, warning of more landslides and road blockages due to saturated soil conditions.

Chief Minister Mamata Banerjee advised tourists in north Bengal to stay put till they were evacuated safely. "Rescue costs are

ours and tourists need not be anxious," she said.

Ms. Banerjee said that Saturday night, there was sudden rainfall exceeding 300 mm in 12 hours in north Bengal, and there was simultaneously excessive flow of water in the Sankosh river from Bhutan and Sikkim, which caused this disaster.

The Chief Minister said that she, along with the Chief Secretary, will visit north Bengal on Monday to

take stock of the situation and provide relief to affected people.

Prime Minister Narendra Modi also took note of the situation and said that the administration is closely monitoring the situation in Darjeeling and surrounding areas affected by the heavy rain and landslides.

Congress president Mallikarjun Kharge expressed deep concern over the devastating landslides in

West Bengal and Sikkim, and urged the Centre to provide relief assistance to the affected States.

NDRF teams deployed

Three teams of National Disaster Response Force (NDRF) have been deployed in north Bengal, including one in the severely affected Mirik area.

State BJP president Samik Bhattacharya will also visit north Bengal on Monday. State Leader of the Opposition Suwendu Adhikari, who claimed that the death toll was 21, lauded the Union government's commitment to relief efforts amid the heavy rain and landslides. "I urge the State government to coordinate effectively with the NDRF, SDRF, ITBP, and Indian Army for swift aid and relief to the affected families," he said.

Several rivers of north Bengal such as the Teesta, Torsa, Jaldhaka and Balasan are flowing above or near the danger level. Along with the landslides and damage in Darjeeling and Kalimpong districts, the Doars in the foothills, particularly in Jalpaiguri, Matigara and Alipurdwar, have been severely affected.

Tourists had to be res-

cued using elephants in areas that were submerged. Several national parks in north Bengal were inundated and wild animals were seen reaching higher grounds. Railway connectivity to the region was affected as tracks were submerged.

Bhutan issues alert

Meanwhile, Bhutan's National Centre for Hydrology and Meteorology issued an alert to West Bengal government stating that it has received information from Druk Green Power Corporation (DGPC) that Tala Hydropower Dam Gates failed to open and river water is overflowing the dam. The dam is located on the Wangchu river in Chukha district of Bhutan.

"It is requested to be alert and inform the State government of West Bengal, India to prepare for eventualities. The Office of TMO, flood warning under the National Centre for Hydrology and Meteorology, will continue to update the situation in coordination with DGPC," an alert by NCHM Bhutan said.

On September 23, 12 persons died of electrocution in Kolkata and its adjoining areas when heavy rain lashed the city.

Static Context

1. Geographical Context

- The Darjeeling–Kalimpong region lies in the Sub-Himalayan belt, characterised by steep slopes, high rainfall, and fragile geology.
- Rivers such as Teesta, Torsa, Jaldhaka, and Balasan originate in this region and are prone to flash floods.
- The area falls under Zone IV (high seismic risk) and is naturally landslide-prone.

2. Climatic Factors

- Orographic rainfall due to moist monsoon winds hitting Himalayan slopes.
- Saturated soil from continuous rain weakens slopes, causing landslides.

- Climate change is increasing intensity and concentration of rainfall episodes.

3. Disaster Management Framework

- India follows the Disaster Management Act, 2005, and the National Disaster Management Plan (2016).
- NDRF, SDRF, IMD, and State Disaster Management Authorities coordinate response and early warning.
- The Sendai Framework for Disaster Risk Reduction (2015-2030) emphasises preparedness and resilience.

Current Context

- Casualties and Damage: 23 deaths (11 in Mirik, 12 in Darjeeling) due to landslides and collapse of bridges.
- **Infrastructure Loss:**
 - Collapse of Dudiya iron bridge over the Balasan river.
 - Roads connecting Siliguri–Mirik–Darjeeling disrupted; rail tracks submerged.
 - Tourism suspended; thousands stranded.
- **Administrative Measures:**
 - Gorkhaland Territorial Administration (GTA) issued tourism suspension.
 - IMD red alert till Oct 6 for heavy rainfall and landslides.
 - Chief Minister Mamata Banerjee to visit region; NDRF teams deployed in Mirik and adjoining areas.
 - PM Modi and Centre monitoring situation; inter-agency coordination with Army, ITBP, and SDRF ongoing.
- **Regional Dimension:**
 - Bhutan's National Centre for Hydrology and Meteorology alerted West Bengal about Tala Hydropower Dam overflow, raising cross-border flood risk.
 - Earlier, on Sept 23, heavy rains caused 12 deaths by electrocution in Kolkata — reflecting a pattern of weather-related urban and hill-region crises.

Implications and Analysis

1. Environmental and Climatic Implications

- Illustrates increasing climate volatility in Himalayan states due to global warming.
- Need for integrated hill-area planning, slope stabilisation, and scientific land-use regulation.
- Over-tourism and unplanned infrastructure (roads, hotels) amplify slope instability.

2. Disaster Preparedness and Governance

- Highlights gaps in early warning dissemination, evacuation planning, and infrastructure resilience.
- Calls for stronger coordination between Centre–State–local bodies and trans-boundary mechanisms (with Bhutan, Sikkim).

3. Socio-Economic Impact

- Loss of life and livelihoods, damage to tea estates, tourism slowdown.
- Urgent need for livelihood restoration, insurance coverage, and community-based disaster preparedness.

Conclusion

The Darjeeling–North Bengal rain disaster is another reminder of India’s growing hydro-meteorological vulnerability. It underscores the need for a shift from reactive relief to proactive resilience — through scientific slope mapping, stricter building codes, regional coordination with neighbouring countries, and climate-adaptive infrastructure. As extreme weather becomes more frequent, mainstreaming disaster risk reduction into development planning is essential for ensuring safety, sustainability, and resilience in India’s fragile Himalayan ecosystems.

