ForumIAS

7 PM COMPILATION

1st and 2nd week July, 2026

Features of 7 PM compilation

- Comprehensive coverage of a given current topic
- Provide you all the information you need to frame a good answer
- Critical analysis, comparative analysis, legal/constitutional provisions, current issues and challenges and best practices around the world
- Written in lucid language and point format
- Wide use of charts, diagrams and info graphics
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- Best cost-benefit ratio according to successful aspirants

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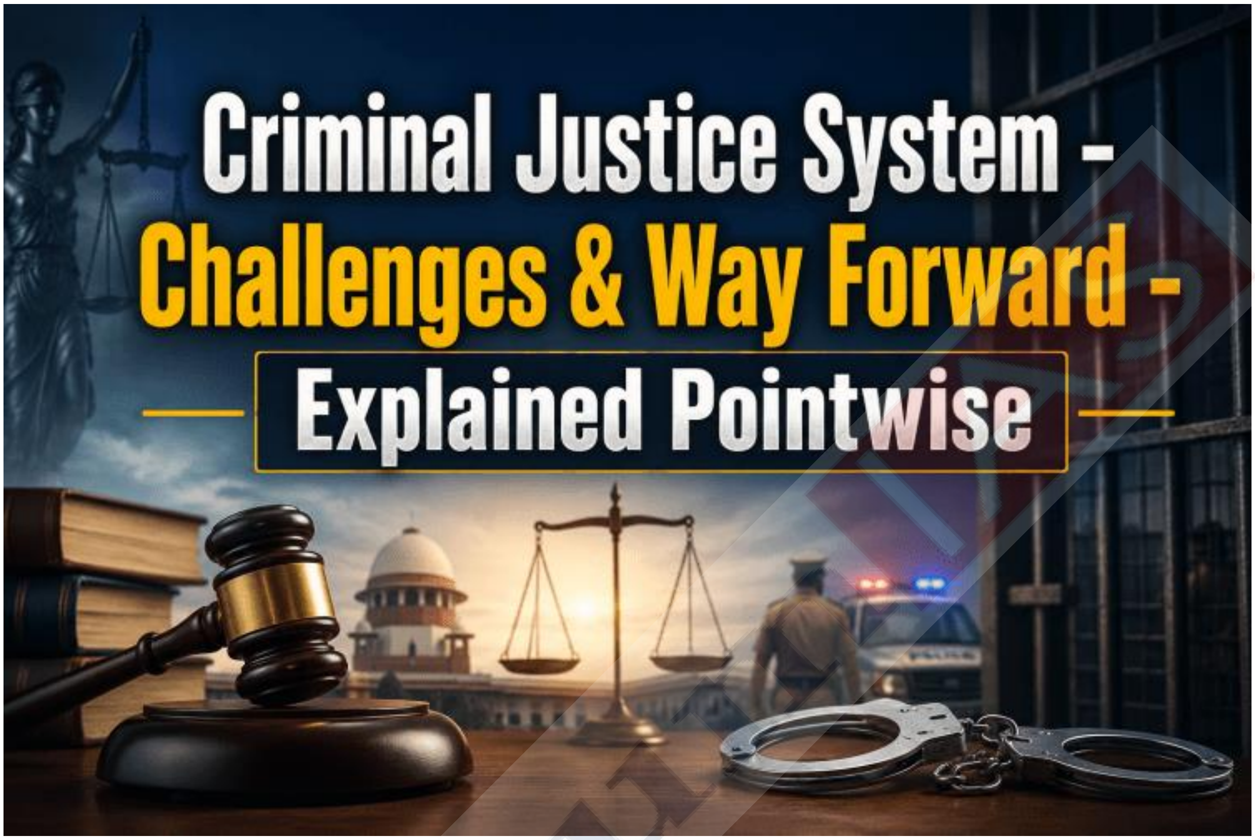
Criminal Justice System – Challenges & Way Forward – Explained Pointwise



India is accelerating the digitisation of its Criminal Justice System to enhance efficiency, transparency, and accessibility. Initiatives such as the Interoperable Criminal Justice System (ICJS), e-Courts, and Crime and Criminal Tracking Network & Systems (CCTNS) seek seamless data integration among police, courts, prisons, and forensic institutions, enabling faster justice delivery.

What is the Criminal Justice System, and What are its Components?

- The Criminal Justice System (CJS) encompasses a series of institutions, agencies, and processes established by the government to curb crime in the nation, and sanction those who violate laws with criminal penalties.
- The CJS is traditionally divided into **three key components:**

Law Enforcement (The Police)	○ **Role:** They are the first point of contact for the public. ○ **Responsibilities:** They maintain law and order, investigate reported crimes, gather evidence, and apprehend suspects. After an arrest, they prepare detailed reports and present the collected evidence to prosecutors.

The Judiciary (The Courts)	○ **Role:** This is the adjudication branch where the guilt or innocence of the accused is determined. ○ **Responsibilities:** ○ **Prosecution:** Attorneys who represent the state, reviewing evidence and presenting it in court to prove the defendant's guilt. ○ **Defense Counsel:** Attorneys who ensure the accused receives a fair trial and vigorously defend their case against the state's charges. ○ **Courts & Judges:** Judges oversee trials, ensure legal procedures are followed, determine guilt based on evidence, and hand down sentences.
Corrections (The Penal System)	○ If an individual is convicted and sentenced, they are handed over to the corrections system. ○ It includes **jails** (for short-term stays or awaiting trial), **prisons** (for long-term confinement), **probation** (supervision in the community instead of jail), and **parole** (supervised early release from prison). ○ Modern correctional philosophy ideally aims for a balance between **retribution** (punishment), **deterrence** (preventing future crime), **incapacitation** (keeping the public safe), and **rehabilitation** (helping offenders successfully reintegrate into society).

What are the issues with the Criminal Justice System in India?

Law Enforcement	1. **Shortage of Police Personnel:** Against a UN norm of 222 police personnel per lakh of population, India's officially sanctioned strength is a paltry 181, and the actual strength is an abysmal 137. 2. **Poor Quality of Investigation:** Indian police often lack advanced forensic tools, specialized training, and modern infrastructure. Consequently, investigations rely heavily on oral testimonies rather than scientific data, resulting in a **low conviction rate** for major crimes. 3. **Lack of infrastructure:** There are also enormous shortfalls in the number of police chowkis, weapons, forensic science laboratories (FSLs). For example, Nearly a million items sent for forensic examination in India, representing a shocking 38% of all such cases, remain unattended for a year or more. Low adoption of forensic methods, outdated tools, and lack of technological infrastructure compromise investigation quality. 4. **Police Misconduct and Human Rights Violations:** Transparency International found that 62% of people reported paying bribes during their interactions with the police. Misaligned incentives to arrest persons (for example, to demonstrate the progress of investigations) have resulted in 60% of all arrests being "unnecessary or unjustified". Reports of **custodial deaths, torture, sexual assault, and unlawful detentions** reflect inadequate oversight and accountability. 5. **Political Interference and Corruption:** Police forces frequently experience political pressure, which can lead to biased investigations, selective enforcement of the law, or the targeting of vulnerable groups.
Judiciary	1. **Massive Case Backlog and Judicial Delays:** Indian courts face a staggering backlog of over 50 million pending cases. The system suffers from a massive backlog of cases, primarily due to a shortage of judges, magistrates, and court infrastructure. The slow pace of trials means "justice delayed" is effectively "justice denied" for millions, as the principle of "speedy trial" remains a constitutional promise frequently unfulfilled. 2. **Shortage of judges:** India has only about **21 judges per million people**, violating recommended ratios and leading to overburdened courts, poor facilities, and systemic inefficiency. 3. **Weak Prosecution**: The prosecution system is often understaffed and lacks the specialized skills needed to effectively argue complex cases. This is sometimes made worse by poor coordination between the police and the prosecution. 4. **Weak Witness Protection**: Witnesses frequently turn hostile due to threats, intimidation, or prolonged court appearances, which collapses the prosecution's case and is a major contributor to the high rate of acquittals. 5. **Low Conviction Rates:** India's conviction rate remains low compared to global benchmarks, reflecting ineffective investigation and prosecution. 6. **Inaccessible Legal Aid:** While the National Legal Services Authority (NALSA) provides free legal aid, the quality of representation for marginalized and poor communities is often weak compared to expensive private defense attorneys. This creates a severe socio-economic divide in who gets justice.

Correction System	1. **Overcrowded Prison:** A significant number of undertrials are languishing in prisons for prolonged periods, often for crimes they may not have committed, leading to severe overcrowding. 2. **Lack of Rehabilitation:** Despite the legislative intent of treating prisons as correctional institutions, there is a distinct lack of vocational training, psychological support, and robust re-entry programs. This increases the risk of recidivism (repeat offenses).
Others	1. **The Colonial Legacy**: The foundation of the system rests on colonial-era codes (IPC, CrPC, and Indian Evidence Act), which were focused more on maintaining state authority than delivering justice to the individual. 2. **Modern Implementation Hurdles:** The transition into the digital era (e-courts, digital filing, and integrating tech-driven investigative standards) faces major roadblocks due to regional disparities in internet connectivity, tech infrastructure, and a general institutional resistance to change.

What are the consequences of an ineffective Criminal Justice System in our country?

1. **Loss of Public Trust and Disillusionment**: Justice delayed is justice denied. When the system fails to investigate crimes swiftly or hold perpetrators accountable, citizens lose faith in state institutions. This disillusionment forces people to feel disconnected from the laws designed to protect them, often leading to social unrest and mob violence as individuals attempt to take matters into their own hands.
2. **Human Rights Violations and Imprisonment of the Innocent**: When the system is slow and inefficient, jails become severely overcrowded with "undertrials" – people awaiting trial who have not been proven guilty. In India, over 66% of the prison population consists of undertrials. This strips them of their dignity, livelihoods, and citizenship rights.
3. **Escalation of Corruption**: Procedural delays and overburdened police forces create fertile ground for corruption. When processes drag on indefinitely, officials may exploit the system to demand "speed money" or bribes to move a case forward.
4. **Economic Costs and Crippling Backlogs**: A poor criminal justice system is financially draining. Tens of millions of pending cases across courts tie up immense state resources, deter foreign investment, and stifle economic growth. Meanwhile, poor victims and defendants bear the brunt of mounting legal fees, travel costs, and lost daily wages just to attend endless, unresolved court hearings.
5. **Weakened Deterrence and Rising Crime Rates**: The fundamental goal of the criminal justice system is to deter crime through the certainty of punishment. When a system is plagued by poor investigation, lack of modern infrastructure, and low conviction rates, the fear of consequences vanishes. This emboldens offenders & leads to higher crime rates.
6. **Celebration of "Encounter Killing":** A tragic consequence of a slow judiciary is that the public often celebrates extrajudicial police killings ("encounters"). While it reflects desperation for quick justice, it subverts the rule of law and risks innocent lives.
7. **Criminalization of Politics:** The delay in the legal system allows individuals with serious criminal charges to contest elections and enter parliament or state assemblies, as final convictions take decades to secure.

What have been various initiatives to improve the Criminal Justice System?

Legislative Reforms	1. **Bharatiya Nyaya Sanhita (BNS), 2023:** This replaces the Indian Penal Code (IPC). It aims to decolonize the penal code, introduce new provisions for contemporary crimes like mob lynching and organized crime, and consolidate scattered sections. 2. **Bharatiya Nagarik Suraksha Sanhita (BNSS), 2023:** This replaces the Code of Criminal Procedure (CrPC). It introduces strict deadlines for investigations, mandates forensic examinations for serious crimes, and promotes the use of digital evidence. 3. **Bharatiya Sakshya Adhiniyam (BSA), 2023:** This replaces the Indian Evidence Act. It formally recognizes electronic and digital records as evidence, modernizing the rules of evidence to align with the digital age.
Judicial Reforms	1. **Interoperable Criminal Justice System (ICJS):** This project aims to integrate the five pillars of the criminal justice system – **police, courts, prisons, forensic labs, and prosecution –** through a single digital platform. This reduces delays and human errors caused by manual record-keeping. 2. **e-Courts Project:** This initiative focuses on the computerization of courts. It includes the digitization of case records, online filing of petitions, and live streaming of court proceedings to enhance transparency and accessibility. 3. **Fast-Track Courts:** Established to handle specific categories of cases, such as those involving sexual offenses against children (POCSO Act) and other serious crimes, to ensure speedy disposal.
Prosecution Reforms	1. **Witness Protection Scheme:** This scheme provides security to witnesses and their families to prevent intimidation and ensure they can testify without fear, thereby strengthening the prosecution's case. 2. **Digital Evidence:** The legal system now officially recognizes digital records and mandates audio-video recording of search/seizure and other proceedings. 3. **National Automated Fingerprint Identification System (NAFIS):** Adoption of digital forensic databases and evidence management systems for improved conviction rates.

Police Reforms	1. **Strict Timelines for Police Investigation:** The new laws require police to complete investigations within 90 days, with similar deadlines for charge-sheet filing and trial framing, addressing delays and case backlog. This makes the process transparent and time-bound, ensuring speedier justice delivery. 2. **Mandatory Forensic Investigations:** Under the new laws, forensic investigation is now mandatory for any crime carrying a punishment of 7 years or more. This forces law enforcement to shift from a "confession-based" model to a scientific, "evidence-based" model. 3. **Crime and Criminal Tracking Network & Systems (CCTNS):** This initiative connects over 16,000 police stations across India into a unified national database, making it possible to track a criminal's record instantly across state borders. 4. **Zero FIR:** This mechanism allows a victim to file a First Information Report (FIR) at *any* police station, regardless of where the crime took place. The case is later transferred to the appropriate jurisdiction, preventing police stations from turning away victims on bureaucratic grounds.
Prison Reforms	1. **Decarceration of Undertrials:** Under the BNSS, guidelines have been loosened to allow first-time offenders who have served up to one-third of their maximum sentence as undertrials to be released on personal bonds, drastically freeing up space in overcrowded jails. 2. **Model Prison Manual:** A comprehensive manual was introduced to shift the focus of prisons from punitive locking-up to modern **rehabilitation**, emphasizing psychological counseling, skill development, and post-release support. 3. **Legal Aid Schemes:** Programs like the *Tele-Law Service* and targeted initiatives by legal service organizations help provide pro-bono counsel to underprivileged undertrials.

What can be the way forward?

1. **Strengthen Implementation of New Laws:** The new codes (Bharatiya Nyaya Sanhita, Bharatiya Nagarik Suraksha Sanhita, Bharatiya Sakshya Adhiniyam) specify strict deadlines for investigation, chargesheet filing, and judgments. Ensuring compliance, backed by adequate staffing and infrastructure upgrades, is crucial for reducing delays and case backlog.
2. **Police Reforms:**
    - **Separate Investigation and Law & Order:** A long-standing recommendation is to separate the police's investigative and law and order functions. This would allow a specialized team to focus solely on investigations, leading to higher quality and more timely outcomes.
    - **Insulate Police from Political Control:** Establish independent **State Security Commissions** to oversee postings, transfers, and promotions, ensuring police officers can investigate powerful individuals without fear of sudden punitive transfers.
3. **Judicial Reforms:**
    - **Increase the Judge-to-Population Ratio:** India needs to double its current strength of judicial officers to effectively tackle the 50-million case backlog.
    - **Reduce Backlog:** Substantially increase the subordinate judiciary's strength, establish more fast-track courts, and consider institutional reforms like the All-India Judicial Service.

   - **Strengthen ADR Mechanisms:** Mandate mediation, conciliation, and the use of *Gram Nyayalayas* (village courts) and *Lok Adalats* (people's courts) to resolve minor disputes amicably, leaving the main judiciary free to focus on serious criminal trials.
   - **AI Integration**: Explore the responsible integration of Artificial Intelligence in India's Judiciary for automated documentation and predictive case management to speed up disposal times.
4. **Prison reforms:**
   - **Bail Liberalization:** Apply the principle of "bail, not jail" (especially for non-violent offenders) to reduce chronic prison overcrowding.
   - **Rehabilitation Focus:** Shift the primary objective of prisons from mere punishment to rehabilitation, skill-building, and education.
   - **Free Legal Aid**: Strengthen the National Legal Services Authority (NALSA) to ensure indigent undertrials receive competent legal representation without delay.
5. **Mass Scaling of Forensic Infrastructure**: Every district in India needs a fully equipped mobile forensic van and a localized forensic science laboratory (FSL) to prevent the current bottleneck where DNA and ballistic reports take years to return.
6. **Widen Digital Infrastructure:** Expand the Crime and Criminal Tracking Network & Systems (CCTNS) and e-courts, ensuring all police stations and courts have reliable internet, equipment, and digital training.
7. **Make Justice System Victim centric:** The system should be victim centric to ensure that the victims get justice. The victim should get a chance to put forth his case and quick completion of trials is needed to ensure that they do not lose faith in the system. Fixing responsibility quickly and transparently will maximise the sense of justice to the victim.
8. **Malimath committee's recommendations:** Malimath committee has recommended many reforms which need to be implemented.

Malimath Committee:

- "**Committee on Reforms of Criminal Justice System**" constituted by Government of India in 2000 under the chairmanship of Justice VS Malimath.
- Its mandate was to review and suggest comprehensive reforms for India's criminal justice system.
- Some of its recommendations were:
  - Need for more judges to dispose-off a large number of pending cases.
  - Constitution of a **National Judicial Commission** to deal with the appointment of judges to the higher courts and amendment of Article 124 to make impeachment of judges.
  - Creation of separate criminal division in higher courts that have judges specialising in criminal laws.
  - Article 20(3) of the Constitution, which protects the accused from being compelled to be a witness against himself/herself, needs to be modified. The courts should be given freedom to question the accused to give information and draw an adverse inference against the accused in case the latter refuses to answer
  - **Victim Compensation Fund** should be created under the victim compensation law and the assets confiscated from organised crimes should be made a part of it.

Conclusion:
Criminal Justice System in India is currently in a state of uncertainty and is highly unpopular due to its inefficiency. Clearly, the reforms in India's Criminal Justice System are a need of the hour. The reforms should not only make CJS more efficient but also be sensitive to both the innocent and the needs of the law enforcing officers.

Read More: The Hindu
UPSC GS-2: Polity

Delhi Government's Electric Vehicle Policy (2026) – Explained Pointwise

The Delhi government's newly launched EV Policy 2.0 (2026–2030) marks a aggressive paradigm shift in the capital's battle against toxic air pollution. Moving beyond simple financial incentives, the policy introduces hard, mandatory phase-out deadlines for conventional vehicles to fast-track a target of 30% total fleet electrification by 2030.

What are the key features of the Delhi Government's Electric Vehicle (EV) Policy, 2026?

1. **Phased Transition to Electric Mobility:** The hallmark feature of the policy is the shift from "encouraging" the EVs to mandating them by capping new Internal Combustion Engine (ICE) registrations:

- **Three-Wheelers & Small Trucks:** From **January 1, 2027**, only electric passenger auto-rickshaws and electric N1 goods carriers can be newly registered in Delhi.
- **Two-Wheelers:** From **April 1, 2028**, no new petrol or CNG scooters and motorcycles will be registered. Anyone buying a new two-wheeler after this date **must** choose electric.
- **School Buses:** Introducing a phased shift where schools must ensure 10% of their bus fleet is electric within two years, scaling up to 30% by **March 31, 2030**.
- **Government fleet:** All new hired or leased vehicles must be electric from the date of notification.

2. **Financial Incentives:** The government has structured financial benefits to lower the entry cost of ownership:
    - **Electric 2-Wheelers:** Up to ₹30,000 (highest in the first year, tapering off in subsequent years to promote early adoption).
    - **Electric 3-Wheelers:** Up to ₹50,000.
    - **Electric N1 Cargo Vehicles:** Up to ₹1,000,000.
3. **Tax Benefits:** EVs will enjoy a **100% waiver on road tax and lifetime registration charges**. However, the road tax exemption for electric passenger cars is strictly **capped on models priced up to ₹30 Lakh.**
4. **Expansion of Charging Infrastructure:**
    - Delhi Transco Limited (DTL) has been designated to execute a fast-tracked deployment plan to install **over 30,000 public charging points.**
    - Every EV manufacturer (OEM) operating in Delhi must set up at least one public charging facility at each of its dealerships.
    - Resident Welfare Associations (RWAs) to introduce shared community charging inside residential blocks.
5. **Single-Window Clearance System:** Introduction of a **single-window approval mechanism** for setting up charging stations to simplify and expedite approvals.
6. **Large Public Investment:** Proposed investment of around **₹15,000 crore** over the policy period to support incentives, charging infrastructure, and ecosystem development.
7. **Promotion of Commercial EVs:** To reduce daytime vehicular smog, the first 1,000 medium-sized electric commercial trucks purchased under the policy will get a **10-year total exemption from Delhi's "No Entry" timing restrictions**, allowing logistics companies to operate clean freight seamlessly 24/7.
8. **Scrappage Incentives**: To remove older, high-emission vehicles off the grid, the policy provides financial reward for scrapping old conventional vehicles when upgrading to an EV:
    - **Private Cars:** Up to ₹1 Lakh scrapping bonus
    - **Commercial / Goods Vehicles:** Up to ₹50,000
    - **Auto-rickshaws:** Up to ₹25,000
    - **Two-Wheelers:** Up to ₹10,000
9. **Battery Recycling**: The Department of Environment will ensure vehicle manufacturers comply with battery waste management rules, while the Delhi Pollution Control Committee (DPCC) will develop battery collection centres under a public-private partnership model.
10. **Institutional Mechanism**: A **Delhi Electric Vehicle Apex Committee** will manage strategic operations — making decisions on implementation, recommending amendments, and advising government on future clean-fuel technologies like hydrogen.
11. **Digital Transparency**: A dedicated EV portal will track vehicle registrations and subsidy claims.

What are the key objectives of the EV Policy?

1. **Accelerate EV Adoption**: Drive rapid uptake of electric vehicles across all categories — two-wheelers, three-wheelers, cars, and goods vehicles — to move Delhi toward a fully electric mobility ecosystem.
2. **Improve Air Quality**: Directly tackle vehicular pollution, which a CAQM report identified as contributing roughly 23% of Delhi's air pollution, particularly during winter months. This is framed as the policy's core justification, drawing on Article 21 of the Constitution (right to a healthy environment).
3. **Reduce Dependence on Conventional Fuels**: Shift the transport sector away from petrol and diesel toward clean energy sources, reducing fossil fuel consumption in urban mobility.
4. **Priority-Based Electrification of High-Impact Segments**: Specifically target two-wheelers (67% of Delhi's vehicle fleet) and high-mileage categories like three-wheelers, commercial cars, and N1 goods vehicles, since these contribute disproportionately to pollution due to daily usage patterns.
5. **Build Comprehensive Charging & Battery-Swapping Infrastructure**: Expand the charging network at scale (32,000 charging points planned) and establish battery-swapping capability, positioning Delhi Transco Ltd as the nodal agency for planning and rollout.

What is the significance of the EV Policy?

1. **Addresses Delhi's Most Persistent Public Health Crisis**: Air pollution in Delhi is a chronic, life-threatening issue, and vehicular emissions are the single largest identified contributor (23%, per CAQM) especially in winter. By targeting the largest and most polluting vehicle segments first, the policy is significant as a direct, evidence-based public health intervention rather than a generic sustainability gesture.
2. **Shifts from Incentive-Only to Mandate-Driven Transition**: Earlier EV policies (including Delhi's own 2020 policy) relied primarily on subsidies to nudge adoption. This policy is significant because it introduces **hard registration deadlines**. This marks a shift from "encouraging" EVs to actively phasing out fossil-fuel vehicle sales in specific categories, a much stronger regulatory instrument.
3. **Data-Driven, Segment-Specific Targeting**: Rather than a blanket approach, the policy is grounded in emissions data — recognizing that two-wheelers dominate Delhi's fleet (67%) while three-wheelers, commercial cars, and N1 goods vehicles cover disproportionately high daily mileage. This targeted design is significant for policy efficiency: it concentrates resources where pollution impact per vehicle is highest.
4. **Constitutional and Legal Grounding**: By explicitly invoking Article 21 (right to life, interpreted to include a healthy environment), the policy strengthens its legal standing and signals that clean air is being treated as a rights-based issue, not just an environmental preference.
5. **National Model**: By blending Central government support (PM E-Drive scheme) with state funding, and by aiming to position Delhi as a leading EV adoption model in India, the policy has significance beyond the city — it could serve as a template other states or the Centre reference for future policy design.
6. **Alignment with National Initiatives**: Complements government programmes such as the **PM E-DRIVE Scheme**, **National Electric Mobility Mission Plan**, and broader goals of green growth and sustainable development.

What are the challenges in the implementation of the EV Policy?

1. **Strict Two-Wheeler Bans:** The mandate stopping registrations of non-electric two-wheelers by April 1, 2028, and three-wheelers by January 1, 2027, has raised concerns about penalizing lower-income families who rely heavily on these segments.
2. **Upfront Cost Barriers:** Even with subsidies (which fade over subsequent years), the initial purchase cost of a high-quality EV remains significantly higher than conventional ICE vehicles.

