

# Forum IAS

## 7 PM COMPILATION

**1<sup>st</sup> to 15<sup>th</sup> May, 2023**

### Features of 7 PM compilation

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

**Cheetah Reintroduction Project: progress so far – Explained, pointwise**

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**Tiger translocation project: Need and significance – Explained, pointwise**

**Topic:-** Environment and Bio-diversity

**Sub topic:-** Conservation



## Cheetah Reintroduction Project: progress so far – Explained, pointwise

### Introduction

The Cheetah Reintroduction Project, a significant conservation initiative in India, aims to restore the cheetah population after more than 70 years of extinction within the country. However, the recent deaths of two cheetahs, Sasha and Uday, at Kuno National Park have raised concerns about the project's progress and success. While some cheetah deaths were anticipated during the project's initial phase, the circumstances surrounding these two incidents have led to several questions and challenges that must be addressed.

About the Cheetah Reintroduction Project

**Must read:** [Cheetah Reintroduction in India – Explained, pointwise](#)

### What is the progress of the Cheetah Reintroduction project so far?

**Successful Translocation:** In total, 20 cheetahs have been brought to India from Africa in two stages. The first phase took place in September 2022, when 8 cheetahs (3 males and 5 females) arrived from Namibia. The second phase occurred in February 2023, with the arrival of 12 cheetahs (7 males and 5 females) from South Africa. Sasha and Uday, who were part of the second phase translocated group.

**Establishment in Kuno National Park (KNP):** The translocated cheetahs, such as Siyaya and Savanna, have been adapting to their new environment, with some demonstrating the ability to hunt wild prey.

**Cheetah Births:** A significant milestone for the project is the birth of four cheetah cubs in Kuno, born to a female cheetah who adapted well to her new habitat.

**Read more:** [RIP Sasha: India's dream of its own cheetah population rests on her companions](#)

### What are the reasons for the death of Cheetahs since reintroduction?

**Health issues:** For example, Sasha's death was due to kidney failure, possibly caused by an underlying infection or health issue that went undetected.

**Stress and captivity:** Both Sasha and Uday may have experienced high-stress levels from confinement, relocation, or other factors, contributing to their health decline.

**Diet issues:** The cheetahs were fed a flesh-only diet during quarantine and confinement, which might have deprived them of essential micronutrients and negatively impacted their health.

**Long confinement:** Uday spent almost 10 months in captivity before being flown to Kuno, which could have had adverse effects on his health and well-being.

**Possible poisoning:** One of the possibilities for Uday's sudden death is botulism poisoning, which can be fatal to cheetahs.

**Other reasons:** The deaths of Sasha and Uday have raised questions about the suitability of the selected cheetahs, their confinement periods, and the potential impact of stress and diet on their health. For instance, Sasha developed kidney failure and gastritis, while Uday's cause of death remains uncertain.

What are the steps taken by the government since Cheetah Reintroduction for conservation?

**Adoption of the action plan:** Considerations for formulating objectives & actions to achieve the goals of cheetah translocation in India. The Action Plan has been developed in compliance with IUCN guidelines (2013).

**Selecting suitable habitats:** Kuno National Park was chosen after extensive research, ensuring that it has the necessary ecological conditions to support the cheetah population.

**Health monitoring and care:** After the deaths of Sasha and Uday, the government has been more vigilant about the health of the remaining cheetahs, conducting regular health checks and providing necessary medical care.

**Enclosures and acclimatization:** Cheetahs were placed in large enclosures within Kuno National Park, allowing them to adjust to their new environment and even successfully give birth, as seen with one of the female cheetahs.

**Supporting prey base:** Efforts to enhance the prey base within Kuno National Park include habitat management practices, such as controlled grazing and reforestation, to provide a sustainable food source for the reintroduced cheetahs.

**Collaboration with international experts:** The government has partnered with the Cheetah Conservation Fund and other international organizations to ensure the success of the project, benefiting from their expertise and knowledge.

**Monitoring and data collection:** A monitoring system, including camera traps and tracking devices, has been established to collect data on the cheetah population and inform future conservation efforts.

**Raising awareness and community involvement:** Local communities around Kuno National Park have been engaged through educational programs and awareness campaigns, helping to promote coexistence between humans and cheetahs and foster support for the project.

What are the benefits of cheetah reintroduction?

**Biodiversity restoration:** Reintroducing cheetahs helps restore the natural balance of the ecosystem by reintroducing a top predator. The efforts to restore and protect their natural habitat can have positive cascading effects on other flora and fauna in the region.