UPSC Prelims Practice Question

Ques: ‘Orographic Rainfall’ is related to –

- (a) Monsoon winds striking the sea
- (b) Evaporation-induced rainfall from forests
- (c) Moist air rising and cooling after hitting mountain slopes
- (d) Rainfall caused by thunder and lightning storms

Ans: c)

UPSC Mains Practice Question

Ques: Discuss how recurrent landslides and extreme rainfall events in the Himalayan states highlight the need for climate-resilient infrastructure and regional disaster management cooperation. **(250 Words)**

In a pioneering step toward marine biodiversity conservation, the Philippines has launched Southeast Asia's first coral larvae cryobank — a facility designed to freeze and preserve coral larvae at ultra-low temperatures for future reef restoration and research. The initiative forms part of a regional effort across the Coral Triangle, the world's most diverse marine ecosystem, to safeguard coral genetic diversity against the mounting threats of climate change and habitat degradation.

Philippines pioneers coral larvae cryobank to protect threatened reefs

The facility will freeze and preserve coral larvae — the small, free swimming 'seeds' of corals — at very low temperatures; these larvae can later be used to revive damaged reefs for research, thus protecting genetic diversity that might otherwise be lost. The project is part of an initiative that seeks to create cryobanks across the Coral Triangle

Neelanjana Rai

Known as the "Amazon of the seas," the Coral Triangle is a 5.7 million sq. km expanse across the tropical waters of Indonesia, Malaysia, Papua New Guinea, the Philippines, the Solomon Islands, and Timor-Leste — and the richest marine ecosystem on the earth.

The Triangle is home to more than three-quarters of the world's coral species, a third of all reef fish, vast mangrove forests, and six of seven marine turtle species. It also sustains the food security and livelihoods of more than 120 million people.

The Coral Triangle is also facing mounting dangers. Growing carbon emissions, destructive fishing, air, water, and soil pollution, and the accelerating effects of climate change are all driving coral bleaching, habitat loss, and species decline, placing both biodiversity and coastal communities at grave risk.

Dangerously exposed

According to the Status of Coral Reefs of the World 2020 report, the planet lost 14% of its corals between 2009 and 2018. Scientists have warned that without drastic action to keep global warming to 1.5° C, 70-90% of live coral cover could be lost by 2050.

According to the UN Environment Programme, ocean temperatures may take decades to stabilise even under the most ambitious climate targets, leaving coral ecosystems dangerously exposed in the interim.

In one form of resistance against these threats, the Philippines is preparing to host Southeast Asia's first coral larvae cryobank to help restore and protect reefs.

Set up by the University of the Philippines Marine Science Institute, the facility will freeze and preserve coral larvae — the small, free swimming "seeds" of corals — at very low temperatures. These larvae can later be used to revive damaged reefs or for research, thus protecting genetic diversity that might otherwise be lost.

The project is part of a wider regional initiative that links research institutions in the Philippines, Taiwan, Indonesia, Malaysia, and Thailand to create a network of cryobanks across the Coral Triangle. Led by Chihsin Lin of Taiwan's National Museum of Marine Biology and Aquarium and the National Dong Hwa University, the cryobank is supported by the Coral Research & Development Accelerator Platform through the Marine Environment and Resources Foundation, Inc.



A variety of corals form an outcrop on Flynn Reef, part of the Great Barrier Reef near Cairns, Australia. TONY HUDSON (CC BY-SA)

Delicate process

Experts have said the programme is a significant step in building long-term resilience for one of the world's most threatened marine ecosystems.

"The Philippines is showing other nations how to take a direct, proactive role in fighting the climate crisis and protecting their natural resources. It's an act of hope and a vital investment in our oceans' future," said Preeyanuch Thongpoo, who is working on cryopreservation in Thailand at the Phuket Rajabhat University.

Dr. Lin is guiding the scientists from participating countries to establish the required facilities. At the heart of the effort is the delicate process that preserves coral larvae without damaging their fragile cells.

A study published in *Frontiers* in 2023 described a technique called vitrification, where the larvae are exposed to special protective solutions before being plunged into liquid nitrogen at -196° C. The rapid freezing that ensues turns the larvae into a glass-like state, preventing the formation of ice crystals that would otherwise destroy them.

To revive the samples, scientists use an equally swift method using lasers, which thaw the larvae in a fraction of a second to avoid re-crystallisation. Once warmed, the larvae are gradually rehydrated in seawater and checked for signs of life, such as swimming and settling, before being transferred to tanks for further growth.

This breakthrough method ensures genetic material from corals can be safely stored for years and later used to help restore damaged reefs.



Cryopreservation is a genetic insurance policy for the future. We are essentially building a living seed bank of coral larvae and *Symbiodiniaceae*

PREEYANUCH THONGPOO
Phuket Rajabhat University

'No endangered species'

Cryobanks of coral symbionts — microscopic algae living inside corals — are crucial to reef survival. One is being set up at Phuket Rajabhat University under Dr. Thongpoo's leadership. Her team is working with cauliflower corals (*Pocillopora* sp.), chosen for their abundance and ability to recolonise heat-damaged reefs.

"Unfortunately, due to technical challenges with our coral husbandry system, the corals did not survive in captivity, which has prevented us from collecting the larvae required for our experiments," Dr. Thongpoo said. "We are now working on refining our husbandry protocols and adapting our approach to ensure we can successfully collect and cryopreserve larvae in the near future."

Cryopreserving many coral species is challenging: their larvae and reproductive cells are large, lipid-rich, sensitive to cold, and often contain algae that block cryoprotectants.

Dr. Lin also stressed that preservation isn't confined to endangered species. "For me, there's no endangered species. All

coral species are endangered," he said, warning that most could collapse by 2050. His team began with "model" species such as *Pocillopora*, which directly releases larvae, and spawning corals like *Acropora* and *Galaxias*.

"You need to set up the model coral species and then use those optimal freezing protocols on the endangered species," he explained. This approach, he added, differs from projects that prioritise only the most threatened species.

'Genetic insurance policy'

For now, the scale of reef loss is sobering. Dr. Lin warned that "in the near future, cryobanks may become museums for extinct coral species."

For Dr. Thongpoo, on the other hand, the effort represents hope:

"Cryopreservation is a genetic insurance policy for the future. We are essentially building a living seed bank of coral larvae and *Symbiodiniaceae*."