3. **Home Charging Inequities:** The mandate places heavy stress on private charging. However, a large percentage of Delhi's population lives in dense residential clusters and resettlement colonies that lack dedicated parking or the electrical load capacity to install private chargers.
4. **Peak Load Pressures:** Mass charging of commercial and private vehicles simultaneously (especially overnight or during hot summer peak periods) will put intense structural stress on Power Distribution Companies (DISCOMs).
5. **Inter-State Leaks**: Delhi does not exist in an economic vacuum; it shares highly porous borders with Haryana (Gurugram/Faridabad) and Uttar Pradesh (Noida/Ghaziabad). Since, neighboring states do not share Delhi's absolute registration bans on petrol/CNG two-wheelers and three-wheelers, individuals may circumvent the rules by buying and registering their vehicles in NCR cities and driving them into Delhi daily.
6. **Early Bus Phase-Outs:** The policy's aggressive 2030 deadline to phase out fossil-fuel school and contractual buses is highly contested. Operators who recently invested in BS-VI diesel and CNG buses argue this will strand their assets long before their mandated 15-year lifespans.
7. **Lending Hesitancy:** Commercial drivers and individual buyers struggle to secure vehicle loans. Lenders often treat EVs as uncertain assets due to concerns over rapid battery degradation and unpredictable resale values.

What should be the way forward?

1. **Time-of-Day (ToD) Tariff Incentives:** Introduce dynamic electricity pricing where EV owners are charged significantly lower rates for charging their vehicles during off-peak hours (e.g., midnight to 6 AM) or during peak solar generation hours in the afternoon.
2. **Support for Gig Workers:** The government must provide interest-free loans, social protection, and affordable charging networks to ease the financial transition for delivery personnel, auto drivers, and ride-share gig workers.
3. **Unified Regional Framework:** Delhi's EV policy cannot succeed in geographical isolation due to its highly porous borders with Haryana and Uttar Pradesh. The National Capital Region Transport Corporation (NCRTC) or a joint inter-state committee must harmonize EV incentives, charging infrastructure standards, and commercial mandates across Noida, Gurugram, Faridabad, and Ghaziabad.
4. **Phased Transition for School Buses**: Allow operators who purchased BS-VI fossil-fuel buses between 2023 and 2025 a longer fiscal cushion or structured tax rebates, slowly tapering their transition rather than forcing premature scrappage.
5. **Fix Home and Residential Charging Barriers**: Clear building codes and standards are needed for installing private chargers in multi-family housing, along with designated authorities to resolve disputes with resident welfare associations that currently obstruct installation.
6. **Adopt a Multi-Pronged Pollution Strategy, Not EVs Alone**: Since vehicle emissions are only one source of Delhi's air pollution, along with construction dust, poor road conditions, and emissions from nearby thermal power plants, the EV Policy should be part of a broader NCR-wide airshed management strategy. This requires coordination with neighboring states and simultaneous efforts to control construction dust and industrial emissions.

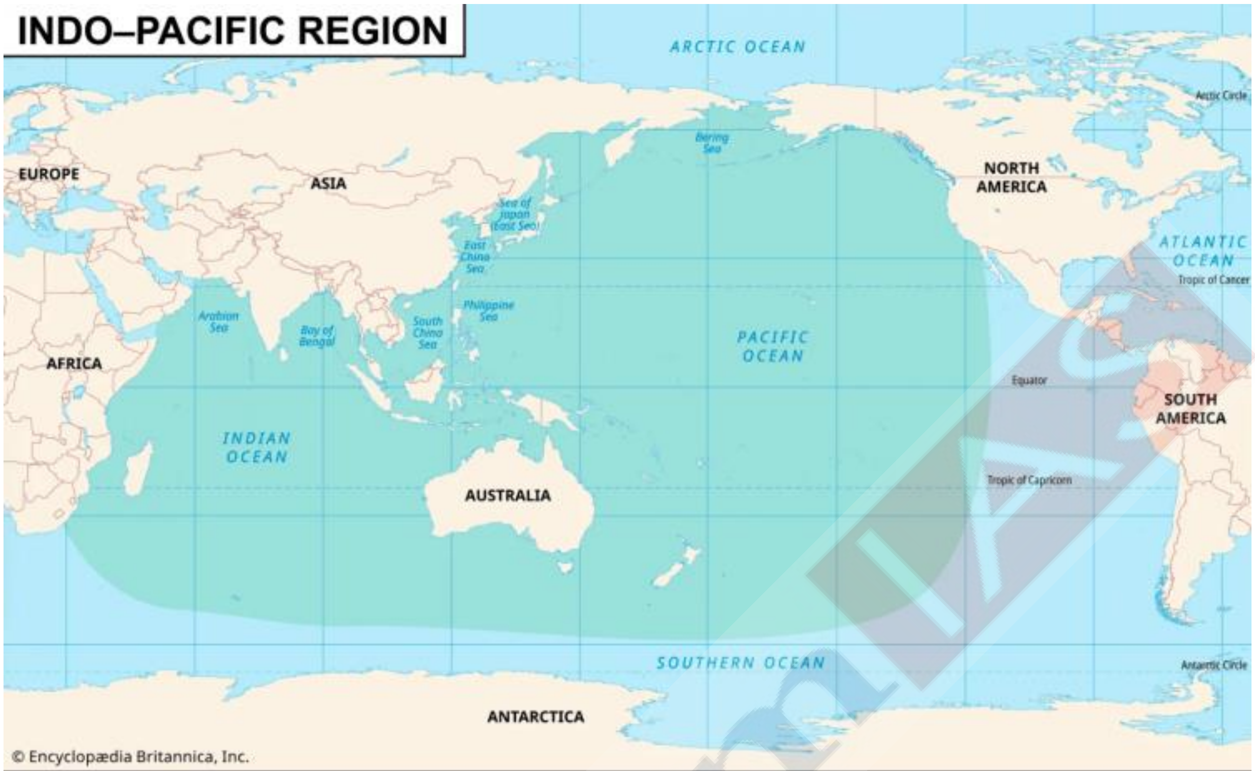
UPSC GS-3: Environment
Read More: [Indian Express]

Indo-Pacific Region – Significance & Challenges – Explained Pointwise

In a highly symbolic move, USA has moved to downplay the overarching "Indo-Pacific" rhetoric in favor of a direct **"Pacific-First"** framework, even reverting the name of its military command from **INDOPACOM** back to **PACOM (Pacific Command)**. Regardless of shifts in U.S. policy, the Indo-Pacific remains central to global trade, maritime connectivity, economic growth, and strategic stability.
The Indo-Pacific is the most important concept in 21st-century geopolitics and strategy. It is a modern term that defines a unified, interconnected, and dynamic super-region that stretches across two oceans.

What is the Indo-Pacific Region?

- The Indo-Pacific region refers to the vast, interconnected maritime area that spans the Indian Ocean and the Pacific Ocean, including the seas and straits that link them.
- **Geographic Scope**: Broadly, the Indo-Pacific encompasses:
  1. **The Indian Ocean:** Stretching from the eastern coast of Africa and the West Asia, past South Asia (India), all the way to western Australia.
  2. **The Pacific Ocean:** Stretching from the waters of East Asia and Southeast Asia across to the western coasts of North and South America.
  3. **The Connecting Waters:** Crucial maritime choke points like the **Strait of Malacca**, which connects the two oceans through Southeast Asia.
- The Southeast Asian seas, especially the South China Sea and the Strait of Malacca, form the crucial geographical and economic nexus connecting the two oceans.


INDO–PACIFIC REGION
ARCTIC OCEAN
Arctic Circle
Bering Sea
EUROPE
ASIA
NORTH AMERICA
Sea of Japan (East Sea)
East China Sea
ATLANTIC OCEAN
Tropic of Cancer
Arabian Sea
Bay of Bengal
South China Sea
Philippine Sea
PACIFIC OCEAN
AFRICA
Equator
SOUTH AMERICA
INDIAN OCEAN
AUSTRALIA
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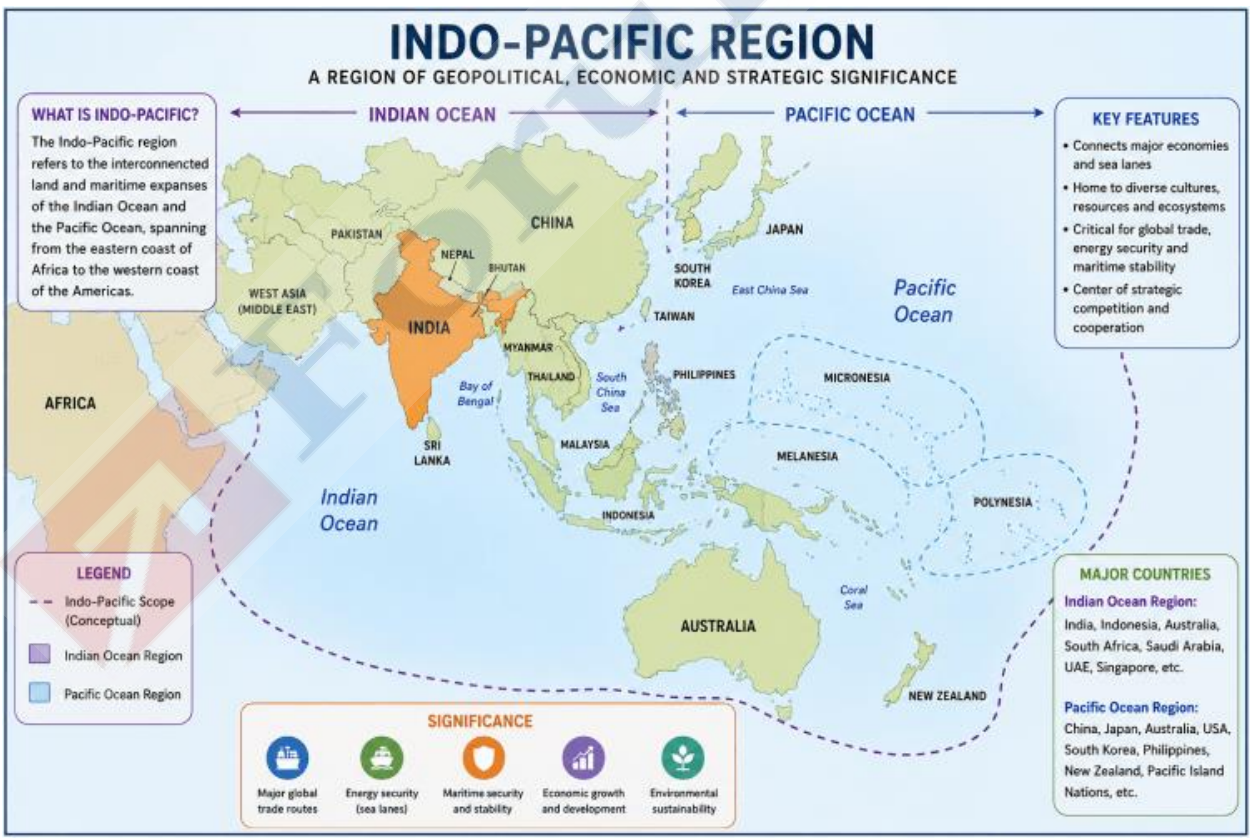
INDO-PACIFIC REGION
A REGION OF GEOPOLITICAL, ECONOMIC AND STRATEGIC SIGNIFICANCE
WHAT IS INDO-PACIFIC?
The Indo-Pacific region refers to the interconnencted land and maritime expanses of the Indian Ocean and the Pacific Ocean, spanning from the eastern coast of Africa to the western coast of the Americas.
INDIAN OCEAN
PACIFIC OCEAN
KEY FEATURES
• Connects major economies and sea lanes
• Home to diverse cultures, resources and ecosystems
• Critical for global trade, energy security and maritime stability
• Center of strategic competition and cooperation
PAKISTAN
CHINA
NEPAL
BHUTAN
JAPAN
SOUTH KOREA
East China Sea
Pacific Ocean
WEST ASIA (MIDDLE EAST)
INDIA
TAIWAN
MYANMAR
THAILAND
South China Sea
PHILIPPINES
MICRONESIA
Bay of Bengal
AFRICA
SRI LANKA
MALAYSIA
MELANESIA
POLYNESIA
Indian Ocean
INDONESIA
LEGEND
Indo-Pacific Scope (Conceptual)
Indian Ocean Region
Pacific Ocean Region
Coral Sea
AUSTRALIA
NEW ZEALAND
MAJOR COUNTRIES
Indian Ocean Region:
India, Indonesia, Australia, South Africa, Saudi Arabia, UAE, Singapore, etc.
Pacific Ocean Region:
China, Japan, Australia, USA, South Korea, Philippines, New Zealand, Pacific Island Nations, etc.
SIGNIFICANCE
Major global trade routes
Energy security (sea lanes)
Maritime security and stability
Economic growth and development
Environmental sustainability

What is the Significance of Indo-Pacific Region?

Economic Significance	• **Global GDP and Population:** ○ The region encompasses countries that account for over 60% of the world's population and generate over 60% of the global GDP. ○ It includes four of the world's largest economies: the United States, China, India, and Japan, along with the dynamic ASEAN bloc. ○ Home to the world's fastest-growing major economies (India, ASEAN states, China) – the region contributes the largest share of global GDP growth. • **Maritime Trade Routes:** ○ Essential sea lanes of communication (SLOCs) pass through the region, including the Strait of Malacca, Lombok Strait, and South China Sea. ○ Roughly two-thirds of global maritime trade and a majority of global container traffic transits through Indo-Pacific waters. ○ Approximately 32.2 million barrels of crude oil pass through annually, with 40% of global exports originating from the region. • **Natural Resources:** ○ The region contains vast offshore oil and gas reserves, with the South China Sea estimated to hold 11 billion barrels of oil and 190 trillion cubic feet of gas. ○ It holds significant mineral resources and fisheries, including 10% of the global fish catch. ○ The oceans in the Indo-Pacific contain immense biodiversity and are crucial for global fish stocks. Sustainable management of these resources is vital for the food security of billions of people in the region.
Geopolitical Significance	• **Centre of Great Power Competition:** ○ The region has become the primary theater of US-China strategic competition, with both powers vying for influence and control. ○ China's Belt and Road Initiative (BRI) represents focused efforts to extend Chinese economic and strategic influence, with investments exceeding $1 trillion as of 2023. • **The Rise of India:** The concept of the Indo-Pacific itself highlights the crucial role of India as a rising democratic power. India's vast geography, massive population, and growing naval capacity are seen by many Western and regional powers as essential for upholding a rules-based international order. • **Security Dynamics:** ○ The Indo-Pacific faces complex security challenges including territorial disputes in the South China Sea, tensions on the Korean peninsula, across the Taiwan Strait, and various regional conflicts. ○ The region is home to 7 of the world's largest militaries, making it a critical area for global security. • **New Security Alliances:** The region has become a birthplace of new global alliances like:

	○ **The Quad:** A diplomatic and security partnership between the US, Japan, India, and Australia focused on regional stability, maritime security, and technology collaboration. ○ **AUKUS:** A trilateral defense pact where the US and UK are helping Australia acquire conventionally armed, nuclear-powered submarines to project power in the region.
Environmental Significance	● **Climate Change**: The region is highly vulnerable to rising sea levels, severe typhoons, and ocean acidification. Low-lying island nations in the Pacific face existential threats, while mega-cities along the Asian coast are at high risk for flooding. ● **Natural Disasters**: It is the most natural disaster-prone region globally, requiring coordinated responses to climate change impacts.

What are India's key interests in the Indo-Pacific Region?

1. **Security & Strategic Interests:**
   - **Maritime Security and Freedom of Navigation:** India depends heavily on the Indian Ocean for nearly 95% of its trade, including vital energy imports, making secure sea lanes and freedom of navigation crucial.
   - **Countering Chinese Influence:** India aims to counterbalance China's growing presence and assertiveness in the region, particularly through China's Belt and Road Initiative and militarization of the South China Sea.
   - **Net Security Provider:** India seeks to position itself as the dominant "net security provider" in the Indian Ocean Region (IOR). This involves working with regional partners (like Sri Lanka, Maldives, Mauritius, and Seychelles) to boost their maritime security capabilities and ensure that no single power dominates the area.
2. **Economic Interests:**
   - **Trade and Investment:** The Indo-Pacific region is central to India's ambitions to become a $10 trillion economy. India seeks to expand trade, maritime connectivity, and economic integration within the region.
   - **Act East Policy Integration:** The Indo-Pacific vision is the logical extension of India's "Act East Policy." India aims to better integrate its North-Eastern states with the dynamic economies of Southeast Asia through connectivity projects like the India-Myanmar-Thailand Trilateral Highway.
   - **Supply Chain Resilience:** Following the disruptions of the pandemic, India's interest lies in diversifying its supply chains away from a heavy reliance on a single nation. Cooperating with Quad partners on supply chain resilience in critical technologies (like semiconductors and pharmaceuticals) is a core economic goal.
3. **Environmental & Resource Security:**
   - **Sustainable Use of Marine Resources:** India aims to promote sustainable management of fisheries, offshore energy resources, and maritime ecosystems to support long-term regional prosperity.

- **Climate Change and Disaster Resilience:** Addressing environmental degradation and natural disaster risks tied to the fragile Indo-Pacific ecosystems is a key concern for India's regional engagement.

4. **Regional Leadership & Diplomacy:**
    - **Promoting a Rules-Based Order:** India advocates for a rules-based order that respects international law, particularly the United Nations Convention on the Law of the Sea (UNCLOS). This is a subtle way of countering unilateral territorial claims in the South China Sea and ensuring freedom of navigation.
    - **Strategic Autonomy:** India uses the concept of the Indo-Pacific to reinforce its commitment to strategic autonomy. India insists that the framework must be "inclusive" (not directed against any single country) and stresses the importance of ASEAN's centrality.
    - **Engagement with Regional Bodies**: Active engagement with ASEAN, BIMSTEC, IORA, and other regional organizations helps India strengthen diplomatic ties and regional cooperation.
5. **Cultural & Historical Links:** India has longstanding civilizational, cultural, and diaspora ties across the Indo-Pacific, which underpin its soft power and influence within the region.

What are the major initiatives undertaken in the Indo-Pacific Region?

1. **ASEAN Centrality:**
    - The Association of Southeast Asian Nations (ASEAN) is the geographic and institutional core of the Indo-Pacific. All major powers (US, China, Japan, India) explicitly support ASEAN's centrality.
    - ASEAN promotes dialogue through forums like the East Asia Summit (EAS) and the ASEAN Regional Forum (ARF), ensuring that regional cooperation remains dialogue-based.
2. **Quadrilateral Security Dialogue (QUAD):**
    - A strategic security forum involving India, US, Japan, and Australia.
    - Focuses on regional security challenges, maritime cooperation, infrastructure development, and humanitarian assistance.
    - Key areas of cooperation include:
        i. **Maritime Domain Awareness**: Sharing information and working to ensure freedom of navigation.
        ii. **Critical and Emerging Technologies**: Collaborating on 5G technology, semiconductors, and supply chain resilience.
        iii. **Health and Climate**: Joint initiatives on vaccine production and distribution, and climate change adaptation.
3. **AUKUS:**
    - Members: Australia, United Kingdom, and United States.
    - A security partnership designed for deeper defense integration and technological sharing.
    - **Pillar I** focuses on helping Australia acquire its first fleet of conventionally armed, nuclear-powered submarines to project power in the Pacific.
    - **Pillar II** focuses on joint development of advanced cyber capabilities, artificial intelligence, quantum technologies, and hypersonic weapons.
4. **Indo-Pacific Oceans Initiative (IPOI):**
    - Launched by India in 2019 at the East Asia Summit.
    - It is a voluntary, non-treaty arrangement focusing on practical cooperation in: maritime security, ecology, resource management, capacity building, disaster risk reduction, science and technology, trade and connectivity.
    - Builds upon India's SAGAR vision for inclusive and sustainable maritime growth.

5. **Indo-Pacific Economic Framework for Prosperity (IPEF)**:
    - **Led by:** The United States, alongside 13 other regional partners (including India, Japan, Australia, and several ASEAN nations).
    - **Focus:** Launched in 2022, IPEF is not a traditional free trade agreement. Instead, it focuses on four key pillars:
        i. **Connected Economy** (digital trade standards)
        ii. **Resilient Economy** (supply chain security for critical minerals and semiconductors)
        iii. **Clean Economy** (clean energy transitions)
        iv. **Fair Economy** (anti-corruption and tax compliance)
6. **SAGAR (Security and Growth for All in the Region):**
    - India's flagship vision launched in 2015 aiming to strengthen maritime security, economic development, and cooperative relations among Indian Ocean littorals and beyond.
    - Focuses on freedom of navigation, anti-piracy, disaster management, and blue economy development.
7. **MAHASAGAR** (Mutual and Holistic Advancement for Security and Growth Across Regions):
    - Announced in **2025**, MAHASAGAR is the strategic evolution of the SAGAR vision.
    - Rather than just a "net security provider", MAHASAGAR positions India as a preferred security partner and primary responder for Humanitarian Assistance and Disaster Relief (HADR) and Search and Rescue (SAR).
    - The vision is a strategic counter to China's expanding influence in the Indian Ocean. It focuses on sustainable infrastructure development, secure supply chains, and collective defense capabilities to promote long-term, non-transactional partnerships.
8. **Indo-Pacific Economic Framework (IPEF):**
    - Initiated in 2022, enhancing economic cooperation among Indo-Pacific partners.
    - Emphasizes resilient supply chains, clean energy transitions, fair trade, digital economy cooperation, and sustainable growth.
    - Partners include India, US, Australia, Japan and 10 other countries.
9. **Act East Policy:**
    - India's diplomatic and economic outreach to engage ASEAN and East Asian nations.
    - Aims to deepen connectivity, trade, cultural ties, and regional integration.
10. **Supply Chain Resilience Initiative (SCRI):**
    - Members: India, Japan, Australia.
    - To establish resilient and diversified supply chains to mitigate the risks of geopolitical shocks and reliance on single-country sources, especially in essential goods and raw materials.
11. **Regional Cooperation Platforms:**
    - India engages actively in regional groupings like the Indian Ocean Rim Association (IORA), Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC), ASEAN Regional Forum (ARF), and others.
    - These platforms address issues like maritime security, climate resilience, and economic cooperation.
12. **Project MAUSAM**: A cultural and economic initiative managed by the Indian Ministry of Culture to reconnect nations across the Indian Ocean world, reviving ancient maritime routes and trade relations.

What are the major challenges facing the Indo-Pacific Region?

1. **Geopolitical Rivalries & Security Concerns:**

- **US-China Strategic Rivalry:** The region is the primary theater for great-power competition. China's assertive foreign policy, rapid military modernization, and infrastructure expansion challenge the traditional influence of the US and its regional allies.
- **Assertive Rise of China**: The rise of China's Belt and Road Initiative (BRI) and its territorial assertiveness challenge existing regional balances, leading to tensions among regional and extra-regional powers.
- **Flashpoints**: The risk of conflict escalation in flashpoints such as Taiwan, the South China Sea, Korean Peninsula, India-Pakistan war remains high.
- **Rapid Militarization**: The region is undergoing rapid militarization. Increased naval deployments, the development of long-range missile capabilities, and the formation of new security pacts (like AUKUS) escalate tensions.

2. **Economic & Development Challenges:**
    - **Infrastructure Debt Traps:** China's Belt and Road Initiative (BRI) offers much-needed infrastructure financing but has often resulted in unsustainable debt for smaller nations (like Sri Lanka and some Pacific Island countries), compromising their economic sovereignty and stability.
    - **Supply Chain Vulnerability:** The heavy concentration of global manufacturing in East and Southeast Asia creates a single point of failure. Geopolitical tensions or natural disasters can – and have – led to significant global supply chain shocks. Initiatives to diversify supply chains are still in their early stages.
    - **Development Gaps:** The region features immense economic disparity, stretching from highly developed nations (Japan, Australia) to developing economies (Bangladesh, Cambodia). Closing these gaps requires significant, sustainable investment and cooperation on trade facilitation.
    - **Lack of Regional Integration:** While trade within the wider Indo-Pacific is high, intra-regional trade within South Asia remains low due to political disputes and poor infrastructure. This failure to integrate economically limits collective growth potential.
3. **Non-Traditional Security Threats:**
    - **Maritime Security Challenges:** Non-state threats such as piracy, illegal, unreported, and unregulated (IUU) fishing, and maritime drug smuggling persist, requiring coordinated naval and coast guard cooperation across numerous jurisdictions.
    - **Cyber and Information Warfare:** The rapid adoption of digital technology, often without adequate cybersecurity protocols, leaves the region vulnerable to state-sponsored hacking, data theft, and sophisticated disinformation campaigns aimed at undermining democratic processes and national infrastructure.
    - **Freedom of Navigation:** Disputes over maritime boundaries, Exclusive Economic Zones (EEZs), and overlapping claims (notably in the South and East China Seas) threaten the safe passage of critical global trade routes.
4. **Climate Change and Environmental Degradation:**
    - **Extreme Weather and Sea-Level Rise:** The region is highly disaster-prone. Low-lying island nations (such as Tuvalu and the Maldives) and coastal areas face existential threats from rising sea levels and intensified cyclones, potentially triggering mass forced migration.
    - **Ecosystem Stress:** Fragile marine environments, including coral reefs and mangroves, face severe degradation from pollution and overfishing.
5. **Recent Shift in US Stance Toward the Indo-Pacific**: The recent shift in U.S. policy poses several challenges, including declining trust among allies, weaker deterrence against China due to the reduced focus on Taiwan and the Quad, greater security burdens on partners such as Japan and India, trade-

related tensions, and the risk of a strategic vacuum that could lead to a fragmented and competitive regional order.

What should be the way forward?