**Enhanced tourism:** The presence of cheetahs in Indian national parks can boost wildlife tourism, attracting more visitors and generating revenue. This in turn can lead to job creation and support for local businesses, benefiting communities living around national parks and wildlife reserves.

**Ecological research opportunities:** Reintroducing cheetahs can provide a unique opportunity for scientists to study cheetah behaviour and ecology in a new environment.

**Conservation awareness:** The publicity surrounding the cheetah reintroduction raises public awareness about wildlife conservation and the importance of protecting endangered species.

**Mitigating human-wildlife conflict:** Cheetahs primarily prey on small to medium-sized ungulates, which could potentially reduce the population of crop-raiding animals, helping local farmers and alleviating human-wildlife conflict.

**Cultural significance:** The reintroduction of cheetahs can help revive their cultural importance in India, as they have historically been symbols of strength and agility in Indian mythology and folklore.

**Inspiring further conservation efforts:** The success of the cheetah reintroduction project can serve as a model for the reintroduction of other species, motivating conservationists and governments to pursue similar efforts for other endangered species.

**Read more:** [Can the cheetahs help India's grasslands?](#)

**What are the challenges faced in the implementation of the Cheetah Reintroduction project?**

**Suitability of selected cheetahs:** Despite concerns over the unsuitability of certain cheetahs like Sasha, who struggled to catch wild prey, they were still included in the project.

**Habitat and space:** Ensuring that Kuno National Park can support the growing cheetah population, as some experts question whether there is enough space for 22 cheetahs.

**Climate change impacts:** Adapting to the impacts of climate change on the habitat and prey availability may pose challenges for the cheetah population's long-term survival.

**Genetic diversity:** Ensuring genetic diversity within the reintroduced cheetah population to promote healthy breeding and prevent inbreeding, which could result in health issues.

**Balancing multiple conservation priorities:** Managing competing priorities in conservation, as resources and attention may need to be allocated to other species and ecosystems that also require urgent intervention, while still supporting the cheetah reintroduction project.

**Read more:** [There are better ways than cheetahs to revive ecosystems](#)

#### What should be done?

**Improve health monitoring:** Regular health checks and early detection of health issues can help prevent deaths like Sasha's from kidney disease and gastritis.

**Coordinate with other countries:** Collaborating with countries like South Africa and Namibia, which also have cheetah populations, to exchange knowledge and best practices in cheetah conservation.

**Secure adequate habitat:** Make sure the habitat (Kuno National Park) has enough space and resources for cheetahs. The government should work on projects that help both cheetahs and other animals by improving the ecosystem and increasing the number of prey animals.

**Enhance adaptation support:** Provide proper training to the cheetahs to improve their hunting skills and ensure their survival in the wild in Madhya Pradesh.

**Streamline project implementation:** Reducing delays in the translocation process and minimizing bureaucratic hurdles can help avoid prolonged captivity periods for the cheetahs.

**Strengthening collaboration:** Enhance cooperation between Indian authorities, international conservation organizations, and experts to share knowledge and best practices for cheetah reintroduction.

**Establish a long-term monitoring plan:** Develop a comprehensive plan to monitor the cheetah population, track their movements, and evaluate the overall success of the reintroduction project.

**Encourage community-based conservation:** Involve local communities in conservation efforts, providing economic incentives and opportunities for sustainable development, such as ecotourism or community-led wildlife management.

**Sources:** The Times of India ([Article 1](#) and [Article 2](#)), [Business Standard](#), [Indian Express](#), [Business World](#) and [Firstpost](#).

**Syllabus:** GS – 3: Environment and Bio-diversity – Conservation.

### Neurotoxic gas leaks and remedies – Explained, pointwise

#### Introduction

The Bhopal gas tragedy of 1984 should have served as a powerful wake-up call to prioritize safety measures and prevent any Neurotoxic gas leak incident from happening again. However, India continues to face challenges related to neurotoxic gas leaks, as evidenced by recent events such as the toxic gas leak in Ludhiana, Punjab, and the 2020 styrene vapour leak in Visakhapatnam, Andhra Pradesh.

This highlights the need to address the pressing issue of neurotoxic gas leaks and explore effective remedies to safeguard the lives of millions of people who are at risk of being exposed to these hazardous substances.