Dr. Lin and Dr. Thongpoo also said that local communities which depend on the reefs for their livelihoods are often unaware of their value. In Southeast Asia, tourism, waste discharge, and destructive fishing have worsened reef decline. Without active community participation, they warned, conservation efforts alone won't save corals.

With regional collaboration between scientists, governments, universities, and local communities, the project aims to strengthen resilience and secure the Coral Triangle's reefs for generations to come.

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THE GIST

The Coral Triangle is home to more than three-quarters of the world's coral species, a third of all reef fish, vast mangrove forests, and six of seven marine turtle species. It faces mounting dangers from carbon emissions, destructive fishing, pollution, and climate change.

At the heart of the conservation effort is the process that preserves coral larvae by plunging them into liquid nitrogen at -196° C. The rapid freezing turns the larvae into a glass-like state. To revive the samples, scientists use lasers, which thaw the larvae in a fraction of a second.

Communities that depend on reefs are often unaware of their value. Scientists warn that conservation alone won't save corals, and community involvement is vital. With regional collaboration, the project aims to strengthen resilience and secure reefs for generations to come.

Static Context

1. About the Coral Triangle

- Known as the “Amazon of the Seas”, the Coral Triangle spans 5.7 million sq. km across Indonesia, Malaysia, Papua New Guinea, the Philippines, the Solomon Islands, and Timor-Leste.
- **Home to:**
 - 75% of global coral species,
 - 33% of reef fish species,
 - 6 of 7 marine turtle species,
 - Over 120 million people depend on its ecosystem for food and livelihood.

2. Threats to Coral Reefs

- Climate change→ Coral bleaching due to rising sea surface temperatures.
- Pollution→ Air, water, and soil pollutants damaging marine habitats.
- Unsustainable practices→ Destructive fishing, coastal development, and tourism.
- Data point: According to the Status of Coral Reefs of the World 2020, 14% of global corals were lost between 2009–2018; up to 90% may vanish by 2050 if warming exceeds 1.5°C.

3. What is Cryopreservation?

- A process of preserving biological material at very low temperatures (–196°C using liquid nitrogen) to halt metabolic activity.
- Used widely for preserving genetic material (sperm, eggs, seeds) — now being adapted for coral larvae.

Current Context

- The University of the Philippines Marine Science Institute has set up the first coral larvae cryobank in Southeast Asia.
- Supported by the Coral Research & Development Accelerator Platform through the Marine Environment and Resources Foundation, Inc.
- Collaboration among Philippines, Taiwan, Indonesia, Malaysia, and Thailand under Dr. Chiahsein Lin (Taiwan’s National Museum of Marine Biology).

Technology Used

• Vitrification Technique:

- Coral larvae are treated with protective solutions, then plunged into liquid nitrogen at –196°C.
- Rapid freezing prevents ice-crystal formation, preserving cell integrity.

- Rewarming is done with laser-based ultra-fast thawing to prevent re-crystallisation.
- Once revived, larvae are rehydrated in seawater and monitored for movement and growth before transplantation.

Analysis (Significance and Implications)

1. Environmental Significance

- Serves as a “genetic insurance policy” to safeguard coral biodiversity.
- Ensures long-term preservation of coral species threatened by climate change.
- Complements in-situ conservation (reef protection) with ex-situ methods (cryobanking).

2. Scientific and Technological Importance

- Represents a breakthrough in marine cryobiology.
- The vitrification method can later be adapted to other marine species, strengthening ecosystem resilience.

3. Regional and Global Relevance

- Strengthens scientific collaboration among Coral Triangle nations.
- Model for other tropical regions like the Great Barrier Reef and Indian Ocean.
- Aligns with UN Sustainable Development Goal 14 – Life Below Water and CBD (Convention on Biological Diversity) commitments.

4. Challenges

- Technical difficulties in preserving larvae with high lipid content and algal symbionts.
- High cost and complexity of cryogenic storage facilities.
- Limited community awareness and participation in reef protection.

Conclusion

The Philippines’ coral cryobank marks a transformative step in ocean conservation, symbolising scientific innovation blended with ecological responsibility. As coral ecosystems face unprecedented threats, such cryogenic “seed banks” could become vital for restoring lost biodiversity and ensuring marine resilience. However, technological solutions must go hand-in-hand with strong climate action, pollution control, and community participation. The Coral Triangle’s future — and that of the planet’s oceans — depends on both science and sustained stewardship.

UPSC Prelims Practice Question

Ques: What is the main objective of the Coral Cryobank Project?

- (A) To monitor pollution in coral reefs
- (B) To preserve the genetic material of coral species at extremely low temperatures
- (C) To develop new technology for artificial cultivation of corals
- (D) To establish a temperature control system in seawater

Ans: (b)

UPSC Mains Practice Question

Ques: Cryopreservation of coral larvae offers a new frontier in marine biodiversity conservation. Discuss its potential and challenges in the context of the Coral Triangle initiative. **(150 Words)**

India, a multi-hazard country, faces frequent natural disasters ranging from cyclones and floods to heatwaves and landslides. In this context, the Union Government, through the Home Ministry (MHA) and National Disaster Management Authority (NDMA), is moving beyond reactive disaster management to a comprehensive disaster risk reduction (DRR) strategy. Guided by the Prime Minister's

India's direction for disaster resilience

In India, a vast, multi-hazard country, a multi-faceted approach is essential to deal with heat-related issues and extreme rainfall events. The Home Ministry (MHA) and the National Disaster Management Authority (NDMA) oversee not only the post-disaster, but also the pre-disaster phases, using the Prime Minister's Ten Point Agenda on Disaster Risk Reduction of 2016 as guiding principles.

Disaster risk reduction

In 2021, the 15th Finance Commission adopted a nuanced approach to disaster risk reduction (DRR), aligning public finances with technological and practical advances, and allocated ₹2.28 lakh crore (\$30 billion) over its five-year term. It broadened the focus from just post-disaster relief to include prevention, mitigation, preparedness, capacity building, and post-disaster reconstruction. Previously, the financial gap for reconstruction was filled through multilateral debt instruments.

The Commission allocated 30% for the first segment, divided between preparedness and capacity building (10%) and mitigation (20%). The rest was assigned to the post-disaster phase, split into response (40%) and reconstruction (30%).