1. **Strengthening Multilateralism & Regional Cooperation:**
    - Promote inclusive regional frameworks such as ASEAN-led mechanisms, Indo-Pacific Oceans Initiative (IPOI), Indian Ocean Rim Association (IORA), and enhanced cooperation among Quad countries.
    - Encourage dialogue, conflict resolution, and confidence-building measures to reduce unilateral attempts and tension hotspots like the South China Sea and Taiwan Strait.
    - Major regional doctrines must actively synchronize. For example, the strategic alignment between India's **MAHASAGAR** initiative and Japan's **Free and Open Indo-Pacific (FOIP)** framework, which streamlines maritime defense and infrastructure investments without creating redundant overlapping programs.
2. **Upholding a Free, Open, Rules-based Order:** Adherence to international law, particularly the United Nations Convention on the Law of the Sea (UNCLOS), to ensure freedom of navigation, overflight, and peaceful dispute settlement.
3. **Enhancing Maritime Security & Safety:**
    - Joint exercises, information sharing, and coordinated response to piracy, terrorism, and natural disasters across the Indo-Pacific.
    - Capacity building for smaller and vulnerable coastal states to strengthen their maritime domain awareness.
4. **Promoting Sustainable Economic Growth & Connectivity:**
    - Develop resilient, interconnected infrastructure in transport, digital, and energy sectors to integrate regional markets inclusively.
    - Support supply chain diversification and green technologies via initiatives like the Indo-Pacific Economic Framework (IPEF).
5. **Addressing Environmental Challenges Collectively:**
    - Coordinate climate change mitigation, marine ecosystem conservation, disaster risk reduction, and pollution control efforts.
    - Share scientific research and best practices for adaptation to rising sea levels and ecosystem preservation.
    - Formalize and strengthen mechanisms for joint military and civilian responses to Humanitarian Assistance and Disaster Relief (HADR) operations, recognizing that cyclones, tsunamis, and earthquakes often require seamless regional cooperation.
6. **High-Quality Infrastructure Investment:** Ensure that infrastructure projects funded through initiatives like the Partnership for Global Infrastructure and Investment (PGII) offer transparent, high-standard, and sustainable alternatives to debt-trap financing. The focus should be on building connectivity that benefits the host nation, not just the donor nation.
7. **Empowering Smaller States:** Providing smaller Indo-Pacific and Indian Ocean nations with expanded, reliable options for both economic development and military capacity building.
8. **Securing Key Tech Frameworks:** Regional partners must formalize strict technological standards regarding Artificial Intelligence (AI), quantum computing, and semiconductors. Agreements must actively restrict critical technology transfers to volatile or non-transparent actors.
9. **Diversifying Away From Over-Reliance on the USA**: Given the demonstrated volatility in US commitment, the region's middle powers need to:

- **Deepen middle-power coalitions**: Japan-India, Japan-Philippines, Australia-Indonesia, and similar bilateral/plurilateral ties should be strengthened as insurance against US unpredictability.
- **Expand intra-Asian economic architecture**: Leaning further into CPTPP and RCEP as parallel economic anchors reduces dependence on the stalled IPEF trade pillar.

Conclusion: The Indo-Pacific region represents the epicenter of 21st-century geopolitics, where economic prosperity, security challenges, and strategic competition converge to shape the future global order. However, the major stakeholders in the region need to focus on building resilient, flexible, multi-stakeholder architecture that doesn't depend on any single power's constancy & keeping the region's founding "free, open, inclusive" ethos intact rather than sliding into rigid bloc politics.

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India-Japan Relationship – Significance & Challenges – Explained Pointwise

India and Japan share a **Special Strategic and Global Partnership** anchored in shared democratic values, economic cooperation, and a common Indo-Pacific vision. The recent visit of Japanese Prime Minister **Sanae**

Takaichi to India for the 16th Annual Summit further deepened collaboration in defence, artificial intelligence, critical minerals, semiconductors, energy security, and resilient supply chains.

How has the India-Japan Relationship evolved?

Ancient Period	• India and Japan share a historical close relationship that has existed since ancient times. • The exchange is said to have begun in the 6th century when Buddhism was introduced to Japan. • Indian culture, through the influence of Buddhism, has had a profound impact on Japanese culture.
Foundation Period (1950-1990)	• Diplomatic relations established in **1952**. • In the aftermath of World War II, India stood out by refusing to attend the **San Francisco Peace Conference** in 1951, choosing instead to sign a separate, bilateral peace treaty in 1952 that waived all reparation claims against Japan. • Japan supported India's post-independence development through Official Development Assistance (ODA). • Relations remained limited due to Cold War alignments.
Post-Cold War Realignment (1991-2000)	• Japan assisted India during the **1991 Balance of Payments crisis**. • Relations temporarily cooled after India's **1998 nuclear tests** due to Japanese sanctions but gradually normalized by 2000.
Strategic & Global Partnership (2000-2014)	• The partnership was formally elevated to a "**Global Partnership**" in 2000, and later to a "**Strategic and Global Partnership**" in 2006. • PM Shinzo Abe delivered his historic speech to the Indian Parliament in 2007, introduces the concept of the "**Indo-Pacific**", and laid the intellectual blueprint for the **Quadrilateral Security Dialogue (Quad)**. • Implementation of the **Comprehensive Economic Partnership Agreement (CEPA)** in 2011.
Special Strategic & Global Partnership (2014-2020)	• The partnership was elevated to a "**Special Strategic and Global Partnership**" in 2014. • Deep alignment under the "**Free and Open Indo-Pacific" (FOIP)** vision.

	• Agreement signed for the **Mumbai-Ahmedabad High-Speed Rail** (Bullet Train) project using Japanese Shinkansen technology.
Indo-Pacific & Technology Partnership (2020-Present)	• Cooperation expanded under the Quad, resilient supply chains, semiconductor collaboration, digital technologies, green energy, and defence interoperability. • Japan has emerged as one of India's most trusted strategic partners amid changing regional geopolitics.

What are the key areas of cooperation between India and Japan that strengthen their bilateral relationship?

1. **Geopolitics & Maritime Security**:
    - **Strategic Convergence:** Joint efforts focus on linking India's **MAHASAGAR** (Mutual and Holistic Advancement for Security and Growth Across Regions) and **IPOI** (Indo-Pacific Oceans' Initiative) with Japan's **Free and Open Indo-Pacific (FOIP)** framework.
    - **The Quad:** India and Japan, along with the US and Australia, drive the Quad agenda, prioritizing infrastructure, maritime domain awareness, and humanitarian assistance in the Indo-Pacific.
    - **The "2+2" Dialogue:** Highly institutionalized ministerial-level interactions (Foreign and Defense Ministers) provide regular strategic reviews, with the 4th round scheduled in Tokyo later this year.
2. **Defence Cooperation**:
    - **Defense Co-Development:** Bilateral defense technology achieved a massive milestone with the finalization of technical designs for the **UNICORN (Unified Complex Radio Antenna)** masts for the Indian Navy – marking their first physical defense co-development program.
    - **Logistics & Maintenance:** Under the **Reciprocal Provision of Supplies and Services (RPSS)** pact, both militaries share logistics. New 2026 agreements are expanding this into naval **Maintenance, Repair, and Overhaul (MRO)** cooperation in the Indian Ocean.
    - **Tri-Service Exercises:** Regular combat interoperability is sustained via annual joint exercises, including **Dharma Guardian** (Army), **Shinyuu Maitri** (Air Force), and **JIMEX/Malabar** (Navy).
3. **Economic Cooperation**:
    - **Bilateral Trade**: Faced with unpredictable global trade routes, the **India-Japan Joint Declaration on Economic Security Cooperation** focuses heavily on reducing dependencies on single nations.
    - **The Semiconductor Hub:** Leading Japanese firms have integrated into India's semiconductor landscape. **Renesas Electronics** is launching mass production at its Gujarat plant this year, while **Tokyo Electron (TEL)** partnered with Tata Electronics to build front-end fabrication ecosystems.
    - **Critical Minerals:** Joint exploration and processing agreements secure the rare earth minerals required for green technology and electronic hardware manufacturing.

- **Industrial Competitiveness:** Under the India-Japan Industrial Competitiveness Partnership (IJICP), 12 targeted working groups manage manufacturing standards across logistics, textiles, and automotive sectors.

4. **Artificial Intelligence:** The Japan-India AI Cooperation Initiative (JAI) was reinforced at the 2026 summit with an explicit framework for trusted AI governance, open-source multilingual model training, and a digital corridor infrastructure.
5. **Space Frontier:** The Indian Space Research Organisation (ISRO) and the Japan Aerospace Exploration Agency (JAXA) are jointly developing the **LUPEX (Lunar Polar Exploration) Mission** to launch a rover to explore the Moon's south pole.
6. **Urban Mass Transit:** Beyond the flagship Mumbai-Ahmedabad High-Speed Rail (Bullet Train), Japan is heavily financing phase expansions of the **Mumbai Metro (Line 11)** and **Bengaluru Metro (Phase 3).**
7. **Human Resource Mobility:** Talent exchange programs like the Technical Intern Training Programme (TITP) and Specified Skilled Worker (SSW) bridge employment demands. Japan is inviting **500 highly skilled Indian AI professionals** to Tokyo by 2030 to build cross-border tech synergy.

Other Areas of India-Japan Cooperation

- **Healthcare**: In view of the similarities between the goals and objectives India's AYUSHMAN Bharat Programme and Japan's AHWIN, both sides had been consulting each other to identify projects for collaboration. Both sides have concluded a MoC to formalize cooperation in the field of Healthcare.
- **Act East Forum**: It was established in 2017 and aims to provide a platform for India-Japan collaboration under the rubric of India's '**Act East Policy**' and Japan's '**Free and Open Indo-Pacific Vision**'. The objective is to coordinate developmental projects in North-East India in areas of connectivity, forest management, disaster risk reduction and capacity building.
- **Supply Chain Resilience Initiative (SCRI)**: The Trade and Economy Ministers of **India, Japan and Australia** launched the (SCRI) in April 2021. The initiative seeks to **enhance the resilience of supply chains** in the Indo-Pacific Region and to develop dependable sources of supply and to attract investment.
- **Disaster Risk Reduction**: India and Japan signed an MoC in the field of Disaster Risk Reduction in 2017. India and Japan have jointly organized a series of workshops to exchange information on policy and measures on disaster risk reduction.

What are the issues limiting India-Japan Relationship?

1. **Trade Deficit:** Total bilateral trade for FY2025–26 stood at a modest **$27.48 billion –** vastly eclipsed by both nations' trade volumes with China. Furthermore, the trade is heavily skewed in Japan's favor; India exported only $6.04 billion while importing $21.44 billion, leading to a steep **$15.39 billion trade deficit.**
2. **Non-Tariff Barriers (NTBs):** Despite the Comprehensive Economic Partnership Agreement (CEPA) eliminating tariffs on over 94% of items, India's core competitive sectors – **pharmaceuticals (generic**

drugs) and agriculture – face rigid Japanese phytosanitary (plant health) standards and complex regulatory hoops. For e.g. procedural and quarantine lapses regularly disrupt agricultural exports like premium Indian mangoes.

3. **Strategic & Diplomatic Divergence:** India prizes **"strategic autonomy,"** maintaining historical trade and defense ties with Russia. Conversely, Japan is tightly integrated into the US alliance system and enforces strict G7 sanctions against Russia, which occasionally misaligns their multilateral approaches.
4. **Defense Co-production Hurdles:** Although military ties are growing, technology transfers and joint manufacturing remain slow. Stricter regulations surrounding Japan's historic defense export bans have stalled major joint projects like the ShinMaywa US-2 amphibious aircraft procurement.
5. **Infrastructure Delays:** Mega-projects utilizing Japanese technology – such as the **Mumbai-Ahmedabad High-Speed Rail** (bullet train) – have suffered significant timeline extensions due to land acquisition challenges and complex regulatory compliance.
6. **Limited People-to-People and Cultural Ties**: Compared to the robust economic and strategic frameworks, the flow of tourism, academic exchange, and cultural understanding between the two populations remains relatively modest. This lack of deep grassroots connection can sometimes result in a lack of mutual social and cultural understanding, which is essential for sustaining a "Special" partnership over the long term.

What steps can be taken to further deepen India-Japan Relationship?

1. **Economic and Supply Chain Resilience**: Accelerating the review of the Comprehensive Economic Partnership Agreement (CEPA) to boost bilateral trade and promote over $67 billion in Japanese private investment in India over the next decade. Accelerating the pending review of the **Comprehensive Economic Partnership Agreement (CEPA)** and resolving regulatory and non-tariff barriers is critical.
2. **Critical Tech & AI Initiatives:** Formalize the first-ever co-development project, the **UNICORN naval radio antenna system.** Japan's recent relaxation of defense export rules creates a major opening for industrial collaboration.
3. **Defense and Security Co-development:** Expanding joint naval exercises and implementing the historic defense co-development agreement to jointly produce advanced military hardware under India's Make in India framework.
4. **People-to-People Mobility:** Achieve the **Action Plan for the exchange of 500,000 personnel in 5 years**, including 50,000 skilled Indian workers heading to Japan. Focus on Japanese language training and sector-specific skilling to improve integration and success rates.
5. **Energy & Clean Tech:** Collaborate on energy resilience, including strategic stockpiling and clean energy initiatives. Launch the **India-Japan Cooperative Biogas Initiative** to build 1,000 plants in India. Explore cooperation on **Small Modular Reactors (SMRs)** as a potential "game-changer" in clean energy.
6. **Political Cooperation**: Conduct regular **"2+2" dialogues** between foreign and defense ministers. Activate the **India-Japan Act East Forum** to ensure strategic follow-through on projects, especially in the Northeast.

Conclusion:

India and Japan are great democracies and aim at the ideals of a value-based order. The need to form the rules-based order was needed to tackle Chinese assertiveness and expansionism in the Indo-Pacific region. Further, India and Japan aim to form a new security architecture which mainly covers maritime security and cooperation. Therefore the deepening of India Japan relationship is not only important for the two countries, but also for the Indo-Pacific region and will encourage peace, prosperity and stability for the world. It is time to consolidate this shared heritage and to cooperate for a better and more prosperous tomorrow & achieve the potential of the '**confluence of two seas**'.

Syllabus: GS II, India and its Neighbourhood relations
Source: Indian Express, Ministry of External Affairs, ORF, Ministry of Foreign Affairs, Japan

India's Fisheries Sector – Significance & Challenges – Explained Pointwise

India ranks as the world's second-largest fish-producing nation, accounting for approximately **8%** of global output. The fisheries sector constitutes a vital component of national food security, employment generation, and income enhancement, particularly across coastal and rural economies. Reflecting its growing structural significance, fisheries account for nearly **7.43%** of Agricultural Gross Value Added (GVA), the highest share among the agriculture and allied sectors. In this regard, let us understand the significance of the fisheries sector & the challenges that it is presently facing, as well as the various policy intervention provided to promote its growth.

What is meant by the fisheries sector?

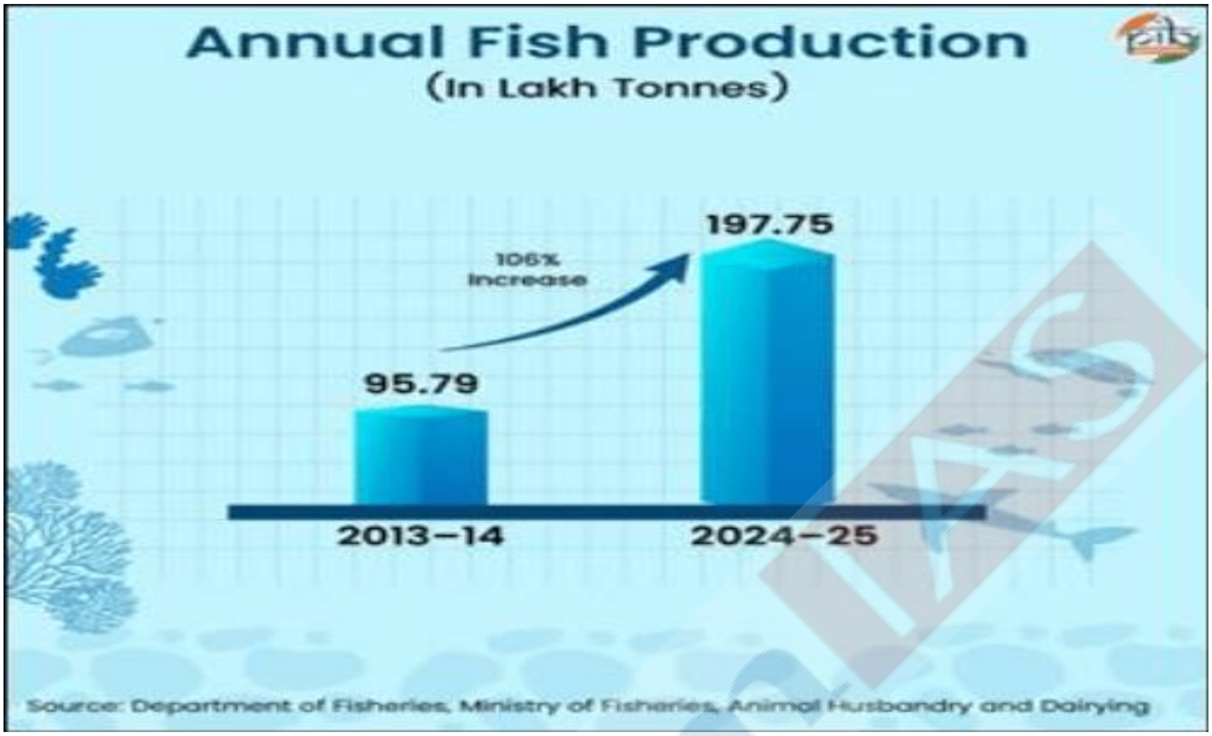
- The **fisheries sector** is a vital part of the global economy and food system. It involves the **harvesting, processing, distribution, and management of fish and other aquatic organisms** such as crustaceans (shrimp, crabs), mollusks (oysters, clams), and aquatic plants.
- Fisheries sector includes:

Marine Fisheries	Capture of fish from the seas and oceans: ○ **Coastal Fisheries:** Traditional and mechanized fishing within the territorial waters. ○ **Deep-Sea Fishing:** Operates in the **Exclusive Economic Zone (EEZ)** and high seas. ○ **Mariculture:** The farming of marine organisms in the open ocean or enclosed sections of the ocean.

Inland Fisheries	Largest contributor to India's total fish production (roughly **70%**).
	○ **Capture Fisheries:** Harvesting fish from open water bodies like rivers, canals, lakes, and reservoirs.
	○ **Aquaculture:** Farming of fish and aquatic organisms under **controlled conditions:**
	  ○ **Freshwater Aquaculture:** Farming in man-made ponds and tanks.
	  ○ **Brackishwater Aquaculture:** Farming in water that has more salinity than freshwater but less than seawater.

What is the current status of the fisheries sector in India?

- India has one of the world's largest inland reservoir networks, spanning approximately **31.5 lakh hectares,** offering significant potential for expanding inland fisheries.
- India's extensive coastline of over **11,099 km** and an Exclusive Economic Zone (EEZ) of approximately **24 lakh square kilometres** sustain the livelihoods of more than **50 lakh members** of the fishing community across 13 maritime States and Union Territories.
- Backed by sustained interventions, total fish output more than doubled from **95.79 lakh tonnes** in **FY 2013–14** to **197.75 lakh tonnes** in **FY 2024–25**, reflecting a **106%** increase over the period.



Source: PIB

Concurrently, seafood exports expanded significantly, reaching **₹62,408 crore** in **FY 2024–25**. Frozen shrimp remains the dominant export commodity, with the United States and China serving as key markets, highlighting the sector's expanding scale and growing global competitiveness.

Source: PIB

Marine Fish Stock Status of India:

ICAR–Central Marine Fisheries Research Institute (CMFRI) has assessed the status of India's commercially important marine fish stocks using scientific stock assessment methods. Some of the key findings are:

- **91.1% of the 135 commercially important fish stocks** assessed in 2022 were found to be **biologically sustainable**, indicating that current exploitation levels are generally within sustainable limits.
- Around **8.9% of the assessed stocks** were found to be **overfished or undergoing overfishing**, highlighting the need for targeted conservation and fishery management measures.
- CMFRI highlighted immense potential in seaweed farming, identifying **333 prospective seaweed farming sites** covering nearly 23,950 hectares. While India's current production is minor, the report noted it could provide substantial alternative revenue for coastal communities.

What is the significance of the fisheries sector and aquaculture?

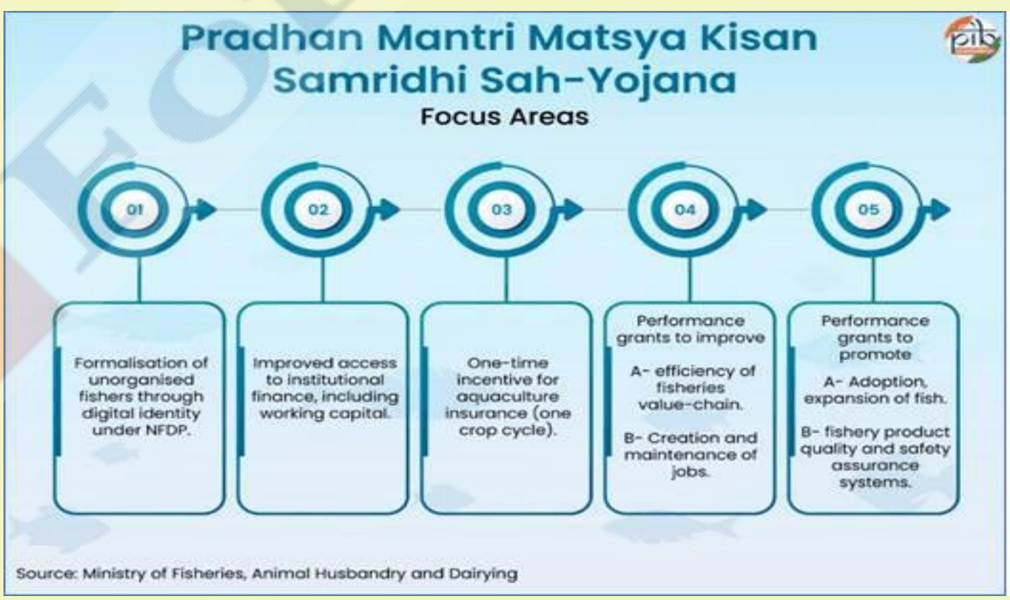
1. **Food & Nutrition Security:** Fish is an affordable and accessible source of animal protein, vitamins, and omega-3 fatty acids, making it essential for combating malnutrition in rural and coastal communities. The sector is often vital to the dietary habits of vulnerable and marginalized populations.
2. **Economic Growth & Exports:** Fisheries are one of the fastest-growing allied agricultural sectors, contributing about 6.24 billion (₹62,408 crore) in seafood exports in recent years. India is a leading exporter of shrimp globally. The sector also contributes roughly 1-2% to the national GDP and nearly 7.5% to the Agricultural Gross Value Added (GVA).
3. **Livelihoods & Employment:** Providing income for more than 28 million fishers, fish farmers, and allied workers, the industry is a massive driver of rural development. It supports vital supplementary incomes for marginal farmers and provides active roles for women in processing, value-addition, and marketing. It strengthens rural and coastal economies and provides supplementary income to farmers.
4. **Resource Utilization & Potential:** India is blessed with vast resources, including over 8,000 km of coastline, vast estuaries, and millions of hectares of inland reservoirs and tanks. Modern aquaculture – such as brackish-water shrimp farming, cage culture, and advanced techniques like Recirculating Aquaculture Systems (RAS) – helps turn underutilized and even wastelands into highly productive assets.
5. **Empowering Women:** Aquaculture and fish processing are highly inclusive, providing significant employment and financial independence to women, who make up a large percentage of the post-harvest workforce (Women constitute **55-62% of the workforce**, especially dominant in post-harvest and processing operations (62%)).
6. **Biodiversity Protection:** Effective management of the sector – like implementing the sustainable practices outlined by institutes like CMFRI – ensures marine ecosystems remain balanced and resilient against climate change.
7. **Poverty Alleviation & Equity:** Fisheries sector provides supplementary income to small and marginal farmers. It offers livelihood options for landless and vulnerable communities through community-based or cage farming.
8. **Environmental & Ecosystem Benefits:** Fisheries sector:
    - Supports aquatic biodiversity when managed sustainably.

- Promotes carbon sequestration and coastal resilience through mangrove-linked systems.
- Reduces pressure on wild fish stocks, aiding marine conservation.

What issues are being faced by the fisheries sector and aquaculture?