About the present neurotoxic gas leak in Ludhiana

Recently, there is a gas leak in Ludhiana's Giaspura area that led to the death of 11 people and the hospitalization of four others. There has been a leak of high levels of hydrogen sulfide, a neurotoxin. It is suspected that the poisonous gas emanated from a partially open manhole in the locality, possibly due to industrial waste dumping.

#### **What are the previous instances of neurotoxic gas leaks in India?**

**Bhopal Gas Tragedy (1984):** The Bhopal Gas Tragedy is considered the world's worst industrial disaster. On the night of December 2-3, 1984, a gas leak at the Union Carbide India Limited (UCIL) pesticide plant released 40 tons of methyl isocyanate (MIC) gas. This led to thousands of deaths and long-term health issues for survivors.

**Visakhapatnam Gas Leak (2020):** In May 2020, a styrene gas leak occurred at the LG Polymers plant in Visakhapatnam, Andhra Pradesh. The leak happened during the reopening of the plant after a COVID-19 lockdown. This caused the death of 11 people, hospitalization of hundreds, and evacuation of thousands.

**Surat Chemical Leak (2022):** In February 2022, a chemical leak in Surat, Gujarat resulted in the deaths of six people. A tanker dumped toxic material, which led to the release of poisonous gases into the atmosphere. Thereby causing severe health hazards for the local population. There are other incidents also which garnered public attention and highlighted the need for better safety standards in the chemical and industrial sectors.

#### **What are neurotoxic gases and how do they affect humans?**

Neurotoxic gases are poisonous substances that can directly affect the nervous system. They can disrupt or even kill neurons or nerve cells, which are essential for transmitting and processing signals in the brain and other parts of the nervous system. Examples of common neurotoxic gases include methane, hydrogen sulfide, carbon monoxide, and carbon dioxide.

##### **Neurotoxic gases effects on Humans:**

**Breathing difficulties:** Exposure to these gases can lead to respiratory problems, making it hard for individuals to breathe.

**Irritation:** Neurotoxic gases can cause irritation in the eyes, skin, nose, and throat.

**Central nervous system damage:** These gases can affect the central nervous system, causing nerve damage and impairing functions such as vision, hearing, and balance.

**Oxygen deprivation:** High concentrations of neurotoxic gases can overpower the oxygen levels in the body, leading to potentially fatal consequences.

#### **What are the various reasons behind neurotoxic gas leaks?**

**Poor Waste Management:** Inadequate disposal of industrial waste can lead to the release of neurotoxic gases. For example, dumping toxic chemicals into sewers can cause dangerous chemical reactions, as seen in the Ludhiana gas leak incident.

**Inadequate Maintenance of Industrial Plants:** Poorly maintained plants and storage facilities can lead to gas leaks. The Bhopal gas tragedy is an example of a catastrophic gas leak caused by inadequate safety measures and maintenance at a chemical plant.

**Lack of Regulation and Monitoring:** Weak enforcement of environmental regulations and insufficient monitoring of industries and government authorities can result in hazardous gasleaks. Insufficient oversight allows industries to operate without proper safety measures, thereby increasing the risk of gas leaks.

**Overcrowded Urban Areas:** The coexistence of factories and residential buildings in densely populated areas increases the risk of exposure to harmful gases. Inadequate urban planning and zoning regulations contribute to this problem, as seen in the Vizag gas leak incident.

**Infrastructure Failures:** Damaged or poorly maintained pipelines and storage tanks can lead to gas leaks. In some cases, ageing infrastructure and lack of proper maintenance can result in hazardous situations.

**Read more:** [On Bhopal Gas tragedy curative petition: Where did the constitutional sympathy for the victims vanish?](#)

#### **What are the government regulations for preventing neurotoxic gas leaks?**

The Indian government has enacted various regulations to prevent neurotoxic gas leaks, such as **Environmental Laws:** The government enforces environmental laws like the Water (Prevention and Control of Pollution) Act, 1974, and the Air (Prevention and Control of Pollution) Act, 1981, to regulate the discharge of pollutants and protect the environment.

**Hazardous Waste Management:** The Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016, govern the safe handling, storage, and disposal of hazardous waste to minimize the risk of toxic gas leaks.

**Factory Licensing and Inspection:** Factories handling hazardous chemicals must obtain licenses under the Factories Act, 1948,. Further, they are subject to regular inspections to ensure compliance with safety standards and regulations.