In establishing the process chain from budget-to-project for nature-based DRR, five priority areas were identified: evaluating the scale of and prioritising India's multi-hazard challenges; integrating scientific concepts of mitigation and reconstruction into public finance; avoiding duplication with existing programmes; synergising inter-ministerial, institutional, and Centre-State relationships in developing such programmes; and establishing processes for light-touch regulation.

In the last year of the award of the Commission, the procedures and standards for design and the manner of expense for such programmes have been established. Inter-ministerial,



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India is leveraging scientific advancements to prioritise nature-based solutions through public finance

cross-institutional and Centre-State appraisal committees are in place for all hazard- or region-specific projects. Over the past two years, the MHA has approved the first five reconstruction project packages worth about ₹5,000 crore for Uttarakhand, Himachal Pradesh, Sikkim, Assam and Kerala. Work is underway to conduct scientific assessments of damage and loss caused by extreme precipitation in the current monsoon.

For the pre-disaster phase, much of the preparedness and capacity-building funds were allocated to modernising fire safety (₹5,000 crore). Additionally, two specialised groups of 2.5 lakh volunteers, Apda Mitra and Yuva Apda Mitra, were created. Some capacity-building funds will now be directed towards establishing geo-spatial training labs and expanding faculty-led, action-based research at the National Institute of Disaster Management (NIDM). Strengthening NIDM's three core objectives of training, research, and documentation, a standard course covering 36 streams of disaster management has been initiated. The aim of capacity building is to mainstream the subject and its practical application to each panchayat.

For the 20% window allocated for mitigation, the best scientists, academicians, and numerous public servants were consulted to develop innovative projects. In the past year, projects worth ₹10,000 crore (\$1.2 billion) have been approved and are being implemented across States. They aim to prioritise neglected nature-based solutions as long-term responses to climate change and extreme weather events. As precursor to these forward-looking mitigation programmes, the National Cyclone Mitigation Programme (2011-22) worth ₹5,000 crore had already succeeded in reducing vulnerability of coastal communities to cyclones across eight States. Key infrastructure

built included seven-day early warning systems, cyclone shelters, and embankments.

Under these mitigation programmes, the NDMA urges States and urban authorities to revitalise water bodies and green spaces to mitigate urban floods; use remote sensing and site-specific automated weather stations to assess the size of at-risk glacial lakes continually; stress bio-engineering solutions for slope-stabilisation in landslide prevention in high-risk zones; rejuvenate water bodies called beels along the Brahmaputra; and focus on break lines, water body rejuvenation and fuel evacuation to prevent forest fires.

Over the years, the government has also developed advanced early warning systems for various hazards, which have significantly reduced casualties. The multi-media Common Alerting Protocol ensures timely alerts in regional languages. To enhance community capacities, initiatives such as a 327-member network of universities and institutional support from the NIDM are crucial. The NDRF Academy, the National Fire Service College, and NIDM train hundreds of public servants annually, in the science of hazards and policy. Mock exercises are carried out to promote hazard- and region-specific awareness, while school safety programmes educate children and distribute resources.

International coordination

International coordination is crucial in shaping how much India will learn from and teach the world. In the face of unrelenting climate change, India created the Coalition for Disaster Resilient Infrastructure and leads DRR-related initiatives at the G-20, SCO, BIMSTEC, and IORA. On advice from public and private entities, and academic and scientific institutions, India is successfully preparing to de-risk its complex hazard profile through innovative and sustainable nature-based solutions.

Ten-Point Agenda on DRR (2016), India is integrating prevention, mitigation, preparedness, and post-disaster reconstruction into its governance and financial planning.

Static Context

1. Disaster Management in India

- NDMA: Apex body responsible for framing policies, plans, and guidelines for disaster mitigation.
- NDRF: Operational arm for disaster response.
- Disaster Management Act, 2005: Provides legal framework for NDMA, State DMAs, and NDRF.

2. Disaster Risk Reduction (DRR)

- Moves focus from post-disaster relief to prevention, mitigation, preparedness, capacity-building, and reconstruction.
- Tools include early warning systems, resilient infrastructure, community training, and nature-based solutions.

3. Key Terms

- Nature-based solutions: Using ecosystems to reduce disaster risk (e.g., wetlands for flood mitigation).
- Capacity-building: Training individuals and institutions to effectively respond to hazards.
- Early warning systems: Technologies and protocols to alert communities about imminent disasters.

Current Context

1. Financing and Planning

- 15th Finance Commission (2021) allocated ₹2.28 lakh crore (\$30 billion) over five years for DRR.
- Distribution: Preparedness & capacity-building (10%), mitigation (20%), post-disaster response (40%), reconstruction (30%).
- Five reconstruction projects worth ₹5,000 crore approved for Uttarakhand, Himachal Pradesh, Sikkim, Assam, and Kerala.

2. Preparedness Initiatives

- Modernising fire safety (₹5,000 crore).
- Creation of ApdaMitra and YuvaApdaMitra volunteer groups.
- Expansion of NIDM training and research across 36 streams for panchayat-level disaster resilience.

3. Mitigation Efforts

- Projects worth ₹10,000 crore implemented across States using nature-based solutions.

- Focus areas: urban flood mitigation, landslide prevention, rejuvenation of water bodies, forest fire prevention.
- Past success: National Cyclone Mitigation Programme (2011-22) reduced coastal vulnerability through shelters, embankments, and seven-day early warning systems.

4. Early Warning & Community Awareness

- Multi-media Common Alerting Protocol ensures timely alerts in local languages.
- Training of public servants and school-level programmes increase community resilience.

5. International Coordination

- India leads Coalition for Disaster Resilient Infrastructure (CDRI).
- Active DRR engagement at G20, SCO, BIMSTEC, IORA.

Implications for UPSC

Prelims Pointers:

- Key bodies: NDMA, NDRF, NIDM.
- Disaster Management Act, 2005.
- Prime Minister's Ten-Point Agenda on DRR.
- CDRI and India's global DRR initiatives.