1. **Overexploitation & Resource Sustainability**:
   - Although official data indicate that most of India's marine fish stocks are sustainable, the Food and Agriculture Organization (FAO) argues that India's marine fish production has reached a plateau, as most major fish stocks are already fully exploited. Scientific data indicates that 4.4% of India's fish stocks are already overfished, with another 8.2% under intense pressure. The situation is critical along the northwest coast, where **54.2% of fish stocks are overfished.**
   - Small-scale, mechanized trawling has caused significant seabed damage, and coastal states often **lack sufficient staff/patrol boats** to enforce the 5-nautical-mile no-trawling zone meant to protect inshore ecosystems.
2. **High Post-Harvest Losses**: Despite a 167% surge in inland aquaculture production to nearly 4 million tonnes, the sector suffers from high **Fish Loss and Waste (FLW)**. Marine fish losses have climbed to over 10%, while dry fish losses are critically high at 37%. These losses stem from inadequate cold-chain capacity, poor handling practices, and unhygienic landing sites.
3. **Lack of Export Market Diversification**: India exports **95% of its shrimp to the US and European markets**, creating a dangerous vulnerability. Potential tariff actions, like those from the US, could deliver a **50% blow** to the shrimp sector.
4. **Devastating Climate Change Impacts**:
   - Increased frequency of cyclones and unpredictable rainfall patterns disrupt fishing days and damage inland ponds. Rising sea surface temperatures are causing species like sardines and mackerel to shift their distribution, moving deeper or further north, which makes them harder for traditional boats to reach.
   - In 2025, unseasonal rains and cyclones in Palghar, Maharashtra, destroyed dried fish stocks worth an estimated **₹100 crore**, pushing over 1,00,000 fisherfolk to the brink. Despite being granted agricultural status, these fishing communities are often denied disaster relief packages available to farmers, leaving them with negligible compensation that fails to cover losses.
5. **Inshore Degradation and Destructive Fishing:** While deep-sea or overall fish stocks might occasionally show healthy numbers, **inshore coastal ecosystems are facing severe depletion**. The widespread use of non-selective bottom trawling destroys benthic habitats and results in massive amounts of "bycatch" (accidental capture of non-target, juvenile, or endangered species).
6. **Limited Value Addition**: India primarily exports raw frozen shrimp, missing out on the 30-40% additional value that competitors like Vietnam capture through processing. This is due to inadequate cold-chain capacity, inconsistent farm supply, and weak integration between farmers, processors, and exporters.
7. **Slow Adoption of Advanced Technology:** While high-tech solutions like **Recirculating Aquaculture Systems (RAS)**, AI-driven feeding, and automated water-quality monitors exist, their high initial capital costs keep them out of reach for the vast majority of traditional farmers.
8. **High Input Costs:** Feed constitutes nearly **70% of production costs**. Rising prices of fishmeal and ingredients make it difficult for small farmers to maintain profitability.
9. **Global Competition:** India faces stiff competition from countries like Vietnam and Ecuador, which have more integrated cold chain systems and lower shipping tariffs.

What are the various government initiatives aimed at promoting the fisheries sector in India?

Blue Revolution	**The Blue Revolution**, launched in 2015, seeks to increase fish production and strengthen the fisheries value chain across inland and marine sectors by enhancing productivity, expanding infrastructure, and promoting modern practices. To build on these efforts and further advance post-harvest management, traceability, fisher welfare, and market linkages, the Government launched the **Pradhan Mantri Matsya Sampada Yojana** (**PMMSY)** in **2020** to accelerate the sector's transformation.
Pradhan Mantri Matsya Sampada Yojana (PMMSY)	The PMMSY seeks to enhance **fish production and productivity,** upgrade quality standards, promote technological modernisation, strengthen post-harvest infrastructure, and improve fisheries governance. The scheme prioritises technology-driven aquaculture systems that improve productivity while optimising resource use. It promotes high-density, water-efficient models such as **Recirculatory Aquaculture Systems (RAS)** and **Bio-floc technology**, which enhance output, maintain quality, enable nutrient recycling, and support environmentally sustainable fish farming.
Pradhan Mantri Matsya Kisan Samridhi Sah-Yojana (PM-MKSSY)	The **Pradhan Mantri Matsya Kisan Samridhi Sah-Yojana (PM-MKSSY)** is a Central Sector sub-scheme implemented under the umbrella of the **PMMSY.** The scheme facilitates the structural transformation of the fisheries sector by advancing formalisation, **expanding insurance coverage, strengthening access to institutional finance, and promoting quality assurance** and **traceability** across the fisheries value chain. 

Kisan Credit Card for Fisheries	The Kisan Credit Card (KCC) scheme has become a pivotal instrument for advancing **financial inclusion** within India's agrarian economy. Structured to provide timely and affordable access to working capital, it enables farmers to finance the purchase of critical inputs and meet liquidity requirements for crop cultivation and allied activities. Since 2019, the scope of the scheme has been expanded to include animal husbandry, dairy, and fisheries. The Government has raised the lending limit under the KCC scheme for fisheries from **Rs 2 lakh to Rs 5 lakh**, thereby improving access to credit for **fishers, farmers, processors, and other stakeholders.**
Fisheries and Aquaculture Infrastructure Development Fund (FIDF)	FIDF was launched in 2018–19 to strengthen infrastructure across marine and inland fisheries and promote sustainable sectoral growth. The scheme offers a **credit guarantee cover**, helping fishers and entrepreneurs access much-needed credit with lower financial risk. It also provides an **interest subvention** of up to **3% per year.**
National Policy on Marine Fisheries (NPMF), 2017	Provides a comprehensive framework for **sustainable development, management, and conservation** of marine fisheries — the policy backbone for stock sustainability efforts.
Marine Fisheries Census 2025	The National Marine Fisheries Census (MFC) 2025, launched in **2025**, represents a significant advancement toward fully digital, georeferenced data collection in India's fisheries sector.
Mission Amrit Sarovars	Under Mission Amrit Sarovar, the Government has facilitated the development of **~70,000 Amrit Sarovars**, including **1,222 water bodies** integrated with fisheries activities, thereby promoting fish culture, livelihood diversification, and the enhancement of aquatic ecosystems – thus, tapping the immense potential of inland fisheries in India.
Blue Economy and Deep-Sea Fishing Framework	The government introduced a dedicated enabling framework to sustainably harness fisheries from the **Indian Exclusive Economic Zone (EEZ) and the High Seas.** Special focus and financial resources are being funneled into the Andaman & Nicobar and Lakshadweep Islands to build modern marine hubs.

	Financial assistance is provided to traditional fishers to upgrade their vessels or transition from over-exploited near-shore waters into deep-sea resource fishing.

What should be the way forward?

1. **Deep Sea Fishing and EEZ Utilization**: With near-shore waters facing overexploitation, attention is increasingly shifting towards deep-sea fishing. This requires investment in Blue Economy hubs in the Andaman & Nicobar and Lakshadweep Islands to support deep-sea fishing fleets. However, the FAO estimates that exploiting deep-sea resources would yield only a marginal increase in overall fish production.
2. **Prioritising Community-Led Models:** Fishermen Cooperative Societies and Fish Farmer Producer Organizations (FFPOs) will be given priority for deep-sea fishing operations. This empowers small-scale fishers by enabling them to access high-value resources like tuna.
3. **Good Aquaculture Practices (GAqP):** Implementing traceability standards from "pond to plate." This ensures that Indian seafood meets the stringent quality requirements of markets like the EU and USA, reducing the risk of export rejections.
4. **Climate Resilience and Sustainability:**
   - **Species Diversification:** Moving beyond just shrimp and carp to high-value species like seaweed, tilapia, and sea bass which are more resilient to changing water temperatures.
   - **Integrated Multi-Trophic Aquaculture (IMTA):** Encouraging systems where the waste of one species (like fish) becomes the food for another (like seaweed or shellfish), creating a circular and eco-friendly farm model.
   - **Stricter Trawling Regulations:** Phasing out destructive bottom trawling in ecologically sensitive zones and introducing stricter enforcement of seasonal fishing bans using satellite monitoring.
5. **Move from Volume-Driven to Value-Driven Growth**: Shift export composition away from raw frozen shrimp (currently 70%+ of earnings) toward **processed, ready-to-eat, and higher-margin seafood products** – reducing vulnerability to tariff shocks like the recent US duty hikes.
6. **Diversify Export Markets**: Reduce overdependence on the US and China by actively developing markets in the **EU, Southeast Asia, Middle East, and Africa**, cushioning against demand shocks or trade policy shifts in any single market.

Conclusion: The fisheries sector is a critical contributor to India's economy, supporting the livelihoods of nearly three crore people, particularly among marginalised coastal and inland communities. If we are able to address the challenges faced by the sector then we will be able to move towards a more inclusive and resilient blue economy while contributing meaningfully to achieving **Sustainable Development Goal 14:** Life Below Water by sustainably managing fisheries and aquaculture.

UPSC GS-3: Agriculture
Read More: PIB, The Hindu

Ethanol Blending Programme – Significance and Challenges – Explained Pointwise

India's Ethanol Blended Petrol (EBP) Programme successfully achieved its 20% blending target (E20) ahead of schedule. However, citing consumer pushback over vehicle mileage loss, engine compatibility issues for older fleets, and the need for broader vehicle technical validations, the government is deferring its proposed shift to the higher E25 blend. In this regarded let us examine the significance & challenges of the ethanol blending programme of the government.

What is the Ethanol Blending Programme?

Ethanol Blending Programme:

- Ethanol Blended Petrol (EBP) Programme has emerged as a key pillar of India's energy transition and biofuel strategy. It aims to improve energy security, support farmers, and reduce environmental impacts. The programme also promotes greater use of domestically produced renewable fuel.
- Under the EBP Programme, ethanol blending has increased from less than 1.5% in 2013-14 to **20%** in 2025-26. India achieved the 20% blending target five years ahead of schedule.
- To support the programme, ethanol production capacity has expanded nearly fivefold, from 421 crore litres in 2014 to about 2,000 crore litres in 2026.
- From 2014-15 to May 2026, the EBP program led to an estimated:
    - **₹1.90+ lakh crore** saved in foreign exchange.
    - **310+ lakh metric tonnes** of crude oil substituted.
    - **~930 lakh metric tonnes** of CO_2 emissions reduced.
    - **₹1.60+ lakh crore** in additional farmer earnings.

Sources of Bio Ethanol Production in India:

Sugarcane	Sugarcane gives rise to three main related products, in the order of decreasing sugar content. a. Sugarcane juice and syrup b. B-heavy molasses c. C-heavy molasses (Sugarcane juice and syrup, and B-heavy molasses typically go into making sugar, as they have higher sugar content.) In a bid to up the ethanol production, the government had started permitting the diversion of Sugarcane juice and syrup, and B-heavy molasses. However, in December 2023, the government restricted the diversion of Sugarcane juice, syrup, and B-heavy molasses, over fears of falling sugar stocks.
Maize	The use of maize for ethanol blending has been increasing to produce more fuel ethanol to compensate for restrictions on using Sugarcane juice, syrup, and B-heavy molasses.
Surplus rice & damaged grains	Surplus rice and damaged grains have been permitted by the government for use as a feed in grain-based distilleries.

Ethanol for blending

With the government restricting the use of B-heavy molasses and sugarcane juice for ethanol production from December 2023, grain-based ethanol production has increased to maintain blending percentages

Ethanol supplied to oil marketing companies

Supply-year	C-heavy molasses	B-heavy molasses	Sugarcane juice	Surplus rice	Damaged grains	Maize	Total in litre crore; blending % in brackets
2019-20	74	68	15	0	16	0	173 (5.00)
2020-21	39	183	39	2	39	0	302 (8.10)
2021-22	11	265	85	49	24	0	434 (10.02)
2022-23	6	235	128	74	32	32	506 (12.06)
2023-24*	39	95	56	0	76	135	401 (13.00)

Supply years are December-November, December to October for 2022-23 and November to October for 2023-24 *Data available only for November-June

Source- The Hindu

Biofuels

- Biofuels are the fuel derived from the biomass of plants or animal wastes. It is commonly produced from corn, sugarcane and animal waste like cow dung.

Generation of biofuels

1st Generation Biofuel	Produced from edible items like sugar,corn,starch.	Higher carbon content and emit greenhouse gases.
2nd Generation biofuel	Produced from leftover food crops like rice husk, wood chips	Greenhouse content less than 1st generation biofuel
3rd Generation biofuel	Produced from microorganisms like algae.	Carbon Neutral (CO_2 emitted=CO_2 sequestered)
4th Generation biofuel	Produced from genetically engineered crops like GM crops	Carbon Negative

Common biofuels used

Bioethanol	Produced from corn and sugarcane using fermentation process. E10 is the most common blend in which 10 per cent composition is Ethanol
Biodiesel	Produced from vegetable oils like soybean oil or palm oil, vegetable waste oils and animal fats using transesterification process.
Biogas	Produced from organic matter like sewage from animals and humans by anaerobic decomposition.

Created- Forum IAS

What is the significance of Ethanol Blending Programme?

1. **Bolsters India's Energy security:** India has a high dependence on imported fuel to meet its energy needs. India has over **88.5% crude oil import dependence**. Such high import dependence, makes India's energy security vulnerable to global events like the Russia-Ukraine war or Blocking of Strait of Hormuz. Ethanol blending programme reduces India's dependence on imported oil, and in turn bolsters the energy security.
2. **Import Substitution:** Ethanol blending can help in strategically reducing the dependence on imported fossil fuels and conserve foreign exchange reserves. As blending levels rise, India conserves substantial foreign exchange (over ₹1.4 lakh crore saved in the last decade) and substantially lowers its annual

import bill. For E20 (20% ethanol), the annual savings are projected at $4 billion, directly improving the current account balance.

3. **Reduction of emissions:** Ethanol is a cleaner-burning fuel. Ethanol-blended fuels significantly reduce CO2 emissions, carbon monoxide, hydrocarbons, and particulate matter compared to pure petrol. As per NITI Aayog, petrol blended with 20% ethanol would reduce carbon monoxide emissions by 50% in two-wheelers and 30% in four-wheelers.
4. **Bolstering Rural Economy and Farmer's Income:** It bolsters the rural economy by promoting the cultivation of various crops (like maize, paddy) through an assured market. The programme has transformed farmers into "**Urjadaatas**" (energy providers). It has helped eliminate sugarcane payment arrears, improved the viability of maize cultivation.
5. **Job Creation:** The setting up, operation, and supply chains of the distilleries have created hundreds of thousands of green jobs in rural and semi-urban semi-industrial areas. As per the Asian Development Bank (ADB), the ethanol blending programme can help in generating about 18 million rural jobs in India.
6. **Ethanol is a High-Performance Fuel**: Ethanol is a high-octane fuel, with a research octane number of about 108.5, compared to 84.4 for petrol. E20 raises the effective octane rating of Indian petrol to around 95, improving combustion in modern engines. Vehicles calibrated for E20 can deliver better acceleration, smoother performance, and lower emissions.
7. **Aligning with Global Best Practices**: Ethanol blending is not unique to India. The United States has standardised E10 and is expanding E15, while Brazil, a global leader, mandates **E27** and targets 30%. India's achievement of **20% blending (E20)** by 2025-26, a full five years ahead of its original 2030 target, places it among leading nations in adopting this fuel strategy.

Read More- Significance of Biofuels-Explained,Pointwise

How has ethanol blending been adopted across different countries around the world?

Ethanol blending is now a globally accepted practice. Several major economies have built ethanol firmly into their fuel strategy such as:

Brazil	Brazil remains the global leader in ethanol use. It currently mandates E27 as its standard petrol blend. This is being raised further to around 35 percent. Over 80 percent of new cars sold are flex fuel vehicles. These run on E27, E30, or pure hydrous ethanol.
United States	E10 is the standard ethanol blended fuel nationwide. E15 is expanding rapidly, backed by the US government. Millions of vehicles are already flex fuel capable. These can run on blends as high as E85.
France	France has emerged as a unique market due to the legalization and subsidization of "E85 conversion kits." Drivers can install a small electronic box under the hood of normal petrol cars to safely run on **E85** (85% ethanol), which is taxed much lower than regular fuel.

European Union	Most member states use **E5** or **E10**, with the average blend rate projected to be around **8.2% by 2033.**

What are the Challenges to Ethanol Blending Programme in India?

1. **Vehicle Compatibility and Consumer Concerns**: A significant challenge is the suitability of India's existing vehicle fleet for higher ethanol blends. Since the rollout of E20 (20% ethanol), there have been complaints from motorists about reduced fuel efficiency and performance issues, particularly in older vehicles not originally designed for higher ethanol content. Also, vehicle owners in India currently do not have an option to choose different fuels at the petrol pump.
2. **Lower Energy Density:** Ethanol has lower calorific value than petrol i.e. ethanol contains less energy per liter than pure petrol, resulting in decreased fuel mileage with higher blends.
3. **Logistics and Storage**: The infrastructure for storing and transporting different ethanol blends (E10, E20, etc.) is a growing challenge. Ethanol cannot be handled like standard petroleum. Because it absorbs water easily, it cannot be transported through existing underground petroleum pipelines, which always contain trace amounts of moisture. Also, India's storage capacity for blended fuels is far behind its consumption needs.
4. **Financial vulnerability of Sugar Mills:** The lack of financial stability of the sugar mills to invest in biofuel plants, and their heavy concentration in certain regions, poses a significant challenge to the Ethanol Blending Programme.
5. **Barriers to inter-State movement of ethanol:** The Central government amended the Industries Development and Regulations Act to ensure smooth implementation and transportation of Ethanol across the country. But only 14 states have implemented the amended provisions. As a result, States that produce ethanol more than the requirement for blending cannot transport the ethanol to other States.
6. **Impact on India's Food security:** The diversion of food crops, such as rice for ethanol production, will hamper India's food and nutritional security ambitions. **For ex-** In 2022, close to 1 million metric tonnes of rice fit for human consumption from FCI's stocks was sold at subsidised prices to produce ethanol.
7. **Diversion of Agricultural Land:** Excessive blending target can lead to the conversion of agricultural land used for growing food crops, to cultivating biofuel feedstocks like sugarcane, corn, or oilseeds. Also, the increased cultivation of maize for ethanol can displace acreage for pulses and oilseeds, potentially increasing India's dependence on imports for these essential commodities.
8. **Intensive Water Use:** Producing ethanol from certain crops, especially rice, is extremely water-intensive. According to government data, producing one litre of ethanol from rice can require approximately **10,790 litres of water**, primarily used for irrigation. Moreover, many ethanol plants are located in already water-stressed states like Maharashtra and Uttar Pradesh, exacerbating the problem.
9. **Impact on Soil Health:** The practices of monocropping for biofuel feedstock crops (such as rice, sugarcane) can deplete the nutrients in the soil and make it infertile.
10. **Increase in Import of Agricultural Crops:** The use of crops like maize for ethanol blending increases the import bill and impacts related agricultural sectors such poultry sector and livestock feed. Poultry and livestock industries rely heavily on maize for feed (consuming roughly 60% of India's supply). Massive diversion to ethanol production has triggered price hikes in maize, indirectly raising fodder costs and hitting dairy and poultry farmers.

What should be the Way Forward?

1. **A Phased Roadmap**: To further advance the Ethanol Blending Programme, the government is evaluating a roadmap for introducing **E21 by 2027** and **E25 by 2029.** The staggered approach seeks to ensure that vehicle manufacturers, parts makers, and fuel suppliers can effectively prepare for the transition.
2. **Vehicle Compatibility:** Continued collaboration between the government, oil companies, and the automotive industry is crucial to ensure that vehicles are compatible with higher ethanol blends. Automakers need to accelerate the production of **E20 compliant vehicles**, while the government can offer incentives to encourage consumers to switch to these models.
3. **Consumer Awareness:** Persistent concerns about mileage reduction and engine damage need to be addressed with clear, consistent communication from the government and industry bodies. A minority mileage drop is acknowledged for older vehicles, but modern vehicles are calibrated for optimal performance on E20 and higher blends.
4. **Differential Pricing:** Pricing E20 (and future higher blends) slightly lower than legacy or pure petrol can offset the marginal drop in fuel mileage, incentivizing consumers to choose greener fuels.
5. **Upgrading Logistics and Storage:** The country's logistics network needs significant investment to handle the increased demand for ethanol. This includes building more dedicated storage facilities and improving transport infrastructure to efficiently move ethanol from production sites to blending units.
6. **Incentivize Flex-Fuel Vehicles (FFVs)**: The ultimate goal is to create a **multi-grade fuel ecosystem.** This would go beyond a single blend to include higher blends like **E30** and even flex-fuel options such as **E85 and E100.** These higher blends would operate alongside a dedicated fleet of flex-fuel vehicles. Offering lower GST or road tax incentives on Flex-Fuel Vehicles and retrofitting kits (similar to policies in France and Brazil) will incentivize production & adoption of FFVs.
7. **Increase in grain based distilleries:** According to the roadmap for achieving ethanol blending targets, prepared by the NITI Aayog, India must invest to increase the capacity of Grain-based distilleries from 258 to 740 crore litres.
8. **Interest Subvention Programmes:** Two interest subvention programmes should be provided for establishment of new distilleries and ramping up of ethanol generation capacity.
9. **Streamlining supply chain:** The Oil Marketing Companies (OMCs) should sign more long-term contracts with distilleries. The inter-state movement of ethanol should be facilitated to streamline supply-chain.
10. **Promotion of maize cultivation in rotation with sugarcane:** Maize is not water intensive. However, it degrades soil and cannot be the sole crop either. It should be cultivated in rotation with sugarcane to ensure that soil fertility is not degraded.
11. **Increase in fuel ethanol pricing:** Increased price support for fuel ethanol can decrease its diversion towards liquor use.

Conclusion:
Ethanol blending programme is a strategic initiative that has the potential to reduce the petroleum imports, enhance energy security & promote cleaner combustion. However, there are certain supply-side & demand-side issues which must be addressed promptly by diversifying the feedstocks, enhancing the infrastructure, introducing technological upgrades to help India in successfully completing its sustainable energy transition.

Read More- The Hindu Business Line, PIB, Indian Express

UPSC Syllabus- GS 3 Environment Conservation

Landslides – Causes, Impact and Management of Landslides in India – Explained Pointwise

Landslides are among India's most destructive natural hazards, particularly in the Himalayas and the Western Ghats. The recent landslide in Wayanad at a tunnel construction site, which claimed **at least three lives** and left several workers missing, has once again highlighted the vulnerability of ecologically fragile regions to extreme rainfall, unsafe construction practices, and inadequate disaster risk management. This catastrophe has again put the spotlight on the reports of the Madhav Gadgil Committee (2011) and the K Kasturirangan-led High Level Working Group (2013), which had recommended that these areas to be demarcated as Ecologically Sensitive Areas. However, these were met with resistance and never implemented.

What are landslides? What is the status of India's Vulnerability to Landslides?

- **Landslide:** Landslides are the downward movement of rock, soil, debris, or earth material along a slope under the influence of gravity. They occur when the stability of a slope is disturbed by natural factors such as heavy rainfall, earthquakes, volcanic activity, and erosion, or by human activities like deforestation, mining, road construction, and unplanned urbanization.
- **Types of Landslides:**

Landslide Classification

Types of Movement

Falls: Falls are rapid movements of rocks and boulders detached from steep slopes or cliffs along fractures, joints, and bedding planes.

Topple: It is the forward rotation of a mass of debris or rock out of a slope. The slope failure generally occurs at point near the base of the block of rock.

Slides: A slide is a downslope movement of material that occurs along a slip surface.

Rotational slide: In this slide the slide movement is roughly rotational about an axis which is parallel to the ground surface and transverse across the slide.

Translational slide: In this slide the landslide mass moves along a planar surface with rotation or backward tilting

Types of Materials

Rock: hard or firm mass.

Debris: 20% to 80% of the particles are larger than 2mm, and the remainder is less than 2mm".

Earth: material in which 80% or more of the particles are smaller than 2mm.

Soil: an aggregate of solid particles, generally of minerals and rocks.

Mud: material in which 80% or more of the particles are smaller than 0.06mm.

Types of flows

Debris flow: It is a form of rapid mass movement in which a combination of loose soil, rock, organic matter, slurry that flows downslope. They are commonly caused by intense precipitation or rapid snow melt.

Earth flow: It is down slope viscous flow of fine grained material saturated with water.

Mudflow: A mudflow is wet or viscous fluid mass of fine and coarse grained material flows rapidly along drainage channels.

Creep: Creep is the slow, steady, downward movement of material under gravity occurs in large area.

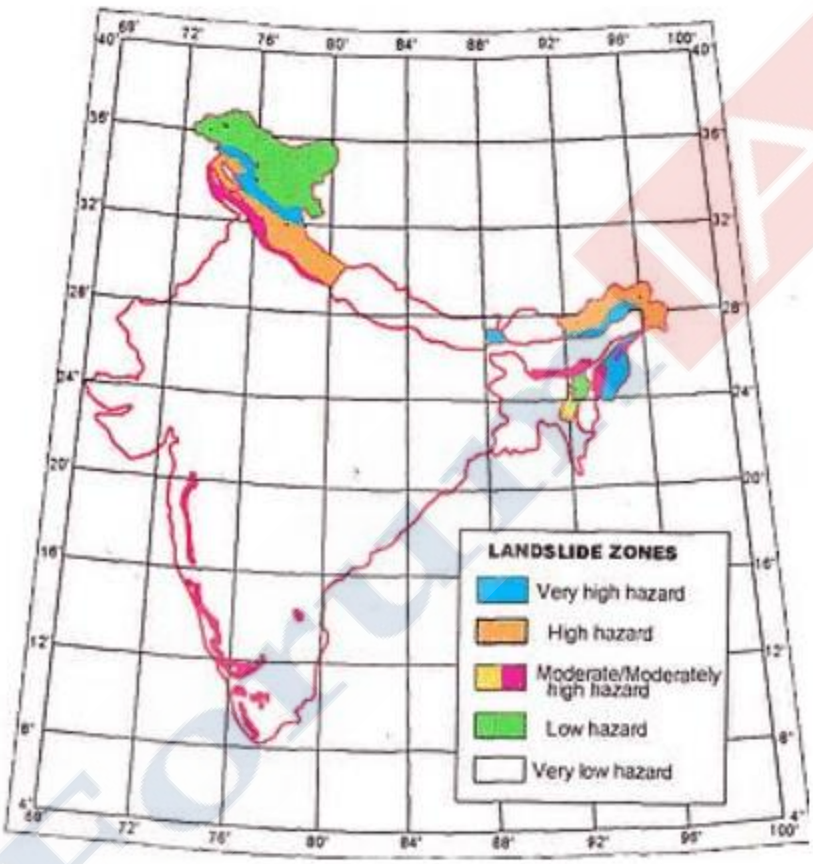
Lateral Spreads: It is the lateral movement usually occur on very gentle slopes or flat terrain. The failure is caused by liquefaction due to earthquake.