**Public Liability Insurance Act:** The Public Liability Insurance Act, 1991, requires industries dealing with hazardous substances to have insurance policies, providing compensation in case of accidents, including neurotoxic gas leaks.

**Chemical Accidents Rules:** The Manufacture, Storage and Import of Hazardous Chemical Rules, 1989, and the Chemical Accidents (Emergency Planning, Preparedness and Response) Rules, 1996, outline safety requirements and emergency response plans for industries handling hazardous chemicals.

**NDMA guidelines:** The NDMA has established clear guidelines on Chemical Disaster Management for various authorities in India. These guidelines promote a proactive and multi-disciplinary approach to chemical disaster preparedness and response.

NDMA has also suggested amendments to existing frameworks and is working to strengthen chemical safety by revamping the Chief Inspectorate of Factories.

Moreover, the finalized National Action Plan on Chemical Industrial Disaster Management (NAP-CIDM) will serve as a roadmap for managing chemical disasters in the country.

**Read more:** [Bhopal's Real Lesson - Attempts to get more out of Carbide for the gas tragedy are futile. India needs good law on civil liability](#)

#### **What are the challenges in preventing neurotoxic gas leaks?**

**Lack of awareness:** In the Bhopal gas tragedy (1984), insufficient knowledge of the hazards associated with methyl isocyanate led to inadequate safety measures, contributing to the devastating leak.

**Improper maintenance:** The Vizag gas leak (2020) at LG Polymers India's plant in Visakhapatnam occurred due to a technical glitch in the refrigeration unit, highlighting the importance of maintaining proper infrastructure.

**Rapid urbanization:** The Gopalapatnam area near the LG Polymers plant in Visakhapatnam was initially a deserted area, but as the city expanded, it became densely populated, increasing the risk of exposure to the styrene gas leak.

**Improper waste disposal:** The Surat toxic waste dumping incident (2022) led to six deaths, illustrating the dangers of illegal dumping and improper waste management.

**Lack of emergency preparedness:** In the Kochi garbage fire incident (2022), a mountain of waste caught fire and emitted toxic gases for over a week. This highlighted the need for better emergency preparedness to minimize harm to human health and the environment.



**Issues with India's legal framework:** These include inadequate and outdated laws, fragmented and overlapping regulations, inadequate penalties and deterrents, and insufficient focus on prevention, etc.

**Non-transparent operations of industries:** These include unauthorized activities, unsafe working conditions, and inadequate funding for maintenance all contribute to increased risks of industrial disasters in India.

**Read more:** [Bhopal tragedy compensation fund of ₹50cr unutilised: SC](#)

### What should be done?

**Enhance awareness:** Educate communities and industries about the hazards associated with neurotoxic gases, like the Bhopal gas tragedy, to minimize the risk of similar accidents.

**Strengthen monitoring and enforcement:** Increase inspections and enforce regulations to follow appropriate waste disposal methods to prevent illegal dumping that can cause toxic gas leaks.

**Enhance workplace safety:** Adopt strict safety measures in industries and formulate proper emergency preparedness plans to prevent accidents and protect workers from toxic gas exposure.

**Encourage research and technological innovation:** Support the development of advanced technologies and safer alternatives to hazardous chemicals. This can help minimize the risk of neurotoxic gas leaks and their impact on human health and the environment.

**Strengthen legal framework:** Review and update existing laws and regulations related to hazardous materials and industrial safety, ensuring they are comprehensive, effective, and in line with international standards.

India should adopt role models such as the European Union's Seveso Directive and REACH regulation, which impose stringent safety requirements and ensure responsible management of chemicals, which could help India strengthen its regulatory framework.

**Promote transparency and accountability:** Ensure that industries maintain accurate records of hazardous materials and report any incidents or accidents in a timely manner, fostering a culture of transparency and accountability.

**Implement better urban planning:** Create buffer zones between industrial facilities and residential areas, as seen in the Navi Mumbai area, to minimize the risk of human exposure to toxic gas leaks.

**Note:** In Navi Mumbai, designated industrial zones have been established away from residential areas, helping to minimize the potential impact of hazardous materials on nearby communities.

**Sources:** Indian Express ([Article 1](#) and [Article 2](#)), [Business Standard](#), The Hindu, [Livemint](#), [TOI](#)

**Syllabus:** GS – 3: Disaster Management: Disaster and disaster management.

## Virtual digital assets(VDAs) and India's stand on it- Explained, pointwise

### Introduction

India's approach to regulating virtual digital assets (VDAs) is measured and considers the challenges posed by emerging technologies. The government has extended anti-money laundering provisions to VDA businesses and service providers, requiring them to register with the Financial Intelligence Unit-India.