Mains Pointers

- Financing and budget allocation for DRR (15th Finance Commission).
- Pre-disaster vs post-disaster interventions.
- Nature-based and tech-driven mitigation strategies.
- Community participation and institutional capacity-building.
- India's role in shaping global disaster resilience frameworks.

Conclusion

India is shifting from a reactive disaster response model to a proactive, science-driven, and community-centric DRR framework. Through significant financial allocations, capacity-building, nature-based mitigation projects, and international cooperation, the country is strengthening its resilience against multi-hazard risks. This approach not only reduces the economic and human costs of disasters but also positions India as a global leader in disaster-resilient infrastructure and climate adaptation strategies.

UPSC Prelims Practice Question

Ques: Which of the following measures has India adopted for urban flood and landslide mitigation?

1. Restoration of water bodies and green spaces
2. Use of site-specific automated weather stations
3. Bio-engineering measures for landslide prevention
4. Construction of only solid concrete structures

Options:

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

Ans: B

UPSC Mains Practice Question

Ques: Community and institutional capacity-building are the core elements of disaster management.
– Explain this statement with examples. **(150 Words)**

India's justice system faces a massive backlog of cases, with over 4.57 crore pending cases across courts. Long delays in adjudication compromise access to justice and can lead to social and economic costs. Alternative Dispute Resolution (ADR) mechanisms — including arbitration, mediation, conciliation, and LokAdalats — have emerged as vital tools to reduce pendency, deliver speedy justice, and strengthen social cohesion. Recent statements by the Law Minister Arjun Ram Meghwal and findings from the India Justice Report 2025 underscore the need to institutionalize ADR based on India's civilisational ethos, such as the doctrine of Panch Parmeshwar, which emphasizes consensus-based dispute resolution.

Why is ADR crucial for India's courts?

What is Alternative Dispute Resolution and how does it work in India? How long does it take to resolve disputes? What legal provisions support ADR and its processes? How can they reduce delays and court pendency effectively? Which States have the highest backlog of cases?

LETTER&SPIRIT

C.B.P. Srivastava

The story so far:

The Minister of Law and Justice recently reaffirmed the government's commitment to legal reforms rooted in India's civilisational ethos. Citing the doctrine of Panch Parmeshwar, which embodies the principle of collective consensus in dispute resolution, Arjun Ram Meghwal emphasised the need for global cooperation to strengthen Alternative Dispute Resolution (ADR) mechanisms. The India Justice Report 2025 highlights significant challenges in India's justice system, particularly including access, delays, and accountability. According to the National Judicial Data Grid (NJDG), the total number of pending cases in India is 4,57,96,239. In the Supreme Court, the number of pending cases is 81,768, and in the High Courts, it is approximately 62.9 lakh. These delays often result in injustice, increasing the focus on ADR as a faster, cost-effective, and socially inclusive way to deliver justice.

What is the constitutional basis of ADR?

The constitutional basis of ADR in India is enshrined in Article 39A, which mandates the state to provide equal justice and free legal aid. Various ADR processes, such as arbitration, conciliation, mediation, and judicial settlement (Lok Adalat), are recognised under Section 89 of the Code of Civil Procedure, 1908.

To regulate processes, these have been incorporated into law. For example, under the Arbitration and Conciliation Act 1996 (amended in 2021), civil and



GETTY IMAGES

compoundable offences like theft, criminal trespass, and adultery are resolved through a binding award or resolution, respectively. The Arbitration Act, 2021, also mentions the establishment of an Indian Arbitration Council, giving legal backing to arbitration agreements.

The law fixes a maximum period of 180 days for dispute resolution, ensuring faster justice.

On many occasions, even after such a solution, if a party is dissatisfied, they can exit the process after two sessions of mediation. Pre-litigation mediation for resolving civil and commercial disputes will not increase the number of pending cases; it will also strengthen interpersonal relationships by increasing interaction at the social level.

How do Lok Adalats function?

Lok Adalats are governed by the Legal Services Authorities Act, 1987, inspired by Article 39A. Apart from Permanent Lok Adalat (Section 22-B of the Act), provisions of the National Lok Adalat and e-Lok Adalat are directly helpful in strengthening the justice system, provided awareness about such a system is made effective and widespread.

The first Lok Adalat in India was organised in Gujarat in 1999. The biggest feature of Lok Adalats is that their decisions shall be final and there is no possibility of appeal. This does not mean that the powers of these courts are absolute.

The reason for no appeal is that these courts resolve disputes before litigation. In order to prevent any possible

absoluteness, it is provided that the dissatisfied party can file a suit in a court.

Why is strengthening ADR crucial?

According to former Chief Justice of India Justice D.Y. Chandrachud, mediation is a tool for social change, where social norms are brought in line with constitutional values through the exchange of views and flow of information. Solutions arrived at through invaluable discussions during mediation ensure true justice for individuals and groups on their terms, in a language they understand, and provide a platform that protects their sentiments.

The India Justice Report also highlights inter-State disparities in terms of the backlog of cases. The report says that pending cases have exceeded five crore, and High Courts and district courts are facing vacancy rates of 33% and 21% respectively. Judges in Uttar Pradesh, Himachal Pradesh and Kerala have workloads exceeding 4,000 cases.

A substantial number of cases in High Courts and subordinate courts have been pending for over 10 years. The NJDG provides real-time data on case pendency and disposal, offering a comprehensive view of the judicial system's performance across States and courts.

The India Justice Report ranks States based on their performance on various aspects of the justice system, including case pendency, with other factors like court infrastructure and judge availability.

States like Andhra Pradesh, Uttar Pradesh, and Bihar have a considerable number of pending cases. This urgently demands rapid disposal and necessitates the strengthening of the ADR for effective per capita justice delivery.

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THE GIST

India's justice system faces significant challenges, including access, delays, and accountability, with over 4.57 crore pending cases, and High Courts and district courts experiencing heavy vacancy rates and workloads.

Strengthening Alternative Dispute Resolution is crucial to address inter-State disparities, reduce court pendency, and ensure true justice through pre-litigation resolution, mediation, and finality of Lok Adalat decisions.

Static Context

1. Constitutional & Legal Basis

- Article 39A, Constitution of India: State shall provide equal justice and free legal aid.
- Section 89, CPC 1908: Encourages settlement of civil disputes through ADR methods.

