Forum IAS

7 PM COMPILATION

1st and 2nd week May, 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
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- Best cost-benefit ratio according to successful aspirants

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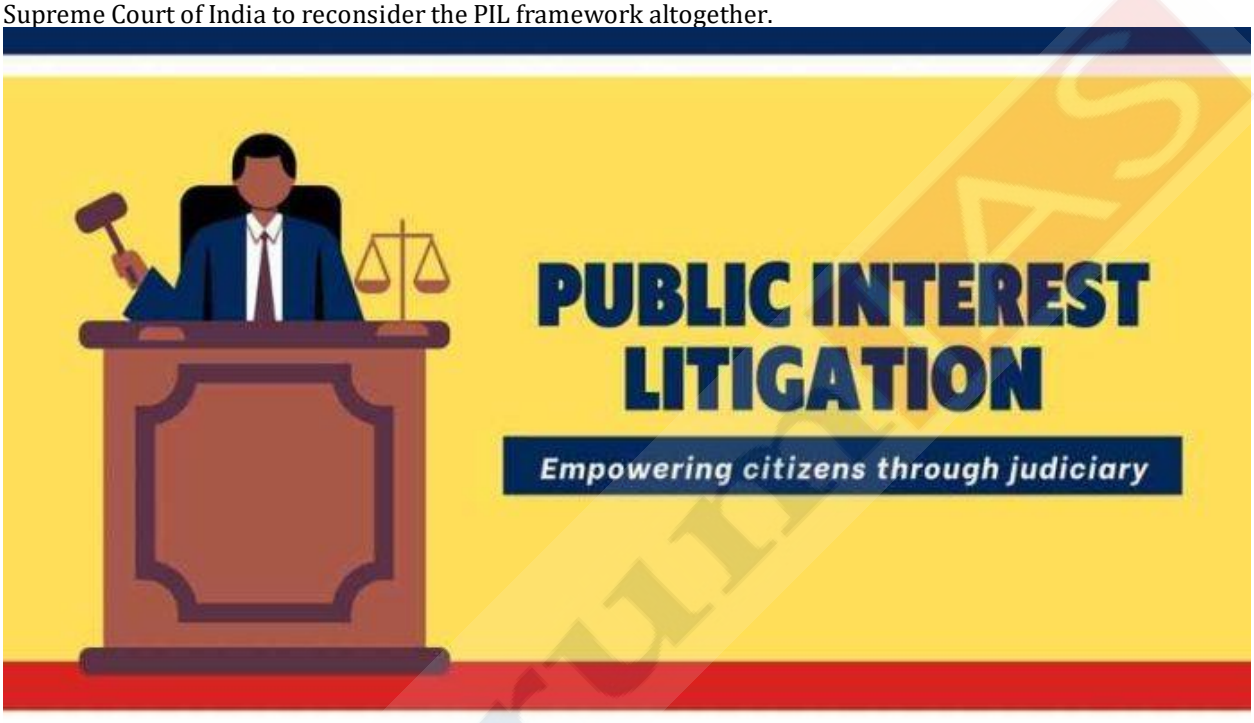
Public Interest Litigation (PIL) – Significance & Criticisms – Explained Pointwise

Public Interest Litigation (PIL) emerged in the 1970s as a transformative judicial innovation aimed at expanding access to justice for the poor and marginalized. This was facilitated by relaxing the strict rules of locus standi to allow representative actions, and by broadening judicial powers to take suo motu cognizance of public issues and convert them into litigation. However, over time, concerns have been raised regarding the misuse of this jurisdiction. Recently, in the Sabarimala reference case, the Union government urged the Supreme Court of India to reconsider the PIL framework altogether.



Source: Law Article

What is PIL?

PIL (Public Interest Litigation) refers to a legal mechanism that allows individuals or organizations to approach a court of law seeking justice for a matter of public interest, rather than for personal gain.

It is designed to protect the rights of marginalized or disadvantaged groups who may not have the resources or ability to file a lawsuit themselves.

PIL originated in the **United States** in the 1960s and was developed in India by the Supreme Court in the late 1970s and 1980s, notably under **Justices P.N. Bhagwati** and **V.R. Krishna Iyer**.

Key features of PIL:

To address issues affecting the public at large, such as environmental pollution, corruption, human rights violations, or prison reforms.

Any citizen, non-governmental organization (NGO), or social activist can file a PIL, not just an aggrieved party.

Unlike ordinary litigation, the strict rules of ***locus standi*** are relaxed, allowing anyone with public spirit to raise an issue.

The court can take **suo moto cognizance** of issues based on a letter, news report, or even a postcard.

PILs are typically filed under **Article 32** (in the Supreme Court) or **Article 226** (in High Courts).

What are some of the important cases taken up under PIL?

Hussainara Khatoon v. State of Bihar (1979)	This is widely considered the **first PIL in India**. A news report revealed that thousands of "undertrials" in Bihar had been in jail for periods longer than the maximum sentence they would have received if convicted. Supreme Court ordered the immediate release of over 40,000 prisoners. It established the **"Right to a Speedy Trial"** as a fundamental right under Article 21.
M.C. Mehta v. Union of India (1986–Present)	These cases gave birth to the **"Absolute Liability"** principle (making companies 100% liable for hazardous leaks) and the **"Polluter Pays"** principle. It forced thousands of polluting industries to either clean up or shut down.
T.N. Godavarman Thirumulpad v. Union of India (1996)	Often called **"the forest case"** of India. It is a landmark PIL which originated as a PIL to protect forest areas of Nilgiris & that fundamentally changed how India protects its environment, shifting the judiciary from a passive interpreter of law to an active manager of natural resources. The case introduced or strengthened several key concepts that govern Indian environmental law today such as **Net Present Value (NPV), CAMPA Funds** etc.
Vishaka v. State of Rajasthan (1997)	PIL highlighting the lack of protection for women in their workplaces. There was no specific law at the time to address the issue. The Court created the **"Vishaka Guidelines."** These guidelines were legally binding for years and eventually led to the enactment of the **Sexual Harassment of Women at Workplace Act, 2013.**
Parmanand Katara v. Union of India (1989)	A person died because hospitals refused to treat him, claiming they couldn't touch a "medico-legal case" (accident case) until a police report was filed. The Supreme Court ruled that **preserving life is paramount**. It held that every doctor, whether in a public or private hospital, has a professional and legal obligation to provide immediate medical aid to injured persons without waiting for police formalities.
NALSA v. Union of India (2014)	A PIL was filed to recognize the rights of transgender people. The Court officially recognized **transgender people as the "Third Gender."**

What is the significance of PIL?

Social Justice: India has vast populations of marginalized groups: Scheduled Castes, Scheduled Tribes, women, children, prisoners, and victims of human trafficking. PIL became the primary legal mechanism to secure justice for these groups. Cases on preventing manual scavenging, protecting the rights of sex workers, ensuring prison reforms, and stopping child labor were all initiated through PIL.

Expanding Article 21 (Right to Life): PIL played a very critical role in expanding the scope of Article 21. The right to a clean environment (M.C. Mehta case), right to livelihood (Olga Tellis case), right to free and compulsory education (Unnikrishnan case), right against custodial torture, right to speedy trial, right to shelter, and right to health are all products of PIL-driven jurisprudence.

Introduction of "Continuing Mandamus": This is a uniquely Indian innovation born out of PIL. Instead of issuing one judgment and closing the case, the court retains jurisdiction and monitors the implementation of its orders over months or even years. For complex issues (like cleaning the Yamuna River or converting Delhi's

buses to CNG), the court appoints committees, seeks regular compliance reports, and passes directions until the problem is fully solved. This ensures that the executive cannot simply ignore a court order.

Addressing Environmental Degradation: Given India's rapid industrialization and severe pollution problems, PIL has been the primary tool for environmental protection. Landmark cases like the **Taj Trapezium** case (protecting the Taj Mahal from acid rain), the **Delhi CNG** case, and the **Silent Valley** case were all PILs. The very establishment of the **National Green Tribunal (NGT)** was influenced by PIL jurisprudence.

Accountability of the State: It serves as a check on "Executive Overreach" or "Administrative Inertia." PIL allowed the judiciary to step in when the executive failed to perform its constitutional duties (**Judicial Activism**). The court takes a proactive role in governance to ensure justice. Thus, PIL transformed the Supreme Court into a "last resort" for citizens who felt ignored by the Executives & the Legislature.

Low-Cost Access to Justice: By relaxing procedural technicalities, the court ensures that the cost of litigation doesn't prevent justice from being served. The judiciary realized that in a developing nation, the "Rule of Law" is meaningless if it only serves those who can pay.

Filling Legislative Vacuums: When the government fails to create laws for urgent issues (like workplace harassment or air quality), the court provides "guidelines" that function as law until a formal Act is passed.

What are the major criticisms of PIL?

Judicial Overreach: PIL has led the judiciary to overstep its constitutional role of interpreting laws and instead start making or administering them. This violates the **Separation of Powers** doctrine. The judiciary is becoming a "super-legislature" and "super-executive" for e.g. Supreme Court's order banning the sale of alcohol on national and state highways, while well-intentioned for road safety, critics argued it ruined livelihoods of thousands of small shop owners.

Misuse for Private, Political, or Vexatious Motives: Many PILs are not for "public interest" at all, but for private gain dressed up in public garb for e.g. Rival politicians file PILs to harass opposition leaders, Business rivals file PILs to stall competitors' projects. The Supreme Court itself has called many PILs "publicity interest litigation," "private interest litigation," or "politically motivated litigation" or "Ambush PIL".

Overburdening of Courts: Hundreds of frivolous PILs have clogged the Supreme Court and High Courts. Instead of waiting for evidence, courts issue notices based on newspaper clippings, TV news reports, or letters. Judges spend weeks and months hearing such PILs instead of clearing the backlog of thousands of old criminal and civil cases involving real litigants.

Anti-Democratic Tendencies: Unlike Parliament or state assemblies, judges are not accountable to the people. Yet, PIL allows a single unelected judge to stall or change laws and policies affecting millions. While unelected judges are necessary for constitutional interpretation, using PIL to run day-to-day governance is a form of "judicial dictatorship."

Inconsistent Standards and Lack of Procedure: Unlike regular cases which have strict rules of evidence, cross-examination, and pleadings, PILs operate on a flexible, often ad-hoc basis. The same petition may be dismissed in one court and admitted in another. There is no codified "PIL Act" in India. Some judges take suo motu cognizance of a news report about a child falling into a borewell, but ignore a letter about thousands of malnutrition deaths. This arbitrariness is a major criticism.

Violation of Natural Justice: In traditional law, no order can be passed against a person without giving them a chance to be heard (***audi alteram partem***). PIL often bypasses this. Courts often issue interim orders (e.g., "stop all construction within 500m of this river") without hearing the affected parties—small builders, laborers, shopkeepers, or state agencies.

Difficulty in Implementation: A court can pass a landmark judgment, but it has no "sword or purse" to enforce it. Many PIL orders remain on paper because the government lacks the funds or the political will to implement them. This can lead to a loss of public faith in the judiciary when people see that court orders are routinely ignored.

Elitist and Urban-Centric Bias: Ironically, while PIL was meant for the poor rural masses, most PILs are filed in the Supreme Court or High Courts by elite urban lawyers, retired judges, or metropolitan NGOs.

What should be the way forward?

Stricter Scrutiny at the Admission Stage (Filtering Frivolous PILs):

Impose costs heavily on frivolous or vexatious PILs at the admission stage itself. The Supreme Court has occasionally done this, but it must become the norm, not the exception.

Distinguish clearly between – Genuine PIL and Private interest disguised as PIL or Publicity PIL.

Codify a "PIL Procedure": The **Parliament** or the **Supreme Court** (under Article 145) should frame clear, codified rules for PIL, including:

Who can file (definition of "public-spirited person").

What issues are maintainable (list of excluded matters: service disputes, contractual matters, political rivalries).

Time limits for disposal.

Requirement to exhaust alternative remedies (e.g., approaching the executive, National Human Rights Commission, or statutory bodies) before filing PIL.

Impose "Continuing Mandamus" Limits:

Courts should **set a time limit** for their own supervision (e.g., 6 months or 1 year) and then exit, leaving implementation to executive bodies.

Instead of monitoring directly, courts can refer complex technical matters to **expert statutory bodies** and only review their reports for constitutional compliance.

The **National Green Tribunal (NGT)** and **Human Rights Commissions** should be strengthened so courts can transfer environmental and human rights PILs to them, reducing the Supreme Court's load.

Enact a "Public Interest Litigation Act": Parliament should enact a **PIL Act** that defines – Who has standing (individuals, registered NGOs with a track record, legal aid authorities), What constitutes "public interest" (excludes private disputes, service matters, contractual breaches, political vendettas), Procedure for filing, hearing, and disposing of PILs, Costs and penalties for misuse. This would remove the arbitrariness and bring PIL within a predictable legal framework.

Bridging the Digital Divide: Expanding **e-Seva Kendras** to every *Gram Panchayat* to help rural citizens file petitions and track cases without needing to travel to a High Court. Translate the court orders and filing forms into regional languages to truly democratize judicial information & to overcome the criticism of urban-elitist biasness of PIL.

Judicial Self-Restraint: Instead of judges making technical decisions (like pollution levels or traffic flow), the judiciary should involve appointing independent, specialized committees and following their recommendations. Rather than passing new "guidelines," the court's role should shift toward monitoring whether existing laws are actually being implemented by the executive.

Strengthening NALSA: The National Legal Services Authority (NALSA) is being bolstered to provide free legal aid at the grassroots level. If local legal aid cells can solve a problem, the need for a massive PIL at the Supreme Court decreases.

UPSC GS-2: Polity
Read More: The Hindu

Gig Workers in India – Benefits & Challenges – Explained Pointwise

In a move to secure the rights of the growing platform-based labour force, the Karnataka government has officially operationalized a specialized grievance redressal mechanism for platform-based gig-workers. Th e mechanism, a first-of-its-kind in India, has been developed by the Karnataka Platform-based Gig Workers' Board in collaboration with the Department of e-Governance.

Source: The Core

Who are the Gig Workers?

According to the **Code on Social Security (2019)**, a gig worker is: "A person who works and earns through activities outside traditional employer-employee relationships."

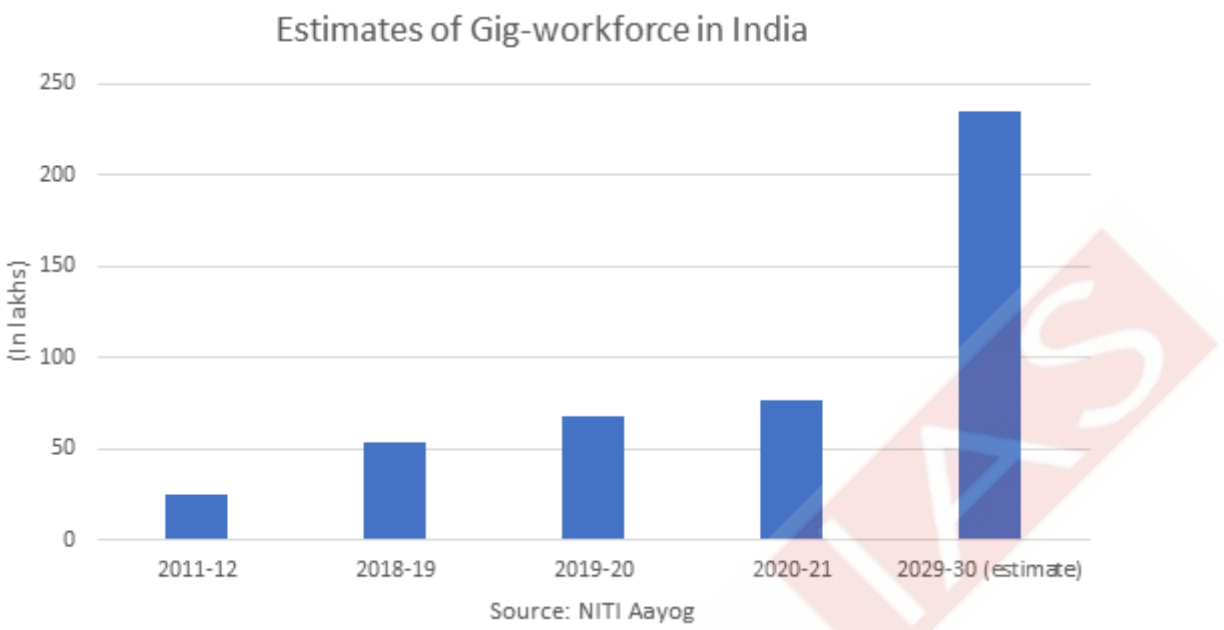
Gig work is largely task-based, facilitated through digital platforms. Workers, including freelancers and independent contractors, are paid per task rather than through full-time contracts. Common roles range from food delivery to online freelancing and digital services.

What is the present status of Gig Economy & Gig Workers in India?

As of now, India has around **7-8 million gig workers**, and this number is rapidly growing. NITI Aayog estimates that the numbers of gig workers could expand to 23.5 million by 2029-30.

The gig economy is expected to expand at a **Compound Annual Growth Rate (CAGR) of 12%**, reaching **23-25 million workers by 2030**. This would mean that gig workers would make up **4.1% of India's total workforce** by that time.

A report by **Boston Consulting Group (BCG)** suggests that the gig economy could potentially create **90 million non-farm jobs** and contribute an additional 1.25% to India's GDP, reflecting its potential as a significant economic driver.



Indicator	Value
2020-21	7.7 million gig workers (NITI Aayog)
2029-30 Projection	23.5 million workers
Skill Distribution	47% medium-skilled 22% high-skilled 31% low-skilled
Major Sectors	Ride-hailing, delivery, content creation, marketing, e-commerce logistics

What are the factors behind rapid growth of Gig Economy in India?

Digital Access	Over 936 million internet users and 650 million smartphone users (2025 estimate). Affordable devices and 4G/5G connectivity allow even rural workers to participate.
e-commerce & Startups	Platforms like **Zomato, Swiggy, Urban Company, Amazon, Flipkart** create demand for delivery, marketing, and logistics work.
Consumer Convenience	Urban lifestyles increase demand for **on-demand services**, boosting opportunities in delivery, customer support, and freelancing.
Labor Market Dynamics	Surplus of semi-skilled labor, weak social security, and high unemployment push workers toward gig jobs as a survival strategy.

Work Preferences	Younger generations value flexibility, remote work, and project-based tasks, making gig work highly attractive.

What are benefits of Gig Economy & Gig workers?

Opportunities for Workers: Gig work provides flexible hours, helping workers balance personal and professional life. **For example**, a woman delivering groceries via Swiggy can manage childcare, while a freelance designer on Upwork can pick projects based on availability.

Business Advantages: Companies access cost-effective, short-term labor. Amazon and Flipkart hire gig workers during peak seasons, allowing rapid workforce scaling and higher productivity.