This move promotes transparency and aligns with global guidelines from organizations like the IMF and FATF. As India holds the G-20 presidency, it can play a key role in shaping global

regulatory frameworks for VDAs while learning from other nations' experiences in regulating this emerging sector.

### What are Virtual digital assets?

Read here: [Virtual Digital Assets \(VDAs\): Challenges in Regulation – Explained, pointwise](#)

### How are Virtual Digital Assets different from Digital Currency?



Source: Techtarget

Virtual digital assets (VDAs) are a broad category of digital representations of value that can be traded, transferred, or stored electronically. They include various types of digital tokens, such as cryptocurrencies, utility tokens, and [non-fungible tokens \(NFTs\)](#).

Digital currency, on the other hand, is a subset of VDAs and refers specifically to digital forms of money, like cryptocurrencies. These currencies can be used as a medium of exchange, a unit of account, and a store of value. A digital currency can be defined as a currency when it is issued by a central bank.

In the case of India, the Reserve Bank of India (RBI) issued e-rupee. The government plans to tax profits made during transactions of these assets at 30 percent.

### Why India needs to regulate VDAs?

**Growing VDA adoption:** With an increasing number of Indian investors and businesses engaging in VDA transactions, it is essential to establish a regulatory framework to address potential risks and challenges.

**Market volatility:** The highly volatile nature of VDAs can lead to significant financial losses for investors. Regulation is needed to minimize the impact of such volatility and protect investors.

**Lack of consumer awareness:** Many Indian consumers may not fully understand the complexities of VDAs and could be vulnerable to misleading information. Regulation is needed to ensure transparency and accurate information dissemination.

**Fragmented regulatory landscape:** Currently, VDAs are subject to a patchwork of rules and regulations. A unified regulatory framework is necessary to bring consistency and clarity to the market.

**Cross-border transactions:** As VDAs facilitate cross-border transactions, it is important to have a regulatory framework in place to address potential issues related to foreign exchange management, taxation, and jurisdictional disputes.

### How does the government define and regulate virtual digital assets?

**UNION BUDGET 2022**

Ministry of Finance  
Government of India

75  
Azadi Ka Amrit Mahotsav

**KEY HIGHLIGHTS IN DIRECT TAXES**

**Measures for Revenue Mobilisation (Contd)**

**Scheme for taxation of virtual digital assets proposed to be introduced.**

- TDS on payment made in relation to transfer of virtual digital asset @1%
- Gift of virtual digital asset also proposed to be taxed in the hands of recipient.

#AatmaNirbharBharatKaBudget #Budget2022

@IncomeTaxIndia @IncomeTaxIndiaOfficial @IncomeTaxIndiaOfficial Income Tax India Incometaxindiaefiling.gov.in

**Source: IT Dept**

To regulate VDAs, the government typically: **(a)** Establishes a legal framework to classify and define VDAs, **(b)** Sets up licensing requirements for VDA service providers, **(c)** Implements anti-money laundering (AML) and combating the financing of terrorism (CFT) rules, **(d)** Enforces consumer protection and disclosure norms, **(e)** Mandates risk management and reporting standards, **(f)** Introduces taxation rules for VDA transactions, **(g)** Ensures transparent advertising and marketing practices.

These regulations help protect investors, maintain financial stability, and prevent illicit activities involving VDAs.

#### **In case of India:**

**The Indian government defines virtual digital assets (VDAs) under section 2(47A) of the Finance Act, 2022.** According to this definition, a VDA includes: **(a)** Any information or code or number or token (not being Indian currency or foreign currency) that meets specific conditions, **(b)** Non-fungible tokens (NFTs) or any other token of a similar nature, regardless of the name used, **(c)** Any other digital asset that the government may specify by notification.

The government also may exclude any asset from the definition of virtual digital asset by notification. The CBDT issued two notifications for the purpose of defining virtual digital asset

under section 2(47A) of the Act—one excluding certain assets from the definition, and a second defining NFT for purposes of the section.

**Must read:** [Cryptocurrency tax: Budget 2022 unveils norms for virtual digital assets](#)

### What are the advantages of Virtual Digital Assets (VDAs)?

**Accessibility:** VDAs are accessible to anyone with an internet connection, allowing more people to participate in the global economy. For example, people in developing countries can use VDAs to access financial services they may not have access to otherwise.