Source- ISRO Landslide Atlas of India

Vulnerability of India to Landslides:

ISRO's Landslide Atlas of India	According to ISRO's Landslide Atlas of India, India is among the top four countries with highest landslide risk. It has been estimated that loss of life per 100 km2 is greater than one.

India Landslide Susceptibility Map (ILSM) by IIT Madras	India accounts for about 8% of global fatalities due to landslides. 13.17% of the country is susceptible to landslides, and 4.75% is 'very highly susceptible'. Kerala is the most vulnerable state with over 14% of its land mass in the 'very high susceptibility' category.



Source- NDMA

Recent Incidents in India:

Wayanad (2024)	One of the deadliest landslides in India's recent history.

Created By Forum IAS

Factors behind the Wayanad Landslide:

1. Wayanad witnessed 140mm of rainfall, with some areas reporting more than 300 mm of rainfall. This rainfall was about five times more than IMD's projections.

2. Overflow in the Chaliyar river swept more sediment downstream. This was due to the fact that heavy rains in 2020 had caused the Chaliyar to strip swaths of its upstream areas of plant cover. This left more rocks and humus vulnerable to being displaced.

3. The heavy rainfall has saturated with moisture. The water reaches the rocks by flowing between the soil and the rock layers. This weakens the force that binds the soil to the rocks and triggers the movement.

4. Quarrying, linear infrastructure development, and construction activities have compromised ecosystems' ability to cope with changing natural conditions.

5. Monocropping, has resulted in the cut down of large, native trees, which serve to hold the

	topsoil to the bedrock. The replacement of these native trees with big plantation crops, such as tea and coffee having shallow roots, has increased the vulnerability. **6.** According to a study by the International Journal of Environment and Public Health, Wayanad has lost **60%** of its forests between 1950 and 2018. The erosion of the green cover has made Kerala susceptible to landslides. **7.** Climate Change has been leading to gradual warming of the Arabian Sea leading to the formation of a deep cloud system over parts of the Western Ghats.
Dharali (2025)	• Intense rainfall triggered landslides and debris flows in Uttarkashi district. • The disaster buried parts of Dharali village, causing significant casualties and widespread destruction. • Studies highlighted the role of unstable glacial deposits, extreme rainfall, and unplanned development.
Bilaspur (2025)	• Triggered by sudden, unseasonal heavy rainfall and localized thunderstorms, a major landslide struck Bilaspur city in the northern state of Himachal Pradesh.

Read More- National Landslide Susceptibility Map

What are the causes of landslides in India?

Natural Causes	1. **Heavy Rainfall:** The occurrence of heavy or continuous rainfall may lead to heavy landslides in the areas of steep slopes. Water works as a lubricating agent and loosens up the material. **For ex:** The 2013 Uttarakhand Cloudburst brought immense landslides in the region. 2. **Earthquakes:** The sudden shaking of earth's crust creates stress on materials resulting in their flow downwards. **For ex:** Tectonically active Himalayas enhance the probability of earthquakes, resulting in an increased vulnerability. 3. **Steep Slopes and Geomorphology:** Mountain slopes in regions like Uttarakhand, Himachal Pradesh, and the Konkan coast often exceed angles of 30 degrees. Gravity acting on these sheer angles naturally accelerates mass wasting. 4. **Nature of Rivers:** The youthful and mighty rivers increase the downcutting of earth on the mountain slopes. **For ex:** The increased flow in the Chaliyar river resulted in heavy sediment erosion, resulting in the Wayanad landslide catastrophe. 5. **Weathering:** The gradual, natural breaking down of rocks by wind, water, and temperature changes weakens slope stability over time.

Anthropogenic Causes	1. **Heavy Infrastructure Development:** The creation of roads, railways, dams, linear infrastructure development in the mountainous region, has resulted in increased landslides. **For ex:** The development of Konkan Railways in western ghats is considered a significant reason behind the frequent occurrences of the disaster in the region. 2. **Mining activities:** It involves removal of the surface of the earth for mineral exploration, which loosens the grip of material. **For ex:** Iron ore, bauxite, manganese, chromite, and limestone mining in the western ghats has increased the risks of this disaster. 3. **Increased Deforestation:** The cutting down of trees for agricultural and industrial activities, loosens the soil grip and makes the region more vulnerable to landslides. **For ex:** Plantation agriculture in Western ghats has resulted in loss of native trees and increased the disaster risk. 4. **Poor Drainage:** Inadequate water drainage systems in hilly regions allow water to seep deep into the slopes, artificially triggering landslides during minor rains. 5. **Unsustainable Tourism:** The rising tourist influx in the Himalayan region and Western Ghats puts greater pressure on land, as more infrastructure and amenities are needed to accommodate them. This leads to more construction and greater landslide risks. 6. **Climate change:** Anthropogenic activities has accelerated the climate change events, leading to increased glacial melts and rainfall. **For ex:** Warming of Arabian sea has resulted in increased rainfall in the Western Ghats region, leading to enhanced landslides.

What are the Impacts of Landslides in India?

1. **Loss of Lives:** The most traumatizing impact of a landslide is the loss of precious human and animal lives for e.g. in the Wayanad landslide, 298 people died.
2. **Economic Losses:** Landslide leads to enhanced economic losses as, significant amount is spent on reconstructing the lost infrastructure, rehabilitating the masses, and providing relief support to the impacted people.
3. **Infrastructural Damage and restricted Movement:** The mud, rocks, and debris moving down the slope result in infrastructural damage to houses, buildings, roads and create a barrier on critical transportation routes. This restricts the movement of goods and people.
4. **Damage to Hydropower Projects:** The immense silt and debris washed down by landslides accumulate in reservoirs, drastically reducing the operational lifespan and power-generation capacity of critical multi-purpose river and hydroelectric projects.
5. **Displacement and Migration:** Landslides force communities to evacuate and migrate. This leads to social disruption and psychological stress among affected populations.
6. **Devastation of the Tourism Sector:** In tourist-dependent states like Himachal Pradesh and Uttarakhand, recurrent landslides result in huge losses of tourism-related revenue. Travel cancellations hit local businesses, hotels, and transport operators deeply.
7. **Loss of Fertile Topsoil:** Hill communities rely heavily on terraced farming and orchards. Debris flows smother agricultural lands with rocks and sand, completely stripping the fertile topsoil and crippling long-term agricultural productivity.

What initiatives have been taken by the Government to mitigate the risks due to landslides?

National Landslide Susceptibility Mapping (NLSM)	Geological Survey of India initiated the National Landslide Susceptibility Mapping (NLSM) program in 2014 to map the landslide areas on a Macro Scale (1:50,000). The goal is to map the 0.42 million sq. km landslide-prone areas across the country.
National Landslide Risk Management Strategy (2019)	Formulated by the NDMA, it addresses all the components of landslide disaster risk reduction and management, which includes: a. Hazard mapping, monitoring, and early warning system, awareness programs. b. Capacity building, training, regulations, and policies, stabilization and mitigation.
National Disaster Management Authority (NDMA) Guidelines on Landslide Hazard Management (2009)	It proposes measures that should be taken to avoid or mitigate the risk posed by landslide hazards. Some of the guidelines are as follows: a. Delineating areas susceptible to landslide hazards. b. Encouraging implementation of successful remediation and mitigation technologies. c. Developing institutional capacity and training for geoscientists, engineers, and planners is necessary for the effective management.
National Institute of Disaster Management (NIDM)	It is a premier institute that provides capacity building support to various National and State level agencies in the field of Disaster Management & Disaster Risk Reduction.
National Landslide Forecasting Centre (NLFC)	Established by the Geological Survey of India (GSI) in Kolkata, the NLFC coordinates data directly from the Indian Meteorological Department (IMD) and the National Remote Sensing Centre (NRSC). It integrates real-time rainfall data to generate and issue regional **landslide forecast bulletins** across highly vulnerable districts.
National Landslide Risk Mitigation Project (NLRMP)	The government has approved this mega-project with a substantial financial outlay of **₹1,000 crore**. Funded by the National Disaster Mitigation Fund (NDMF), it spans **15 landslide-prone states** (including Jammu & Kashmir, Himachal Pradesh, Uttarakhand, Kerala, and Northeastern states) to scale up disaster preparedness and active slope stabilization.

What are the challenges in implementation of measures proposed for landslide Mitigation?

1. **Non implementation of Gadgil and Kasturirangan committee reports:** The Gadgil committee report proposed to regulate developmental activities in the entire 1,60,000 sq km stretch of the

Western Ghats. K Kasturirangan report recommended demarcation of 37% of the Western Ghats as an ecologically sensitive area (ESA) and complete ban on mining and quarrying in these protected zones. These reports have not been implemented with resistance by all states and parties across the political spectrum in the biodiverse region.

2. **Scale Incompatibility:** Most existing Landslide Hazard Zonation (LHZ) maps created by agencies like the GSI are at a macro-scale (1:50,000). While useful for national planning, they are completely inadequate for village or town-level town planning (1:1,000 or 1:5,000).
3. **Lack of landslide mitigation plan:** Many States vulnerable to landslides including Kerala lack landslide mitigation plan. These maps and plans help to explain the route a landslide can take once it has been triggered.
4. **Insufficient Monitoring Systems:** Many regions lack effective monitoring and early warning systems, which are crucial for timely evacuation and disaster preparedness. The absence of real-time data lead to increased casualties and damage during landslide events.
5. **Policy and Regulatory Gaps:** Bureaucratic and regulatory bodies often struggle to enforce strict land-use zoning restrictions. Despite high-risk classifications, unauthorized constructions of multi-story hotels, commercial resorts, and heavy infrastructure projects continue to creep up on unstable slopes.
6. **Low Community Awareness and Participation:** Low levels of public awareness regarding landslide risks and preparedness measures impede community involvement in disaster management. For early warnings to be effective, the public must understand them and know how to respond. Without robust community engagement, even the best forecasts are rendered useless.
7. **Resistance to Evacuation:** Offering generic financial compensation fails to replace lost agricultural livelihoods. Families frequently refuse to relocate to safe, flat terrains offered by the state because those locations lack immediate economic opportunities or connection to their community roots.

What Should be the Way Forward?

1. **Micro-Zonation:** The Geological Survey of India (GSI) and state authorities must prioritize high-resolution, site-specific mapping (1:1,000 to 1:5,000 scale) for all highly vulnerable hill towns and municipal areas.
2. **Drawing up of Route Maps:** Route maps help in marking out areas which should be out of bounds for settlements or any activities. These maps also map out the routes that landslides are likely to take after they have been triggered. The route maps need to be drawn at the earliest to complement the susceptibility maps.
3. **Proper Environment Impact Assessment (EIA):** Proper implementation of EIA norms must be carried out before initiating mining or dam construction, in the ecologically fragile mountainous regions.
4. **Demarcation of ecologically sensitive areas in Western Ghats:** The panel headed by Sanjay Kumar must finalise the draft notification on ecologically sensitive areas for the western Ghats. This will help in reducing engineering projects in ecologically sensitive areas.
5. **Mandatory Carrying Capacity Audits:** Scientific assessments of a hill station's carrying capacity (maximum population, vehicles, and structures it can support) must guide all future tourism and urban development plans.
6. **Prioritize Nature-Based Solutions**: While concrete retaining walls are necessary, they are expensive and can fail. India should heavily integrate **Ecosystem-based Disaster Risk Reduction (Eco-DRR):**
    - Stabilize loose topsoil using geo-textiles (coir/jute mats) combined with the plantation of deep-rooted, soil-binding native trees and grasses (like Vetiver grass).

   - Prioritize the regular clearing, maintenance, and construction of dedicated surface and sub-surface drainage networks. Controlling the flow of water across a slope is often the single most effective way to prevent a landslide.
7. **Community-Led Conservation:** Train local communities to monitor their slopes, identify early warning signs (like new cracks in walls or ground subsidence), and maintain local drainage networks, turning them into active guardians of their ecosystem.
8. **Leverage AI and New Models:** Invest in AI, Machine Learning, and Deep Learning to develop more reliable, field-validated multi-hazard models. **For e.g.** IIT Roorkee is developing models to forecast fast-moving debris flows, a particularly deadly type of landslide.

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UPSC Syllabus- GS 3- Disaster and its Management

Cooperative Sector – Benefits & Challenges – Explained Pointwise

Established in 2021, the Ministry of Cooperation completes five years in 2026, strengthening India's cooperative movement through reforms, digitisation, and inclusivity. The cooperative sector in India is very prominent, comprising over **8.44 lakh cooperative societies** with a membership exceeding **32 crore people.** This positions India as home to about 25% of all cooperatives globally, demonstrating its role as a cornerstone of the country's economy and social fabric. Governed by policies like the National Cooperation Policy 2025 and the Ministry of Cooperation, the sector generates 13% of direct employment and drives rural financial inclusion.

What are Cooperatives?

- Cooperatives are an autonomous association of persons united voluntarily to meet their common economic, social, and cultural needs and aspirations through a jointly-owned and democratically-controlled enterprise.
- Cooperatives are guided by seven core principles:
    1. **Voluntary and Open Membership:** Anyone who can use their services and is willing to accept the responsibilities of membership can join, free from discrimination.
    2. **Democratic Member Control:** Members have equal voting rights and actively participate in setting policies and making decisions.
    3. **Member Economic Participation:** Members contribute equitably to the capital of their cooperative and democratically control that capital.
    4. **Autonomy and Independence:** Cooperatives are self-help organizations controlled by their members.
    5. **Education, Training, and Information:** They provide education and training to their members, elected representatives, managers, and employees so they can contribute effectively to the development of their cooperative.
    6. **Cooperation among Cooperatives:** By working together through local, national, regional, and international structures, cooperatives better serve their members and strengthen the cooperative movement.
    7. **Concern for Community:** Cooperatives work for the sustainable development of their communities through policies approved by their members.
- Cooperation is a **State subject** (Entry 32, State List), thus, States have their own Cooperative Societies Acts.
- The **97th Constitutional Amendment (2011)** inserted **Article 43B** (a Directive Principle promoting cooperatives) and **Part IX-B**, laying down provisions for the composition, term of office, and conduct of elections in cooperative societies to improve governance, autonomy, and accountability.
- There are 2 types of co-operative structures in the country i.e. **State Cooperative Societies** and **Multi-State Cooperative Societies** (MSCS). The **Multi-State Cooperative Societies come under the Union Government** and the **State Cooperative Societies are under the State Governments**.

What is the significance of the cooperative sector?

Economic Significance	1. **Driving Financial Inclusion:** Cooperatives, particularly Primary Agricultural Credit Societies (PACS), serve as the backbone of rural finance, providing credit to small farmers and entrepreneurs who might not have access to traditional banking. 2. **Rural Development**: They function as multi-service hubs in villages, offering everything from banking and insurance to access to government schemes, thus acting as a catalyst for grassroots development. 3. **Creating Jobs and Livelihoods:** The sector has immense potential for employment generation. It is estimated that cooperatives could create **55 million direct jobs and 56 million self-employment opportunities in India by 2030**. For e.g. Uralungal Labour Contract Cooperative Society (ULCCS) in Kerala, which employs over 18,000 workers, show how this model can provide stable, dignified work. 4. **Price and market stability:** Marketing cooperatives (such as sugar cooperatives in Maharashtra, cotton cooperatives in Gujarat) help farmers get better price realization by aggregating produce and reducing dependence on middlemen. 5. **Fostering Innovation and Self-Reliance:** The cooperative model is evolving beyond traditional roles to become a driver of innovation. In India, cooperatives are now actively involved in digital services, renewable energy, and organic farming. For e.g. Dhondi Solar Energy Producer Cooperative Society in Gujarat, which lets farmers sell surplus solar power to the grid.
Social Significance	1. **Empowerment of vulnerable groups:** Cooperatives have historically empowered women (e.g. self-help group-linked cooperatives), Dalits, and marginalized farmers by giving them collective bargaining power. 2. **Grassroots democracy:** The "one member, one vote" principle fosters democratic participation and leadership skills at the local level, complementing Panchayati Raj institutions. 3. **Social capital and trust:** Cooperatives build community-level trust and cooperation, which is valuable for local development initiatives.
Political Significance	1. **Decentralization tool:** Cooperatives support the constitutional vision of local self-governance and subsidiarity, reducing over-centralization of economic activity. 2. **Buffer against corporate concentration:** They offer an alternative economic model where control rests with primary producers rather than external capital. 3. **Instrument of policy delivery:** Government schemes increasingly channel benefits (credit, insurance, procurement) through cooperative structures for last-mile delivery.

The Lijjat Papad Success Story:

In 1959, seven women in Mumbai borrowed ₹80 to start making papads on a building terrace. Today, the **Shri Mahila Griha Udyog Lijjat Papad** is a massive cooperative employing over 45,000 women across India, providing them with reliable, dignified livelihoods and complete financial independence.

What are the major challenges faced by the cooperative societies in India?

1. **Excessive Political Interference & Bureaucracy**: Since cooperatives control massive vote banks and handle large amounts of rural capital, they are frequently hijacked by local politicians. Politicians use co-ops to distribute favors, contracts, and jobs to their supporters.
2. **Bureaucratic overreach:** Instead of functioning as independent businesses, co-ops frequently have to wade through layers of red tape for routine approvals. State Registrars of Cooperative Societies often exercise excessive control over internal affairs, eroding the functional autonomy.
3. **Top-Down Formation and Weak Ownership:** Many cooperatives were created to meet targets, leading to weak grassroots ownership and a lack of genuine community engagement. When farmers primarily join to access government subsidies, their interest fades once the incentives end.
4. **Insufficient Capital:** Many cooperatives struggle with insufficient equity and working capital, which limits their ability to invest in markets, technology, and necessary infrastructure.
5. **Weak elections and accountability:** Despite the 97th Amendment's Part IX-B provisions mandating timely elections, many states delay cooperative elections or manipulate the process.
6. **Elite Capture and Exclusion:** Wealthier and more powerful members often dominate board and leadership positions. They can use the cooperative to secure subsidies, credit, and inputs for themselves, while marginal and landless farmers face exclusion or exploitation.
7. **Lack of Professional Management**: Cooperative leadership is often elected rather than appointed on merit, leading to a shortage of technical and managerial expertise. Management roles are often filled based on nepotism or seniority rather than professional expertise in business administration, supply chains, or finance.
8. **Regional Imbalances**: The success of the cooperative movement in India is highly skewed geographically, leaving vast parts of the country underserved. The movement is highly successful in western and southern states like **Maharashtra, Gujarat, Karnataka, and Tamil Nadu** (especially in dairy, sugar, and banking). However, it remains weak, poorly managed, or practically non-existent across much of northern and eastern India, including states like Bihar, Jharkhand, and Uttar Pradesh.

What are the various initiatives introduced by the government to promote the cooperative sector in India?

1. **National Cooperation Policy 2025 (NCP 2025)**: This is the central, long-term policy framework for the sector. It provides a roadmap for strengthening cooperatives as dynamic economic entities, promoting technology adoption, and expanding into new sectors like organic farming and renewable energy to realize the vision of **'Sahkar-se-Samriddhi' (Prosperity through Cooperation).**
2. **Ministry of Cooperation**: Established in 2021, this dedicated ministry signals the government's strong commitment to fostering a cooperative-centric economic model and driving these reforms. The ministry provides a separate administrative, legal and policy framework for strengthening the cooperative movement in the country.
3. **Multi-State Co-operative Societies Act, 2002**: The Multi-State Co-operative Societies (MSCS) Act, 2002 allows cooperatives whose operations span more than one Indian state to register as a single

entity. It provides benefits like limited liability and functional autonomy without restricting business across state borders.

4. **National Cooperative Database (NCD)**: This comprehensive database was launched to enable data-driven decision-making and policy formulation. It offers a single point of access for data on over 8,00,000 cooperative societies and their 290 million members, ensuring greater transparency and effective collaboration within the sector.
5. **Computerisation of PACS**: A Centrally Sponsored Scheme to digitally enable PACS by March 31, 2027. This will bring them onto a common, ERP-based software platform, linking them with NABARD and other financial institutions to improve transparency, reduce transaction costs, and enhance coordination.
6. **New National-Level Apex Multi-State Societies**: To boost trade and quality control, the government established three new mega-cooperatives under the Multi-State Cooperative Societies Act:
    a. **National Cooperative Organics Limited:** To aggregate, brand, and market chemical-free organic produce under a trustworthy banner.
    b. **National Cooperative Export Limited:** To act as an umbrella clearinghouse that helps local farmers export their products directly to international markets.
    c. **Bharatiya Beej Sahkari Samiti Limited:** A dedicated seed cooperative focusing on the research, enhancement, and distribution of high-yield certified seeds.
7. **International Year of Cooperatives (IYC) 2025:** India played a central role in the UN's International Year of Cooperatives, officially launched at the International Cooperative Alliance Global Cooperative Conference in New Delhi, drawing delegates from over 100 countries.
8. **Bharat Taxi (Sahakar Taxi Cooperative):** India's first cooperative-based mobility platform, with 6.37 lakh registered drivers and 35.77 lakh registered customers, offering a driver-owned alternative to conventional ride-hailing apps.
9. **"Tribhuvan" Sahkari University:** India's first cooperative university (previously known as the **Institute of Rural Management Anand** (**IRMA**)), located in Anand, Gujarat. Its mandate is to support the professional management of rural organizations.

What should be the way forward?

1. **Depoliticization:** Ensure genuine implementation of Part IX-B provisions (97th Amendment) for timely, fair elections and fixed tenures of boards to reduce political capture.
2. **Professional management:** Introduce qualified CEOs/managers for cooperative banks and large PACS, separating day-to-day management from elected boards (similar to corporate governance models).
3. **Limiting bureaucratic control:** Reduce excessive discretionary powers of Registrars of Cooperative Societies, and move toward a more autonomous, self-regulatory model as envisioned under the Model Cooperative Societies Act.
4. **Value addition and agro-processing:** Encourage cooperatives to move up the value chain (processing, branding, packaging) rather than remaining limited to primary produce aggregation, following models like AMUL.
5. **Focusing on Underserved Zones:** Targeted government setup and investment are crucial to build functional milk and agricultural unions in states like Bihar, Jharkhand, and Uttar Pradesh.
6. **Centre-State cooperation:** Since cooperation is a State subject, the Ministry of Cooperation should function as a facilitator rather than a controller, respecting federal principles while enabling convergence of central schemes (PM-KISAN, PMMSY, PM-MKSSY) with cooperative delivery

mechanisms. Also, encourage states to adopt a model law that balances autonomy with accountability, reducing legal fragmentation across states.

7. **New National Cooperative Policy:** Update the 2002 policy to reflect contemporary challenges, focusing on ease of doing business for cooperatives, taxation parity, and integration with the formal economy.

Conclusion: Cooperatives can play a vital role in the rural transformation. Provision of adequate financial and technical assistance can enable them to address rural challenges and contribute to India's growth story. Government should take all possible steps to facilitate growth ecosystem for the Cooperatives.

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India-Australia Relationship – Significance & Challenges – Explained Pointwise

India and Australia have emerged as close strategic partners, driven by shared democratic values and converging interests in the Indo-Pacific. Prime Minister Narendra Modi's landmark visit to Melbourne in July 2026 for the Annual Leaders' Summit significantly strengthened this bond. The talks advanced key defense agreements, critical minerals cooperation, and business ties, anchoring security and prosperity across the Indo-Pacific.

How has the India-Australia relationship evolved?

Pre-Independence Period	• **1944 =** Diplomatic relations established
Cold War Inertia (1947–1990s)	• Despite opening diplomatic offices in the 1940s, relations remained lukewarm. • India's non-aligned stance and close ties to the Soviet Union clashed with Australia's position as a staunch US ally. • Relationship often described as the "three Cs": **Commonwealth, Curry, Cricket** • Ties hit a low point in 1998 when Australia strongly condemned India's Pokhran-II nuclear tests.
Strategic Convergence (2000-2014)	• Growing concerns over regional security and maritime stability brought the two countries closer. • **2009** = The two nations upgraded their partnership to a **Strategic Partnership.** • Australia lifted its ban on uranium exports to India in 2011–12.
Deep Strategic Partnership (2014-2020)	• Prime Minister Narendra Modi's 2014 visit to Australia – the first by an Indian PM in 28 years – marked a turning point. • Regular high-level visits, defence exercises, and cooperation in the Indo-Pacific increased. • Bilateral ties expanded across trade, energy, education, and technology.
Comprehensive Strategic Partnership (2020-Present)	• Driven by shared concerns over an increasingly assertive China, the two nations upgraded to a **Comprehensive Strategic Partnership (CSP)** in 2020. • Signing of the **India–Australia Economic Cooperation and Trade Agreement (ECTA)** in 2022 boosted economic ties. • Collaboration has expanded in critical minerals, clean energy, supply chains, cyber security, maritime security, and emerging technologies. • **Annual Summits** institutionalized.

What is the significance of the India-Australia Relationship?