Economic Impact: By 2030, the gig economy could create 90 million jobs, handle $250 billion in transactions, contribute 1.25% to GDP, and represent 4.1% of the workforce. Platforms like Zomato and Ola illustrate its role in boosting employment and economic activity.

Inclusivity & Technology: Gig work is reaching Tier-II and Tier-III cities, offering jobs to local youth. Ride-sharing and food delivery are expanding in cities like Mysuru, Coimbatore, and Lucknow. AI and predictive analytics help assign tasks efficiently, cut waiting times, and increase earnings.

Skill Development: Gig work encourages skill enhancement and digital literacy, as workers learn new tools, platforms, and professional practices to stay competitive.

What are the challenges faced by the Gig Workers?

Income Volatility: Unlike traditional salaries, gig income fluctuates based on demand, season, or even the time of day. This "feast-or-famine" cycle makes long-term financial planning (like getting a mortgage) extremely difficult.

Lack of Benefits: Most gig workers are classified as "independent contractors," meaning they do not receive health insurance, paid sick leave, maternity leave, or retirement contributions.

Operational Costs: Workers often bear the full burden of expenses, such as fuel, vehicle maintenance, insurance, and equipment, which can significantly eat into their "take-home" pay.

The "Black Box": Platforms use opaque algorithms to assign tasks, set pay rates, and track performance. Workers often feel they are working for a "boss they can't talk to."

Arbitrary Deactivation: A sudden drop in customer ratings or a technical glitch can lead to "deactivation" (essentially being fired) without a clear human appeal process or due process.

Surge and Target Pressure: Many platforms use "gamified" incentives, pushing workers to work longer hours or take higher risks (like 10-minute delivery guarantees) to meet targets or earn bonuses.

Occupational Hazards: Delivery and transport workers face high risks of road accidents, extreme weather exposure, and physical exhaustion.

Misclassification: There is a global legal battle over whether gig workers should be considered "employees." Until this is resolved, many remain in a "legal grey area" without the protection of minimum wage laws or collective bargaining rights.

What are the various initiatives taken by the government for Gig Workers?

Central Legislation	**Code on Wages, 2019:** Proposes a universal minimum wage for all sectors, including gig workers. **Code on Social Security, 2020:** Recognises gig workers as a separate category, but rules are yet to be framed. **Motor Vehicle Aggregator Guidelines, 2020:** Provides **term insurance of ₹15 lakh** and **health insurance of ₹10 lakh** for gig drivers. Limits working hours to **12 hours per day** with a **10-hour break** if logged in full-time.

	PM Jan Arogya Yojana (PM-JAY, 2025-26): Offers **₹5 lakh per family per year** health coverage for gig workers. **e-SHRAM Portal (2021):** National database for unorganized and gig workers; **30.58 crore workers registered** as of early 2025.
State-Level Initiatives	**Rajasthan (2023):** First state to enact platform-based gig worker law. Key features include: Mandatory registration of gig workers and aggregators. Creation of a **Welfare Board and Fund**, financed by a **1-2% transaction cess**. Provisions for **grievance redressal, payment transparency, and rights awareness**. **Karnataka:** **Karnataka Platform-Based Gig Workers (Social Security & Welfare) Act:** Based on Rajasthan's law but with stronger focus on **worker safety and welfare**. Includes **aggregator contributions** to the welfare fund as a percentage of gig worker earnings. **Integrated Public Grievance Redressal System Portal (IPGRS)**: Gig workers can officially lodge grievances, including regarding pay, working conditions, and platform-specific disputes. **Jharkhand & Bihar:** Recently passed similar laws ensuring registration and grievance redressal mechanisms for app-based workers.

What should be the way forward?

Implement existing legal framework better: Notify the detailed rules on eligibility, contribution rates, and benefit packages (health, accident, pension, maternity) under the social security fund for gig workers. Ensuring all gig workers are on e-Shram and linking this to actual scheme delivery, not just data collection, including PM-JAY coverage and existing pension schemes for unorganised workers.

Design a robust social security fund: Mandate 1-2% of platform annual turnover or payouts (capped as in the Codes) into a ring-fenced social security fund, with public disclosure and digital tracking of all contributions and disbursements. Provide portable, proportional benefits (health insurance, accident cover, disability support, and old-age income protection) that follow the worker across multiple platforms and cities.

Improve Work Conditions & Income Security: Guarantee minimum earnings floors or algorithmic "minimum standard orders" for pay, deductions, and insurance, drawing on models used in Australia and certain US jurisdictions.

Strengthen Worker Voice & Data Rights:

Giving gig worker representatives real voting power in national and state Social Security Boards and Welfare Boards, with transparent criteria for their selection.

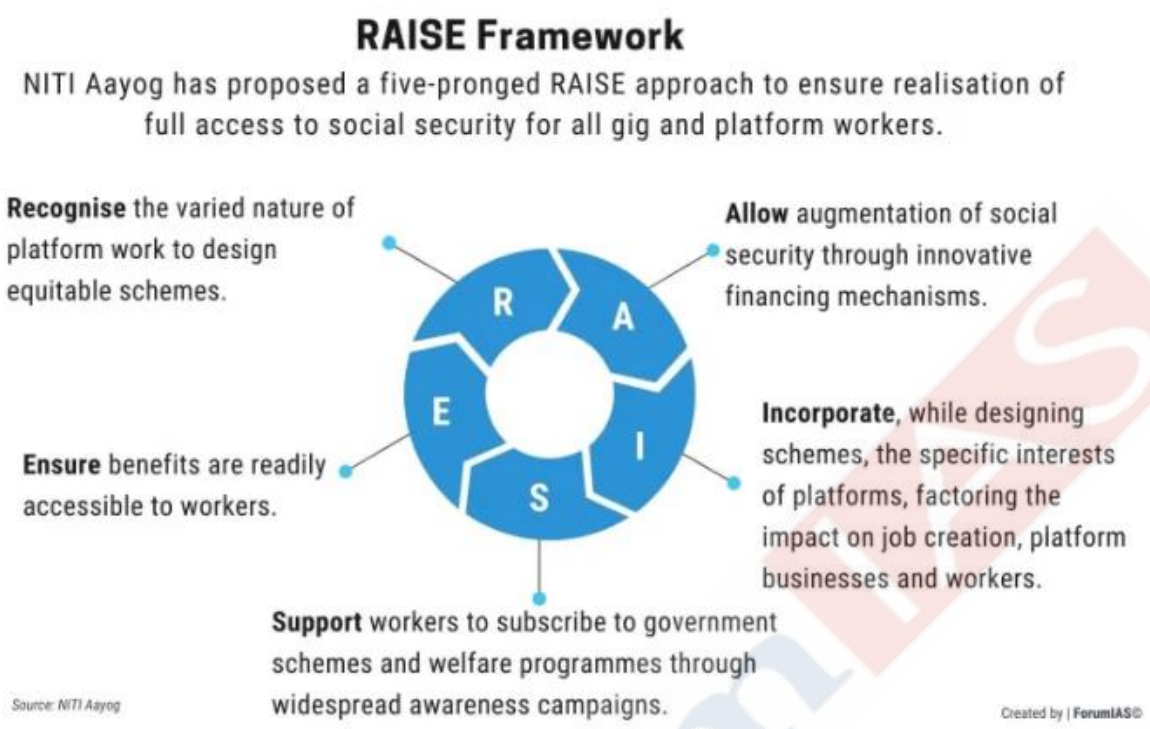
Mandating platform transparency on algorithms that set fares, incentives, and ratings, and granting workers rights to explanation and appeal against automated decisions, as proposed in draft state legislation.

Encourage Platform Responsibility & Innovation:

Offering tax or regulatory incentives for platforms that provide group insurance, skill-upgradation, and savings products over and above statutory minima, while penalising free-riding on the system.

Promoting digital benefit wallets linked to worker IDs so that every platform contribution (statutory and voluntary) accumulates in one portable account, improving financial inclusion and credit access for gig workers.

Implement NITI Aayog's RAISE Framework:



Read More: The Hindu
UPSC GS-3: Economics

Medical & Wellness Tourism in India – Explained Pointwise

India is emerging as a leading hub for Medical Value Travel (MVT) by integrating advanced medical infrastructure with traditional wellness systems such as AYUSH. Strong policy support, digital facilitation, and initiatives like **AYUSH Visa** and **Regional Medical Hubs** are strengthening the ecosystem. Rising global healthcare costs and demand for holistic care are driving international patients to India for affordable, high-quality treatment and preventive wellness solutions.

Source: Nimba

What is meant by Medical and Wellness Tourism?

Medical Tourism: It focuses on curative interventions such as complex surgeries, organ transplants, and advanced diagnostic care provided by specialised hospitals and healthcare institutions.

Wellness Tourism: It centres on preventive and holistic well-being through traditional systems such as Yoga, Ayurveda, Naturopathy and other AYUSH practices. It offers therapies that promote physical, mental and spiritual health.

How is India emerging as a global healing destination?

Across the world, rising healthcare costs, long waiting times, and the growing burden of lifestyle diseases are driving patients to seek treatment abroad. This global shift has led to the emergence of a multi-billion-dollar **Medical Value Travel (MVT) industry.**

The global Medical Value Travel market was valued at about **$115 billion in 2022**. It is projected to reach around **$286 billion by 2030**. The market is growing at a compound annual growth rate **(CAGR) of about 10.8%.**

India has emerged as one of the most significant destinations in this evolving global landscape. For centuries, India has been regarded as a sanctuary for those seeking healing, balance and recovery. Today, this ancient legacy has evolved into a dynamic Medical Value Travel ecosystem. It combines modern medical science with the timeless wisdom of traditional systems.

Industry estimates place the medical tourism market in India at about $8.7 billion in 2025, with projections of $16.2 billion by 2030.

Through the flagship **"Heal in India"** initiative, the Government is positioning the country as a premier destination for integrated and holistic healthcare.

According to the **Medical Tourism Index 2020–21**:

India ranks **10th** among the top 46 medical tourism destinations globally

12th among the world's top 20 wellness tourism markets.

5th among the top 10 wellness destinations in the Asia-Pacific region.

Leading Markets: According to 2025 figures, the top source countries for medical tourists include - Bangladesh (3,25,127 arrivals), followed by Iraq (30,989), Uzbekistan (13,699), Somalia (11,506), Turkmenistan (10,231), Oman (9738), and Kenya (9,357).

What are the reasons responsible for the growth of Medical and Wellness Tourism in India?

Robust Medical Resources	India's healthcare system is supported by one of the world's largest pools of trained medical professionals. India has **69,364 hospitals (43,486 private hospitals, and 25,778 public hospitals) with 1.2 million registered doctors**, achieving WHO recommended doctor population ratio. English serves as the primary language of medical education and clinical practice in India, enabling seamless communication with international patients. Over the past decade, India has significantly expanded its medical education capacity and healthcare infrastructure. This has strengthened the availability of skilled healthcare professionals across specialised disciplines.
Advanced Technology and Accreditation	India's healthcare system is supported by robust quality assurance mechanisms and internationally recognised accreditation standards. Hospitals and healthcare providers across the country obtain accreditation from the **National Accreditation Board for Hospitals and Healthcare Providers (NABH).** In addition, several Indian hospitals hold **Joint Commission International (JCI)** accreditation. It places the hospitals among healthcare institutions that meet globally accepted standards of clinical excellence.
Cost-Effective Medical Treatment	India's medical tourism appeal is significantly strengthened by its cost competitiveness. High-quality medical treatment in India is often available at substantially lower cost compared to many developed countries, while maintaining comparable clinical standards. This affordability is supported by **advanced medical technology and skilled professionals**. It enables international patients to access **specialised treatment without long waiting periods.**
Strengthening AYUSH-led Medical Value Travel	India possesses a unique advantage in wellness tourism through its centuries-old traditional systems of medicine collectively known as **AYUSH — Ayurveda, Yoga, Naturopathy, Unani, Siddha and Homeopathy.** **AYUSH Visa Facilitation**: To streamline access for international patients, the Government of India introduced a dedicated AYUSH Visa in 2023. It enables foreign nationals and their attendants to travel to India specifically for treatment under recognised AYUSH systems. **Insurance Coverage**: Insurance coverage for AYUSH therapies has also expanded significantly. Under the Health Insurance Regulations of IRDAI, insurers are permitted to cover treatments under AYUSH. Global outreach is also expanding through platforms like the WHO Global Traditional Medicine Summit, the Know India Programme, and AYUSH initiatives showcased during Maha Kumbh Mela 2025.
Regional Medical Hubs	A key proposal involves the establishment of **five Regional Medical Hubs** across the country in partnership with State Governments and the private sector. These Hubs are

	designed as **integrated healthcare complexes** that will house medical, educational, and research facilities under one umbrella.
Infrastructure for Wellness	In addition to strengthening modern healthcare infrastructure, the Government is also expanding the country's capacity in traditional systems of medicine: The establishment of **three new All India Institutes of Ayurveda** has been proposed to enhance education, research, and clinical services in Ayurveda. **WHO Global Traditional Medicine Centre in Jamnagar** is being upgraded to strengthen evidence-based research and global collaboration in traditional medicine systems.
Institutional Mechanism for Medical and Wellness Tourism	**National Medical & Wellness Tourism Promotion Board (NMWTB):** Constituted by the Ministry of Tourism in 2015, chaired by the Union Minister for Tourism. It promotes and facilitates medical and wellness tourism in India. **Multi-Stakeholder Platform**: The Board brings together ministries, state governments, hospitals, wellness centres, accreditation bodies, and industry stakeholders. Together, they strengthen the Medical Value Travel ecosystem. **State-Level Coordination**: States are encouraged to establish dedicated Medical and Wellness Tourism Promotion Boards or cells to support regional development and promotion.

What is the significance of growth of medical & wellness tourism in India?

Foreign Exchange Earnings: Attracts high-spending international patients, boosting foreign currency reserves.

Job Creation: Generates employment in healthcare, hospitality, transport, and wellness sectors (e.g., Ayurveda, yoga centers).

Ancillary Industry Growth: Spurs development of medical travel facilitators, translation services, insurance tie-ups, and post-operative care facilities.

Revenue for Healthcare Sector: Helps private hospitals utilize excess capacity and reinvest in advanced technology.

Retaining Talent (Reverse 'Brain Drain'): High-paying roles and world-class research opportunities in India's "Regional Medical Hubs" are encouraging top Indian doctors to stay in or return to India rather than moving to the US or UK.

Tier-2 Development: The expansion into cities like **Jaipur, Lucknow, and Chandigarh** means that world-class healthcare infrastructure is no longer concentrated only in the big metros, improving healthcare access for millions of locals in those regions.

Soft Power & Regional Leadership:

Positions India as a leader in **affordable, quality healthcare** within Asia and the Global South.

Strengthens diplomatic ties with neighboring countries (e.g., Afghanistan, Bangladesh, Myanmar) whose citizens rely on Indian hospitals.

What are the challenges faced by India Medical & Wellness Tourism sector in India?

Geopolitical Disruptions: Conflicts like the war in West Asia have caused a sharp decline in patients from key source markets such as Iraq, Yemen, and other Gulf nations. Travel disruptions, flight cancellations, and heightened uncertainty have led to a reported 30-40% drop in international patient footfall in some major Indian hubs.

Dependence on a Few Markets: A significant portion of medical tourists still comes from neighboring countries like Bangladesh, Iraq, and other nations in the Global South. Bangladesh remains the single largest contributor (over 50% of medical tourists). Any change in diplomatic relations or visa policies with neighbor nations can immediately impact hospital occupancy.

Visa & Logistical Hurdles: The current medical visa and e-visa durations (often 20-35 days) are too short for complex procedures like organ transplants or cancer therapy, which require weeks of follow-up care. This creates immense uncertainty for patients and their families.

Legal & Regulatory Complexities:

The legal framework poses risks for foreign patients. In the case of medical negligence or malpractice, pursuing a cross-border lawsuit is difficult and expensive due to different legal systems and language barriers.

Furthermore, there are significant data privacy concerns when sharing sensitive medical records across borders, as India's data protection standards may not be considered "adequate" by stringent frameworks like the EU's GDPR.

Insurance Synchronization: Many high-cost surgeries in India are still not seamlessly covered by global insurance providers, forcing international patients to pay out-of-pocket, which is a major deterrent compared to Singapore or Dubai.

Potential for Domestic Healthcare Disparity: There is a growing ethical concern that the lucrative medical tourism market could lead to a "two-tier" system. Hospitals may prioritize high-paying international patients for complex procedures and premium bed space, potentially crowding out or diverting resources from India's own population, which also faces a significant burden of disease.

What Should be the Way Forward?

Regional Medical Hubs: The government's announcement to establish **five Regional Medical Hubs** is a game-changer. These hubs will integrate modern medical facilities with AYUSH centres and dedicated facilitation units, moving beyond the current hospital-centric model to offer a complete ecosystem for international patients.

Specialized Clusters: Developing specific regions as "Centres of Excellence" for example, Kerala for Ayurveda, Tamil Nadu for Cardiac Care, and Uttarakhand for Yoga and Mental Wellness.

Skilled Manpower: A key differentiator will be service quality. The plan to train **1.5 lakh caregivers** in Yoga and Ayurveda will help create a pool of professionals who can offer genuine, standardized wellness experiences that blend with medical treatment. This must be complemented by training facilitators in global hospitality and language skills.

Insurance Portability: A major hurdle has been the lack of integration with global insurance networks. Future efforts require active collaboration with international insurers to include Indian hospitals in their coverage networks, removing a significant financial barrier for patients from the US or UK.

Shifting the Brand Narrative: India must market its **high-technology, fast, and reliable delivery** of complex procedures like transplants and oncology. The focus needs to shift from being the cheapest option to the most **trusted and technologically advanced** one, reinforcing the message of "competence, care, and compassion".

Medical Diplomacy: Incorporating healthcare into bilateral trade agreements with African and BIMSTEC nations to create "Green Channels" for patient referrals and doctor exchange programs.

Conclusion: India's medical and wellness tourism ecosystem is evolving into a globally trusted model of integrated healthcare. It combines modern medical infrastructure with traditional systems such as AYUSH. This enables both curative and preventive care. As global demand rises, India is poised to play a key role in shaping the future of global healthcare and wellness travel. For India to lead, it must move beyond relying on its natural strengths and start building the surrounding architecture of policy, trust, and seamless service that global patients require.

UPSC GS-3: Indian Economy

Read More: PIB

Model Code of Conduct – Explained Pointwise

Recently, Prime Minister Narendra Modi was accused of violating the **Model Code of Conduct (MCC)** when his address was broadcast live on national television. In his speech, he named opposition parties and urged women voters to punish them for defeating the **131st Constitution Amendment Bill** in the Lok Sabha. The broadcast raises important questions under both the Code and the Representation of the People Act, 1951.