**Lower transaction costs:** VDAs often have lower transaction costs compared to traditional banking services. For instance, crossborder payments can be faster and cheaper with VDAs like Bitcoin.

**Enhanced privacy and security:** Using VDAs can provide a higher level of privacy and security compared to traditional financial systems. For example, blockchain-based VDAs can protect users from identity theft and fraud.

**Decentralization:** VDAs are decentralized, meaning no central authority controls them. This can reduce the risk of manipulation and censorship. For instance, cryptocurrencies like Bitcoin operate on a decentralized network of computers.

**Financial innovation:** VDAs can foster innovation in financial services, leading to the development of new products and platforms. For example, decentralized finance (DeFi) platforms built on Ethereum offer various financial services using smart contracts.

**Asset diversification:** VDAs provide an alternative asset class for investors, allowing for portfolio diversification. For instance, investors can allocate a portion of their investments to VDAs like Bitcoin to potentially hedge against economic uncertainty.

**Read More:** [Cryptocurrencies in India: Ban or Regulation? – Explained, pointwise](#)

### What are the challenges in controlling virtual digital assets?

**Anonymity:** VDAs can provide a high level of anonymity, making it difficult for authorities to trace transactions. For example, privacy focused cryptocurrencies like Monero can be used to hide transaction details.

**Decentralization:** The decentralized nature of VDAs makes it challenging for governments to exert control over them. For instance, shutting down a single server won't affect the Bitcoin network since it operates on numerous computers worldwide.

**Regulatory complexity:** Creating and enforcing regulations for VDAs can be complex due to the rapidly evolving technology and varying legal frameworks across jurisdictions. For example, differing tax treatments for VDAs across countries can lead to confusion and compliance challenges.

**Volatility:** VDAs often experience significant price fluctuations, making them a risky investment and complicating their use as a stable means of payment. For instance, Bitcoin's value can change drastically within a short period, impacting investors and users.

**Cybersecurity risks:** VDAs are susceptible to cyberattacks, which can lead to theft, fraud, and loss of assets. For example, cryptocurrency exchanges have experienced security breaches, resulting in the loss of millions of dollars worth of VDAs.

**Illicit activities:** VDAs can be used for illegal activities, such as money laundering, terrorism financing, or purchasing illicit goods. For example, the anonymous nature of some VDAs can make it easier for criminals to conduct transactions without being traced.

**Read more:** [Finance Ministry brings crypto assets under Prevention of Money Laundering Act: What are the implications?](#)

**What should be done?**

**Establish clear regulations:** The government should create comprehensive and transparent regulations to guide the VDA market. For example, implementing licensing requirements for VDA service providers can ensure responsible operation and consumer protection.

**Harmonize international standards:** Global cooperation is essential to address VDA-related challenges. Countries can collaborate to establish standardized rules, such as in areas of anti-money laundering and taxation. For instance, the Financial Action Task Force (FATF) guidelines can serve as a starting point.

**Enhance cybersecurity measures:** VDA stakeholders, including governments and service providers, must prioritize cybersecurity to protect user assets. For example, implementing strict security protocols for cryptocurrency exchanges can reduce the risk of hacks and thefts.

**Promote education and awareness:** Public education campaigns can help users make informed decisions about VDAs and mitigate risks. For instance, providing resources on safe VDA practices, potential scams, and investment risks can empower individuals to navigate the digital asset landscape responsibly.

**Foster innovation:** The government should encourage the development of new VDA technologies and applications, which can drive economic growth and benefits. For example, supporting research and development in areas like blockchain technology can lead to innovative solutions in finance, supply chain management, and more.

**Monitor and adapt:** As the VDA market evolves, governments should continuously review and update regulations to stay current with emerging trends and challenges. For example, adjusting policies as needed to address new types of VDAs, such as stablecoins and decentralized finance platforms.

**Read more:** [Taking the lead on regulation of digital assets](#)

**Sources:** [Indian Express](#), [The Hindu](#), [Livemint](#), [Economic Times](#) and [ORF](#)

**Syllabus:** GS 3: Economic development – Indian Economy and issues relating to planning, mobilization, of resources, growth, development and employment.