Strategic & Geopolitical Significance	1. **Indo-Pacific balancing:** Australia and India are two of the four Quad members, and together they anchor the Indo-Pacific's eastern and western maritime flanks. For India, Australia is critical to extending strategic reach into the Pacific; for Australia, India is the counterweight it needs in the Indian Ocean. 2. **Maritime security:** The India-Australia Maritime Security Collaboration Roadmap aims to deepen bilateral maritime engagement – significant given both countries' Indian Ocean/Pacific coastlines and shared concern over sea lane security.
Economic Significance	1. **Economic Synergy**: The bilateral trade exceeded **$48 billion USD in 2024.** Both countries have set a goal to achieve **$100 billion AUD in bilateral trade by 2030.** Economically, the two countries complement each other perfectly. They do not compete, they complete each other: ○ Australia has critical minerals, uranium, and energy resources India needs for its clean-energy transition. ○ India has manufacturing scale, a growing market, and a services/tech sector Australia wants access to. 2. **Energy Security**: Australia is a reliable supplier of coal, LNG, uranium, and critical minerals such as lithium and cobalt. Cooperation between the two countries supports India's clean energy transition and renewable energy ambitions. 3. **Global Supply Chains**: The COVID-19 pandemic and subsequent geopolitical tensions exposed how vulnerable global supply chains are when concentrated in one country. The India-Australia partnership is crucial to building **Supply Chain Resilience.** 4. **Critical Minerals Partnership**: Australia possesses some of the world's largest reserves of critical minerals necessary for green energy, electric vehicles, and high-tech manufacturing. Given China's dominance in critical mineral processing, an Australia-India minerals partnership has direct relevance to India's supply chain diversification and "China+1" strategy.
Security Significance	1. **Defence Cooperation:** The relationship has advanced from joint exercises to deeper military coordination and intelligence sharing, with agreements to share critical data and cooperate on maritime security and undersea awareness. 2. **Counter-terrorism:** Intelligence sharing on terrorist threats, and expanded cooperation against violent extremism, terror financing, and online radicalisation.
Soft Power	1. **Diaspora:** The ~1,20,000+ Indian students and a roughly 8,00,000-strong Indian diaspora in Australia give this relationship a people-to-people density most of India's other Indo-Pacific partnerships lack. This diaspora functions as both an economic bridge (remittances, business networks) and political constituency.

What are the areas of cooperation in India-Australia Relations?

1. **Economy & Trade:** The relationship is commercially driven by the **Economic Cooperation and Trade Agreement (ECTA)**, which eliminates tariffs on the vast majority of goods traded between the two nations. Both countries are actively working to upgrade this into a full **Comprehensive Economic Cooperation Agreement (CECA)**.
2. **Defence & Maritime Security**:
   - **Joint Military Exercises:** Cooperation spans all three military branches through major war games like **AUSINDEX** (Naval), **AUSTRAHIND** (Army), and India's regular participation in Australia's **Exercise Pitch Black** (Air Force).
   - **Logistics & Interoperability:** A **Mutual Logistics Support Arrangement** allows their militaries to use each other's bases for refueling and maintenance.
3. **Critical minerals:** India and Australia have strengthened their **Critical Minerals Partnership** to secure reliable supplies of lithium, cobalt, rare earth elements, and other strategic minerals. Partnerships between government agencies, companies, and research institutions to secure long-term supply, offtake arrangements, and processing/value-addition capabilities.
4. **Energy**:
   - **Civil Nuclear Energy:** A major commercial milestone includes a civil nuclear energy pact enabling the stable supply of Australian uranium for India's domestic nuclear power projects.
   - **Renewable energy:** The Australia-India Renewable Energy Partnership covers solar PV, green hydrogen, energy storage, recycling, two-way investment, and skills.
5. **Science, Technology & Cyber**:
   - **Australia-India PACTS:** Partnership on Cyber, Critical Technologies and Supply Chains, enhancing information-sharing and collaboration on strategic technologies.
   - **Space:** Indian NewSpace firms like Skyroot are launching satellites for Australian customers, with an Australian satellite scheduled for launch on an Indian rocket in 2026.
6. **Education & Skills**:
   - **Higher Education:** Indian students are the second-largest foreign student group in Australia (~120,000, 17% of all international students in Australia).
   - **Campuses in India:** Prominent Australian universities (such as Deakin and Wollongong) operate independent branch campuses directly within India.
   - **The MATES Program:** The Mobility Arrangement for Talented Early-professionals Scheme facilitates streamlined, temporary pathways for top-tier Indian STEM graduates and professionals to live, work, and contribute to industries in Australia experiencing deep skills shortages.
7. **Multilateral Cooperation**: Both the countries coordinate with each other in the Quad, G20, East Asia Summit, Indian Ocean Rim Association (IORA), and the United Nations. Australia has generally supported India's case for permanent UNSC membership.
8. **Diplomatic Framework:** This multi-sector cooperation is managed through a highly formal structural architecture, including regular **Annual Prime Ministerial Summits**, the **2+2 Foreign and Defence Ministerial Dialogues.**

Key Agreements and Outcome Documents Signed During the Annual Leaders' Summit (2026):

- **Joint Declaration on Defence and Security Cooperation (JDDSC)**: Replaces the 2009 Joint Declaration on Security Cooperation. Expands cooperation in defence industrial collaboration, maritime security, cyber security, interoperability, counter-terrorism, humanitarian assistance and disaster relief (HADR), and support for a rules-based Indo-Pacific.
- **Maritime Security Collaboration Roadmap (MSCR)**: Establishes a framework for enhanced maritime cooperation. Focuses on maritime domain awareness, information sharing, operational coordination, and capacity building.
- **India–Australia Joint Statement on Energy Security**: Reaffirms cooperation on energy security amid global geopolitical disruptions. Promotes collaboration in LNG, coal, clean energy, and investment while supporting progress toward the Comprehensive Economic Cooperation Agreement (CECA).
- **Finalisation of the Administrative Arrangement under the India–Australia Civil Nuclear Agreement**: Operationalises the 2014 Civil Nuclear Cooperation Agreement. Enables commercial exports of Australian uranium for India's civilian nuclear energy programme.
- **Partnership on Cyber, Critical Technologies and Supply Chains (PACTS)**: Deepened cooperation under the Australia-India Partnership on Cyber, Critical Technologies and Supply Chains (PACTS), enhancing information-sharing on strategic technologies.

What are the challenges in India-Australia Relations?

1. **Geopolitical and Strategic Divergences**: While both nations are members of the Quad to balance regional threats, their fundamental foreign policy outlooks differ. Australia aligns tightly with Western defense coalitions (such as the US and AUKUS), while India historically champions strategic autonomy.
2. **Trade Imbalances**: The bilateral economic relationship is heavily asymmetrical and narrow. Australia's exports to India are overwhelmingly dominated by coal and coke, creating an uncomfortable reliance for a nation attempting to meet global net-zero targets. Ongoing negotiations for a more comprehensive Comprehensive Economic Cooperation Agreement (CECA) continue to grapple with these sticky issues.
3. **Agricultural Market Access**: India continues to protect politically sensitive sectors, particularly dairy, from Australian competition. Given the dependence of millions of farmers on the dairy sector, any major market-opening concessions carry significant domestic political and economic costs. This sensitivity mirrors the concerns that influenced India's decision to withdraw from the Regional Comprehensive Economic Partnership (RCEP).
4. **Visa & Labour Mobility Friction**: Australia's domestic sensitivity around skilled/temporary migration has historically been a friction point in trade talks. India pushes for greater professional mobility provisions (especially for IT services) while Australia faces domestic political pressure to limit visa expansion.
5. **China Factor**: Both countries have concerns regarding China's growing influence, but their economic dependence on China differs. Divergent approaches towards managing relations with China creates policy differences.
6. **Geographical Distance and Connectivity**: Large geographical separation increases transportation and logistics costs. The limited direct connectivity constrains trade and people-to-people exchanges.

What can be done to strengthen India-Australia Relations?

1. **Upgrade ECTA to CECA**: The ECTA primarily focused on goods. A CECA is essential to unlock deeper liberalization in **services, investment, and regulatory cooperation**, which represent significant untapped commercial potential.
2. **Diversify Trade Beyond Raw Materials**: India and Australia should move beyond the existing pattern of coal and gas exports in exchange for refined goods and focus on value-added manufacturing partnerships. Critical minerals present a key opportunity, with Australia supplying mineral resources and India developing midstream processing and manufacturing capabilities to create more resilient and diversified supply chains.
3. **Expand Defence Cooperation**: Build on the 2026 Joint Declaration by moving toward more complex, multi-domain exercises (not just naval) and explore co-development/co-production in defense manufacturing under India's "Atmanirbhar Bharat" framework. Use the new Annual Defence Ministers' Dialogue to institutionalize technology transfer discussions, not just exercises.
4. **Green Energy Grid Architecture**: Collaborate on green hydrogen, renewable energy, energy storage, and low-carbon technologies. Australia possesses vast land resources and abundant solar potential. India offers cost-effective engineering expertise and large-scale manufacturing capabilities in solar panels and electrolyzers. By combining Australia's resource advantages with India's manufacturing strength, the two countries can build resilient clean-energy supply chains.
5. **Expand Education and Skill Cooperation**: Increase academic partnerships, joint research programs, and student exchanges. Facilitate easier mobility for students, professionals, and tourists. Deepen India–Australia ties by expanding mutual recognition of academic and professional qualifications.

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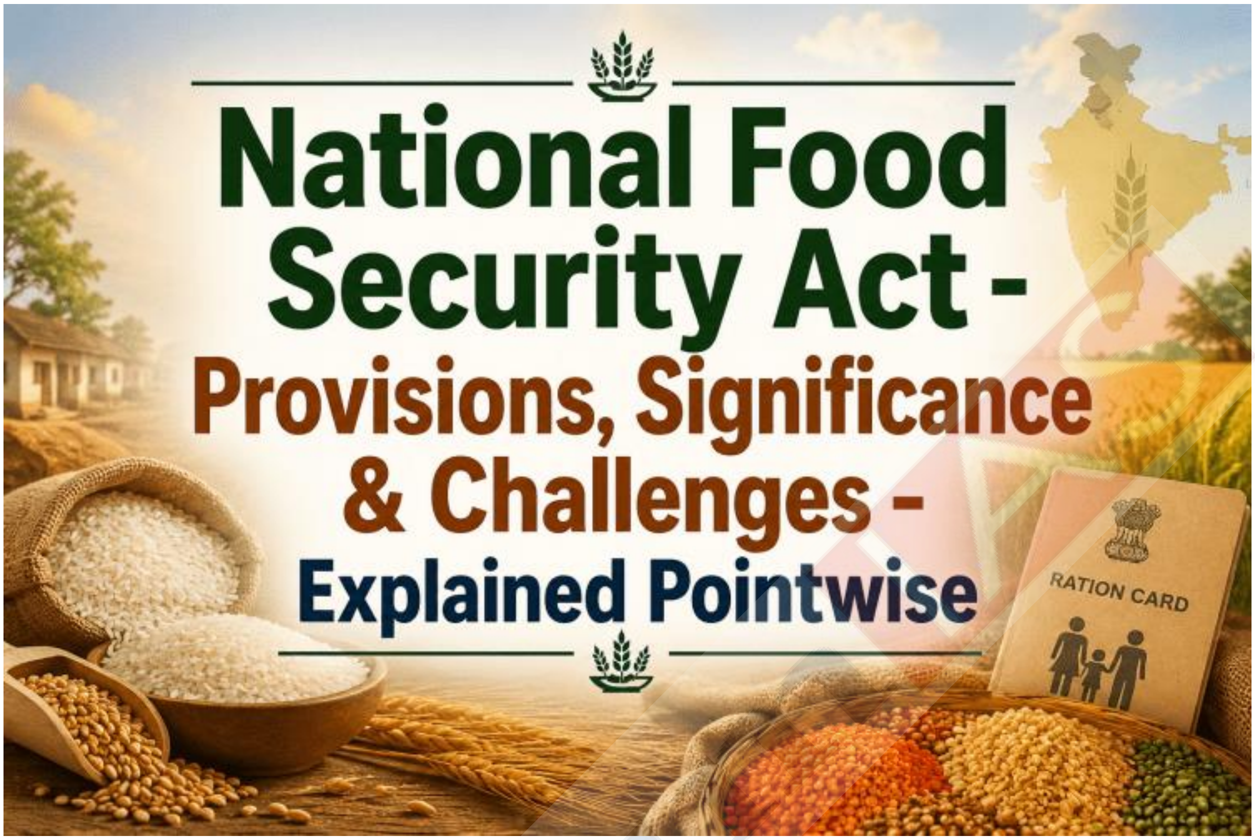
National Food Security Act – Provisions, Significance & Challenges – Explained Pointwise



The Central Government has proposed amending the National Food Security Act (NFSA) to shift Antyodaya Anna Yojana (AAY) entitlements from a flat **35 kg per household** monthly allocation to a per-capita **7 kg per person** model (capped at 35 kg). However, the move faces stiff opposition from States like Tamil Nadu and Kerala – arguing that the revised formula disproportionately slashes foodgrain quotas for small nuclear families and elderly households, effectively penalizing States that successfully stabilized their populations through family planning.
India's journey towards food security reached a significant milestone with the enactment of the National Food Security Act (NFSA) 2013, transforming the "right to food" into a legal entitlement and marking a shift from a welfare to a rights-based approach.

What is the National Food Security Act (NFSA), 2013?

- The National Food Security Act 2013 was enacted with the objective of providing food and nutritional security by ensuring access to adequate quantity of quality food at affordable prices for people to live a life with dignity.
- The Act covers up to **75% of the rural population** and up to **50% of the urban population** for receiving subsidized good grains under the Targeted Public Distribution System (TPDS), thus covering about two-thirds of the population.

What are the key provisions of the Act?

- Under NFSA, the government is obliged to give subsidized foodgrains every month to the beneficiaries identified by each state government based on the economic status of households.

- **Identification of Beneficiaries:** The identification of eligible households is done by the State Governments, adhering to inclusion/exclusion criteria set by the central government.
- **Two categories of beneficiary households:**
    - **Antyodaya Anna Yojana (AAY):** AAY households receive 35 kg of foodgrains monthly.
    - **Priority Households (PHH):** Each PHH member gets 5 kg of foodgrains monthly, including rice at Rs 3/kg, wheat at Rs 2/kg, and coarse grain at Rs 1/kg.
- **Nutritional Support for Children:** Children between 6 months and 14 years receive nutritious, free meals through the Integrated Child Development Services (ICDS) and Mid-Day Meal (MDM) schemes.
- **Maternity Entitlement:** Pregnant women and lactating mothers are entitled to a maternity benefit of at least ₹6,000 for six months to partially compensate for wage loss and ensure nutritional support.
- **Institutional Framework:**
    - Establishes State Food Commissions for monitoring and implementation.
    - Creates a grievance redressal mechanism at district level.
    - Mandates transparency and accountability through social audits.

What is the importance of the Act?

1. **Philosophical Shift: From Welfare to Rights:** The most significant contribution of the NFSA is the paradigm shift it mandated in India's approach to public assistance. By explicitly stating that food access is a legal right for two-thirds of the population, the NFSA ensures that the government is legally obligated to provide subsidized food grains. This allows citizens to seek judicial recourse if entitlements are denied.
2. **Food & Nutritional Security:** Through the Public Distribution System (PDS), the Act ensures monthly entitlements of rice, wheat, and coarse grains at highly subsidized rates to over 810 million beneficiaries. By guaranteeing affordable access to staples, the NFSA combats undernutrition and food insecurity among the poor.
3. **Enhanced Social Inclusion:** The Act prioritizes marginalized sections, including SC/STs, women, and children, helping to address inequality. It also ensures women's empowerment with provisions for female household heads as ration card holders.
4. **Poverty Reduction:** The assured supply of foodgrains acts as a form of income transfer. By reducing household expenditure on essential food items, it frees up a significant portion of the income of poor families, allowing them to spend on education, health, and other needs. This indirectly aids in poverty reduction.
5. **Crisis Management:** During national crises, such as the COVID-19 pandemic, the NFSA mechanism allowed the government to immediately scale up distribution (e.g. through schemes like PMGKAY), ensuring no person went hungry when livelihoods were lost. The existing buffer stock and distribution network were instrumental in this massive relief effort.
6. **Driver of PDS Reforms & Accountability:** The NFSA necessitated and accelerated long-pending reforms in the Public Distribution System (PDS), drastically improving its efficiency and reducing leakage such as:
    - **Technology Integration:** The mandate for effective delivery led to the widespread adoption of e-PDS (electronic PDS), including Aadhaar linking and the use of Point of Sale (PoS) devices at Fair Price Shops. This has significantly eliminated "ghost" beneficiaries and reduced the diversion of grains.

- **Grievance Redressal:** The requirement for state-level and district-level Grievance Redressal Officers and mandatory Vigilance Committees has built a layer of institutional accountability into the food distribution system, enhancing transparency.
- **Portability (ONORC):** The success of the NFSA is closely tied to the One Nation, One Ration Card (ONORC) scheme, which ensures that NFSA entitlements are portable. This means a beneficiary can collect their subsidized food grains from any Fair Price Shop (FPS) across the country, hugely benefiting migrant workers.

What are the major limitations of the Act?

1. **Leakages and Inefficiency in PDS:**
    - Persistent leakages, diversion of foodgrains, and corruption in the Public Distribution System (PDS) undermine efficient delivery of benefits.
    - Errors in beneficiary identification and exclusion/inclusion issues result in deserving households missing out or ineligible ones receiving benefits.
2. **Quality of Foodgrains:**
    - Beneficiaries often receive poor-quality or spoiled food grains, undermining the nutritional objectives of the Act.
    - There is little provision within the Act for pulses, oils, or more nutritious foods.
3. **Fiscal Burden and Sustainability:**
    - **Food Subsidy:** The difference between the Minimum Support Price (MSP) paid to farmers and the Central Issue Price (CIP) charged to beneficiaries (₹1, ₹2, ₹3) is borne by the government as the food subsidy. This subsidy is one of the largest items of non-developmental expenditure, putting pressure on the national fiscal deficit.
    - **Buffer Stocks:** Maintaining adequate buffer stocks for distribution requires significant investment in storage and incurs heavy costs related to interest, storage, and wastage.
4. **Supply Chain and Infrastructure Gaps:**
    - Shortcomings in logistics, transportation, and storage infrastructure lead to wastage and inefficiency.
    - Old and insufficient warehouses, especially in remote regions, make timely and quality delivery challenging.
5. **Exclusion and Inclusion Errors:**
    - **Exclusion Errors:** Genuinely poor and eligible households are left out of the list (often due to outdated data or complex documentation requirements), meaning those who need the food the most don't receive it.
    - **Inclusion Errors:** Non-poor or ineligible households manage to acquire subsidized ration cards, leading to wastage of public resources.
    - Migration, urbanization, and inter-state movement are not addressed adequately.
6. **Limited Nutrition Focus:** The Act focuses mainly on calorie security through grains, neglecting dietary diversity and micronutrient requirements. Provisions for pulses, oils, and fresh foods are minimal or absent.
7. **Functioning of Fair Price Shops (FPS):** While the implementation of PoS devices has improved transparency, challenges remain. These include internet connectivity issues in remote areas, resulting in transaction failures, and residual corruption by FPS dealers regarding timing, weighing, and behavior.

8. **Weak Enforcement:** State-level Grievance Redressal Officers (GROs) often lack the authority, resources, or political will to effectively penalize violators or ensure timely resolution of complaints. The mandated Vigilance Committees are often defunct or non-functional.

What should be the Way Forward?

1. **Updating Population Coverage:** The Act must be amended to use current population estimates instead of the rigid 2011 Census figures. This change is crucial to include families who have moved into poverty or who were born after 2011, thereby reducing exclusion errors.
2. **Dynamic Exclusion Criteria:** Instead of relying solely on old BPL (Below Poverty Line) lists, States should implement dynamic exclusion criteria using technology and data points (e.g., vehicle ownership, government employment status, electricity consumption) to regularly update and clean beneficiary lists.
3. **Universalizing ONORC:** While the One Nation, One Ration Card (ONORC) scheme has been implemented, continuous investment in seamless biometric and internet infrastructure is needed. The goal should be to make ration portability a frictionless experience, especially for internal migrant workers.
4. **Mandating Fortification:** Central and state governments should mandate the fortification of all rice and wheat supplied through the PDS with essential micronutrients like Iron, Folic Acid, and Vitamin B12. This is a highly cost-effective public health measure.
5. **Integrating with Local Produce:** Pilot programs should be launched to link Fair Price Shops (FPS) with local self-help groups (SHGs) or farmer producer organizations (FPOs) to provide seasonal, locally sourced, and subsidized fresh fruits and vegetables to beneficiaries, particularly through ICDS and Mid-Day Meal schemes.
6. **Smart Procurement and Storage:** Modernize the food supply chain by shifting from traditional bag storage to steel silos and implementing End-to-End Computerization of the PDS. This drastically reduces storage costs and physical wastage (spoilage and theft).

Conclusion:

The NFSA can evolve from a basic food distribution program into a dynamic, transparent, and nutrition-sensitive social security pillar for the nation if its challenges are addressed & next-gen reforms are implemented properly.

UPSC GS-3: Agriculture
Read More: Vikaspedia, The Hindu

AI in Judiciary – Significance & Challenges – Explained Pointwise

The Supreme Court's AI Committee recently released the **Draft Regulations for the Use of AI in Courts, 2026**. The draft seeks to establish a governance framework for the use of AI in the judiciary by prescribing guiding principles and creating an institutional mechanism for its oversight. The regulations aim to facilitate the responsible use of AI in court processes and enhance the efficiency of court administration.

What are the salient features of the Draft Regulations for the Use of AI in Courts, 2026?

The **Draft Regulations for Use of Artificial Intelligence (AI) in Courts, 2026** is a comprehensive regulatory blueprint released by the Supreme Court of India's AI Committee. Released for public consultation, this document marks India's first official framework to govern, standardize, and draw boundaries around how AI is used across the entire judicial hierarchy.

Some of the salient features of the Draft Regulations are:

1. **Wide Applicability**: Applies to AI use, deployment, or integration in any judicial, adjudicatory, or administrative function of the Supreme Court, High Courts, and all courts, including tribunals and statutory commissions performing adjudicatory functions across India.
2. **Five Foundational Principles**: Human primacy, transparency, accountability, data protection, and judicial independence are embedded throughout the document's architecture.
3. **Human Primacy as Non-Negotiable Core**: AI must function strictly in an assistive capacity. The ultimate power to evaluate facts, apply the law, and render justice remains exclusively with human judges.

4. **Individual Accountability**: The responsibility and accountability for any decision taken with the assistance of AI shall remain solely with the concerned officer and cannot be delegated to the AI system.
5. **Mandatory Disclosure Regime**: Any party or legal representative utilizing AI in the preparation of pleadings or submissions must explicitly disclose such use and furnish a duly executed declaration or certificate in the prescribed format.
6. **Permissible Uses of AI**: AI may be used for:
   a. Legal research and precedent retrieval
   b. Document drafting assistance
   c. Translation and transcription
   d. Case management and scheduling
   e. Court administration and litigant assistance
   f. Workflow automation
7. **Prohibited Uses**: AI cannot be used for:
   a. Decide cases, judgments, or sentences
   b. Determine bail eligibility
   c. Predict judicial outcomes or recidivism
   d. Assess witness credibility or profile litigants
   e. Influence adjudicatory discretion in any manner
8. **Layered Institutional Governance**:
   a. **Apex Body**: a permanent, full-time body at the Supreme Court chaired by an SC judge nominated by the CJI, comprising two High Court Chief Justices, two High Court judges, a representative from an institution of national importance, a Joint Secretary from MeitY, and experts in finance, cybersecurity, technology law, and data privacy.
   b. **AI Committees & Secretariats**: every High Court must set up its own AI Committee and Secretariat for local supervision and incident handling.
   c. **CoRE-AI**: a Centre of Research and Excellence conducting original research, evaluating AI tools/prototypes, and publishing white papers.
9. **Strict Data Protection Norms**: Sensitive judicial data cannot be transferred to external systems without express written authorisation. Anonymisation is mandatory before use in training/testing AI systems.
10. **Regulated Private Sector Engagement**: Private entities may engage only after comprehensive evaluation of technical capability, legal compliance, ethical standards, data security, and financial standing, with written approval required.
11. **Annual Transparency Reporting**: Every High Court, Tribunal, and Commission must submit an annual AI adoption Transparency Report covering systems in use, audit outcomes, and recorded incidents, published on its official website.
12. **Grievance Redressal Mechanism**: Any party harmed by prohibited AI use may file an application before the court where the system was deployed.

What is the significance of AI in Judiciary?

1. **Enhancing Administrative Efficiency & Reducing Case Backlogs & Delays:** AI can automate routine and repetitive tasks such as document review, case classification, and scheduling, thereby enabling judges to devote more time to substantive legal analysis and decision-making.

2. **Promoting Accessibility & Inclusivity:** AI-powered tools like the Supreme Court Vidhik Anuvaad Software (SUVACE) can translate legal documents and judgments from English to various Indian languages, breaking down language barriers and making legal information more accessible to the public. Similarly, chatbots and virtual assistance can guide ordinary citizens through court procedures without needing a lawyer for basic queries.
3. **Legal Research & Drafting:** AI tools can scan vast case law databases to surface relevant precedents, statutes, and legal principles in seconds rather than hours. AI can assist lawyers and judges in drafting orders, summarizing lengthy case files, and identifying inconsistencies.
4. **Predictive Analytics:** AI can analyze patterns in past judgments to provide predictive insights into potential case outcomes. This can contribute to a more consistent application of the law, reducing the element of subjective judgment in similar cases. However, this is primarily for informational purposes and does not determine the final ruling.
5. **Transparency & Public Trust:** Digital records and AI-powered dashboards improve transparency in judicial processes, enabling effective monitoring and public accountability. The e-Courts initiative and AI tools make court proceedings and orders more visible and easier to follow for the public.