Source: The Sentinel Assam

Key Provisions of Model Code of Conduct

General Conduct	a. No party or candidate shall engage in any activity which may aggravate existing differences or create mutual hatred between different castes and religious or linguistic communities. b. No party or candidate shall engage in bribing of voters, intimidation of voters, impersonation of voters, canvassing within 100 meters of polling stations, holding public meetings during the period of 48 hours ending with the hour fixed for the close of the poll.
Meetings	The party or candidate shall inform the local police authorities of the venue and time any proposed meeting well in time so as to enable the police to make necessary arrangements for controlling traffic and maintaining peace and order.
Procession	A Party or candidate organizing a procession shall decide before hand the time and place of the starting of the procession, the route to be followed and the time and place at which the procession will terminate.
Polling Day	a. All Political parties and candidates shall co-operate with the officers on election duty to ensure peaceful and orderly polling. b. All Political parties and candidates shall refrain from serving or distributing liquor on polling day and during the forty eight hours preceding it.
Party in Power	a. Ministers shall not combine official visits with election work or use official machinery for the same. b. Public spaces and rest houses shall not be monopolized by the party in power and other parties shall also be allowed to use them.
Election Manifestos	a. Political parties shall avoid making promises that are likely to vitiate the purity of the election process or exert undue influence on voters. b. Manifestos shall reflect the rationale for promises and broadly indicate the ways and means to meet the financial requirements for it.

Created By Forum IAS

What is the Model Code of Conduct? What is the history of its evolution?

Model Code of Conduct: The Model Code of Conduct is a set of guidelines issued by the Election Commission of India for political parties and candidates to maintain decorum in their campaigning. It lays down a list of dos

and don'ts for leaders and parties ahead of elections. The Election Commission formalised it in 1968, revised it in 1974, and added Part VII on the **'Party in Power'** in 1979.

Duration of Model Code of Conduct: The MCC comes into force from the date the election schedule is announced until the date that results are out.

Legal Enforceability of MCC: MCC does not have any statutory backing. It has come to acquire strength in the past decade because of its strict enforcement by the EC. Certain provisions of the MCC may be enforced through invoking corresponding provisions in other statutes such as the IPC 1860, CrPC 1973, and RPA 1951.

Penalties for its violation: If the Election Commission finds a party or candidate in violation of the Model Code of Conduct, it can take measures from issuing a warning to ordering an FIR against the concerned party or candidate.

History of Evolution of Model Code of Conduct:

1960	The origin of the MCC lies in the Assembly elections of Kerala in 1960. The State administration prepared a 'Code of Conduct' for political actors.
1962	ECI circulated the Model Code of Conduct to all recognized political parties & State governments. It was followed in the Lok Sabha Elections in 1962.
1991	The EC decided to enforce the MCC more strictly after repeated flouting of the election norms.
2014	The EC issued guidelines prohibiting parties from making promises that exert an undue influence on voters. The EC also suggested that manifestos must also indicate the means to achieve promises.

What are the key provisions of MCC?

General Conduct	No party or candidate shall engage in any activity which may aggravate existing differences or create mutual hatred or cause tension between different castes and religious or linguistic communities. All parties and candidates shall avoid scrupulously all activities which are 'corrupt practices' and 'offences' under the election law, such as bribing of voters, intimidation of voters, impersonation of voters, canvassing within 100 meters of polling stations, holding public meetings during the period of 48 hours ending with the hour fixed for the close of the poll, and the transport and conveyance of voters to and from polling station. Parties and candidates shall refrain from criticism of all aspects of private life, which are not connected with the public activities of the leaders or workers of other parties.
Meetings	The party or candidate shall inform the local police authorities of the venue and time any proposed meeting well in time so as to enable the police to make necessary arrangements for controlling traffic and maintaining peace and order.

	The party or candidate shall apply to the authority concerned well in advance to obtain permission or license for the use of loudspeakers or any other facility in connection with any proposed meeting.
Procession	A Party or candidate organizing a procession shall decide before hand the time and place of the starting of the procession, the route to be followed and the time and place at which the procession will terminate. The organizers shall take steps in advance to arrange for passage of the procession so that there is no block or hindrance to traffic. The carrying of effigies purporting to represent member of other political parties or their leaders, burning such effigies in public and such other forms demonstration shall not be countenanced by any political party or candidate.
Polling Day	All Political parties and candidates shall co-operate with the officers on election duty to ensure peaceful and orderly polling. All Political parties and candidates shall refrain from serving or distributing liquor on polling day and during the forty eight hours preceding it. All authorized party workers at polling booths should be given suitable badges or identity cards. Identity slips supplied by them to voters shall be on plain (white) paper and shall not contain any symbol, name of the candidate or the name of the party.
Polling Booth	The EC will appoint observers to whom any candidates may report problems regarding the conduct of the election.
Party in Power	Ministers shall not combine official visits with election work or use official machinery for the same. The party in power shall avoid advertising at the cost of the public exchequer or using official mass media for publicity on achievements to improve chances of victory in the elections. Ministers and other authorities shall not announce any financial grants, or promise any construction of roads, provision of drinking water. Public spaces and rest houses shall not be monopolized by the party in power and other parties shall also be allowed to use them.
Election Manifestos	The election manifesto shall not contain anything against the ideals and principles enshrined in the Constitution. Political parties shall avoid making promises that are likely to vitiate the purity of the election process or exert undue influence on voters. Manifestos shall reflect the rationale for promises and broadly indicate the ways and means to meet the financial requirements for it. Manifestos shall not be released during the prohibitory period (before 48 hours), as prescribed under Section 126 of the Representation of the People Act 1951, for single or multi-phase elections.

What is the significance of MCC?

Ensuring free and fair elections (Article 324): Model Code of Conduct aims to address the issues of electoral malpractices and ensure that elections are conducted in a free and fair manner.

Ensures a Level Playing Field: The MCC prevents the ruling party (at the Centre or state) from misusing its official position or resources to gain an undue advantage over opponents for e.g. **No announcement of new policies, schemes, or financial grants** once the code is in force, **Ban on using government machinery, vehicles, or personnel** for campaigning, **Bar on transferring officials** who are connected with election work.

Ensuring social harmony: Model Code of Conduct aims to preserve social harmony by proscribing the political parties and candidates in engaging in any activity which may aggravate existing differences, create mutual hatred and cause tension between different castes and communities, religious and linguistic groups.

Encouraging transparency and accountability: MCC encourages transparency and accountability on part of the political parties to reflect the rationale for their electoral promises and broadly indicate the ways and means to meet the financial requirements for it.

Creates Moral & Political Authority: Though **not legally enforceable** as a statute, the MCC has gained immense **moral and political force** over decades. Parties and candidates comply largely due to fear of ECI's punitive actions (e.g., barring a leader from campaigning, nullifying a victory, or deregistering a party).

What are the Challenges with the Model Code of Conduct?

Lack of Statutory Backing: The MCC is election commission's moral sanction to get political parties and candidates to fall in line. But the norms of the Model Code of Conduct are flouted due to lack of legal backing.

Ineffectiveness in Curbing Malpractices: The MCC has failed to prevent electoral malpractices such as hate speech, fake news, money power, booth capturing, voter intimidation and violence.

Challenges from evolving technologies: The MCC was designed for traditional media and rallies. MCC norms are also being increasingly challenged by new technologies like AI based deepfakes, and social media platforms that enable faster and wider dissemination of misinformation and propaganda.

Vague Clauses: Some MCC clauses, such as maintaining the 'purity of the election process', are subjective and can be misinterpreted. Phrases like "appealing to communal feelings" or "personal attacks" are subjective. What one person considers a policy critique, another may see as a violation, leading to claims of bias in how the ECI interprets the code.

Reliance on Political Cooperation: The MCC's effectiveness depends on the cooperation from political parties and governments. Parties and governments often indulge in the violation of MCC. **For ex-** Hate Speeches during election campaigning.

Lack of Enforcement capacity of Election commission: ECI suffers from the shortage of functionaries for the effective implementation of the MCC.

Interference with Governance: ECI is criticized for the early application of MCC as it imposes limitations on policy decisions, public spending, welfare schemes, transfers, and appointments. The blanket ban on new policy announcements and projects can stall critical, non-political administrative and development work.

Inconsistent & Delayed Enforcement: The ECI can be slow to act on complaints, especially against high-profile leaders, leading to allegations of bias and eroding public trust.

Lack of Awareness and Compliance: The provisions of the Model code of conduct is not widely known or understood by voters, candidates, parties, and government officials.

Exclusion of Party Expenditure: While there are strict legal limits on how much an individual **candidate** can spend on an election, there is currently **no cap on how much a political party** can spend. This creates a massive loophole where parties can spend hundreds of crores on high-tech rallies, digital ads, and private jets, technically staying within the "spirit" of the MCC while vastly outspending smaller rivals.

Read More- Electoral Reforms in India

What Should be the Way Forward?

Establishment of fast track tribunals: Establishing special election tribunals to resolve MCC cases within 6 months would ensure that the punishment actually happens while the election impact is still fresh.

Explore the option of providing statutory backing to MCC:

The recommendation of standing committee on electoral reforms of providing statutory backing to MCC must be considered and explored.

Instead of making the entire MCC a law (which could lead to long judicial delays), the **Law Commission** has suggested making specific, grave violations – like "Paid News," surrogate advertising, and communal hate speech – explicitly punishable as **"Corrupt Practices"** under the Representation of the People Act (RPA).

Changes in MCC to counter the misuse of new technologies: Changes in MCC must be brought and the capacity of ECI must be increased to deal with the misuse of social media like Whatsapp and Facebook which are used to influence opinions on the day of election.

Rationalizing MCC Application: To prevent disruption of development works and administrative processes – Create "essential services" exemption list; phase-wise withdrawal of MCC after polling.

Neutrality on part of ECI: ECI must be neutral in application of MCC across all the parties and candidates.

Deregistration Power: Currently, the ECI can register a party but lacks the clear power to **deregister** one. A proposed reform is to empower the ECI to suspend or deregister parties for repeated, systemic violations of the MCC.

Amending the "Silence Period": The 48-hour campaign silence period before polling (Section 126 of RP Act) is virtually ineffective online. The law must be explicitly amended to cover the internet, social media, and OTT platforms to prevent last-minute misinformation campaigns.

Mandatory AI Watermarking: All political parties must be mandated to use "digital signatures" or watermarks on their official content, making it easier to track "dark ads" or fake videos back to their source.

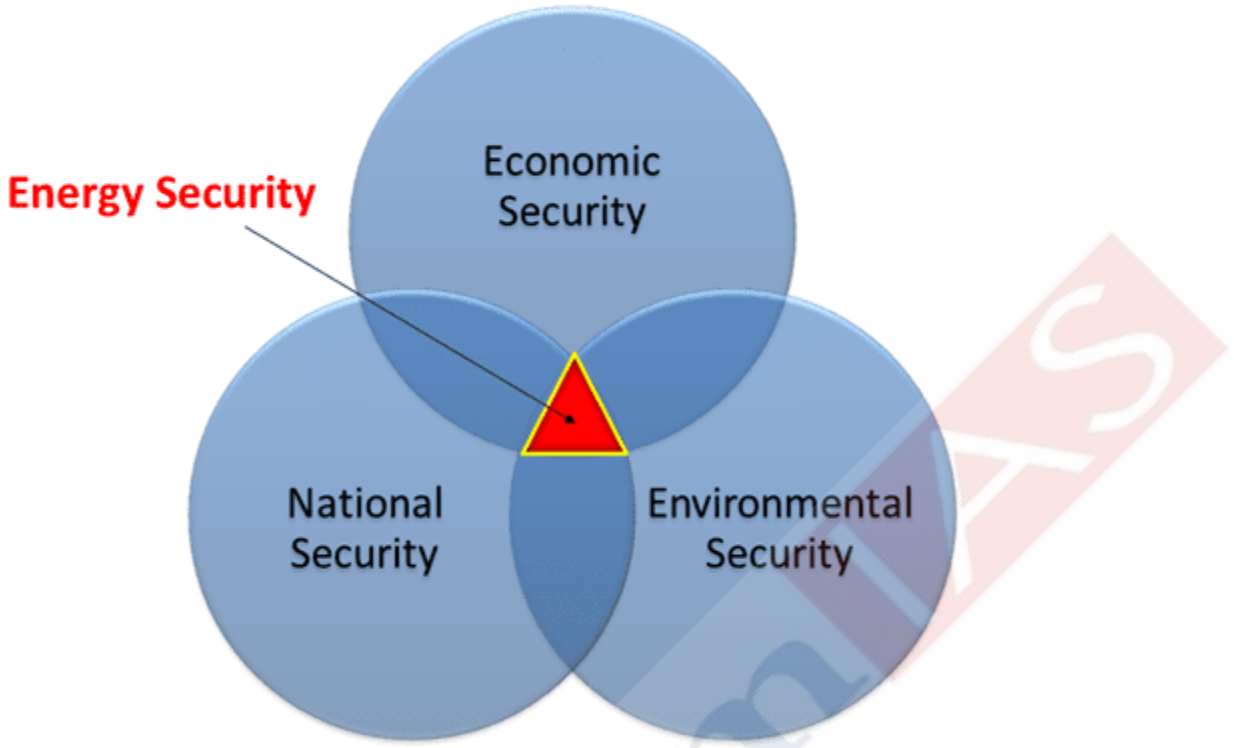
Capping Party Expenditure: A statutory cap on party-level expenditure is considered essential to maintain a "level playing field" and prevent the MCC from being overwhelmed by massive corporate-funded campaigns.

Read More: ECI, The Hindu
Syllabus: GS 2- Electoral reforms and issues related to RPA

India's Energy Security – Significance & Challenges – Explained Pointwise

The conflict in West Asia has demonstrated the speed with which geopolitical shocks have been transmitted to India's domestic economy. India is projected to see its economy growth slowdown from 7.4% in FY26 to 6.5% in FY27 with a projected increase in inflation from 2.3% to 4.4% due to disruptions observed in the energy supply chains. Despite rapid renewable capacity growth globally, geopolitical shocks expose India's dependence on fossil fuel imports from West Asia.

In this context, energy security can no longer be defined solely as the procurement of fuel at the lowest possible cost; it now hinges on resilience, diversification, and the safeguarding of macroeconomic stability.



Source: Arava Institute

Introduction:

Energy security:

Energy security refers to the uninterrupted availability of energy sources at an affordable price. It involves ensuring a reliable supply of energy to meet the growing demands of a nation, while managing risks such as geopolitical conflicts, supply chain disruptions, and environmental challenges.

Key aspects of energy security:

Availability: Enough energy resources (like oil, natural gas, coal, or renewables) are accessible.

Reliability: Energy supply is stable and not frequently interrupted (e.g., blackouts or fuel shortages).

Affordability: Energy prices remain reasonable and not overly volatile

Sustainability: Energy production and use do not harm the environment long-term (increasingly tied to clean energy).

Energy security is closely linked to the concept of **Energy transition**, which focuses on moving away from fossil fuels toward cleaner and more resilient energy systems.

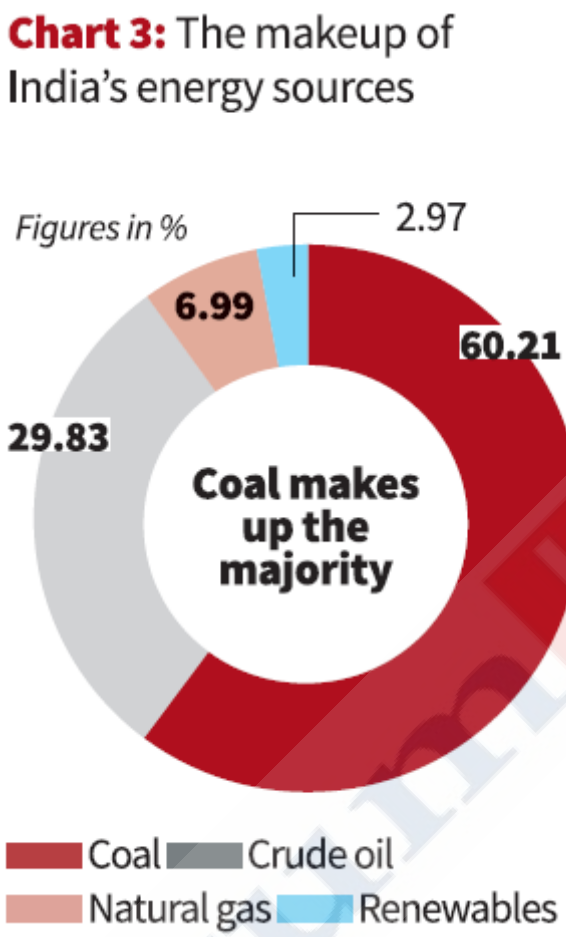
For India, energy security is crucial for sustaining economic growth, reducing dependency on imports, and achieving long-term sustainability.

India currently relies heavily on fossil fuels, primarily coal, for its energy needs, which poses environmental challenges and increases dependence on imports. Renewable energy (RE), including solar, wind, and hydropower, accounts for 44% of the installed capacity but contributes only 23% to energy generation.

Despite progress, the need for a diversified energy mix is critical to address rising demand and reduce carbon emissions.