### India's Evacuation Missions and challenges – Explained, pointwise

**Introduction**

India's Evacuation Missions have become increasingly vital for safeguarding its citizens during global crises, as exemplified by the recent Sudan conflict in 2023. In this mission, India demonstrated its unwavering commitment to ensuring the safety and well-being of thousands of its nationals trapped in the African nation. However, these missions also present a myriad of challenges, including geopolitical complexities, operational difficulties, and resource constraints. About India's present Evacuation Mission – Operation Kaveri

**Read here:** [India launches Operation Kaveri to evacuate stranded citizens from war-hit Sudan](#)

About India's Evacuation Missions in the Past

**Read here:** [Evacuation operations of India in various countries](#)

**Why there is a rising complexity in India's Evacuation Missions?**

**Unstable Regions:** India's evacuation missions often involve unstable regions where the security situation can change rapidly, making it difficult to plan and execute safe evacuations. The recent rescue of Indians from Sudan highlights this complexity, as the IAF faced intelligence challenges and a rough landing environment.

**Global Crises:** Global crises like the COVID-19 pandemic and the recent conflict in Afghanistan have led to an increased need for evacuation missions in challenging circumstances. In the Kabul mission of August 2021, the pilots faced chaotic and uncontrolled airspace, emphasizing the complexity of such operations.

**Diverse Nationalities:** India's evacuation missions often involve not only Indian citizens but also foreign nationals, adding to the logistical challenges of coordinating with other governments and international organizations. During "Operation Raahat" in 2015, India evacuated over 4,600 Indians and 950 nationals from 41 countries amid the Yemen crisis.

**Coordination Challenges:** India's evacuation missions require close coordination between various government agencies, the armed forces, and international partners. This increases the complexity of such operations, as demonstrated by India's efforts to evacuate its citizens from Ukraine during the COVID-19 pandemic or from Iraq and Syria.

**Evolving Security Threats:** India's evacuation missions are becoming more complex due to evolving security threats, such as terrorism and cyberattacks. These threats can directly impact the safety and security of evacuees and the personnel involved in the missions, requiring robust planning and countermeasures to mitigate risks.

**Climate-Related Disasters:** Natural disasters caused by climate change, such as cyclones and floods, can hamper evacuation missions.

**Growing Indian Diaspora:** With an increasing number of Indians living, working, and studying abroad, the potential for India's evacuation missions to involve a more diverse group of people is growing. This can create additional complexities in terms of communication, cultural understanding, and logistical coordination during evacuation operations.

### **What is the policy support provided by the government for India's Evacuation Missions?**

**Strong Political Commitment and Continuous Assessment:** India's Prime Minister's directive to prepare evacuation plans for Indian citizens in Sudan in 2023 and his emphasis on regular monitoring and assessment of their safety demonstrate the government's unwavering dedication to protect its nationals abroad.

**Interagency Coordination:** The high-level meeting chaired by India's PM to discuss the situation of Indians trapped, this was attended by officials from the Ministry of External Affairs, the Indian ambassador to Sudan, the Foreign Secretary, and high-level officials from the air force and navy, highlighting the importance of interagency coordination in evacuation missions.

**Diplomatic Efforts:** India's External Affairs Minister meeting with UN Secretary-General Antonio Guterres to discuss the situation, emphasizing the role of diplomacy in facilitating evacuation missions.

**Resource Allocation:** The Indian government's allocation of resources, such as the deployment of Indian Air Force C-130J Super Hercules aircraft for evacuation missions like the one in Sudan in 2023, demonstrates support for the missions.

**Public Communication:** The Ministry of External Affairs' cautionary statement to Indians in Sudan about active fighting near the Indian mission in Khartoum, emphasizing the role of effective public communication in ensuring the safety of citizens during evacuation missions.

**Specialized Training:** The specialized training provided to the IAF's special operations crew, like the C-130J squadrons, which helped in successful evacuation missions such as the ones in Afghanistan and Sudan.

**Coordination with Host Countries:** During the Vande Bharat Mission in 2020, India worked closely with host countries to ensure the safe repatriation of Indian citizens from various nations, emphasizing the importance of coordination with host countries for successful evacuation missions.

Read more: [Rescue service – The Sudan evacuation highlights challenges India faces in conflict](#)

#### What are the operational challenges faced in India's Evacuation Missions?

**Limited Intelligence:** Evacuation missions can face challenges due to insufficient information about local conditions, hindering effective planning and execution.

**Logistical Hurdles:** Coordinating transportation, navigating difficult terrain, and providing basic necessities like food and water can be challenging during evacuation missions. For instance, Indian citizens trapped in Sudan in 2023 faced difficulties due to a lack of electricity, food, and water, highlighting the logistical challenges in evacuation missions.