- Arbitration and Conciliation Act, 1996 & 2021 amendments: Provide binding resolution and establish Indian Arbitration Council.
- Legal Services Authorities Act, 1987: Governs LokAdalats, including permanent, national, and e-LokAdalats.

2. Key ADR Mechanisms

- Arbitration: Binding decision by arbitrator(s), faster than courts.
- Mediation/Conciliation: Facilitated negotiation; parties can exit after 2 sessions if dissatisfied.
- LokAdalats: Pre-litigation dispute resolution; decisions are final with no appeal, promoting speed and social harmony.

3. Timeframe

- Legal framework mandates maximum 180 days for arbitration or conciliation resolution, ensuring speedier justice compared to traditional courts.

Current Context

1. Case Backlog

- Supreme Court: 81,768 pending cases.
- High Courts: ~62.9 lakh pending cases.
- District Courts & lower judiciary: backlog exceeds 5 crore cases, with some cases pending over 10 years.
- States with highest backlog: Uttar Pradesh, Andhra Pradesh, Bihar, Himachal Pradesh, Kerala.

2. Challenges Highlighted

- Judge vacancies: High Courts (33%), District Courts (21%).
- Workload per judge: Exceeding 4,000 cases in some States.
- Social impact: Delays erode trust in justice delivery, reduce access, and affect governance outcomes.

3. Importance of Strengthening ADR

- Ensures speedy, cost-effective, and socially inclusive justice.
- Aligns dispute resolution with constitutional and civilisational values.
- Enhances interpersonal and community harmony by resolving conflicts amicably.
- Reduces judicial burden, allowing courts to focus on complex and high-stakes litigation.

Conclusion

ADR is not an optional alternative but a strategic necessity for India. With enormous case backlogs and persistent delays, arbitration, mediation, and LokAdalats can ensure swift, fair, and accessible justice. Effective implementation, public awareness, and integration with technology (e-LokAdalats) are critical

for addressing inter-State disparities and enhancing per capita justice delivery. Strengthening ADR mechanisms is essential not just for efficiency but also for social cohesion and trust in the justice system, embodying India's civilisational ethos in contemporary governance.

UPSC Prelims Practice Question

Ques : Which of the following statements about LokAdalats is correct?

- A) Their decisions are final and generally not appealable
- B) They are only for criminal disputes
- C) Their decisions can be challenged in the Supreme Court by default
- D) They operate only at the district level

Ans: a)

UPSC Mains Practice Question

Ques: How can ADR mechanisms such as LokAdalats, mediation, and conciliation contribute to speeding up justice, reducing costs, and ensuring social harmony? What reforms are necessary for their effective implementation in India? **(150 Words)**

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Artificial Intelligence (AI) is increasingly shaping education in India, influencing both teaching methods and learning outcomes. Global AI players like OpenAI (ChatGPT), NVIDIA, and tech giants such as Google and Microsoft are investing heavily in India's AI ecosystem. The India AI Mission aims to build an inclusive and trusted AI framework, with special focus on education, talent development, and digital literacy. While AI promises to revolutionize pedagogy, ethical dilemmas, digital divides, and superficial use threaten its transformative potential.



GETTY IMAGES

How is AI transforming teaching and learning practices in Indian classrooms?

ChatGPT, NVIDIA, and other global business giants are investing heavily in AI in India, with the India AI Mission aiming to build an ecosystem for trusted and inclusive AI; teachers and students use AI tools but ethical dilemmas and the digital divide challenge meaningful classroom interaction

Dev Nath Pathak
Avantika Dharmani
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The story so far:

The U.S.-based ChatGPT, developed by OpenAI, announced the opening of its first office in India this year. Union Minister for Electronics & Information Technology Ashwini Vaishnaw remarked that India is uniquely positioned to drive the next wave of AI-led transformation. With OpenAI, the India AI Mission aims to build an ecosystem for trusted and inclusive AI. Besides, another U.S.-based company, NVIDIA, a world leader in artificial intelligence computing, had announced a partnership with India's Reliance company in 2023. The global business giants such as Google and Microsoft have invested heavily in AI manufacturing and marketing in India.

Tech-savvy pedagogy

In contemporary India, teaching and learning are tangled in ethical twists and turns as teachers and students are increasingly inclined to AI. Integration of advanced technology and pedagogy is arguably a new age mantra for the technocratic management of education. A report of the Central Square Foundation that works with the Indian government said that about 70% of school teachers in India are tech-savvy. Teachers use AI solutions to design pedagogy and curricular content. This shall solicit a qualitative evaluation of AI literacy and

the digital divide in India.

The National Sample Survey report this year provided information about the digital divide at the level of quality and skills. Although a large percentage of the population in India uses the Internet, the logic of inclusion requires participation in the digital world. Inclusion is evaluated through meaningful and relevant use of technology rather than merely usage.

How meaningful is the intervention of AI in the educational world? Does ChatGPT enhance the quality of teaching and learning? These are the questions that ought to be asked while classrooms incorporate ever-evolving AI solutions.

Unbridled AI in educational practices

Contrary to the euphoria, the uncritical embrace of AI threatens the philosophical foundations of teaching and learning. Philosophically, pedagogy entails a humanistic dialogue between the teacher and the student that fosters empathy and trust. The ideal pedagogues in the history of education emphasised the evolution of emancipatory understanding in the classroom. Whether it be the feminist pedagogues Bell Hooks in the contemporary world or Rabinindranath Tagore in early modern India, they envisaged a pedagogic alchemy that inspired hermeneutic understanding. The ideal teachers ensured that education was not reduced to the accumulation of information. The educational philosophy solicits a natural and organic rather than singular AI smartness of the teacher and the taught.

There are also ethical dilemmas of using AI for pedagogy. According to a survey by the Centre for Teacher Accreditation (CENTA), a high percentage of teachers employ AI tools in the classroom, more for the fulfilment of technical requirements than for dialogic engagement with students. The use of AI by students has become a concern for the Central Board of Secondary Education in India. The CBSE issued an advisory against using ChatGPT in board exams.