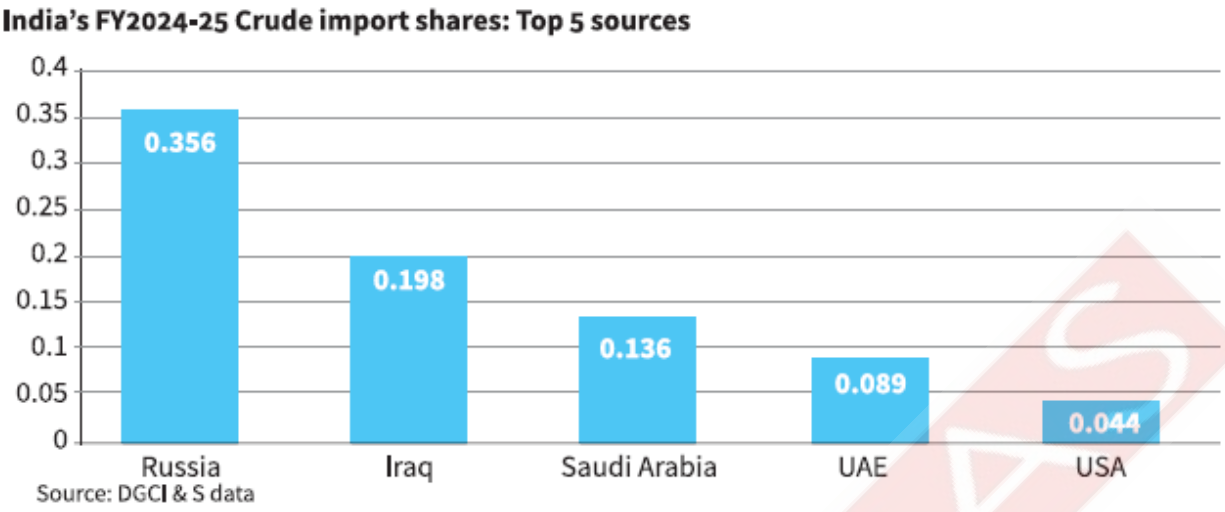
Current status of India's Energy Sector:

India's Energy Sources:

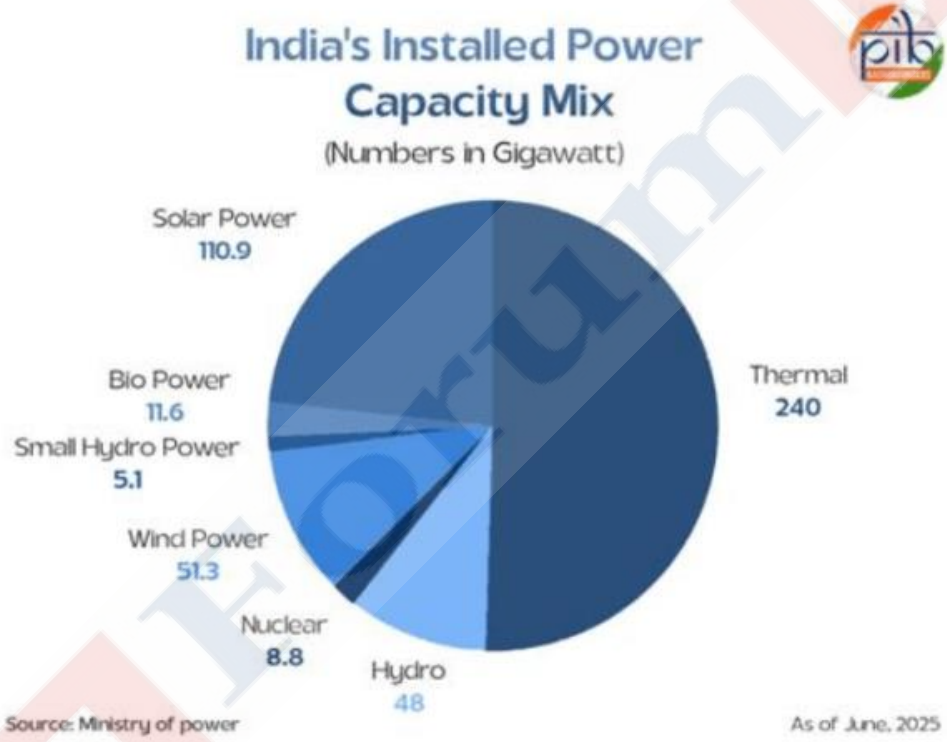


Source: The Hindu

Total **installed power capacity** reached **476 GW** by June 2025.
Thermal power accounts for **50.52%** of total installed capacity.
Per capita electricity consumption increased to **1,395 kWh** in 2023–24 from 957 kWh in 2013–14.
India achieved **100% village electrification** by April 2018.
Non-fossil fuel sources contribute **49% of total capacity** by June 2025.
India ranks **4th globally** in Renewable Energy Installed Capacity, **4th in Wind Power**, and **3rd in Solar Power capacity**.
Solar capacity increased to **110.9 GW**.
Installed **wind capacity** increased to **51.3 GW**.
Installed **nuclear capacity** grew to **8,780 MW**, across 25 reactors.
Hydro capacity increased to **48 GW**.
India's Crude Oil Import Sources:



Source: The Hindu



Source: Ministry of Power

What is the Significance of energy security for India?

Economic Stability & Growth:

India is one of the world's fastest-growing major economies. Sustaining a growth rate of 7-8% requires a proportional increase in energy consumption.

Reliable and affordable access to energy fuels industrial production, transportation, agriculture, and services, supporting GDP growth and job creation.

Energy security shields the economy from global supply shocks, volatile prices, and supply disruptions, ensuring sustained development.

National Security & Strategic Autonomy:

Reduces vulnerability to geopolitical risks, embargoes, and external supply disruptions by diversifying energy sources and suppliers.

Maintaining strategic reserves (petroleum, gas, critical minerals) enhances resilience during international crises or conflicts.

Technological Advancement & Competitiveness:

Stable energy supply encourages investment in advanced manufacturing, digital infrastructure, and innovation in sectors like AI, data centers, and green tech.

Promotes Make in India initiatives and supports export competitiveness.

Sustainable & Inclusive Development:

Ensures universal access to clean and affordable energy, vital for alleviating poverty, improving healthcare, and providing education in rural and remote areas.

Drives energy transition towards renewables and cleaner fuels, supporting environmental sustainability and meeting climate commitments.

Social Security & Quality of Life: Universal, reliable access to electricity and clean cooking fuels enhances health, reduces indoor pollution, and improves standards of living, particularly for vulnerable populations.

Rural Transformation: Reliable power enables mechanized farming and cold-storage chains, which are vital for doubling farmers' incomes.

What are the Challenges faced by India in ensuring its energy security?

Import Dependency: India imports nearly **90% of its crude oil** and more than **50% of its natural gas.** Crued oil, LNG, and LPG are all imported heavily from West Asia. Over 25% of the total import bill in FY24, puts pressure on rupee, inflates the trade deficit, making the country extremely sensitive to global price spikes, and compromises macroeconomic stability.

Economic Exposure: A modest $10 rise in global crude prices can widen India's current account deficit by up to 0.4% of GDP and add to inflationary pressures.

Declining Domestic Production: The situation is worsened by falling domestic output. Crude oil production dropped by **22.3%** over the last decade, and natural gas reserves have shrunk by **25%.**

Coal Paradox: India has the world's fourth-largest coal reserves, yet it still imports high-quality coking coal for its steel and power industries because domestic coal often has high ash content and lower calorific value.

Global Vulnerabilities:

Geopolitical conflicts, such as the Russia-Ukraine war and the USA-Iran war, and international sanctions cause sharp fluctuations in global oil prices, impacting India's oil import bill, fiscal balance, and foreign exchange reserves.

A staggering share of imports – **45% of crude oil, 60% of natural gas, and over 90% of LPG –** originates from the Middle East and must transit through the **Strait of Hormuz (Hormuz Chokepoint)**. Any disruption, as seen in recent conflicts, can have an immediate impact.

Financing Needs for Energy Transition: According to the International Energy Agency (IEA), India requires $160 billion per year to meet its energy transition goals by 2070 (India has a goal of **Net Zero by 2070**).

Rising Energy Demand: Driven by economic growth, population increase, urbanization, and industrialization, India's energy demand is projected to double by 2040. India's LPG imports also surged due to expanded household access due to schemes like PM Ujjwala Yojana – which increased the LPG connections from 62% of households in 2016 to nearly 100% by 2025.

Renewable Energy Intermittency: Renewable energy sources, like solar and wind, pose challenges due to their inherent variability, uncertainty, and concentration, require continuous balance to maintain grid stability.

Grid Instability: Solar and wind are intermittent. Without massive investments in **Battery Energy Storage Systems (BESS)**, the grid struggles to handle the surge of power during the day and the lack of it at night.

Inadequate Storage Infrastructure:

Strategic Petroleum Reserves: India's Strategic Petroleum Reserves (SPR) currently provide only about **9–10 days** of coverage, significantly lower than the 90-day global benchmark recommended for major economies.

LPG and LNG: These are critical vulnerabilities, with LPG reserves covering less than **two days** of consumption.
Critical Mineral Dependency: The energy transition creates fresh vulnerabilities for India. India's expansion into solar, batteries, EVs and storage may reduce oil use over time. However, India is currently **100% import-dependent** on critical minerals like **lithium, cobalt, and nickel**, which are essential for EV batteries and energy storage. Furthermore, **China controls 70-90% of the world's refining capacity** for these minerals, creating a new, highly concentrated supply chokepoint.

India's Plan for Energy Security:

Diversification of Energy Sources: India aims to diversify its energy portfolio by increasing the share of renewables like solar, wind, and hydropower, along with exploring other alternatives such as nuclear energy, biomass, and waste-to-energy. The goal is to achieve 50% of installed energy capacity from renewables before 2030.
Expansion of Nuclear Energy: India is expanding its nuclear energy capacity as a clean and efficient alternative. With 25% of the world's thorium deposits, India is exploring thorium-based nuclear reactors and small modular reactor technology to enhance operational flexibility and safety.
Boosting Hydropower and Cross-Border Energy Trade: Hydropower remains a key part of India's energy strategy, with plans to expand cross-border energy cooperation with neighboring countries like Nepal and Bhutan. By importing hydropower, India seeks to enhance its energy mix and ensure stable supply, particularly during peak demand periods.
Strengthening Transmission Networks: India is focused on enhancing transmission networks to efficiently absorb and distribute increased renewable capacity. This includes expanding inter-state transmission lines and developing energy corridors to connect renewable-rich states with energy-deficient regions.
Promoting Distributed Energy Generation: India is investing in distributed energy solutions such as rooftop solar, biogas, and small-scale wind projects. These decentralized energy systems can reduce transmission losses, support rural electrification, and increase energy resilience.

Various Government Initiatives for ensuring Energy Security:

Renewable Energy Expansion:
Target of 500 GW non-fossil fuel capacity by 2030: Includes solar, wind, hydro, and nuclear sources. As of 2025, installed non-fossil fuel capacity crossed 225 GW (solar 97.9 GW, wind 48.2 GW, hydro 46.9 GW, nuclear 8.2 GW). India ranks 4th globally in renewables.
Long-term Vision (2047): The draft National Electricity Policy (NEP) 2026 aims for **80% of installed capacity and nearly two-thirds of total generation** from non-fossil sources by 2047.
Solar Parks Scheme & PM-KUSUM: Boosts grid-connected and decentralized solar power, with 50 solar parks sanctioned and solar pumps for farmers.
National Green Hydrogen Mission: India aims to produce 5 million metric tonnes of Green Hydrogen by 2030. By February 2026, the first 8,000 tonnes of capacity were commissioned, with massive incentives for domestic electrolyzer manufacturing and use in refineries, transport, and fertiliser.
Ethanol Blending: India is on the verge of achieving **20% ethanol blending in petrol** (E20) by the end of 2026, significantly reducing the oil import bill.
National Bioenergy Mission & SATAT Scheme: Promotion of biogas, CBG, waste-to-energy plants to diversify energy sources and utilize agricultural waste.
Strategic Petroleum Reserves (SPR): India maintains reserves at Mangalore, Padur, and Vizag (5.33 million tonnes), with expansion plans at Bikaner, Mangalore (additional), Bina, Padur, and Chandikhol. These will buffer supply disruptions and build resilience. Private participation in SPR policy is encouraged.
Natural Gas Grid: The National Gas Grid has expanded to over 25,000 km, aiming to increase the share of natural gas in India's energy mix from 6% to 15% by 2030.
Grid Modernization: The **Draft National Electricity Policy 2026** focuses on making the grid "smart" to handle intermittent renewable energy.
Nuclear Power Expansion:

In April 2026, India reached a historic milestone with the **Prototype Fast Breeder Reactor (PFBR)** at Kalpakkam attaining criticality. This marks India's official entry into the second stage of its nuclear plan, which allows the country to eventually use its vast **Thorium reserves** for near-limitless power.

The 2025-26 Budget allocated ₹20,000 crore for SMRs (**Small Modular Reactors**) – smaller, safer reactors that can be deployed closer to industrial hubs.

The **SHANTI Act of 2025** opened the nuclear sector to private companies for the first time, aiming for 100 GW of nuclear capacity by 2047.

What should be the Way forward?

Further Diversify the Energy Sources & Mix:

India should reduce dependence on any single source or supplier by promoting alternative fuels and increasing sourcing from various global regions (e.g., Russia, Africa, U.S., Latin America).

India should continue to explore underutilized energy sources such as tidal, geothermal, and hydrogen fuel, which can provide sustainable alternatives. Expanding research and development in these areas can unlock new opportunities for energy security.

Build Storage Buffers: Fast-track Strategic Petroleum Reserves Phase II by 6.5 MMT, including new sites in Odisha and Karnataka, aiming for 90-day IEA benchmark from current 9-10 days..

Invest in Energy Storage Solutions: Improving energy storage technologies, like advanced batteries and pumped hydro storage, is crucial for balancing supply and demand, especially with the increasing share of renewables. Enhanced storage capacity can stabilize the grid and ensure a reliable power supply during fluctuations. Accelerating the rollout of **Battery Energy Storage Systems (BESS)** and **Pumped Hydro Storage** will ensure clean energy is available 24/7, not just when the sun shines.

Focus on Energy Efficiency and Conservation: Adopting energy-efficient technologies and practices across industries, buildings, and transportation can significantly reduce energy demand. Policies promoting energy conservation, retrofitting, and smart grids can optimize energy use and lower dependency on imports.

Smart Grid Transition: Implementing the **Draft National Electricity Policy 2026**, which mandates AI-driven grid management to predict demand spikes and manage the "intermittency" of green power.

Strengthen International Energy Cooperation:

India should strengthen its partnerships with global energy leaders to secure access to advanced technologies, invest in joint ventures, and develop cross-border energy projects.

Collaborating on research, sharing best practices, and participating in global energy markets can enhance India's energy resilience.

Leverage the **International Solar Alliance** (India's own initiative) for technology and financing.

Participate actively in BRICS energy frameworks and SCO energy cooperation.

Expand Infrastructure for Alternative Fuels: To reduce reliance on conventional fuels, India should invest in infrastructure for alternative fuels like compressed natural gas (CNG), liquefied natural gas (LNG), and biofuels. This includes setting up fueling stations, pipelines, and processing facilities to support the adoption of cleaner alternatives.

Expand Biofuels Potentials: Ethanol blending program reduces crude imports and transfers over ₹92,000 crore to farmers, foreign exchange savings.

Strengthen Nuclear energy Roadmap: Revive thorium roadmap, secure uranium partnerships, and localize Small Modular Reactor (SMR) technologies. Nuclear power offers zero-carbon energy.

Advance Utility Reforms: Strengthen governance in distribution companies by empowering boards, enhancing financial independence, and listing state-owned utilities on stock exchanges to attract private investment.

Securing Critical Minerals Supply Chains: Secure the supply of critical minerals through international collaboration, long-term stockpiles, and financial strengthening of entities like KABIL.

Strengthen Ecosystem: Adopt a "whole-of-government" approach with enhanced inter-ministerial coordination and a high-level committee on resilient supply chains for energy transition.

Conclusion:
Energy security is vital for India's economic growth and environmental sustainability. By diversifying its energy mix, enhancing infrastructure, and exploring new technologies, India can build a resilient energy system that meets growing demand while reducing carbon emissions. Continued investment in renewables, nuclear energy, and cross-border cooperation will be key to securing a sustainable energy future.

UPSC GS-3: Energy
Read More: The Hindu

India-Vietnam Relations – Explained Pointwise

The Vietnamese President is on an official visit to India, during which the two sides elevated their bilateral relations to the level of an "**Elevated Comprehensive Partnership**" and signed 13 agreements, including one on critical minerals. Both countries also decided to set a new bilateral trade target of **$25 billion by 2030** and enhance defence procurement cooperation between them.
Vietnam is a major pillar of India's '**Act East Policy**' and '**Vision MAHASAGAR**'. India also seeks to expand its ties with ASEAN through its relations with Vietnam. Moreover, both the countries have a common outlook in the field of Indo-Pacific.

Source: Bharat Shakti

Evolution of India-Vietnam relations:

Anti-Colonial Roots	The bond was forged between **Mahatma Gandhi** and **Ho Chi Minh**, who shared a mutual struggle against colonial rule. India was a crucial supporter of Vietnam during its war for independence from France. It served as the Chair of the **International Commission for Supervision and Control (ICSC)** formed by the 1954 **Geneva Accord**.

1970s	Full diplomatic relations were established in **1972**. India remained one of the few countries to support Vietnam during its **1979** conflict with China and its subsequent international isolation. India was also one of the few non-communist countries to condemn the U.S. action during the Vietnam War.
1990s	**Look East Policy (1992):** Following India's economic liberalization, Vietnam became a focal point of India's "Look East Policy," shifting the relationship from purely ideological to economic and strategic.
2000s-Now	**2007:** Establishment of a **Strategic Partnership**, expanding cooperation into defense and security. **2016:** Elevation to **Comprehensive Strategic Partnership** (CSP) during PM Modi's visit to Hanoi—a status Vietnam shares with only a few countries like Russia, China, and the US. **2026:** The relationship has reached a new peak with the elevation to an **Enhanced Comprehensive Strategic Partnership.**

What is the significance of India-Vietnam relationship?

Strategic & Security Significance:

Vietnam is the most critical pillar of India's **"Act East Policy."** A strong relationship with Vietnam allows India to maintain a strategic presence in the South China Sea, ensuring that the **Indo-Pacific** remains free and open. India is viewed as a "**trusted friend**" and a reliable source of defense modernization. By collaborating with India on **BrahMos missiles** and maritime surveillance, Vietnam diversifies its security dependencies and strengthens its "**Four No's**" defense policy *(no part in military alliances, no siding with one country against another, no foreign bases on its territory, and no use of force in international relations)*. This allows Vietnam to balance its complex relationship with China without becoming dependent on any single patron.

Economic Significance:

Supply Chain Resilience: In 2026, both nations signed a landmark MoU on **Rare Earths and Critical Minerals**. This is a direct move to reduce reliance on Chinese monopolies and secure the raw materials needed for high-tech industries like EVs and semiconductors.

Trade Complementarity: Vietnam imports Indian raw materials (iron, steel, cotton) and pharmaceuticals to fuel its manufacturing boom. **India** imports electronics, mobile components, and chemicals from Vietnam to support its digital infrastructure.

Digital Connectivity: The linking of India's **UPI** with Vietnam's payment systems in 2026 has revolutionized trade for small businesses and tourists alike.

Voice of the Global South: As two of the world's fastest-growing economies in 2026, they use their partnership to champion the interests of developing nations at the UN and ASEAN.

Gateway to ASEAN: Vietnam is one of ASEAN's most dynamic and influential members. A strong partnership with Vietnam serves as a key bridge for India to deepen its economic, strategic, and cultural engagement with the entire 10-nation bloc. Conversely, India provides Vietnam with a massive consumer market and a strategic partner in the Indian Ocean Region (IOR).

Defense and Security Cooperation: Defence & security cooperation is a key pillar in India-Vietnam Comprehensive Strategic partnership. Vietnam is India's most trusted defense partner in Southeast Asia. This cooperation helps India gain valuable operational experience in the region, test its military hardware, and build the capacity of a like-minded nation.

Civilizational Ties: The shared Buddhist heritage provides a layer of "soft power" that ensures public support for political and military alliances.

What are the challenges in India-Vietnam relationship?

Untapped Trade Potential: Bilateral trade remains well below its potential. The target of $15 billion has been repeatedly pushed back. Moreover, India faces a **trade deficit** with Vietnam, with Vietnamese exports (electronics, machinery) outpacing Indian exports.

Tariff & Non-Tariff Barriers: The ASEAN-India Trade in Goods Agreement (AITIGA) has uneven tariff coverage, with many products still in sensitive categories. Beyond tariffs, non-tariff barriers – including differences in technical standards, complex certification procedures, and regulatory frictions – significantly raise transaction costs.