What are the ways in which AI is being integrated into the Indian judicial system?

e-Courts Project	India's judiciary is integrating AI primarily through the e-Courts Mission Mode Project with the aim of improving administrative efficiency and reducing case backlog.
SUPACE **(Supreme Court Portal for Assistance in Court Efficiency)**	SUPACE uses machine learning to help process case files, extract facts, and assist judges with research and summarization. It scans large volumes of case files to identify relevant precedents, statutes, and legal principles. It does not pronounce judgments, serving instead as a research aid.
SUVAS **(Supreme Court Vidhik Anuvaad Software)**	SUVAS facilitates automated translation of judgments from English to regional languages, improving accessibility. It has translated over 36,271 Supreme Court judgments into Hindi, and by 2026 supports bi-directional translation between English and 19 Indian languages.
LegRAA	A generative AI tool for legal research.
TERES	Real-time transcription of court proceedings.
Su-Sahayak	An interactive chatbot launched via a Supreme Court circular, helping visitors access case status, cause lists, orders, and judgments.

Adalat.AI	In 2025, the **Kerala High Court** mandated the use of **Adalat.AI** in its subordinate courts to record witness depositions. It converts speech to text instantly, replacing manual stenography and speeding up trial proceedings.

What are the challenges in the use of AI in the judiciary?

1. **Biasness & Ethical Concerns:** AI can perpetuate prejudices found in historical legal data, leading to potentially discriminatory outcomes based on race, gender, or socio-economic status. If historical court or police data contains systemic biases such as disproportionate targeting of marginalized communities, specific castes, or certain socio-economic classes – the AI will internalize these patterns. Such biasness can undermine the principles of justice and fairness.
2. **Accuracy & Reliability (AI hallucinations):** AI tools may produce inaccurate results, fabricate information, or generate fake legal citations and facts, which poses dangers for judicial decision-making. Dependence on unreliable or incomplete databases can further skew outcomes. *For e.g. Last year, a trial court judge in Vijayawada dismissed a case citing four Supreme Court judgments; however, it was later found that none of those judgments actually existed.* The SC released a **'White Paper on AI & Judiciary'** in Nov 2025 – which identified 'Fabrication of Cases & Hallucination' as the primary risk associated with the use of AI. The document noted that AI tools can hallucinate judgments, citations, quotes, or refer to any legislation that may not be in existence.
3. **Compromise of Human Judgment & Legal Reasoning:** Human judgment in law involves nuanced interpretation, contextual understanding, moral reasoning, and empathy, which AI currently struggles to replicate.
4. **Human Rights & Due Process:**
   Replacing or heavily supplementing human judgment with algorithmic decision-making can threaten fundamental rights – such as the right to a fair trial and appeal. Over-reliance could reduce complex human experiences to mere statistics.
   At more structural level, AI risks reducing adjudication into rule-based interferences, overlooking the combination of human judgement, a specific context, and relevance of precedents that impact judicial decision making.
5. **Constitutional concerns:** Integrating AI into judicial process risks algorithmic bias, threats to privacy, accountability gaps, and erosion of reasoned decision-making under Articles 14 and 21 (equality, privacy, and fair trial).
6. **Lack of Regulation:** India lacks comprehensive legislation or clear policy for regulating AI use in the judiciary; most existing rules are adapted from older laws not tailored for AI's complexities. As a result, courts in India have shown inconsistent approaches to AI adoption, with some encouraging cautious use and others, like Kerala High Court, banning AI tools from judicial decision-making.

What can be the way forward?

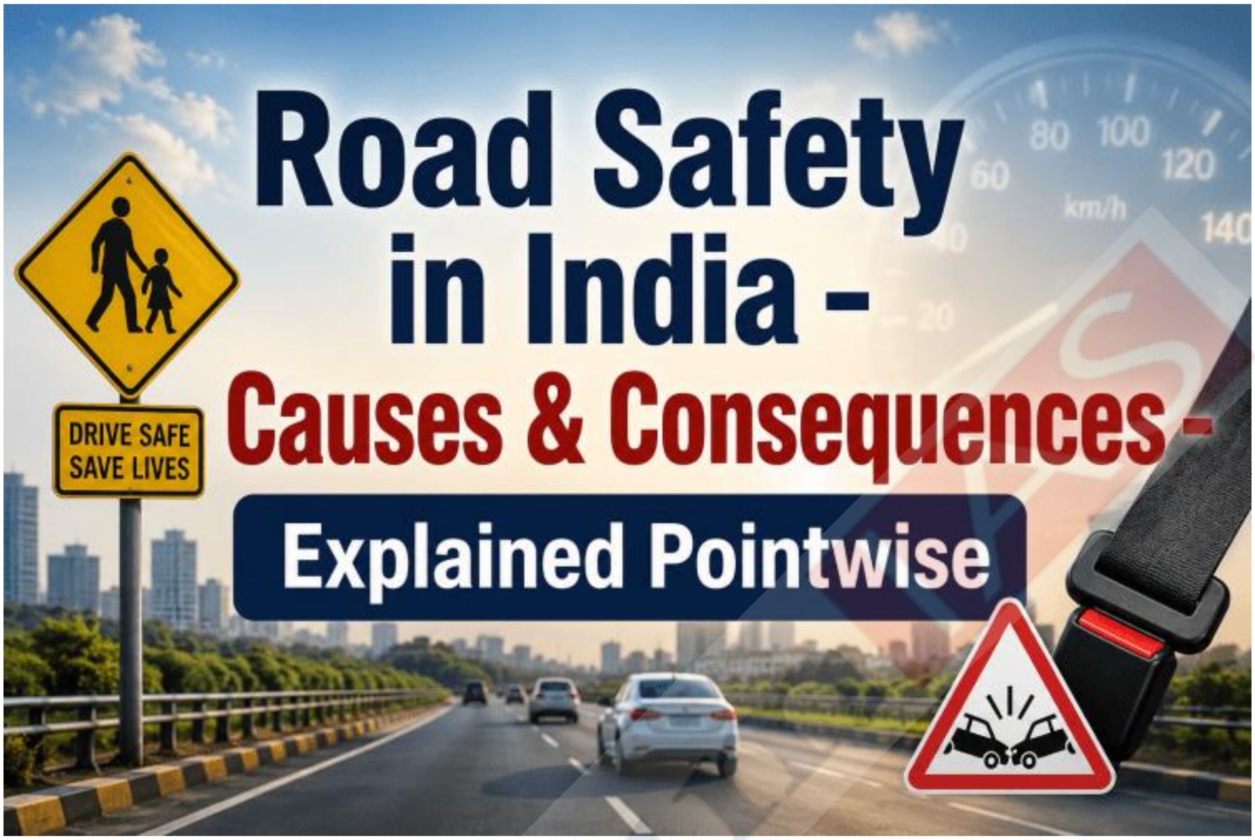
1. **Enact a dedicated statutory framework:** Move beyond draft regulations to binding legislation specifically governing judicial AI use, since India currently does not have dedicated AI legislation, with only local policies and guidelines emerging for lawyers and judges.
2. **Capacity Building:** Conduct nationwide training for critical AI literacy for judges, court staff, and lawyers to raise awareness, build digital literacy, and promote effective use of AI tools. In addition to capacity building to use AI tools, programmes are also required to understand the limitations of the systems deployed. Judicial academies & bar associations, in collaboration with AI governance experts, are well placed to facilitate such capacity building.

3. **Phased Adoption:** Implementing AI systems progressively. Lower-risk administrative tasks (transcription, scheduling) should be standardized first, while any system interacting with case data must undergo "Controlled Environment Testing" (sandboxing) before deployment.
4. **Human Oversight & Judicial Discretion:** AI should be an assistive, not a substitute, tool – final decision-making authority must always remain with human judges. Require judicial officers to review and, if necessary, override AI-recommended outcomes when context or justice so demand.
5. **Develop Regulatory & Ethical frameworks:** Enact legislation and guidelines that define the permissible uses of AI in courts with emphasis on human rights, fairness, accountability, and explainability. Mandate regular audits and ethical reviews of AI tools used in judicial processes to ensure they are unbiased and transparent.
6. **Address Biasness Issue:** Use diverse, updated, and representative datasets for developing and training AI systems to minimize bias and errors. Continually monitor, validate, and retrain AI models to avoid perpetuating systemic injustice.
7. **Right to be informed:** If AI is used in adjudication process, litigants must have a right to be informed. Similarly, litigants & lawyers have a right to know if AI is being used in certain courtrooms. Litigants may be allowed to opt-out of pilots or fully-deployed AI if they have any concerns about safeguards or human oversight.
8. **Empowering Dedicated Oversight Bodies:** Establishing permanent bodies like the proposed **Apex Body at the Supreme Court** and dedicated **AI Committees at High Courts**. These committees must feature multidisciplinary experts (judges, data scientists, and ethicists) tasked with vetting all software before it interacts with court databases.

Conclusion:
Adoption of AI in judiciary is significant to make it more efficient, accessible & transparent, however, it should not eclipse the nuanced reasoning & human decision-making that is at the heart of the adjudicatory process.

Read More: The Hindu, The Indian Express
UPSC GS-2: Judiciary

Road Safety in India – Explained Pointwise



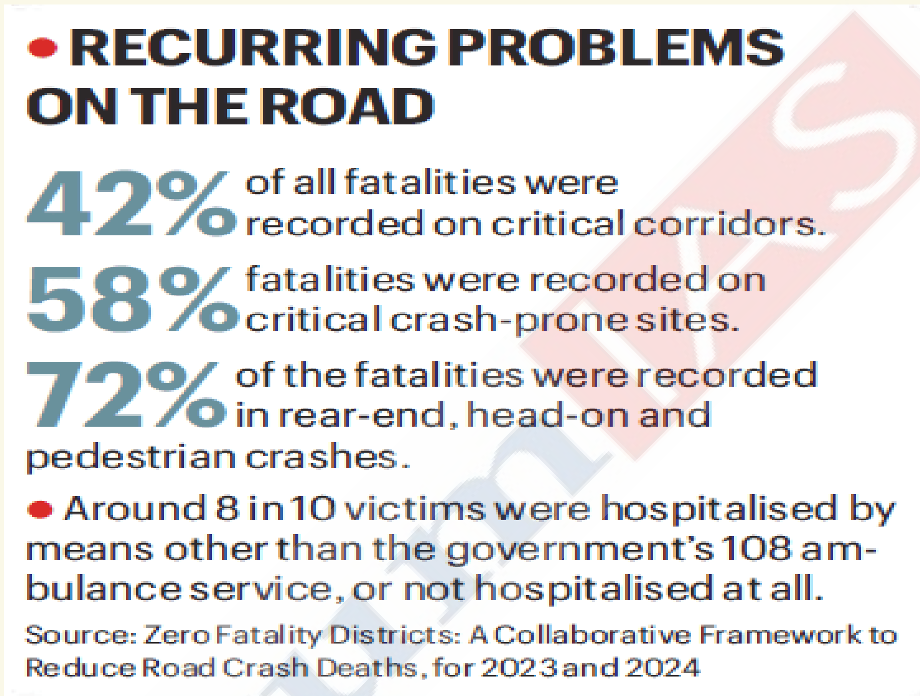
With over 1.7 lakh annual fatalities, India suffers the world's highest road crash burden, draining 3% of its GDP and pushing vulnerable families into poverty. India not only ranks first in the world in road accidents fatalities, but its numbers are also far ahead of the second & third ranked countries (China accounts for just 36% & USA for just 25% of India's total road deaths). Thus, addressing this crisis is not just a transport issue, but an urgent humanitarian and developmental priority to safeguard lives, human capital, and sustainable growth.

What are the key findings of various reports on road accidents in India?

Findings of Road Crash Statistics (by NGO SaveLIFE Foundation):

Road engineering	59% of all road accidents fatalities do not involve any traffic violation, indicating that road engineering is one of the biggest contributory factors for deaths. According to the report, damaged crash barriers, absent or faded pavement marking, unprotected hard structures, damaged or wrong signage, and inadequate illuminations are among the top 20 most common engineering issues on the road.

<table>
<tr>
<td>Crash-prone Sites</td>
<td>Most accidents are concentrated in known locations, including specific road stretches & crash-prone spots (58% of the total deaths were recorded on the crash-prone locations). The report suggested that if the govt schemes & budgets are directed toward such locations, a significant number of deaths could be prevented.



Source: Indian Express</td>
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<tr>
<td>States with road accidents</td>
<td>UP (20 districts) > Tamil Nadu (19) > Maharashtra (11) > Rajasthan (8)</td>
</tr>
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Findings of India Status Report on Road Safety (2024):

Road accidents remain a major public health challenge	Road traffic injuries remain a major public health challenge in India. There has been little progress in reducing fatalities, despite advancements in other sectors. Road traffic injuries were the 13th leading cause of death in India and the 12th leading cause of health loss (measured in Disability-Adjusted Life Years, or DALYs) in 2021.
Indian States unlikely to meet the UN target	Most Indian States are unlikely to meet the United Nations Decade of Action for Road Safety goal to halve traffic deaths by 2030.

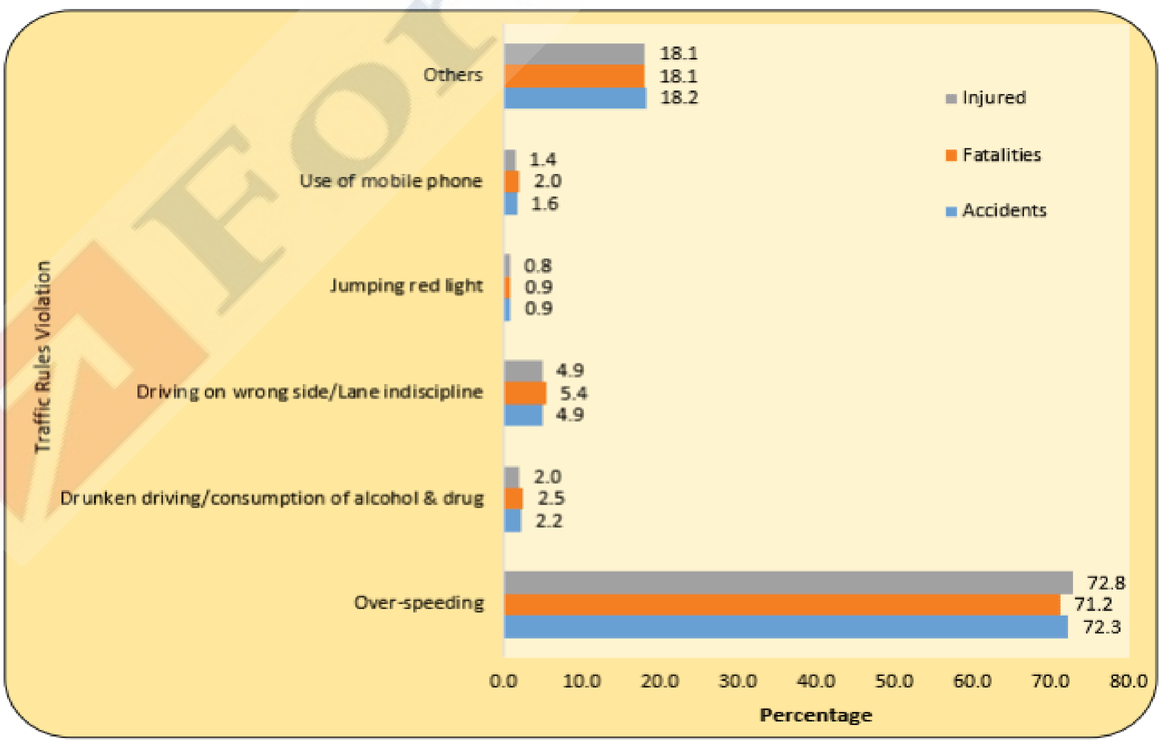
Most common victims of road accidents	Pedestrians, cyclists, and motorised two-wheeler riders are the most common victims of road accidents. Trucks are responsible for the highest proportion of impacting vehicles.
Lack of Basic Traffic Measures	India lacks basic traffic safety measures like traffic-calming, markings, and signage. Helmet usage in rural areas is particularly low, and trauma care facilities are inadequate.
Increase in India's road accident fatalities	India has large gap in road safety as compared with other developed countries like Sweden and other Scandinavian nations, which have excelled in road safety governance. An Indian was 40% more likely to die in a road accident than someone in these countries, in 1990. By 2021, this figure had soared to 600%, indicating a sharp rise in road fatalities.

What are the major causes of road accidents in India?

India's high rate of road accidents is a complex issue resulting from the interplay of multiple systemic, behavioral, and infrastructural factors.

1. **Human & Behavioral Factors:**
Reckless Driving: Over speeding is the major cause of road accidents in India and it accounts for 71.2% of the persons killed due to road accidents. Driving on the wrong side is the second reason accounting for 5.4% deaths.

Chart 3.1: Road Accidents by type of Traffic Rules Violation during 2022



a. **Driving Under Influence**: Widespread drink-driving, especially among commercial and private vehicle drivers.
b. **Driver Fatigue**: Long, uninterrupted shifts for commercial drivers (trucks, buses) leading to loss of concentration.
c. **Lack of Training & Licensing Lapses**: Corruption in driving tests, poor training standards, and fake licenses.
d. **Non-use of Safety Gear**: Helmets (especially among two-wheeler riders) and seat belts are often ignored.
e. **Distracted Driving**: Approximately 8% of accidents happens because of distracted driving, especially mobile phone use, which impairs attention and reaction time.

2. **Vehicular & Mechanical Factors:**
   a. **Poor Vehicle Maintenance**: Old vehicles, faulty brakes, worn-out tires, and inadequate lighting.
   b. **Overloading**: Especially in trucks, buses, and three-wheelers, affecting stability and braking.
   c. **Poor Safety Standards**: Many vehicles lack basic safety features like airbags, ABS, or crashworthy structures. Crash tests carried out by the Global New Car Assessment Programme (NCAP) in 2014 revealed that some of India's top-selling car models failed the UN's frontal impact crash test.
3. **Road Infrastructure & Design Deficiencies:**
   a. **Poor Road Design & Engineering**: Faulty road engineering leading to blackspots, poor designing of junctions, inadequate signage, haphazard planning of state highways and city roads are also some major factors causing road accidents.
   b. **Mixed Traffic Flow**: High-speed vehicles share space with slow-moving vehicles, cyclists, and even animals on the same road.
   c. **Lack of Pedestrian Infrastructure:** Pedestrians account for nearly **20% of road fatalities** in India. The lack of designated footpaths, zebra crossings, and overhead bridges forces pedestrians to walk directly on fast-moving lanes.
   d. **Uncontrolled Access Points**: Too many entry/exit points on highways without proper merging lanes.
   e. **Poor Maintenance of Roads**: Maintenance of highways receive only 35 to 40% of estimated funding in India.
4. **Systemic & Governance Issues:**
   a. **Weak Enforcement of Laws**: Corruption, understaffed traffic police, and inconsistent penalty systems reduce deterrence.
   b. **Lack of Emergency Medical Care**: Delayed ambulance services and inadequate trauma care increase fatalities.
   c. **Lack of Golden Hour Treatment:** Lack of rapid trauma care on highways leads to high fatalities.
   d. **Delayed Implementation of Safety Laws**: The **Motor Vehicles (Amendment) Act, 2019** introduced stricter penalties, but enforcement is uneven across states.
   e. **Jurisdictional Fragmentation**: Subjects like roads, police, public health, and vehicle regulation are divided across Union list, State list, and Concurrent list in the Constitution. Such fragmentation of the governance structure ensures that no single institution owns the prevention of road accidents.

What are the impacts of road accidents in India?

1. **Loss of Life and Disability:** India has one of the world's highest numbers of road accident fatalities – over **1.7-1.8 lakh deaths annually –** translating to 20 deaths and 55 accidents every hour. A traffic accident claims a life every three minutes in India.
2. **Disability and Long-Term Injury Burden:** Beyond fatalities, lakhs of people are injured annually, many suffering permanent disabilities that impose lifelong medical and rehabilitation costs on families and the state.
3. **Economic Burden:** The World Bank estimates road accidents cost India **3-5% of its GDP annually**. This includes:
    - **Medical Costs:** Immediate emergency care, long-term treatment, and rehabilitation.
    - **Loss of Productivity:** Victims' lost income and reduced earning capacity, plus caregivers' lost work time.
    - **Administrative & Legal Costs:** Police, insurance, and court expenses.
4. **Destruction of Human Capital:** 83.4% of all fatalities occur within the productive working-age bracket of **18 to 60 years**. The premature death or permanent disability of young earners drains the national workforce and lowers long-term industrial productivity.
5. **Gender-Specific Impact:** According to World Bank's report "Traffic Crash Injuries and Disabilities: The Burden on Indian Society 2021", about 50% of Indian women were severely affected by the decline in their household income after a crash.
6. **Increased Poverty:** Medical expenses and loss of income push millions of households below the poverty line each year.
7. **Overburdened Courts:** Millions of accident-related cases clog the judicial system, leading to long delays in compensation.
8. **Undermines India's Global Standing and SDG Commitments:** India recorded the highest absolute number of road accident deaths worldwide in 2023, directly jeopardizing progress toward SDG Target 3.6 (halving road traffic deaths) and India's goal to cut road deaths by 50% under the UN Decade of Action for Road Safety (2021–2030).

What measures have been taken in India to reduce road accidents?

1. **Formulation of National Road Safety Policy (NRSP), 2010:** The policy was formulated based on the recommendations of **S. Sundar Committee**. Some important highlights are:
    a. Establishment of **Road Safety Information Database**.
    b. Periodical review of road design standards and vehicle safety standards.
    c. Creation of a **National Road Safety Council** to supervise matters related to road safety.
2. **Establishment of District Road Safety Committees (DRSC):** Established under the Section 215 of the Motor Vehicle Act of 1988. These have been entrusted with creation of a district road safety plan and an emergency medical plan.
3. **Supreme Court Directives**: In S. Rajaseekaran v. Union of India (2014), the Supreme Court issued wide-ranging orders, including:
    a. Strict enforcement of helmet laws, using cameras to identify violators.
    b. Audit and improve existing footpaths and pedestrian crossings in 50 cities to address the alarming number of pedestrian deaths.
    c. Ban illegal strobe lights and hooters, and regulate vehicle headlight luminance.
4. **Passage of Motor Vehicles (Amendment) Act 2019:** Govt of India has tried to enhance the road safety measures through this Act.
    a. Creating a **National Road Safety Board** to advise the government on traffic management.
    b. Higher fines for traffic rule violations such as ₹10,000 for drunken driving.

   c. Recalling defective vehicles which are dangerous for the environment and people.
   d. Creation of a '**Solatium Fund**' for victims of hit-and-run accidents.
   e. Punishment to the owner for violations committed by Juvenile.
   f. Automated testing for driver's licence and fitness certificate (FC).
   g. Protection of Good Samaritans from civil and criminal liability.
5. **National Road Safety Board Rules, 2025**: This new central body was established to coordinate road safety efforts between the central and state governments, promote awareness, develop a road safety information system, and ensure safer road infrastructure.
6. **AI-Led Surveillance (ANPR Systems):** High-resolution Automatic Number Plate Recognition (ANPR) and AI-enabled cameras are live across major metros. These cameras automatically issue e-challans by tracking stop-line violations, lane discipline etc.
7. **Vehicle Scrapping Policy:** A structural initiative to systematically phase out unscientific, old, and unfit commercial and private vehicles that pose heavy breakdown risks on fast-moving expressways.
8. **Scientific Rectification of "Black Spots":** The Ministry of Road Transport and Highways (MoRTH) has invested over ₹40,000 crore specifically into improving road geometry. Under this initiative, thousands of high-fatality "black spots" (accident-prone stretches) are identified & have been structurally re-engineered.
9. **New Delhi Road Safety Declaration (2026)**: This declaration outlines a roadmap to halve road fatalities by 2030, focusing on five pillars: **road safety management, safer vehicles, safer road users, post-crash response,** and **safer driving environments**.
10. **International Commitments**: India was among the initial 100+ countries to sign the **Brasilia Declaration** in 2015 & committing to SDG 3.6 which aims to halve the global deaths and injuries from road accidents by 2030.

To systematically reduce road accidents, the Government of India operates a multi-pronged strategy structured around the **"4Es of Road Safety"**: **Education, Engineering (Roads & Vehicles), Enforcement, and Emergency Care.**

Read More: Motor Vehicles (Amendment) Act 2019

Some global initiatives for Road Safety:

Brasilia Declaration on Road Safety (2015): India is a signatory to the Declaration. The countries plan to achieve Sustainable Development Goal 3.6 i.e., to halve the number of global deaths and injuries from road traffic accidents by 2030.
Decade of Action for Road Safety (2021-2030): The UN General Assembly adopted resolution "Improving Global Road Safety" with the ambitious target of preventing at least 50% of road traffic deaths and injuries by 2030.

What measures must further be adopted to reduce road accidents in India?

1. **Create a unified body:** Creating a unified, statutory **National Road Safety Authority (NRSA)**. Currently, road safety is fragmented across MoRTH, state transport departments, municipal corporations, and traffic police, resulting in a lack of coordinated accountability. Such a single road safety body, modelled on the GST Council, would enable the Centre and States to jointly formulate and

implement standards for road design, vehicle fitness, emergency medical care, and accident fatality reporting.