Unfair use of the technology by both teachers and students has handicapped the pedagogical essence of classroom interaction between teachers and students. Although AI is enabling, the ethical complexity is seldom a consideration for the technocratic management of educational institutes.

The current educational practices with AI are reduced to superficial use of technology. A teacher using audio-visuals through smartphones and computers in the classroom is mistaken for pedagogic smartness. The transformative capacity of teachers, instead, shall be the yardstick for the evaluation of pedagogy. Only then can AI in the classroom bring about a sense of equality along with improved teaching quality.

India AI mission

India AI's mission envisages the opening of the AI Centres for Excellence (CoE) in education. The mission's pillars are India AI Compute Capacity, geared to establish the infrastructure to support AI innovation, and India AI Future Skills is

towards facilitating the talents to utilise the established infrastructure. These pillars can help create accessible cloud-based tools that promote basic digital literacy and equip all teachers with skills to be tech-savvy. However, teachers also require in-service professional training for capacity enhancement to develop an ethical understanding and meaningful integration of AI into pedagogy. Such a training shall enable pedagogues to critically evaluate and employ technology, with a nuanced capacity to transform the educational practices for a just society. The training modules need to prioritise independence and freedom, creativity and imagination, of both teachers and students.

The mission's Application Development Initiative promises impactful AI solutions aimed at large-scale socio-economic transformation. Such promising aspects ought to be embedded in a context-sensitive manner when it comes to the integration of AI with educational practices. Only then would AI not reproduce the social and digital inequalities through seemingly unquestionable smart pedagogy. Without adequate social, ethical, cultural, and political anchorage, AI may become an anathema defended in rhetoric and abused in practice.

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Static Context

1. AI in Education

- AI tools assist in curriculum design, lesson planning, assessment, and personalized learning.
- Enhances access to resources and can cater to diverse learning needs.

2. Digital Divide and Inclusion

- National Sample Survey (2025) highlights gaps in access, quality, and digital skills.
- Meaningful inclusion requires effective and context-sensitive usage, not mere access.

3. Ethical and Pedagogical Concerns

- AI use risks undermining the humanistic dialogue between teacher and student.
- Over-reliance on AI may reduce education to information accumulation, weakening critical thinking and creativity.
- Misuse in assessments (e.g., ChatGPT in board exams) is a rising concern.

4. India AI Mission in Education

- Centres of Excellence (CoE) to support AI-driven pedagogy.
- India AI Compute Capacity: Infrastructure for AI innovation.
- India AI Future Skills: Teacher training and digital literacy development.
- Application Development Initiative: Create AI solutions for socio-economic transformation.

Current Context

1. Teachers and Tech

- ~70% of Indian school teachers are tech-savvy (Central Square Foundation report).
- Use of AI is often technical rather than pedagogical, prioritizing efficiency over meaningful engagement.

2. Challenges in Classrooms

- Ethical dilemmas: fairness, assessment integrity, and student engagement.
- Digital inequities may reinforce existing socio-economic gaps.
- Professional development is needed for critical evaluation and ethical integration of AI.

3. Global and National Partnerships

- OpenAI's India office, NVIDIA-Reliance collaboration, and investment by Google & Microsoft.
- Government initiatives aim to democratize AI in education, emphasizing skill development and digital literacy.

Implications for UPSC

1. Opportunities

- AI can personalize learning, improve assessment accuracy, and optimize teacher workload.
- Supports skill development aligned with future employability.
- Can bridge access gaps in remote or under-resourced areas if implemented inclusively.

2. Challenges

- Ethical use, student privacy, and academic integrity.
- Risk of technocratic pedagogy undermining critical thinking and teacher-student dialogue.
- Digital divide may exacerbate inequality.

Conclusion

AI has the potential to transform Indian classrooms, making education more inclusive, adaptive, and effective. However, meaningful integration requires ethical awareness, professional teacher training, and bridging the digital divide. India's AI initiatives, such as the India AI Mission and Centres of Excellence, must prioritize context-sensitive pedagogy that fosters creativity, critical thinking, and equality. Only then can AI serve as a tool for equitable socio-educational transformation, rather than a superficial technological add-on.

UPSC Prelims Practice Question

Ques: Which of the following initiatives under India AI Mission aims to develop teacher skills and digital literacy?

- A) India AI Compute Capacity
- B) India AI Future Skills
- C) Application Development Initiative
- D) AI Research Fellowship

Ans : b)

UPSC Mains Practice Question

Ques: Evaluate the benefits and challenges of AI in Indian classrooms at present. Suggest how policymakers can address these challenges. **(150 Words)**

Treat employment as a national priority

India is the most populous and also one of the youngest countries. Estimates by the Confederation of Indian Industry (CII) suggest that over the next 25 years, India will add around 133 million people to its working-age population (15-64 years), which is close to 18% of the total incremental global workforce. However, India has a short window to leverage this demographic dividend, as the worker population is expected to peak around 2043.

Employment generation is critical for equity and inclusion. Quality jobs at scale can lift millions out of poverty, reduce regional and social disparities, and ensure a more even distribution of growth benefits. Generating jobs is also vital for growth and resilience. In a consumption-driven economy such as India's, broadening consumption through good quality jobs accelerates and stabilises growth.

Focus on long-term job creation

Employment must, therefore, be treated as a national priority. This requires consistent growth policies that encourage steady investment and long-term job creation, rather than fragmented or short-term approaches. Despite central and State governments initiatives, from skill development to social security, India still lacks a unified national framework that comprehensively addresses employment and livelihoods.

Job creation requires interventions on both demand and supply sides of the labour market. Demand is driven by economic and sectoral growth, while supply is influenced by skills, mobility and societal norms. Without bridging these gaps, policy impact will remain limited. A particular concern is the employability of graduates. College curricula need focused reviews to make graduates job ready, supplemented with skilling programmes that are aligned to industry and emerging sectors.

To address these challenges, an Integrated National Employment Policy is of urgent need. This should consolidate existing schemes and align diverse initiatives. It must be developed in coordination with States, key Ministries, and



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India still lacks a unified national framework that addresses the issue of employment and livelihoods

industry. Governance could be overseen by an Empowered Group of Secretaries, with implementation led by District Planning Committees that understand local challenges.