Logistical Inefficiencies: Limited direct shipping links and weak maritime connectivity result in high logistics costs, making bilateral trade less competitive compared to trade with nations having better infrastructure.

Lack of Direct Links: The two countries are separated by the Bay of Bengal and lack direct land or efficient sea routes. While a **Trilateral Highway** connecting India, Myanmar, and Thailand is under development, its proposed eastward extension to Vietnam remains in the planning phase with no direct projects currently implemented.

Economic Dependency: Despite strategic friction, China remains Vietnam's largest trading partner and a major source of FDI. Vietnam must balance its security ties with India against the risk of economic retaliation from Beijing.

Vietnam's Balancing Act: Vietnam's foreign policy is built on "diversification" and avoiding over-dependence on any single power. While it has a **Comprehensive Strategic Partnership** with India, it has also recently upgraded its relationship with China to a "**Community with a Shared Future**."

Defense and Arms Supply Challenges: While India has supplied defense equipment, **competition from Russia, Israel, and the US** limits India's defense market share in Vietnam. India's own defense industrial capacity and export infrastructure are still maturing.

Limited People-to-People and Cultural Exchange: Despite ancient civilizational links (Cham culture, Buddhism), **contemporary awareness** of each other in both societies is limited. The Indian diaspora in Vietnam is small, reducing the people-to-people bridge compared to India's ties with, say, Singapore or the US.

What are the various initiatives undertaken to boost the India-Vietnam relationship?

Political Cooperation	**Elevated Partnership (2026)**: The relationship was formalized as an "Enhanced Comprehensive Strategic Partnership," marking a significant upgrade from the 2016 Comprehensive Strategic Partnership. **2+2 Ministerial Dialogue:** India and Vietnam have established a **Strategic Diplomacy-Defense Dialogue (2+2)** involving their Foreign and Defense Ministers. This elite diplomatic format is shared by India with only a handful of partners like the US and Japan.
Economic & Trade Cooperation	**Trade Target:** The bilateral trade target has been raised to **$25 billion by 2030.** **UPI-VietQR Interoperability:** In a landmark move for 2026, India's **NIPL** and Vietnam's **NAPAS** signed an agreement to link their payment systems. This allows for seamless cross-border QR code payments, benefiting tourists and small businesses. **IT and Software Services:** An MoU between the **Ministry of Electronics & IT (India)** and the **Ministry of Science and Technology (Vietnam)** focuses on deep-tech collaboration, specifically in **AI, cybersecurity,** and **semiconductor supply chains.** **Rare Earths Partnership:** MoU was signed between India and Vietnam's **ITRRE** for the joint exploration and processing of **rare earth elements**. Vietnam holds the world's second-largest reserves, and this partnership is designed to build a non-China-dependent supply chain.

Defense and Strategic Security Cooperation	**Shared Vision 2030**: Defence cooperation is guided by the "Joint Vision Statement on India-Viet Nam Defence Partnership towards 2030," focusing on capacity building, joint exercises, and industry collaboration. **BrahMos Missile Deal:** Negotiations for the sale of the **BrahMos supersonic cruise missile** (valued at approximately **$629 million**) have entered their final stages, signaling a shift from capacity building to active deterrence cooperation. **Naval Support:** India is moving forward with a **$500 million defense credit line**, which includes the construction of **14 high-speed patrol boats** and potential upgrades for Vietnamese Navy ships and submarines. **Indo-Pacific Oceans Initiative (IPOI):** Vietnam officially joined the **IPOI** in 2026, aligning with India's vision for maritime security and disaster management in the region.
Cultural Cooperation	**Preserving Heritage:** India is funding the **digitization and preservation of ancient Cham manuscripts** (of Indian origin) found in Vietnam, reinforcing the historical civilizational link. **Academic Chairs:** New **India Studies Chairs** have been established at the University of Da Nang and in Ho Chi Minh City by the ICCR. **Nalanda University Link:** An agreement between **Nalanda University** and Vietnam's **Ho Chi Minh National Academy of Politics** has been launched to train Vietnamese officials and researchers in public policy and governance.

What should be the way forward?

Institutionalizing the Relationship:

Hold **annual summit-level meetings** (not just on sidelines of multilateral forums) to sustain political momentum.

Establish a **Joint Strategic Vision Committee** at the foreign minister level with quarterly reviews.

Create a **Track 1.5 / Track 2 dialogue mechanism** involving think tanks, retired diplomats, and business leaders from both sides to generate fresh ideas.

Boost Economic Ties, Trade and Investment:

Set **realistic, time-bound trade targets** (e.g., $20 billion by 2028) with sector-specific roadmaps.

Reduce the **trade deficit** by promoting Indian pharmaceuticals, IT services, machinery, and agricultural products in Vietnam.

Encourage Indian companies — especially in **electronics, textiles, and manufacturing** — to set up supply chain operations in Vietnam as part of China+1 diversification strategies.

Establish a **Fast Track Investment Mechanism** for Indian businesses similar to what Japan and South Korea enjoy in Vietnam.

Deepening Defense and Security Cooperation:

Expedite BrahMos missile transfer — finalizing and delivering the BrahMos missile system to Vietnam would be a landmark signal of strategic trust and India's emergence as a credible defense exporter.

Expand joint naval exercises in the South China Sea to enhance interoperability and signal shared commitment to freedom of navigation.

Offer Made-in-India defense platforms — patrol vessels, radars, and ammunition — under favorable financing to reduce Vietnam's dependence on Russia (especially post-Ukraine war disruptions to Russian arms supplies).

Establish a **bilateral defense industry working group** to co-develop or co-produce equipment suited to Vietnam's operational needs.

Enhancing Physical and Digital Connectivity:

Push for **direct shipping lines** between Indian ports (Chennai, Vishakhapatnam) and Vietnamese ports (Ho Chi Minh City, Da Nang).
Increase **direct flight connectivity** between major Indian and Vietnamese cities to boost tourism and business travel.
Collaborate on **digital public infrastructure** — India can export its UPI, Aadhaar-equivalent, and digital governance frameworks to Vietnam, which is rapidly digitizing.
Explore a **India-Vietnam digital corridor** for fintech, e-commerce, and startup ecosystems.
Strengthening Multilateral Alignment:
Coordinate positions at **ASEAN, East Asia Summit, UNCLOS tribunals, and the UN** more systematically.
India should reconsider or find **alternative pathways to RCEP** participation, or negotiate bilateral trade enhancements that compensate for its absence.
Work together on **reformed multilateralism** — UNSC reform, WTO modernization, and climate finance — where both have convergent interests.
Expanding People-to-People and Cultural Ties:
Significantly **increase scholarships** for Vietnamese students at Indian universities, especially in STEM, medicine, and business.
Promote **Buddhist cultural diplomacy,** joint restoration projects, pilgrimages, and cultural festivals can build lasting bonds.
Establish **Indian Cultural Centers** in Hanoi and Ho Chi Minh City and Vietnamese cultural centers in Delhi and Mumbai.
Support **Yoga, Ayurveda, and Indian soft power** more actively in Vietnam, where there is growing interest.

UPSC GS-2: International Relations
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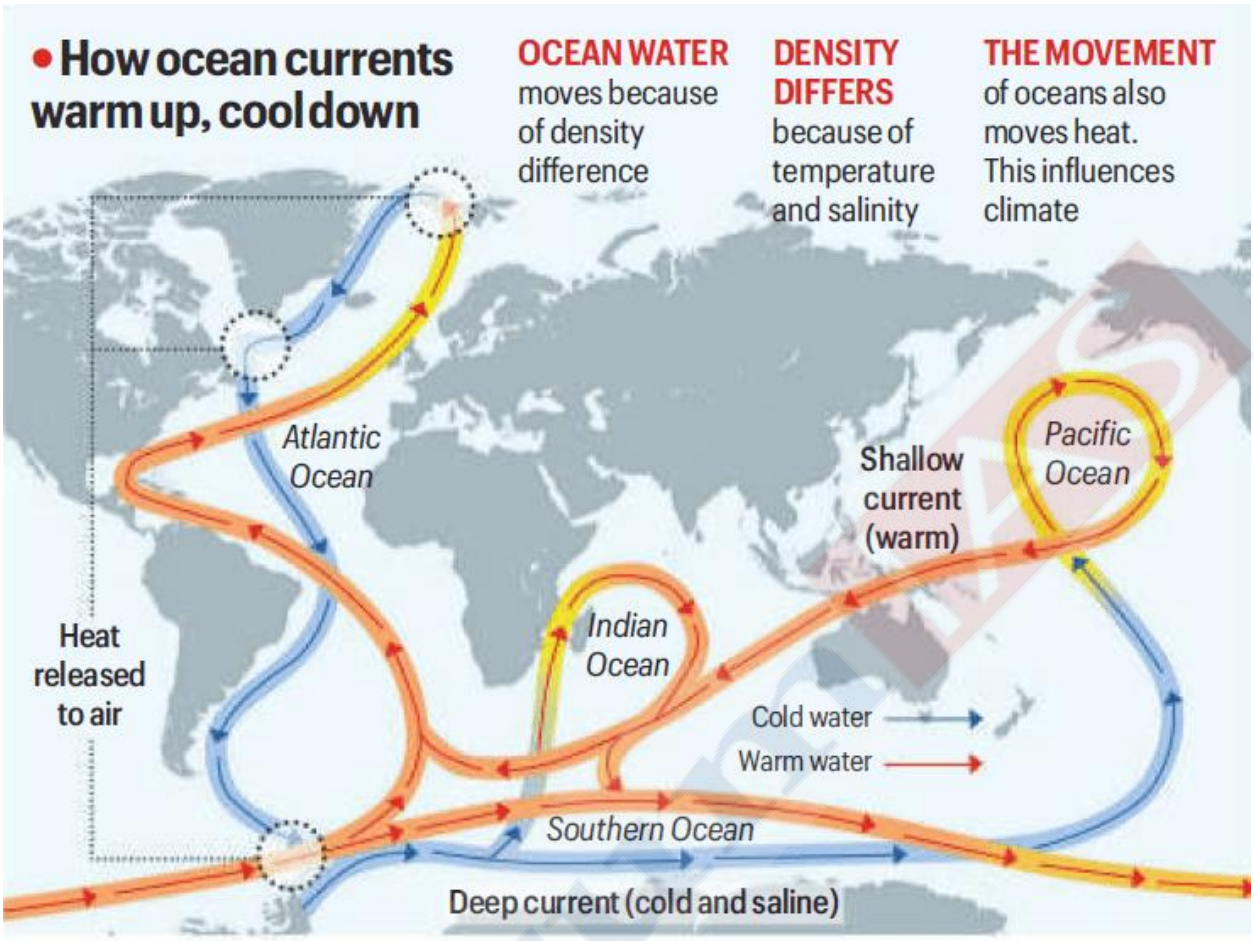
Atlantic Meridional Overturning Circulation (AMOC) – Explained Pointwise

According to a new research, the Atlantic Meridional Overturning Circulation (AMOC), which regulates the climate across much of the globe, may slow by up to 59% by 2100, with potentially devastating consequences for weather systems as far away as the Indian subcontinent.



Source: Indian Express

What is AMOC?

Atlantic Meridional Overturning Circulation (AMOC) is a massive system of ocean currents that circulates water within the Atlantic ocean and is also part of the global thermohaline circulation, which connects the world's oceans with a single "conveyor belt" of continuous water exchange.

It is a component of Earth's ocean circulation system and plays an important role in the climate system. Earth's oceans behave a massive, invisible conveyor belt, – in the Atlantic ocean, this system is scientifically known as the AMOC.

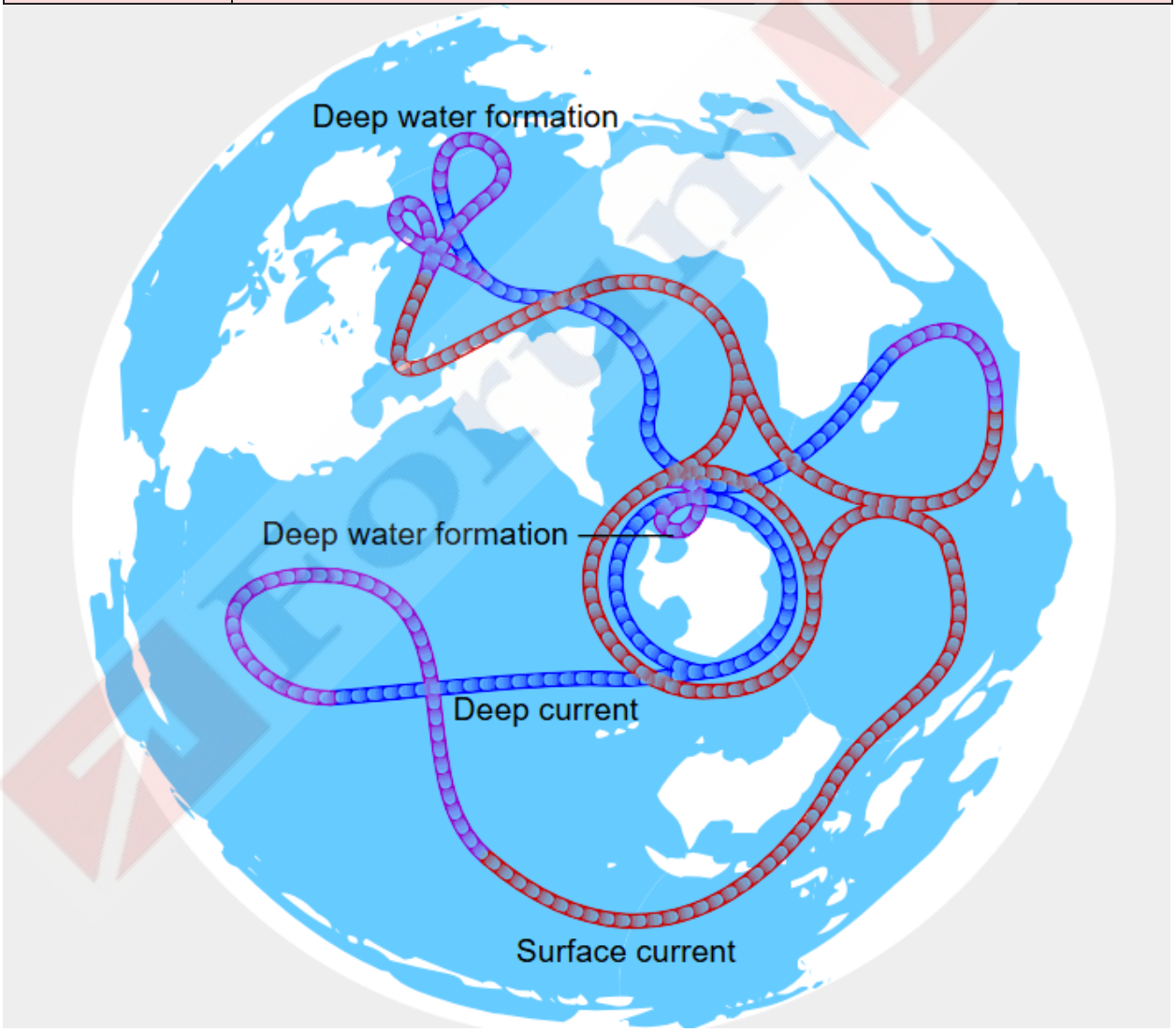
The AMOC is composed of a northward flow of warm, more saline water in the Atlantic's upper layers and a southward, return flow of cold, less salty, deep water.

AMOC is considered a **climate tipping point** — a system that, if pushed past a certain threshold, could irreversibly collapse into a new, sluggish state.

What is the mechanism of AMOC?

Formation of North Atlantic Deep Water (NADW)	The combination of intense cooling and brine rejection creates a dense, heavy, salty, cold water mass called **North Atlantic Deep Water (NADW).** This dense water sinks in the subpolar region near Greenland & Norway – the sinking of NADW is the driving force of the entire mechanism. As the water sinks, it creates a vacuum-like effect at the surface, pulling more warm water from the south to take its place.

Downwelling	The sinking water fills the deep basin of the North Atlantic. Because the sinking occurs constantly, it creates a "pile" of deep water.
Southward Flow	Gravity and pressure gradients push this deep water southward along the ocean floor, flowing like a slow, deep river all the way to the Southern Ocean.
Upwelling	Upwelling occurs mainly in the Southern Ocean (around Antarctica) and the Pacific and Indian Oceans, driven by winds and ocean turbulence. The rising water warms up, becomes less dense, and completes the loop.
Return Flow	The resurfaced waters are warmed and eventually return to the Atlantic, completing the circulation cycle. A single cubic meter of water takes about 1000 years to complete the journey.



Source: Wikipedia

What is the significance of the AMOC?

Climate regulation:

AMOC transports an enormous amount of heat northward (equivalent to the power of roughly one million nuclear power plants) – keeping Western Europe and the North Atlantic region significantly warmer than they would otherwise be. Without this heat transport, countries like the UK, Norway, and France would be 5 to 10° Celsius colder, resembling the climate of Canada or Siberia.

On the other hand, by pulling heat away from the tropics, the AMOC prevents the equatorial regions from becoming excessively hot, helping to maintain a more uniform global temperature.

Weather patterns:

The ITCZ: The AMOC influences the position of the **Intertropical Convergence Zone (ITCZ)**, a belt of low pressure near the equator & the planet's main rain belt.

Monsoons: If the AMOC shifts, these rain belts move. This could lead to devastating droughts in the Sahel region of Africa and parts of South America, potentially leading to widespread crop failure and food insecurity for billions of people.

Carbon sequestration & nutrient cycling:

The AMOC is a major "**carbon sink**". It helps draw CO_2 out of the atmosphere and into the deep ocean, making it a key part of the global carbon cycle.

When surface water sinks in the North Atlantic, it carries oxygen down to the deep ocean, allowing deep-sea life to survive.

It also drives upwelling of nutrient-rich deep water – this fuels the growth of phytoplankton, which forms the base of the entire marine food web.

Sea level: By "pulling" water away from the US East Coast, AMOC suppresses sea levels there. A weakening circulation would cause sea levels along the northeastern US to rise faster than the global average.

What are the reasons behind the slowing down & potential collapse of the AMOC?

Freshwater Influx from Melting Ice: AMOC depends on cold, **dense, salty water** sinking in the North Atlantic to drive circulation. As Greenland's ice sheet and Arctic glaciers melt at accelerating rates due to global warming, massive volumes of **fresh water** pour into the North Atlantic. Freshwater is lighter and less dense than saltwater, so it **disrupts the sinking mechanism** that powers AMOC like a pump. This is widely considered the primary threat.

Ocean & Atmospheric Warming:

Atmosphere Warming: In the past, warm surface water would release its heat to the cold Arctic air, becoming cold and dense. However, as Arctic air temperatures rise, the water doesn't cool down as effectively.

Ocean Warming: Warmer water is less dense and occupies more volume (thermal expansion). This added buoyancy makes it much harder for the water to begin its descent into the deep ocean. Essentially, the "engine" of AMOC loses its driving force.