2. **Fix the Engineering Gap**: Re-engineer roads by eliminating high-risk black spots, construct physically segregated lanes for vulnerable road users, and introduce crash-absorbing barriers and roundabouts to prevent fatal high-speed collisions.
3. **Indian Vehicles safety features must conform to global best standards:** The European Union's General Safety Regulation which prescribes features like advanced emergency braking technology and intelligent speed assistance must be adopted in India.
4. **Implementation of important recommendations of KS Radhakrishnan panel on Road Safety:** The important ones are:
    a. Compulsory audit on road safety by the State governments.
    b. Creating awareness among people on road safety rules, insurance policies.
    c. Providing enough compensation to victims on time.
5. **Separation of Traffic:** High-speed heavy vehicles, passenger cars, and Vulnerable Road Users like pedestrians and cyclists should never share the same lane. Dedicated, physically segregated lanes for non-motorized transport are essential.
6. **Strengthen Trauma Care and Emergency Response**: Strengthen trauma care systems, as efficient ambulance services, well-equipped trauma centres, and prompt emergency response can significantly reduce accident-related fatalities. This is particularly important because nearly 50% of road accident deaths occur within the "Golden Hour" due to inadequate trauma care facilities along highways.
7. **Strict implementation of the existing rules:** The enhanced fines for traffic rules violations will also help in reduction of road accidents in India.
8. **Improve Public Transport**: India must strengthen its public transport system to reduce overall traffic exposure and dependence on two-wheelers, which bear the highest fatality burden.
9. **Database for fatal crashes:** A national database for fatal crashes should be established which will help in evidence-based policy making, identifying the 'black spots' and will foster greater transparency & accountability. The central and the state governments must undertake efforts towards it.
10. **Constitutional Reform:** Amend the Seventh Schedule of the Constitution to bring roads and traffic more firmly within Parliament's legislative domain. This would help address the constitutional gaps that often limit the effectiveness of advisory bodies in ensuring uniform road safety standards across the country.

Conclusion: The approach to road safety has to be proactive, rather than reactive. The public has as much role to play as the Government. A concerted and focused effort from both the government and the citizens can help bring down road accidents and help save precious lives.

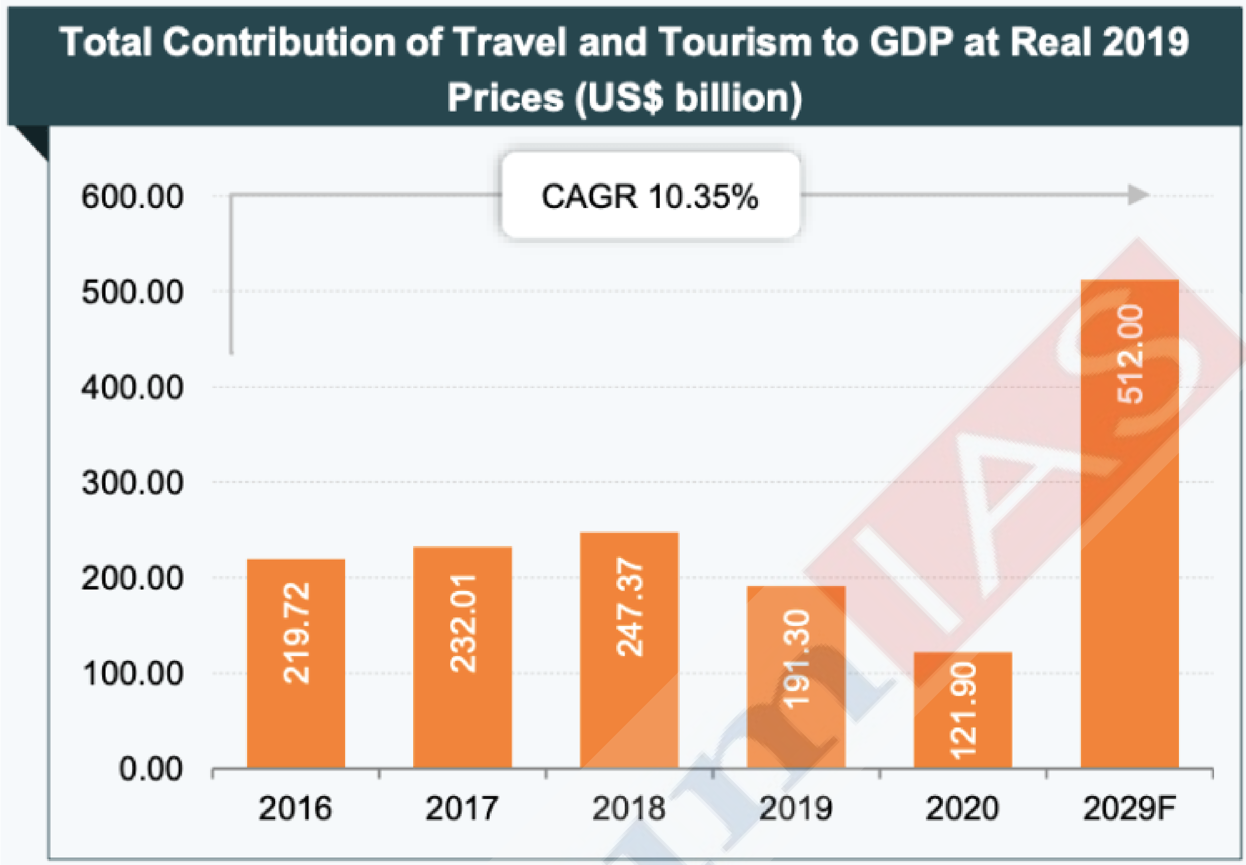
Read More: [The Indian Express]
UPSC Syllabus: Infrastructure: Energy, Ports, Roads, Airports, Railways etc.

Tourism Sector – Significance & Challenges – Explained Pointwise

The tourism sector is a broad and dynamic industry encompassing all the businesses and services that facilitate travel, leisure, and recreation. It's one of the world's largest economic sectors, connecting people to new places, cultures, and experiences.
India's tourism sector is a major driver of economic growth, employment generation, foreign exchange earnings, and cultural exchange. Endowed with diverse landscapes, rich heritage, and vibrant traditions, India attracts millions of domestic and international tourists annually. The sector plays a crucial role in promoting inclusive development and regional prosperity.

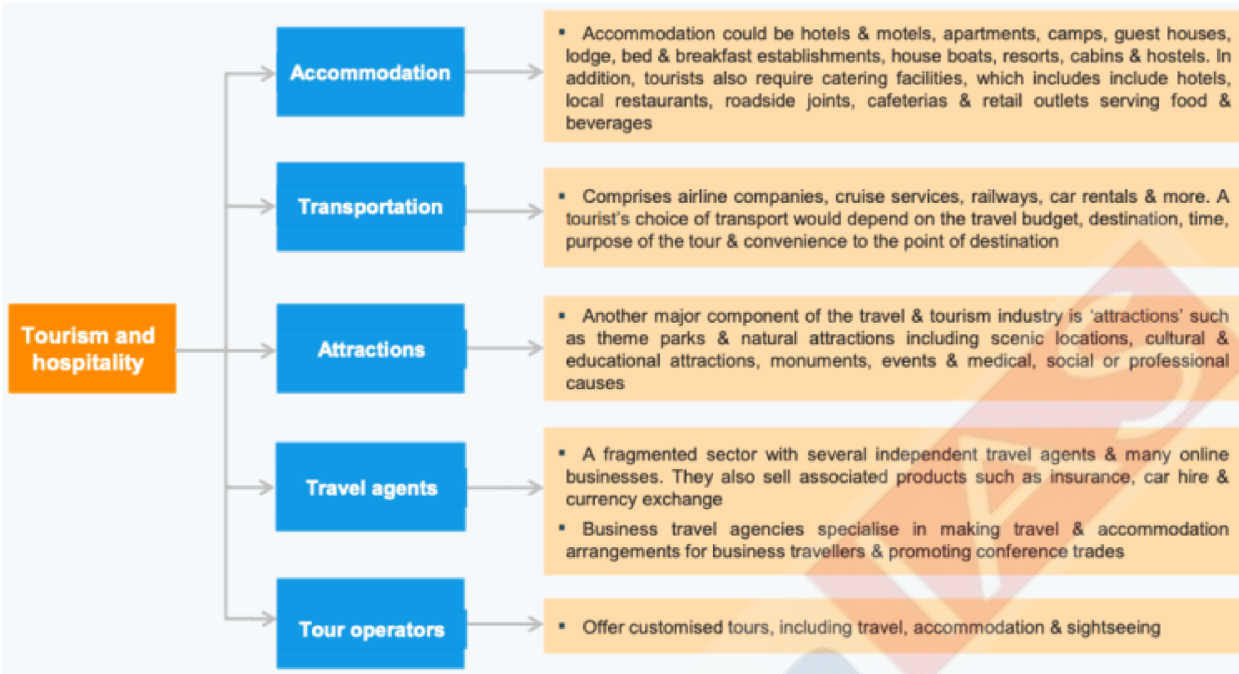
What is the current status of the Tourism Sector in India?

- Before the onset of the pandemic, the contribution of the tourism sector to India's GDP had reached ~US$ 250 billion in 2018. However, the contribution had fallen to US$ 122 billion in 2020 due to the pandemic. In 2025, tourism contributed about $231.6 billion to GDP (approx. 7%), making India the world's 8th largest tourism economy. The sector is projected to reach 4th position globally within the next decade.



Source: IBEF

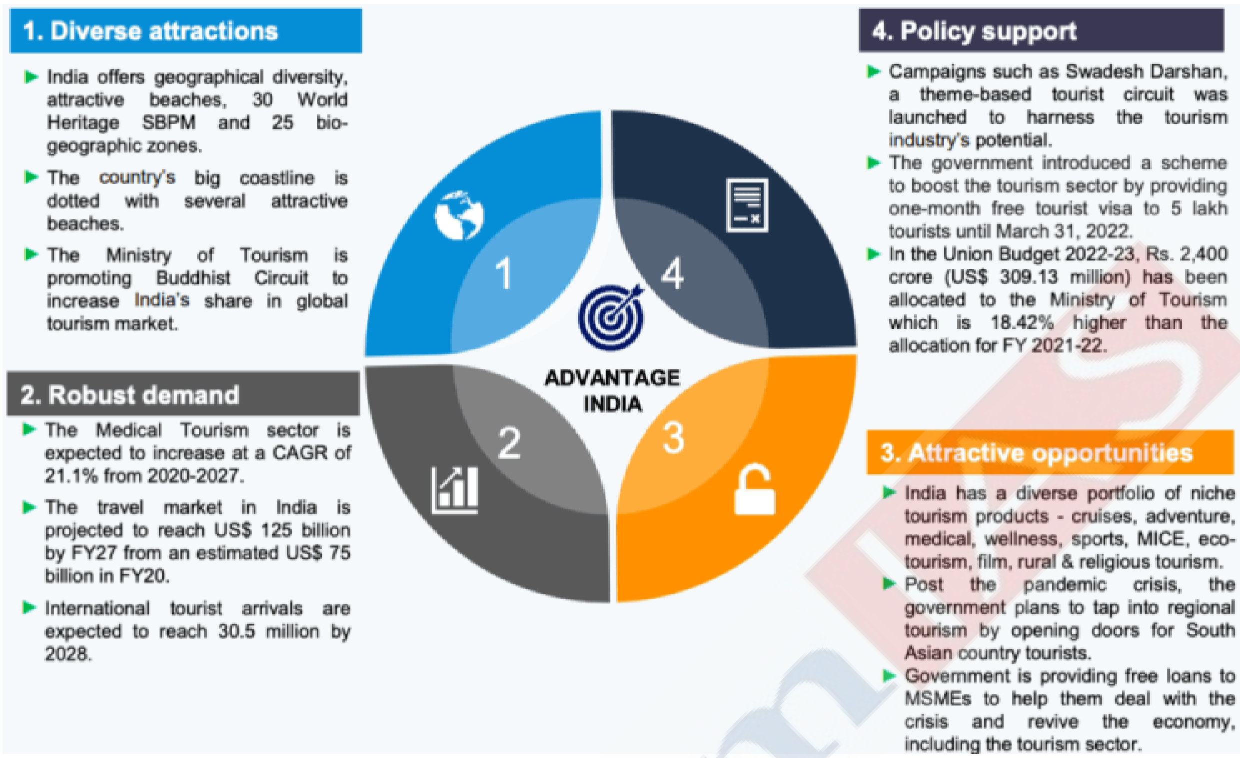
- The share of Tourism to GDP has hovered around **~5-6%.** In 2023-24, tourism contributed 5.22% to national GDP and generated approximately **84.63 million jobs (around 13.34% of total employment)**, both direct and indirect.
- India recorded approximately **4.13 billion Domestic Tourist Visits** in **2025 (provisional)**, reflecting sustained growth in domestic travel.
- **International Tourist Arrivals** reached **20.57 million in 2024**, surpassing the pre-pandemic level of 2019.
- Tourism generated approximately **₹2.74 lakh crore** in foreign exchange earnings during **2025 (provisional)**, making it an important source of foreign currency.
- India's tourism and hospitality sector is poised to reach nearly US$60 billion by 2028, with traveler spending expected to triple by 2034.
- India was ranked 39th in the **Travel & Tourism Competitiveness Report 2024** published by the World Economic Forum.
- The Economic Impact 2019 Report published by the World Tourism and Travel Council (WTTC) has noted that between 2014-19, India witnessed the strongest growth in the number of jobs created (6.36 million), followed by China (5.47 million) and the Philippines (2.53 million).
- The tourism sector provides diverse opportunities for jobs like in hospitality/hotels/accommodation, transportation, tour guides, travel operations etc.



Source: IBEF

What are the driving factors of the Tourism Sector in India?

The Tourism Sector in India is driven by various factors like diverse attractions, robust demand (like for medical tourism) and attractive opportunities.



Source: IBEF

What is the significance of the Tourism Sector?

1. **Economic Contribution**: The travel and tourism sector contributed approximately **$249 billion** (about 6% of India's GDP) and is on a trajectory to reach a **$3 trillion** tourism economy by 2047. It spurs growth in allied sectors such as hospitality, transport, handicrafts, and retail, amplifying economic impact.
2. **Employment Generation:** Tourism is highly labor-intensive sector. It accounts for 13.34% of total employment in India, supporting over 46 million jobs. Crucially, for every ₹10 lakh invested in tourism, it is estimated to create nearly 90 jobs – a employment multiplier far higher than manufacturing.
3. **Low Barrier to Entry:** Because the sector requires diverse skill sets, it provides immediate livelihoods for women, youth, and low-skilled workers in rural areas through homestays, local transport, guiding, and artisanal crafts.
4. **MSME and entrepreneurship boost:** Homestays, local guides, small tour operators, and artisan shops thrive on tourist footfall, which leads to the development of grassroots entrepreneurship – particularly in remote & rural areas.
5. **Cultural & Heritage Preservation:** Tourism incentivizes the conservation of India's rich cultural heritage, historic monuments, art forms, and traditional crafts by generating revenue and global interest. Pilgrimage and heritage tourism help sustain religious traditions and local communities.
6. **Balanced Regional Development & Inclusive Growth:** Tourism drives infrastructure development in tier-2 and tier-3 cities, promoting balanced regional growth. Community-based and rural tourism empower local populations, improve quality of life, and reduce urban migration. For e.g. when

travelers visit spiritual hubs in Uttarakhand, monastery trails in the Northeast, or wildlife sanctuaries in Madhya Pradesh, money flows directly into remote, rural, and tribal economies.

7. **Forex Earning:** Tourism is one of India's largest sources of net foreign exchange. In 2024, international tourists directly injected **$28 billion** into the Indian economy.
8. **Environmental Conservation:** Eco-tourism and wildlife sanctuaries (like the tiger reserves of Central India) prove to local communities that protecting forests and wildlife is far more profitable than deforestation or poaching.
9. **Projection of Soft Power & Diplomacy**: Through campaigns like **Incredible India** and specialized focus areas like **Spiritual Tourism** (e.g. the Buddhist Circuit) and **Wellness Tourism** (Yoga and Ayurveda), India projects its ancient heritage as a source of global healing and peace. It fosters deep "people-to-people" ties, which serves as a very powerful tool for geopolitical diplomacy & smoothing international relations.

What are the challenges faced by the Tourism Sector in India?

1. **The Value Gap**: While India sees massive tourist footfall, it struggles to translate this volume into economic value. Tourism contributes only about **5-6% to India's GDP**, which is roughly half the global average of 10%.
2. **Lack of Awareness**: Despite promotional campaigns by the Government, the awareness regarding India as a tourist destination remains low. Even among domestic tourists, the choice is limited to few popular destinations which remain overcrowded, while many other potential places receive low footfalls of tourists.
3. **Infrastructure Deficit**: India has only 1.8 lakh branded hotel rooms against demand of 5–6 lakh – which creates **accommodation gap**. Many popular destinations lack air connectivity, especially in the hilly regions. There is a lack of proper hygienic facilities in many places.
4. **Safety Concerns**: There are safety concerns especially among foreign visitors because of few cases of harassment. Poor experience of some tourists leads to bad word-of-mouth information impacting perception of potential tourists.
5. **Communication**: Many tourists face communication problems while in India. This makes them dependent on tourist guides or travel operators to curate their travel in India.
6. **Lack of Skilled Manpower**: There is dearth of skilled manpower especially multi-lingual tour guides or hotel staff. The sector is dominated by small unorganized players who can't spend on skilling their employees or sensitising them to cultural values of the foreign tourists. This impacts tourist experience.
7. **Visa Process**: India's visa policies are seen as restrictive. The country ranks below the global average on the UN Tourism Visa Openness Index. This, combined with issues like slow e-visa processing and limited visa-on-arrival access, deters potential travelers.
8. **Widening travel trade deficit:** India is earning less from foreign visitors than what Indians spend traveling abroad, with a travel trade deficit of more than $2.6 billion in the July–September quarter of the last fiscal year.
9. **High Taxation and Cost Competitiveness**: India has become an expensive destination due to high taxes and expensive services, with 18% GST on tourism-related services, undermining price competitiveness against neighboring destinations.
10. **Environmental & Sustainability Concerns:** Popular eco-tourism sites in the Himalayas and coastal Goa are buckling under the weight of **overtourism**. Problems range from severe plastic pollution to construction booms that exceed the "carrying capacity" of the land, triggering landslides and biodiversity loss.

11. **Socio-Cultural Costs**: Commercialization of tourism often leads to commodification of local traditions, art forms, and festivals to appeal to foreign audiences.
12. **Seasonality of Tourism Demand:** Demand fluctuates seasonally, leading to underutilized infrastructure and unstable income for providers during off-peak periods.

What steps have been taken for the development of the Tourism Sector in India?

Flagship Schemes	● **Swadesh Darshan 2.0:** This revised scheme takes a theme-based approach to develop **55 major destinations** across 32 states into comprehensive, sustainable tourism hubs. The focus areas include eco-tourism, cruise tourism, and heritage management. ● **PRASHAD Scheme (Pilgrimage Rejuvenation and Spiritual Heritage Augmentation Drive):** This initiative targets the holistic development of historic spiritual hubs. It includes makeovers of Varanasi's Kashi Vishwanath Corridor, the Ayodhya redevelopment, and Kedarnath temple complexes. ● **PM-JUGA (Dharti Aaba Janjatiya Gram Utkarsh Abhiyan):** Will build 1,000 tribal homestays as a Swadesh Darshan sub-scheme, linking the tourism sector to socio-economic uplift of tribal communities.
Infrastructure	● **Road & Railway Expansion**: The Government has been increasing investments in strengthening the country's road and rail networks and promoting port development is a significant driver for the growth of the Tourism sector. ● The **Adarsh Station Scheme** is helping modernize railway stations. ● **The UDAN (RCS) Scheme:** The Regional Connectivity Scheme has operationalized dozens of previously ignored tier-2 and tier-3 airports. Remote hotspots like Khajuraho, Lakshadweep, and Darbhanga are now connected by affordable, direct commercial flights.
Promotional Campaign	● Promotional activities such as the **Incredible India 2.0** campaign focuses on niche tourism products including yoga, wellness, luxury, cuisine wildlife among others. ● "**Find the Incredible You**" **Campaign:** Focuses on the promotion of niche tourism products of the Country on digital and social media. ● **"Chalo India" Campaign:** Launched globally, this unique initiative leverages the vast Indian diaspora. It encourages Non-Resident Indians to act as cultural ambassadors and incentivize at least five non-Indian friends to travel to India. ● **Medical Tourism Promotion**: The government is actively promoting the **"Heal in India"** initiative to boost medical tourism.
Information Helpline	● The government has introduced the concept of **e-tourist and e-medical visas** which has helped increase inbound tourists to the country.

	● Additional initiatives such as ***Atithi Devo Bhava***, a 24×7 multi-lingual Tourist Helpline, among others have helped improve the **safety and security** of tourists. ● On a pilot basis, an '**Incredible India Helpline**' has been set up to guide the tourists.
Safety	● The Ministry of Tourism has adopted a **code of conduct for safe tourism**, which contains a set of guidelines to encourage tourism activities to be undertaken with respect to basic rights like dignity, and safety of both tourists and local residents, in particular women and children.
Investment	● The government allows **100% Foreign Direct Investment** in the Travel and Tourism sector through the automatic route to increase investments across the sector. ● The GST rate cut on hotel room tariffs will boost the sector's competitiveness globally.
Cleanliness and Hygiene	● A major cleanliness campaign has been launched under the ***Swachh Bharat*** movement for **protecting and preserving the sanctity of monuments of national heritage.** ● The Ministry of Tourism has also launched an awareness campaign to ensure cleanliness of surroundings and help create a ***Swachh Bharat, Swachh Smarak.***
Skill Developmen t	● The Ministry of Tourism has introduced the **Incredible India Tourist Facilitator** (IITF) and **Incredible India Tourist Guide** (IITG) **Certification Programme** to create an online learning platform of well-trained tourist facilitators and guides across the country. ● The Ministry of Tourism had launched an initiative called **SAATHI (System for Assessment, Awareness & Training for Hospitality Industry)** by partnering with the Quality Council of India (QCI) in October 2020. The initiative was focused on effective implementation of guidelines/SOPs issued with reference to COVID-19 for safe operations of hotels, restaurants, and other units.
Collaboratio n with States	Tourism is a **State subject** – which makes coordination between State governments & Central government key to boost the sector.

	• **Financial Support for States**: The government provides interest-free loans for 50 years to states under the **Special Assistance to States for Capital Investment (SASCI)** scheme. • **Developing 50 Top Destinations**: The Union Budget 2025-26 announced a key initiative to develop 50 top tourist destinations in partnership with state governments, using a "challenge mode" approach to ensure high-quality outcomes.
Digital Initiatives	• **Utsav Portal:** Launched in 2022 to broadcast events, festivals, and Live Darshans across India, and provide information on tourist attractions and accommodation. • **Bharat Ranbhoomi Darshan app:** Launched by the Ministry of Defence in collaboration with the Ministry of Tourism and Indian Army to promote battlefield tourism, showcasing India's military heritage. • **Digital Platform**: A revamped **Incredible India Digital Platform (IIDP)** has been launched, featuring an AI-powered tool that personalizes visitor experiences with real-time updates and allows seamless travel bookings.

What should be the way forward?

1. **Infrastructure Expansion & Modernization:** Accelerate development of transport connectivity (roads, railways, airports) to underserved and emerging tourist destinations. Upgrade accommodation, sanitation, and visitor facilities, focusing on quality and accessibility.
2. **Promotional Campaigns:** The government should continue to promote India's diversity and rich heritage to re-establish its position as a tourist paradise. The promotional campaigns should target both domestic and foreign tourists. Similarly, the extent of theme-based tourist circuits can be expanded.
3. **Skill development & Capacity Building:** The skilling initiatives should be scaled-up. The tourism sector has a potential to provide a lot of livelihood opportunities in smaller cities/towns (below tier-2 level). It can help address the issue of jobless growth. Also expand the training programs for frontline workers, hospitality professionals, and local guides to uplift service standards.
4. **Visa Process Reform:** Expand e-Visa coverage, reduce processing delays & overhaul the e-visa portal to fix technical glitches. Also introduce a 90-day, multiple-entry Visa-on-Arrival framework for primary source markets.
5. **Unified Tourism Interface**: India needs to integrate its powerful digital public infrastructure (DPI) into a seamless travel application ecosystem. By unifying **UPI** (instant payments), **DigiYatra** (biometric airport entry), **DigiLocker** (digital document storage), and the **ONDC** (Open Network for Digital Commerce) a single, friction-free digital layer can be created.
6. **Grant infrastructure status to hospitality:** It would lower the cost of capital, unlock institutional funding, and enable sustainable capacity creation in Tier-II/III cities and pilgrimage circuits.
7. **Sustainable Tourism:** There is a need to balance the promotion of tourism with safeguarding the physical, social, and cultural environment in the destination areas. The government should also promote green and sustainable tourism to tackle issues relating to water crisis, pollution, waste management, etc.

8. **Policy & Regulatory Reforms:** The Government should further reform the tourist visa norms and processes to facilitate tourism. The Government should also explore the possibility of expanding the visa-on-arrival facility.
9. **Emerging Segments of Tourism:** The focus should also be on supporting and promoting the emerging segments of tourism – such as:

Source: IBEF. Emerging Segments of Tourism.

Conclusion:

The tourism sector is a powerful force for both economic development and cultural connection. It has huge untapped potential in India. The multiplier effect associated with the tourism sector can help raise the income levels and ensure inclusive growth. Thus, tourism is a powerful pathway to national growth, prosperity, and global influence – hence realizing the essence of "**Incredible India, Invaluable Economics**".

Syllabus: GS III, Indian Economy and issues related to growth.
Source: The Hindu, Hindustan Times, IBEF, Indian Express