The policy must define time-bound goals, identify high-employment-potential sectors and align trade, industrial, education and labour policies to maximise job creation. It should also tackle labour market frictions, regional disparities and barriers faced by women and marginalised groups, while ensuring that skilling incorporates technologies such as Artificial Intelligence and robotics.

Another challenge is the mismatch between the availability of people and jobs. The Centre and States must work together on migration policies and support systems that promote mobility constructively, without letting politics become a barrier. Building "One India" for employment mobility will be critical.

Timely implementation of the four Labour Codes must also be prioritised and clear transition guidelines and advisory support for businesses will be essential.

Sectors to zero in on

Job creation efforts must focus on labour-intensive sectors such as textiles, tourism, agro-processing, real estate, and health care. The Micro, Small and Medium Enterprises sector, which already employs over 25 crore people, requires a comprehensive support strategy covering access to finance, technology, skilling, and markets to generate "growth with jobs". To address urban job distress, an urban employment guarantee programme could be piloted in select cities.

A major opportunity lies in the expanding gig economy, which employs between 80 lakh and 1.8 crore workers and could grow to 9 crore by 2030. With participation spreading into Tier-2 and Tier-3 cities, it holds enormous potential for job creation and formalisation. A national policy for the gig economy can help unlock this potential.

The policy should promote sector growth

while ensuring worker protection through skilling, finance and social security. A centralised registry could enable seamless onboarding, preserve work histories and reduce entry barriers. Fair contracts, safety standards and grievance redress must also be ensured. With the right institutional and regulatory support, the gig economy can become a cornerstone of India's inclusive workforce.

Beyond numbers, improving job quality through better wages, safer conditions, and social security is vital. Affordable housing near industrial hubs can improve mobility and quality of life. Regionally balanced employment can be promoted through targeted interventions in 100 most underdeveloped districts, rural internships for graduates, and remote work and BPOs in towns. Enhancing female labour force participation should be another priority. This requires incentives under the Employment-Linked Incentive (ELI) scheme, formalisation of Anganwadi and Accredited Social Health Activist roles, investment in childcare and eldercare, and campaigns to address societal norms restricting women's work.

Need for employment data

Finally, high-quality, real-time employment data is critical. A dedicated task force could strengthen methodologies, expand coverage to the informal and rural workforce, and reduce the lag between data collection and publication.

With coordinated reforms, targeted investments, and an inclusive national employment strategy, India can fundamentally transform its employment landscape. Doing so is not only essential to unlocking its demographic dividend, but also central to achieving equitable, resilient, and sustained growth.

These employment-focused measures also tie in with the broader reform agenda that CII has laid out in its recent Report on Policies for a Competitive India. Employment generation, as emphasised in this article, is an integral part of that wider vision of building a competitive India and achieving Viksit Bharat by 2047.

GS. Paper 03— Indian Economy

UPSC Mains Practice Question: Why is an Integrated National Employment Policy necessary to harness India's demographic dividend? In your answer, include aspects such as regional disparities, women's workforce participation, and the gig economy. (150 Words)

Context :

India, the world's most populous and one of the youngest countries, is poised to add around 133 million people to its working-age population over the next 25 years. This demographic dividend offers immense potential, but only if India generates quality employment at scale. Employment is central not just to economic growth, but also to equity, inclusion, and social stability. Addressing this requires making job creation a national priority, backed by a coherent, integrated employment policy.

Static Context**1. Demographic Dividend**

- Working-age population (15-64 years) projected to peak around 2043.
- Harnessing this demographic window is crucial for sustained growth and social development.

2. Employment and Economic Growth

- Jobs drive consumption, poverty alleviation, and regional balance.
- Quality employment ensures fair distribution of growth benefits and social mobility.

3. Legal and Policy Framework

- Labour Codes (4 in total): Simplify and unify labour laws to enhance employment flexibility while ensuring worker protection.
- Skill India Mission, ELI Scheme: Focus on skill development, women's workforce participation, and employment-linked incentives.
- Micro, Small and Medium Enterprises (MSME) policies: Support finance, technology, and market access for employment generation.

Current Context**1. Challenges**

- Mismatch between available workforce and jobs.
- Regional disparities and barriers for women and marginalized groups.
- Urban job distress and limited opportunities in Tier-2 and Tier-3 cities.
- Inadequate real-time, comprehensive employment data, especially in informal and rural sectors.

2. Strategies for Job Creation

- Integrated National Employment Policy:
 - Consolidates existing schemes.
 - Aligns trade, industrial, education, and labour policies.
 - Implements district-level planning for local employment needs.
- Sectoral focus: Labour-intensive sectors like textiles, tourism, agro-processing, healthcare, and MSMEs.

- Gig economy: Potential to expand to 9 crore workers by 2030; requires formalization, skilling, social security, and fair contracts.
- Women's workforce participation: Incentives, childcare support, formalization of social sector roles, and campaigns against restrictive norms.
- Urban employment interventions: Piloting urban employment guarantee programs, promoting remote work, BPOs, and rural internships.

3. **Role of Technology**

- AI and robotics: Integration in skilling programs to prepare workforce for emerging sectors.
- Digital registries for gig and formal employment to enhance transparency and reduce entry barriers.

Implications for UPSC

1. **Economic Implications**

- Employment drives demand-led growth, poverty reduction, and regional balance.
- Gig economy and MSMEs can accelerate inclusive economic growth.

2. **Social Implications**

- Reduces inequality, social exclusion, and unemployment-linked distress.
- Promotes women's participation and empowerment.

3. **Governance Implications**

- Need for integrated policy approach, real-time data collection, and coordination between Centre and States.
- Time-bound implementation of Labour Codes and district-level oversight critical for effective outcomes.

Conclusion

Employment generation in India is not merely an economic issue but a strategic imperative. With the right integrated national employment policy, sectoral focus, skill development, and inclusive strategies, India can harness its demographic dividend, achieve equitable growth, and build a resilient workforce. Timely interventions in labour-intensive sectors, gig economy formalization, women's workforce inclusion, and real-time employment data can transform India's employment landscape, supporting the broader vision of a Viksit Bharat by 2047.