Rising global temperatures reduce the **temperature contrast** between tropical and polar waters — a contrast that helps drive the circulation.

Arctic Sea Ice Loss: Sea ice formation naturally expels salt (**Brine Rejection**) into the surrounding ocean, increasing water density and aiding sinking. As Arctic warming causes dramatic **sea ice decline**, this salt-expulsion process weakens, further reducing the density of North Atlantic water and slowing the circulation.

Changes in Precipitation Patterns: Climate change is intensifying the global water cycle — making wet regions wetter. Increased **rainfall and river runoff** into the North Atlantic (particularly from rivers in North America and Europe) adds more freshwater to the ocean surface, compounding the dilution effect and further inhibiting the sinking of dense water.

Stratification of Ocean Layers: Climate change is making the ocean more "layered" (stratified). Normally, surface water and deep water mix. But now, a warm, fresh layer is sitting on top like a cap, while the cold, salty water stays trapped below. This stratification prevents the vertical exchange of water, meaning the "overturning" part of the Atlantic Meridional Overturning Circulation simply stops happening.

Positive Feedback Loops: The most alarming aspect is how these factors **reinforce each other**:

A weaker AMOC transports less warm water northward → less evaporation → fresher surface water → even weaker AMOC.
Reduced heat transport accelerates ice melt → more freshwater → further weakening.
If the current weakens, less salt is transported north, making the North Atlantic even fresher and further slowing the circulation.
These self-reinforcing loops mean that beyond a certain tipping point, the collapse could become self-sustaining and irreversible on human timescales

What can be the consequences of AMOC collapse?

Rapid Cooling of Europe & the North Atlantic: Europe currently enjoys a climate far warmer than its latitude would suggest, thanks to AMOC's heat transport. A collapse could trigger:
Temperature drops of **5–15°C in parts of Northwestern Europe** (UK, Ireland, Scandinavia, Iceland) within decades. Arctic sea ice would expand significantly southward, potentially reaching the British Isles and Denmark during winter months.
Paradoxically, this **regional cooling would occur within a globally warming world** — creating a stark climate anomaly.
Accelerated Sea Level Rise on the US East Coast: AMOC acts like a barrier, pulling Atlantic water away from the US coastline. Without it:
Sea levels along the **northeastern US coast could rise by an additional 30–80 cm** above the global average,
Cities like **New York, Boston, and Miami** face dramatically increased flood risk.
Storm surges from hurricanes would penetrate further inland and cause far greater damage.
Disruption of Global Monsoon Systems: AMOC is deeply connected to atmospheric circulation patterns worldwide. Its collapse would ripple far beyond the Atlantic:
The **West African and South Asian monsoons** could shift southward or weaken significantly.
The **Indian summer monsoon**, which is the backbone of the country's agriculture & economy, relies on specific global heat distributions. When the Atlantic conveyor slows down, less heat travels north. This shift pulls the planet's tropical rain belt southward, away from the Indian subcontinent. The result would be shorter wet seasons, longer dry spells, and an overall drying trend. This threatens rainfall that **billions of people** in India, West Africa, and Southeast Asia depend on for food and water.
The **Amazon rainforest**, already under stress from deforestation, could face severe drought, pushing it toward its own tipping point.
Sahel & African Drought: The tropical rain belt (the Inter-Tropical Convergence Zone) would shift southward with AMOC collapse:
The **Sahel region** of Africa — already one of the world's most climate-vulnerable areas — could experience prolonged, devastating droughts
Agricultural collapse across sub-Saharan Africa would threaten food security for hundreds of millions. This would likely trigger **mass migration** on an unprecedented scale, with major geopolitical consequences.
Marine Ecosystem Collapse: AMOC drives the upwelling of nutrient-rich deep water that sustains ocean food chains:
Collapse would cause a dramatic **decline in marine productivity** across the North Atlantic.
The circulation of nutrients that feeds phytoplankton (the base of the ocean food web) would cease, likely leading to a **total collapse of North Atlantic fisheries**.
Ocean deoxygenation in deep waters would create **dead zones**, further devastating marine biodiversity.
The ocean's capacity to absorb CO_2 would also be reduced, **accelerating atmospheric warming.**
More Extreme & Erratic Weather: The temperature gradients that AMOC helps maintain drive weather patterns across the Northern Hemisphere:
The **jet stream** would become more unstable and erratic, leading to more extreme and persistent weather events.
Europe and North America could see more devastating **winter storms, summer heatwaves, and flooding.**

Hurricanes forming in the Atlantic may shift their tracks, potentially striking areas not historically prone to them.

Acceleration of Global Warming: An AMOC collapse could turn the Southern Ocean from a carbon "sink" into a carbon **source.** The disruption of ocean layers could release massive amounts of stored CO_2 back into the atmosphere.

El-Nino: A sluggish AMOC traps heat in the southern hemisphere & leaves the Norther Pacific cooler. Thus, a weaker AMOC will make El-Nino events more unpredictable & extreme.

Triggering Other Tipping Points: Perhaps the most catastrophic dimension — AMOC collapse doesn't happen in isolation:

Cooling of the North Atlantic could **destabilize the West Antarctic Ice Sheet**, accelerating global sea level rise.

Drying of the Amazon could push it past **its own tipping point**, converting the world's largest rainforest into savanna and releasing enormous amounts of stored carbon.

Arctic permafrost thaw could **accelerate**, releasing methane and CO_2 that further drive warming.

UPSC GS-1: Geography
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Role of Governor in Government Formation – Explained Pointwise

In the recently held Tamil Nadu Assembly elections (2026), the Governor's role in government formation became a major constitutional and political issue because the verdict resulted in a hung Assembly. TVK emerged as the single largest party but initially lacked a clear majority in the Assembly. The Governor reportedly asked TVK to furnish support from at least 118 MLAs before government formation, leading to political controversy and debate regarding constitutional conventions. Constitutional experts emphasized that the proper method to determine majority is a floor test in the Assembly rather than subjective assessment by the Governor.

In this regard, it becomes important to understand the role plated by the Governor in the formation of the government in States.

What is the role & powers of Governor in Indian polity?

Constitutional & Ceremonial Role:

The Governor is the constitutional head of the State executives.

The executive power of the State is vested in the Governor (**Article 154**), and all executive actions of the State government are formally taken in their name (**Article 166**).

The Governor acts as a bridge between the Centre and the State.

He/she enjoys various executive, legislative, financial and discretionary powers.

Constitutional Provisions:

Article 153: Provides for a Governor for one or more than one states.

Article 154: The executive powers of the state are vested in the Governor and can be exercised directly or through subordinate officers in accordance with the Constitution.

Article 155: Provides for the appointment of the Governor by the President by warrant under his hand and seal.

Article 156: Provides the term of office of Governor- Appointed for a period of five years and holds office during the pleasure of the President. Pleasure of the President means that he can be removed anytime by the President, even before the expiry of five years.

Article 157: Qualifications – He should be a citizen of India and must have completed the age of 35 years.

Article 164(1): Provides that the Chief Minister of a State shall be appointed by the Governor, while other ministers shall be appointed by the Governor on the advice of the Chief Minister.

Discretionary Powers: Governor has two types of discretion in the execution of his work:

Constitutional Discretion	**Article 200 & 201 = Reservation of Bills:** The Governor can reserve certain bills for the consideration of the President. **Article 356 = President's Rule Report:** The Governor can send a report to the President declaring the failure of the constitutional machinery in the state. This action is taken in personal discretion without ministerial advice. **Article 239 (2) = Administrator of Adjacent Union Territory:** Where the Governor is also appointed as administrator of some Union Territory in respect of administration of such territories he will act independently of his Cabinet. **Article 167 = Seeking Information:** He seeks information from the Chief Minister with regard to the administrative and legislative matters of the state. **Special Tribal/Regional Responsibilities:** Determining royalties payable to Tribal District Councils (Assam, Meghalaya, Tripura, Mizoram).
Situational Discretion	**Appointment of Chief Minister**: When no single party has a clear majority, the Governor must use discretion to invite the leader most likely to command a majority in the House. **Dismissal of Council of Ministers**: If the Council of Ministers loses the confidence of the House or acts unconstitutionally, the Governor may dismiss them. **Dissolution of Assembly**: The Governor may dissolve the Legislative Assembly if a government loses a vote of confidence and no alternative government can be formed. **Asking for a Floor Test:** When the Governor has reasonable grounds to believe the government has lost its majority, they can direct the CM to prove it on the floor of the House.

What are the recommendations of various commissions regarding the Governor's role in the formation of government?

Sarkaria Commission (1988)	The Sarkaria Commission was the first to systematically address this issue. It recommended that the Governor, when inviting a party to form a government, should be guided by the following **'order of preference'**: **Pre-poll alliance:** First, invite the coalition of parties that was formed before the elections and commands the largest support. **Single largest party:** If no pre-poll alliance has a majority, invite the single largest party that stakes a claim to form the government with the support of others. **Post-poll coalition:** Next, consider a coalition formed after the election, with all partner parties joining the government. **Post-poll alliance:** As the last option, consider an alliance formed after the election, where some parties form the government and others (including independents) support it from outside. **Final arbiter:** In all these scenarios, the Governor's ultimate task is to select the leader who, in their judgment, is most likely to command a majority in the Assembly.
Punchhi Commission (2010)	The Punchhi Commission largely concurred with the Sarkaria Commission's order of preference but also made some significant additional recommendations:

	It reiterated the same **four-step order of preference** for government formation in a hung house, firmly supporting the principle that pre-poll alliances should be treated as a single political party. It also suggested that Governors must make decisions within a **fixed time frame (4 months)** and not sit on them indefinitely. **Codification:** It recommended that these guidelines be codified into the Constitution or through a "Code of Conduct" so that Governors cannot use personal whims.

What are the issues related to the Governor's role in the formation of government?

The Constitutional "Grey Area": The primary issue is the Constitution's silence on the exact procedure for a hung Assembly. While Article 164(1) gives the Governor the power to appoint the Chief Minister, it does not specify any criteria for when no party has a clear majority – leaving the Governor to exercise what is known as "situational discretion." This ambiguity creates a vacuum that has often been exploited for political maneuvering.

Disagreement Over the "Order of Preference":

Legally Non-Binding: While Sarkaria & Punchhi commissions have recommended a clear order of preference for whom the Governor should invite first, these are not legally binding. This has led to direct conflicts between the Governor and the political parties.

Subjective Interpretation: Governors often alternate between inviting the **Single Largest Party (SLP)** and a **Post-Poll Coalition**, depending on which aligns with the party in power at the Centre.

The "Agent of the Centre" Perception: The most persistent political issue is the widespread perception that Governors act not as impartial constitutional heads but as agents of the central government. The actions of Governors in hung Assembly situations are often viewed not as neutral constitutional decisions but as deliberate attempts to keep opposition parties out of power and favor a party aligned with the Centre.

Misuse of the "Time Frame" for Floor Tests: When a Governor invites a leader to form a government, they specify a period to prove a majority (the **Floor Test**). Giving an exceptionally long period (e.g., 15 days) is often viewed as providing a window for **"Horse-Trading"**.

"Subjective Satisfaction" vs. "Objective Proof": Governors sometimes reject claims of support based on their "subjective satisfaction" regarding the stability of a coalition. Instead of allowing the **Floor of the House** to be the judge (as mandated by the *S.R. Bommai* case), Governors sometimes act as "gatekeepers," deciding in the Raj Bhavan whether an alliance is "principled" or "opportunistic." The mandate should be tested in the Assembly, not in the Governor's office.

What should be the way forward?

Codification of the "Order of Preference": The recommendations of the **Sarkaria** and **Punchhi Commissions** should be formally codified into a "Code of Conduct" or added as a **New Schedule** to the Constitution.

Strengthening the "Floor Test" Doctrine: The **Supreme Court** has repeatedly stated that the floor of the House is the only place to prove a majority:

Mandatory Timelines: A standard "Floor Test" window (e.g., 48 to 72 hours) should be institutionalized to prevent the "buying of time" for horse-trading.

Physical Verification: Governors should be discouraged from demanding "physical parades" or "letters of support" at Raj Bhavan, instead, they should let the legislative process determine the majority.

Reform in Appointment and Tenure: A Governor who is constantly worried about being removed by the Centre cannot remain neutral:

Security of Tenure: As suggested by the **Punchhi Commission**, the phrase "during the pleasure of the President" should be replaced with a fixed 5-year term. Removal should only be possible through a process similar to impeachment by the State Legislature.

Appointment Panel: Instead of unilateral appointment by the Centre, a panel comprising the **Prime Minister, Speaker of Lok Sabha, and the Chief Minister of the concerned state** should select the Governor to ensure state-level consensus.

Regulating the Discretionary Powers: It is imperative that the Governors exercise their discretionary powers in a bona fide manner. The recent Justice Kurian Joseph Committee report on Union-State Relations, constituted by TN government, recommended incorporating a new schedule into the Constitution to codify the rules governing the Governor's use of discretionary powers.

UPSC GS-2: Indian Polity
Read More: The Hindu

Solid Waste Management in India – Explained Pointwise

The Solid Waste Management remains an Achilles heel for India. India's waste crisis is no longer a localised urban nuisance but a national ecological emergency. Our cities are choking on waste; plastic-clogged drains worsen monsoon flooding; landfills have become mountains of methane, fire & leachate; open burning of waste materials fouls the air; and rivers and coasts bear the burden of urban negligence. Proper steps need to be undertaken for safe disposal and treatment of solid waste in India.

The **Solid Waste Management Rules, 2026**, notified in supersession of the 2016 Rules and brought into effect from April 1, 2026, are driven by a legitimate and urgent environmental objective. They seek to improve source segregation, regulate bulk waste generators, promote scientific waste processing, reduce dependence on landfills, remediate legacy dumpsites, encourage a circular economy, and move towards digital monitoring. However, the Rules have also been criticized for disregarding the principles of federalism, local democracy, and subsidiarity.

What is a Solid Waste?

Solid Waste: Solid waste refers to any unwanted or discarded material. It is important to note that the definition of solid waste is not limited to wastes that are physically solid. Many solid wastes are liquid, semi-solid, or contained gaseous material. The solid waste includes a wide range of materials generated from various sources such as households, industries, commercial establishments, construction sites, and institutions.

Types of Solid Waste:

Municipal Solid Waste (MSW) – Household, commercial, market waste.
Biomedical Waste – Hospitals, clinics (requires special handling).
Electronic Waste (E-waste) – Phones, laptops, appliances.
Construction & Demolition (C&D) Waste – Debris, bricks, tiles.
Industrial Waste – By-products from factories, often hazardous.
Plastic Waste – Single-use plastics, packaging material.

Solid Waste Management: Solid Waste Management **(SWM)** refers to the systematic process of collecting, segregating, transporting, processing, recycling, and disposing of solid waste in an environmentally safe and sustainable manner.

Components of Solid Waste Management:

Waste Generation – Production of waste from households, industries, agriculture, hospitals, etc.
Segregation at Source – Separation of biodegradable, recyclable, hazardous, and inert waste.
Collection and Storage – Gathering waste from different sources and storing it safely.
Transportation – Moving waste to treatment or disposal facilities.
Processing & Treatment – Composting, recycling, biomethanation, and waste-to-energy conversion.
Final Disposal – Scientific landfilling or safe disposal of residual waste.

What is the status of Solid Waste generation in India?

Status of Solid Waste Generation in India:

According to a study published in 'Nature' – India is the **biggest plastic polluter** in the world – releasing 9.3mT of plastic waste annually – which is equivalent to around **20% of global plastic emission**.

According to CPCB report, **only ~50%** of total solid waste generated in the country is treated. The processing of solid waste in India has improved significantly, from **19%** in 2015-16 to **~50%** in 2020-21. In the corresponding period, the proportion of solid waste landfilled has fallen from **54%** to **18.4%**.

The total quantity of Solid waste generated in India per Day	~1,60,000 Metric Tonnes Per Day (TPD)
Waste Collection per day	~1,53,000 Metric Tonnes Per Day (TPD) Waste Collection efficiency is **~96%.**
Waste treatment per day	~80,000 Metric Tonnes Per Day (TPD) **Only 50%** of the total waste is treated.
Waste Landfilled per day	~30,000 Metric Tonnes Per Day (TPD) **18.4%** of the total waste generated ends in landfill.
Unaccounted Waste Generation	~50,000 Metric Tonnes Per Day (TPD) **31.2%** of the total waste generated remains unaccounted.

About 50-55% of the waste generated in Indian cities is biodegradable wet waste, about 35% is non-biodegradable wet waste and 10% is an inert component.

What are the Challenges Associated with Solid Waste Management in India?

1. Rising Waste Generation: Rapid economic growth has raised the consumption levels in the economy, which has in turn increased the waste generation. Further, the expansion of digital economy is leading to a multifold increase in e-waste generation. Rising plastic waste generation in eco-sensitive regions like Himalayas are choking the fragile ecosystems present there. ***For ex-*** *A Planning Commission Report had estimated that India will generate 165 million tonnes by 2030.*

2. Lack of proper Waste Management: India lacks proper waste management and disposal techniques.

Inadequate Infrastructure: Many urban and rural areas lack proper infrastructure for waste collection, segregation, transportation, processing, and disposal.

Collection & Treatment: While collection rates are improving, a significant portion of the generated waste remains uncollected.

Poor Processing: Only 50% of the waste produced is actually processed in India. ~30% of waste is not accounted and ~20% ends up in landfills, reflecting poor waste disposal method.

Incorrect and Inadequate Segregation Techniques: There is poor segregation of waste at source. Hazardous waste and e-waste is not sealed and labelled leading to improper disposal. ***For ex-*** *Valuable materials like aluminum and plastics end up in landfills instead of being recycled.*

Reuse/Recycling of waste: Reuse and recycling of waste is predominantly an informal economy, lacking access to advanced technology.

Financial Constraints: Local municipal bodies often face budget limitations hindering investments in modern waste management systems.

3. Littering and Illegal Dumping: Due to poor disposal methods, almost half of waste is placed in uncontrolled dumps and landfills. A substantial amount of untreated waste, approximately 24%, ends up in landfills, many of which are unscientific and overflowing. These landfills are the source of generation of methane gases, leachates, and landfill fires, adversely affecting the surrounding environment

4. Lack of land resources: The urban areas in India lack adequate land resources to set up waste processing plants. ***For ex-*** *Waste processing plants in Delhi need large land parcels, of about 30-40 acres each for treatment.*

5. Lack of public awareness: Lack of public awareness regarding proper waste management practices, contributes to littering and improper disposal habits.

6. Lack of regular waste collection services: The lack of regular waste collection services adds up to the building up of waste as well as littering. Illegal dumping in open areas and waterbodies increases the pressure on the municipal body, warranting more resources for clean-up.

7. Lack of proper data: Lack of data regarding the quantity & quality of waste generated & processed in India is a major roadblock in its management. The data regarding the rate of waste generation in India is under-estimated & of waste collection is over-estimated. **For e.g.** according to the official estimates, the plastic waste generation rate in India is 0.12 kg/capita/day, while according to the study published in 'Nature' , it is as high as 0.54 kg/capita/day. The agencies in India claim to collect 95% of the waste generated, however, these official statistics do not include rural areas, open burning of uncollected waste or the waste recycled by the informal sector.

8. Informal Sector: The informal sector, consisting of ragpickers and recyclers, plays a crucial role in managing and extracting value from waste, though often under hazardous conditions.

9. Waste Composition: A large percentage of Indian waste is organic, offering potential for composting and bio-methanation. However, the increasing proportion of non-biodegradable waste like plastics and e-waste presents management challenges.

10. Over-Centralization & One-Size-Fits-All Approach:

The waste management rules formulated in our country are based on the belief that centralization and over-regulation can cure administrative weaknesses, and that the Centre must design and command while the States merely execute. Thus, environmental governance in India not only runs contrary to the principle of subsidiarity but also embodies a technocentric vision that is insufficiently attentive to ground realities.

The Rules also follow a one-size-fits-all approach. A system suited to a resource-rich metropolis like Mumbai cannot be mechanically applied to a Himalayan pilgrimage town, an island settlement with scarce land, a coastal panchayat facing tidal flooding and marine litter, or a scattered tribal hamlet where low-density habitation makes waste collection and transportation costly.

What are the harmful impacts of poor Waste Management?

Health Issues	The improper waste management leads to several health issues such as: **Respiratory & Chronic Issues**: Open burning of waste leads to formation of harmful particles which can cause lung diseases. **Disease Breeding Grounds:** Poor collection of solid waste leads to garbage dumps which act as breeding ground for rats and mosquitoes etc. Mosquitoes act as carriers of diseases like malaria and dengue. **Microplastics in the Food Chain:** Poorly managed plastic waste eventually breaks down into microplastics. These are ingested by marine life and livestock, eventually making their way into human bloodstreams and organs.
Environmental Issues	Improper waste management techniques lead to various environmental problems such as: **Surface and Groundwater Contamination:** Unscientific dumping in landfill leads to formation of harmful chemicals which permeate into soil and groundwater. This renders groundwater unfit for drinking and cause multiple diseases **Air Pollution:** Open burning of trash—a common practice in areas with poor collection—releases hazardous chemicals like dioxins and particulate matter into the air. Additionally, decomposing organic waste in landfills produces methane (CH_4), a greenhouse gas roughly 28 times more potent than CO_2. Waste in landfills leads to formation of harmful gases leading to air pollution. ***For ex-*** *Around 90-98% of landfill gases are made up of methane and carbon dioxide, remaining 2-10% includes nitrogen, oxygen, ammonia, sulphides, hydrogen and various other gases.* **Soil Degradation**: Hazardous materials (like heavy metals from batteries) alter the soil's pH and chemistry, killing essential microorganisms and making the land infertile for years. **Marine Pollution**: A lot of land-based waste eventually ends up in sea leading to marine pollution.
Economic Impacts	Improper waste management usually has grave economic impacts such as: **Economic Loss:** Poor waste management is expensive. Governments end up spending more on **healthcare** and **emergency disaster relief** than they would have spent on an efficient disposal system. It also hurts tourism and lowers property values. **Urban Flooding:** In many cities, plastic waste clogs drainage systems. During heavy rain, this prevents water from flowing, leading to "artificial" floods that damage homes and infrastructure. **Resource Depletion:** Expansion of landfills occupy useful land, leading to wasteful utilization of an economic resource.
Impact on Wildlife	**Ingestion and Entanglement:** Over **100,000 marine mammals** die annually from plastic entanglement or ingestion. Land animals often choke on plastic or die from chemical poisoning after scavenging at dumpsites.

	Habitat Loss: Landfills and illegal dumping destroy natural habitats, forcing species to migrate or face local extinction.

What have been the Government interventions for Solid Waste Management?

Policy and Legal Framework for Waste Management in India	The Government of India (GoI) has formulated various Rules and Regulations. These rules are updated periodically and have been formulated under the **Environment Protection Act, 1986**. These include: a. **Solid Waste Management Rules** b. **e-Waste Management Rules** c. **Plastic Waste Management Rules**
Extended Producer Responsibility (EPR) Mechanism	EPR is a policy approach in waste management that makes producers responsible for the entire lifecycle of their products, including their collection, recycling, and disposal. In 2022, EPR initiatives utilizing market mechanisms were implemented for plastic packaging, e-waste, battery waste, and used oil.
Swachh Bharat Mission for Solid Waste Management	Central assistance is provided under Swachh Bharat Mission for solid waste management, including plastic waste management in urban and rural areas.
Compost Banao, Compost Apnao Campaign	It is a multi-media campaign launched by MoHUA on waste-to-compost under SBM-(U). The aim is to encourage people to convert their kitchen waste into compost to be used as fertilizer and to reduce the amount of waste getting to landfill sites.
Promotion of Waste to Energy	The Ministry of New and Renewable Energy (MNRE) launched Program on Energy from Urban, Industrial, Agricultural waste/residues and Municipal Solid Waste to promote setting up of Waste-to-Energy projects and to provide central financial assistance.
GOBAR-Dhan Scheme	This scheme promotes the conversion of cattle dung and organic farm waste into biogas and organic compost in rural areas.
National Action Plan for Municipal Solid Waste Management	This plan by the Central Pollution Control Board (CPCB) outlines strategies for waste minimization, utilization, recycling, processing, and environmentally sound disposal.
Mission LiFE	Mission LiFE (Lifestyle for Environment) is an India-led global mass movement to encourage individuals and communities to adopt sustainable, climate-friendly lifestyles and reduce mindless consumption.

	Mission LiFE actions are organized around themes such as energy conservation, water saving, waste reduction, sustainable food systems, reduced single-use plastics, healthy lifestyles, and e-waste management.

What should be the Way Forward?

1. Scientific Waste Management: The waste management planning should be based on sound scientific and engineering studies. They should consider waste composition, capital and long-term operating costs, transport distances, and the geographical location of waste processing and disposal facilities.

2. Smart Waste Management System: In the long term, technology like (Internet of Things) can be integrated into waste management. ***For ex-*** *RFID-enabled door-to-door waste collection monitoring can enhance collection efficiency and GPS based vehicle tracking can help in real time monitoring.*

3. Emphasis on Recycling, Resource recovery & Processing: Policies supporting recycling and recovery of resources from waste must be implemented stringently. Waste processing methods like composting, vermicomposting and bio-methanation should be adopted for treating organic waste. Establish efficient material recovery facilities (MRFs) and support the formalization of the recycling sector.

4. Scaling up Waste-to-Energy: Bio-methanation (anaerobic digestion) which uses microorganisms to convert the organic waste into methane, can be used as fuel. Bio-methanation plants should be scaled up. Also, Refuse-Derived Fuel (RDF) which consists of plastics, paper, and textile waste, having good calorific value, can be used to generate power in waste-to-energy projects.

5. Polluter Pays Principle:

Waste Management Rules which have incorporated '**Polluter Pays Principle**', need to be stringently implemented to penalize non-compliance.

Polluter pays principle casts absolute liability on the polluter for the harm caused to the environment & extends not only to compensate the victims of pollution but also the cost of restoring environmental degradation.

While the liability is clear under this principle, but the process of determining an equitable compensation is difficult as it must account for both tangible & intangible damages inflicted on environment & the affected communities. To overcome this, the Courts have modified the principle into **'Government Pays Principle'** under which it is the government which has to pay the compensation to the affected individuals & recover the same from the polluters, until the damage caused to the ecology is fully reversed.

6. Increasing Public Awareness: Self- help groups, residents' welfare associations, and community-based organizations should be encouraged to educate and acquaint people with beneficial waste management strategies, including separation, recycling modes, and drop off centers for recyclables, as well as composting.

7. Data collection: There is an urgent need to collect & provide reliable data about waste generation & its composition in the country for its effective management. We need to know how much of the waste is being generated, where & how it is being managed for finding an effective solution. We also need to have data regarding the infrastructure that has been built over the years for waste management & such infrastructure needs to be geotagged to help in proper disposal of waste.

8. Extended Producer Responsibility (EPR): To effectively operationalize the EPR, the producers, importers & and brand owners that have a legal obligation to collect the waste, can collectively form kiosks across the country to collect the waste from local bodies – so that all the waste that is covered under EPR can be deposited & effectively managed.

9. Circular Economy Model: The circular economy model underlines waste as a resource. India needs to move away from a linear to circular mode of waste management – with the twin objectives of minimizing waste & recovering energy & other resources.

10. Differentiated Environmental Governance:

Allow States to frame their own solid waste management rules for at least five years, subject to minimum national norms. States can try policies at manageable scale, contain failures, and allow successful models to diffuse horizontally or be adopted nationally.

Solid waste management rules must be recast around 5 principles – Minimum national standards, State flexibility, Empowered local bodies, Predictable finance, and citizen accountability.

Conclusion:

According to the SC of India, environmental protection is not only a regulatory obligation but also a constitutional imperative which aims to safeguard the fundamental rights of the individuals & preserve the ecological balance. Thus, it is the right time to hold the waste management system in the country accountable to the people whose health is impacted by the land, water & air pollution caused by unmanaged & mismanaged waste all across the country.

Read More: The Hindu
UPSC Syllabus: GS III, Conservation, Environment Pollution and Degradation.

National Testing Agency – Functioning & Challenges – Explained Pointwise

The **National Testing Agency (NTA)** has been caught in the middle of the storm surrounding the NEET controversy. In May 2026, the **NEET-UG examination** was cancelled nationwide after a "guess paper" circulated on WhatsApp was found to have a significant overlap with the actual question paper. This affected approximately 2.3 million students.

The Agency has once again come under scrutiny for its alleged weak operational capacity, porous cybersecurity framework, and poor crisis communication.

Source- NTA

What is the National Testing Agency? What is its envisaged role?

National Testing Agency: National Testing Agency (NTA) was established as a Society registered under the Indian Societies Registration Act, 1860. It has been established as a premier, specialist, autonomous and self-sustained testing organization to conduct entrance examinations for admission/fellowship in higher educational institutions.

Aim: NTA aims to conduct efficient, transparent and international standardized tests in order to assess the competency of candidates for admission and recruitment purposes.

Composition:

NTA is chaired by an eminent educationist appointed by the Ministry of Education.

The CEO of NTA is the Director General to be appointed by the Government.
The Director General is assisted by 9 verticals headed by academicians/ experts.
NTA consists of a Board of Governors comprising members from user institutions.

What was the intention behind the establishment of National Testing Agency (NTA)?

Professionalizing the Examination Process: Before the NTA, major exams like JEE Main and NEET were conducted by the **Central Board of Secondary Education (CBSE)**. However, the CBSE's primary expertise is in schooling and curriculum, not high-stakes competitive psychometrics. Thus, NTA was created as a specialist body whose sole mission is to research and execute entrance tests using modern assessment techniques.

Incorporation of Online Mode of examination: The NTA was designed to eliminate human error and leakage risks. Some of the examinations such as JEE Mains are conducted by NTA in the online mode at least twice a year. By pivoting to **Computer Based Tests (CBT)**, the agency intended to:
Standardize the testing environment across the country.
Provide faster, more accurate result processing.
Minimize the logistical challenges associated with paper-and-pencil tests (like physical transport of millions of OMR sheets).

Promoting Equity and Access: A major part of the NTA's mandate is to ensure that students from rural or underprivileged backgrounds are not disadvantaged by the shift to digital testing. The NTA established a network of centers (called Test Practice Centres (TPCs)) where students can practice CBT for free & also created online infrastructure such as a 'mobile app' to help students practice and take mock tests on their own computers or smartphones, ensuring that "tech-savviness" doesn't become a barrier to entry. It has helped in democratization of education.

Moving Toward "Scientific" Testing: The NTA aims to use data-driven insights to improve how students are evaluated. This includes:

Psychometric Analysis: Evaluating the difficulty level and discrimination index of every question.

Equipercentile Equating: A statistical method used to ensure that if an exam is held over multiple days, a student who got a "harder" set of questions isn't unfairly penalized compared to a student who got an "easier" set.

Adoption of global best practices: NTA was designed to adopt technology and best global practices to bring in high reliability, transparency, and standardized difficulty levels in the examinations. It has collaborated with international organizations like ETS (Educational Testing Services).

Implementation of Programme of Action (POA) 1992: Creation of National Testing Agency is to give effect to the Programme of Action (POA), 1992 which envisaged the concept of a common entrance exam on an all-India basis for admission to professional programs.

Research and Training: NTA was aimed at the establishment of a strong R&D culture as well as a pool of experts in different aspects of testing. It was also aimed to provide training and advisory services to the institutions in India.

What are the issues with functioning of NTA?

Frequent Paper Leaks and Integrity Breaches: The allegations of irregularities in the conduct of exams like NEET-UG, including suspected question paper leaks, distribution of wrong question papers, and technical glitches have posed serious questions on the integrity of the organization. A parliamentary panel found in late 2025 that at least **five of the 14 major exams** NTA conducted faced "major issues".

Over-Reliance on Outsourcing: The **Radhakrishnan Committee** (formed after the 2024 controversies) highlighted that the NTA is dangerously dependent on third-party vendors:

Contractual Staff: Much of the sensitive work – including question processing, translation, and exam center management – is handled by contractual personnel rather than permanent, accountable government officials.

Private Centers: Many exams are conducted in private computer labs and schools that lack standardized security protocols, leading to non-functional CCTV cameras and "managed" cheating.

High scores and Grace marks: The award of Grace marks to the candidates and unusual spike in the number of candidates securing full marks in the NEET exam (67 students securing full 720/720) has raised eyebrows on the procedure adopted by the National Testing agency.

Lack of Transparency and Accountability: There have been allegations regarding the lack of transparency and accountability on part of NTA to address the concerns of the students. NTA has often been criticized for being an opaque body, lacking transparency in its operations. **For ex-** Denial of demands for a CBI inquiry and a retest of the NEET exam on part of NTA.

Operational and Administrative Challenges: Even when papers aren't leaked, the NTA has struggled with the "scientific" execution of tests. Foe e.g. In 2026, the NTA had to revise its JEE Main answer key after correcting 19 errors in the Chemistry section alone. Students frequently complain about being allocated centers in far-flung cities, sometimes hundreds of kilometers away, despite providing local preferences.

Technical Failures: Beyond leaks, students frequently face **technical glitches, server crashes, and answer key errors**. Critics also highlight that despite pressure for digital reform, NEET remains a **pen-and-paper exam** conducted across 10,000+ centres, creating vast logistical vulnerabilities.

Reverting to pen-paper mode from the progressive online medium: The reversal to pen and paper mode from the online mode has increased the vulnerability of the examinations conducted by NTA to leaks. **For ex-** UGC-NET was an offline exam conducted by the CBSE till 2018, when it was taken over by the NTA and became an online exam. However, it was reverted to offline, pen-and-paper exam, which is potentially more vulnerable to paper leaks.

Delayed Implementation of Reforms: Most of the recommendations made by the **Radhakrishnan Panel** are yet to be fully realized:

The Digital Gap: The shift to a "hybrid" model (digital delivery of papers with OMR answering) has been slow to roll out across all regions.

Personnel Reform: The goal of replacing contractual staff with permanent personnel is still a "work in progress," with the agency currently targeting late 2026 for completion.

Read More- Exam Paper Leaks- Concerns and Way Forward- Explained Pointwise

What should be the Way Forward? (Including Radhakrishnan Panel Recommendations)

Structural Restructuring: The NTA must shift from being an administrative coordinator to a technology-first research body:

Permanent Workforce: Reducing reliance on private outsourcing. The goal is to man the NTA with internal experts in psychometrics and cybersecurity rather than temporary contractual staff.

Government-Only Centers: Major exams should be moved out of private schools/computer labs and conducted exclusively at government-controlled institutions, Kendriya Vidyalayas, or standardized "National Testing Centers."

Adopting a "Hybrid" Examination Mode: Since India lacks the infrastructure to test 2.5 million students simultaneously on computers (CBT), a **Hybrid Model** is the proposed middle ground:

Digital Delivery: Question papers are delivered to centers via an encrypted digital link just 30–60 minutes before the exam.

Physical Answering: Students still mark their answers on OMR sheets, but the physical transport of printed booklets—the most common point of paper leaks—is eliminated.

High-Speed Printing: Each center would be equipped with secure, high-speed printers to generate papers on-site.

Multi-Stage and Multi-Session Testing: To reduce the high-stakes pressure and the scale of potential leaks:

NEET-UG Two-Tier System: Moving toward a Preliminary and Mains format (similar to JEE or UPSC). This makes a "mass leak" much harder to execute and easier to contain.

Multiple Attempts: Allowing students to take the exam twice a year to reduce the "do-or-die" desperation that fuels the paper-leak market.

Deploy Full Biometric & AI Surveillance: While pilot tests have been conducted, a nationwide rollout of **Aadhaar-based facial recognition** and **AI-enabled CCTV monitoring** (which flags suspicious behavior in real-time) is essential to prevent impersonation and organized cheating.

Encrypted "Question Banks": Moving away from a single "master set" of questions to a system where each center (or even each student) receives a randomized set of questions pulled from a secure, encrypted cloud server.

Accountability and punishment of the guilty: The government should take steps to rehaul the NTA's systems and personnel. This will ensure that the technical glitches, cheating scams, paper leaks, and proxy candidates that have plagued the exams this year are not allowed to happen again.

Strict Enforcement of the 2024 Act: Rigorous implementation of the **Public Examinations (Prevention of Unfair Means) Act, 2024,** which mandates up to 10 years in prison and ₹1 crore fines for organized paper-leak syndicates.

Dismantling the centralised structure of National Testing Agency: The centralised structure of the NTA should be dismantled. This may well curb the Union government's centralising tendencies leading to examinations of enormous scale that are harder to manage in a far-flung regions of the country.

Taking help from the State government: For all-India examinations, the States should join the Central Govt in recovering the integrity of the beleaguered examination system. The state governments should also be shared some responsibilities for entrance examinations.

Read More: The Hindu
UPSC Syllabus- GS 2- Various regulatory and statutory Bodies

AI-Powered Financial Inclusion – Explained Pointwise

India's financial inclusion journey is witnessing a paradigm shift, propelled by the convergence of robust **Digital Public Infrastructure (DPI)** and **Artificial Intelligence (AI)**. What initially began as an effort to broaden access to basic banking services has now evolved into a technology-driven ecosystem aimed at delivering intelligent, inclusive, and real-time financial services at scale. By leveraging extensive digital footprints, advanced analytics, and consent-based data-sharing frameworks, AI is reshaping the design and delivery of financial services—improving efficiency, widening outreach, and enabling more personalized

financial solutions.

What is meant by Financial Inclusion?

Financial inclusion is the process of ensuring **access to financial services**, with timely, adequate and affordable credit primarily for vulnerable groups such as weaker sections and low-income groups.

In India, financial inclusion has moved beyond being just a policy goal and has become a digital reality. Over the last decade, interconnected digital platforms have made financial services more accessible, widespread, and technology-driven.

This transformation is anchored in foundational systems enabling identity verification, seamless payments, and direct benefit delivery. These systems ensure that financial services are **accessible, affordable, and efficient** across geographies. Together, they form the backbone of an integrated ecosystem that supports last-mile connectivity and future innovations.

What are the key foundational systems supporting financial inclusion in India?

JAM Trinity (Jan Dhan-Aadhaar-Mobile)	JAM is a foundational convergence of universal bank accounts, biometric identity, and mobile connectivity. Its motive is to provide every citizen with a unique financial identity and a direct link to the state, ensuring that geography is no longer a barrier to financial access.

Unified Payments Interface (UPI)	UPI is a real-time payment system that allows for instant money transfers between any two bank accounts via a mobile platform. It aims to democratize digital payments by offering a low-cost, interoperable, and secure experience for both small merchants and individual users. It accounts for nearly **81% of total retail payment volume** in India, becoming the primary digital rail for both person-to-person and person-to-merchant payments.
Direct Benefit Transfer (DBT)	Under DBT system, government subsidies and welfare benefits are directly transferred into the bank accounts of beneficiaries. Its primary goal is to enhance transparency and efficiency by removing intermediaries, thereby eliminating leakages and delays in the delivery of social welfare.

What are the various initiatives aimed at integrating AI into the financial sector?

BHASHINI	**Digital India BHASHINI Division (DIBD)** and the **RBI** has signed an MoU to collaborate on integrating **BHASHINI's language AI models** to enhance multilingual access to banking and financial services. The initiative aims at promoting financial inclusion across India's diverse linguistic landscape by providing multilingual access to banking services in all **22 scheduled Indian language,** thus removing literacy and language barriers. By providing **AI-powered solutions** for communication and service delivery, it ensures that all citizens, regardless of language, can **access essential services** and information effectively.
RBI Regulatory Sandbox	The RBI introduced the **Enabling Framework for Regulatory Sandbox (RS)**, to foster responsible innovation, enhance efficiency, and benefit consumers in the fintech sector. The objective of the RS is to foster responsible innovation in financial services, promote efficiency and bring benefit to consumers. It offers a **controlled environment** for **testing new products/services** under regulatory supervision before wider deployment.
MuleHunter.AI	The **Reserve Bank Innovation Hub (RBIH)**, **MuleHunter.AI** is an advanced AI-powered tool designed to identify and mitigate "mule" bank accounts used in cybercrimes. Unlike traditional rule-based systems, it uses **AI/ML-powered tool** to analyze transaction patterns in real-time, detecting anomalies that indicate money laundering or illegal betting.

Digital ShramSetu	**Mission Digital ShramSetu** announced in October 2025, is a proposed national initiative to create an AI-driven ecosystem that makes technology accessible, affordable, and impactful for India's **490 million informal workers.** The mission harnesses **AI, Blockchain, and Immersive Learning** to dismantle structural constraints such as financial insecurity, limited market access, and lack of formal skilling. By providing tools for social protection and real-time skill verification, the mission aims to turn the informal workforce into a primary driver for the **Viksit Bharat 2047** vision.
Unified Lending Interface (ULI)	ULI is a technology-based initiative to make frictionless credit available to every Indian and to further the Government's broader vision of digital empowerment, financial inclusion, and last-mile service delivery. ULI enables **digital access to multiple data sources**, including authentication services, land records, satellite service, and other financial and non-financial datasets, to support loan processing.

What is the significance of integrating AI into the financial sector?

Enhanced Efficiency and Cost Reduction: AI automates routine tasks such as data entry, transaction processing, and customer inquiries (via chatbots), reducing operational costs and freeing human workers for higher-value activities. AI-driven solutions can reduce the cost of business activities to nearly **1/10th** of traditional manual processes.

Improved Risk Management: Machine learning models analyze vast amounts of historical and real-time data to detect patterns indicative of fraud, credit defaults, or market volatility, enabling proactive risk mitigation. By leveraging the **Unified Lending Interface (ULI)**, AI models analyze "digital footprints" to assess risk.

Credit Scoring and Lending: Digital advancements and AI are reshaping India's credit ecosystem by strengthening **credit assessment and expanding lending access**. Traditionally, access to formal credit was limited by the lack of verifiable financial histories, particularly for MSMEs, informal workers, and first-time borrowers. **AI-powered solutions** move beyond conventional credit scoring models and leverage alternative data such as digital payment transactions, GST filings, bank statements, and utility payments to assess creditworthiness. By converting digital footprints into dynamic risk profiles, AI enables faster, more accurate, and cost-efficient underwriting decisions.

Advanced Fraud Detection and Security: AI systems can identify anomalies in transaction behavior almost instantly, flagging potential fraud with greater accuracy than rule-based systems, and adapting to new threats over time. AI identifies subtle patterns in transaction metadata that human analysts would miss, stopping "deepfake" fraud and sophisticated cyber-attacks before they settle.

Regulatory Compliance (RegTech): AI helps automate compliance monitoring, report generation, and transaction screening for anti-money laundering (AML) and know-your-customer (KYC) requirements, reducing human error and compliance costs.

What are the challenges associated with integration of AI in financial sector?

The "Black Box" & Opacity: Many AI systems lack transparency, making it difficult to explain decisions like loan rejections. In a country where financial literacy varies significantly, AI-driven loan rejections are often unexplainable. Frontline bank staff frequently cannot explain to a customer why an algorithm denied their credit, leading to trust deficits.

Data Privacy & Security: AI relies on vast amounts of sensitive financial data, increasing risks of breaches, unauthorized processing, and privacy violations. This is governed by the Digital Personal Data Protection (DPDP) Act, 2023.
Operational & Infrastructural Gaps: India has only ~3% of global data center capacity, a major hurdle for AI processing. Many smaller banks and NBFCs lack resources to build AI governance, creating an uneven playing field.
Algorithmic Bias: Because AI models are often trained on historical data, there is a significant risk of reinforcing social biases. For example, an AI might inadvertently penalize borrowers from specific pin codes or communities that were historically underserved, contradicting India's goal of inclusive finance.
Data Localization: Storing and processing massive financial datasets locally adds significant infrastructure costs for smaller fintechs and Cooperative Banks.
Socio-Economic Concerns: Low financial literacy (25-30%) could worsen the digital divide. Job displacement is a major concern, especially in public sector banks, requiring large-scale reskilling programs.
What should be the Way Forward?
Explainability as Default: Institutions must move away from "black box" models. Every AI-driven loan rejection or fraud flag must be traceable and explainable to both the regulator and the customer. Thus, prioritize **explainable AI (XAI)** tools (like SHAP or LIME). Disclose AI use in customer interactions and credit decisions, and provide clear grievance redressal mechanisms.
Algorithmic Audits: Regular third-party audits of AI models will become standard practice to detect and "unlearn" biases related to gender, geography, or socio-economic background.
Regulatory Sandboxes: More fintechs should utilize the RBI's regulatory sandbox to test "Agentic AI" (AI that can execute transactions) in a controlled environment before public release.
Workforce and Society: Launching massive, systematic reskilling initiatives for IT and banking professionals to manage the transition and mitigate job displacement, alongside nationwide programs to improve financial literacy so citizens can navigate an AI-driven financial world safely.
RBI's FREE-AI Framework: In response to the challenges involved, the RBI released the 'Free-AI Committee Report' in August 2025, proposing a framework for responsible and ethical AI use . Its key principles include:
Accountability: Financial entities are accountable for their AI models' actions, regardless of the autonomy granted to them .
Transparency & Explainability: AI-generated decisions must be traceable to comprehensible human logic .
Fairness & Non-Discrimination: AI models must act in an unbiased manner .
Human Oversight: Final decision-making must vest with humans, not AI models.

UPSC GS-3: Indian Economy
Read More: PIB

Medical Education in India and Associated Issues – Explained Pointwise

The medical education in India stands at a defining crossroads. Though, the country has witnessed an unprecedented expansion in its capacity to train future doctor over the past decade, however, this rapid expansion has also raised the question about the quality of doctors being produced in our country.
The cancellation of this year's NEET-UG, that has not only left over 22 lakh medical aspirants in lurch, but has

also triggered the calls for a structural reform.

What is the current status of Medical Education in India?

Growth in Institutions and Seats: From the academic years 2020-21 to 2025-26, MBBS seats increased by **48,563** and postgraduate seats by **29,080**. The number of medical colleges has grown to **819** in 2025-26, with a nearly 50/50 split between government and private/deemed universities.

Postgraduate Expansion: The postgraduate seats has been increased to ~85,000 nationwide. There is a concerted push to increase MD/MS seats to bridge the gap between undergraduate and specialist training.

Entry Examination: The **National Eligibility cum Entrance Test (NEET)** remains the standard for admissions. However, its administration has been marred by controversies, including paper leaks that led to the cancellation of the NEET-UG 2026 exam.

NExT Exam: The National Exit Test (NExT), intended to replace the final year MBBS exams, the FMGE, and the NEET-PG, remains in a state of "phased transition." The NExT exam has been **deferred** for high-stakes purposes until **2029**.

Approximately **20,000 to 25,000** Indian students go abroad every year to study MBBS. It is estimated that over **1.3 to 1.5 lakh** Indian students are currently enrolled in medical programs outside the country.

What are the shortcomings of medical education in India?

Integrity of the Examination System: The cancellation of **NEET-UG 2026** due to paper leaks has exposed vulnerabilities in the National Testing Agency (NTA). NEET was introduced for the much needed standardisation & transparency with regard to the selection of medical students. However, repeated paper leaks and litigation have led to widespread burnout & mental health crises among aspirants as well as an almost complete collapse of trust in the national entrance examination system.

Faculty Crisis:

High Vacancy Rates: There is a chronic shortage of qualified faculty, especially in rural and newer medical colleges. "Ghost faculty" — teachers on paper only, hired to clear inspections — is a well-documented problem. New AIIMS have reported vacancy rates around 40%, and many private colleges operate with minimal staff to cut costs.

Poor Quality of Teaching: Overburdened and underqualified faculty often resort to rote learning and outdated teaching methods. There is little emphasis on interactive, problem-based learning or mentorship.

Rote Learning and Outdated Pedagogy: The curriculum, despite recent reforms, is still heavily tilted towards memorization rather than understanding or application. The system rewards students for regurgitating facts from standard textbooks, not for critical thinking, clinical reasoning, or problem-solving. The high-stakes NEET exam reinforces this culture from the pre-medical stage itself.

Poorly Structured Clinical Training: Clinical training lies at the heart of medical education. But, such training in India is largely ineffective because it is focused on large tertiary care hospitals where students see a high volume of rare and end-stage diseases. They get minimal exposure to common outpatient illnesses, primary care, or community health settings.

Urban and Specialist Bias: The training produces doctors who are comfortable in urban, well-equipped hospitals. It fails to prepare them for rural postings where they must be generalists, handle tropical diseases, and work with minimal diagnostics.

Inadequate Focus on Public Health: The curriculum underemphasizes primary care, rural health, preventive medicine, and public health — despite India's massive burden of communicable and non-communicable diseases at the community level. Graduates lack skills in epidemiology, disease surveillance, health management, and implementing national health programs. Thus, there is a mismatch between India's public health needs and the medical education provided by institutions in the country.

Rampant Coaching Culture: The need for private coaching from the school level distorts priorities away from foundational learning towards shortcut techniques for exam success. The hyper-competitive environment, from NEET coaching to postgraduate entrance exams, often fosters a culture contrary to medical ethics.

Overburdened and Broken Postgraduate (PG) System: The PG system, intended to create specialists, is under immense strain in India. Postgraduate residents (especially junior residents) are treated as service providers who run the entire public hospital system with negligible learning time. They work 80-100 hour weeks, often without proper stipends or safety, leading to burnout and depression.

Maldistribution of Specialties: A vast majority of PG aspirants chase a few "glamourous" clinical specialties (e.g., Dermatology, Cardiology, Radiology). This leaves critical branches like Anesthesiology, Emergency Medicine, Geriatrics, and Psychiatry, as well as non-clinical ones like Pathology and Microbiology, with thousands of vacant seats.

Regulatory Gaps: The Medical Council of India (MCI) was dissolved in 2020 partly due to corruption and dysfunction, replaced by the National Medical Commission (NMC). While the NMC has powers, its actual inspection and enforcement are weak. Many private colleges routinely flout norms (e.g., patient load, faculty numbers, infrastructure) without severe consequences.

Commercialization of Education: Especially in the private sector, medical education has become a high-cost business. High tuition fees (often crores of rupees for a PG seat) can lead to a debt trap, pushing some doctors towards unethical practices to recoup their investment. This also limits access for meritorious but financially weaker students.

What are the adverse impacts of these shortcomings?

High Rates of Misdiagnosis and Medical Errors: A doctor trained primarily through rote learning, with inadequate clinical exposure, struggles to apply textbook knowledge to a real patient. This leads to a higher likelihood of missed or incorrect diagnoses, inappropriate prescriptions, and harmful medical procedures.

Rural Healthcare Crisis: Because the training is urban- and tertiary-hospital-centric, new doctors are neither skilled nor willing to work in rural areas. This results in the massive **79.9% specialist vacancy rate** in rural Community Health Centres (CHCs).

Unpreparedness for Epidemics: Weak training in public health, epidemiology, and community medicine means the healthcare system struggles to mount coordinated responses to outbreaks — as exposed repeatedly, including during COVID-19.

Persistent Disease Burden: Inadequate emphasis on preventive medicine and health promotion means doctors are ill-equipped to counsel patients on lifestyle, vaccination, screening, and disease prevention — perpetuating India's dual burden of communicable and non-communicable diseases.

Exploitation of Patients: Commercially motivated medical education produces commercially motivated doctors. Unnecessary surgeries, tests, and hospital admissions are partly a downstream consequence of a system that treats medicine as a business from the outset.

Rise of Violence Against Doctors: Poor quality care and communication failures fuel public frustration, contributing to the alarming rise of physical assaults on doctors and hospital staff in India.

Increased Brain Drain and Outflow of Capital: Many of India's best medical graduates emigrate to the US, UK, Australia, and Canada, seeking better training, pay, and working conditions. This represents a massive loss of investment and talent for the country. With ~25,000 students going abroad annually, billions of dollars in tuition fees flow into the economies of Russia, Georgia, and Central Asia rather than being invested in Indian infrastructure.

What steps have been taken by the Government?

Increase in Number of Medical Colleges & Seats:

The number of medical colleges has more than doubled, rising from **387 in 2014 to 819 today**. India now has the highest number of medical colleges in the world.

From the academic year 2020-21 to 2025-26, MBBS seats increased by **48,563** and postgraduate (PG) seats by **29,080.**

The government has approved the addition of another **10,023 medical seats** (5,023 UG and 5,000 PG) in government colleges from 2025-26 to 2028-29. This is part of a larger goal to create **75,000 new medical seats by 2029.**

22 new All India Institutes of Medical Sciences (AIIMS) have been approved under the **Pradhan Mantri Swasthya Suraksha Yojana (PMSSY)** to provide high-standard tertiary care and training.

Regulatory Overhaul: **Dissolution of MCI & Establishment of NMC (2020)** The Medical Council of India, long plagued by corruption and regulatory capture, was replaced by the **National Medical Commission (NMC)** through the NMC Act, 2020.

Examinations:

Entrance Exam: A single national entrance test (NEET-UG & NEET-PG) replaced multiple state and private entrance exams, reducing the influence of capitation-based admissions and improving merit-based selection.

Exit Exam: The NMC Act mandated the introduction of NEXT (National Exit Test), a two-part national exit examination. This ensures every graduate meets a minimum national standard before practicing independently, regardless of which college they attended.

Curriculum Reform: The **Competency-Based Medical Education (CBME) Curriculum Guidelines** have been notified to ensure graduates are better equipped with practical skills and knowledge relevant to India's healthcare needs. CBME shifted the focus from rote learning as it mandates **Early Clinical Exposure** from Year 1.

Regulatory Frameworks: Key regulations like the **Graduate Medical Education Regulations (GMER), 2023** and the **Maintenance of Standards of Medical Education Regulations (MSMER), 2023** have been issued to uphold integrity and quality.

New Faculty Regulations 2025: The **Medical Institution (Qualifications of Faculty) Regulations, 2025** have been issued to adopt a more inclusive approach.

Compulsory Rural Service: Several states have made a period of rural service mandatory after MBBS as a condition for PG admission or registration — attempting to address rural doctor shortages.

What should be the Way Forward?

Restoring the Sanctity of National Exams: Moving away from a single-day, pen-and-paper mass exam (like NEET-UG) to a multi-day, computer-based model. The immediate focus must be on "Leak-Proofing" the entry and exit points of the profession.

Comprehensive Regulatory Reforms: Strengthen NMC & ensure that NMC boards function with full autonomy, transparency, and accountability.

National Faculty Pool: A centralised pool of qualified faculty drawn from both public & private sectors can be created to deliver teaching across institutions, either physically or through digital platforms.

Address Regional Imbalances: A major concern is the skewed distribution of medical colleges. The government must actively incentivize the establishment of new institutions in underserved states like **Bihar, West Bengal, and Madhya Pradesh**, where the seat-to-population ratio is critically low.

Incentivize Rural & Underserved Postings:

Offer loan waivers, accelerated promotions, and PG admission preferences for faculty serving in rural or newly established medical colleges.

Elevating the living standards and salaries of rural medical officers to match or exceed their urban counterparts to make rural service a "choice," not a "punishment."

Reserve a percentage of medical seats for students from "Aspirational Districts" who are trained locally, as they are statistically more likely to stay and serve their own communities.

Ensure Affordability: To curb commercialization, fees for at least **50% of seats in private medical colleges** should be regulated at the state government rate.

Strengthen Clinical & Holistic Skills: The rigid, exam-centric learning model must be replaced with **competency-based assessments** that prioritize clinical reasoning and practical skills. The proposed **National Exit Test (NExT)** can serve as a standardized, high-quality assessment for all graduating students, ensuring a uniform level of competence nationwide.

Embrace Technology: It is imperative to integrate training on **Artificial Intelligence (AI) and digital health tools** right from the undergraduate level, preparing students for a tech-driven healthcare landscape.

Focus on Translational Research: Focus on research that solves real-world health problems & contribute meaningfully to patient care & policy, moving beyond the current practice of producing research solely for academic promotion .

Align Medical Education with India's Health Needs:

Train students in the actual top killers and disablers in India — tuberculosis, diabetes, hypertension, malnutrition, mental health, road traffic injuries.

Elevate Community Medicine from a poorly regarded subject to a central pillar of the curriculum.

Produce graduates who understand and can address health at the population level, not just the individual level.

Conclusion: The transformation of medical education in India is both an opportunity & a responsibility. The system must now transition from a focus on numbers to a focus on outcomes. Producing competent, compassionate, and future-ready doctors should remain the central goal. Achieving this will require visionary policymaking, institutional commitment, and a willingness to embrace change.

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