**Communication Barriers:** Language differences, poor communication infrastructure, and limited access to local authorities can complicate coordination and rescue efforts.

**Time Constraints:** In many evacuation scenarios, the situation on the ground can change rapidly, requiring flexibility and adaptability from the mission planners and the personnel involved. This adds another layer of complexity to India's evacuation missions, as decision-makers must quickly respond to new information and adjust their plans accordingly.

**Uncertainty in Evacuee Numbers:** Estimating the exact number of citizens who require evacuation can be difficult, leading to challenges in planning and executing evacuation missions.

**Navigating Political Sensitivities:** Evacuation missions may involve coordinating with foreign governments or navigating complex political situations, such as India maintaining contact with the U.S., Saudi Arabia, the U.K., and the UAE during the Sudan evacuation in 2023.

#### What are the advantages associated with the success of India's Evacuation Missions?

**Enhanced National Reputation:** Successful evacuation missions, like the 2023 Sudan evacuation, demonstrate India's commitment to its citizens abroad and bolster the country's international standing.

**Improved Military Capabilities:** Complex operations help strengthen India's military expertise, particularly in the areas of special operations and logistics.

**Strong Diplomatic Relations:** Coordinating with multiple nations during evacuation missions, as India did with the U.S., Saudi Arabia, the U.K., and the UAE in the Sudan case, fosters international cooperation and strengthens diplomatic ties.

**Greater Public Confidence:** Successfully executing evacuation missions instils confidence in Indian citizens, both at home and abroad, that their government is committed to their safety and wellbeing.

**Showcase of Technological Advancements:** Successful evacuations, such as the Wadi Seidna mission, highlight the capabilities of advanced aircraft like the C-130J Super Hercules. This shows India's technological progress in the defence sector.

Read more: [India's evacuation diplomacy – Express View on Sudan crisis: Indian government's efforts to evacuate nationals are commendable](#)

#### What should be done?

**Enhance Intelligence Gathering:** Collaborate with regional and global partners to improve intelligence collection and sharing for better situational awareness, like during the Yemen evacuation mission, which involved coordination with several countries.

**Strengthen Coordination Mechanisms:** Establish joint task forces with friendly countries to streamline coordination between different government agencies, foreign governments, and international organizations, similar to the collaboration during the Nepal earthquake relief operations. Invest in

**Advanced Technology:** Continue investing in cutting-edge technology, such as the C-130J Super Hercules and C-17 Globemaster aircraft, to enhance evacuation capabilities and ensure mission success, as seen in the Sudan evacuation.

**Train and Equip Special Forces:** Strengthen the training and capabilities of special forces like the Garud commandos, who participated in the Herat embassy evacuation mission, to guarantee the safety of Indian citizens abroad.

**Develop Contingency Plans:** Conduct regular simulations and exercises with regional partners to prepare comprehensive contingency plans for different scenarios, ensuring timely and effective responses in real-life situations.

**Maintain Diplomatic Engagement:** Actively participate in regional forums and establish joint mechanisms with countries in the region, as well as those with significant citizens in crisis zones. This will ensure smooth cooperation during evacuation missions.

**Sources:** The Hindu ([Article 1](#) and [Article 2](#)), [India Today](#), [Carnegie](#) and [Indian Express](#)

**Syllabus:** GS – 2: International Relations: Effect of policies and politics of developed and developing countries on India's interests, Indian diaspora.

### Indian aviation industry: Potential and challenges – Explained, pointwise

#### Introduction

The Indian aviation industry has experienced significant growth in recent years, emerging as one of the fastest-growing sectors in the global market. With a vast population and increasing disposable incomes, the demand for air travel in India has skyrocketed, creating the immense potential for further expansion. However, the industry also faces numerous challenges, as highlighted by the recent insolvency of Go First Airlines.

#### What are the reasons behind Go Air's insolvency?

**Engine Manufacturer Issues:** Go Air faced problems with Pratt & Whitney (P&W), the engine manufacturer, which led to an increasing number of failing engines. This resulted in a significant portion of Go Air's fleet being grounded, causing operational challenges.

**Financial Difficulties:** With many aircraft grounded, Go Air's market share declined, leading to financial stress.

**Dependence on International Suppliers:** Go Air's reliance on a few international suppliers exposed the airline to risks. The difficulties with P&W highlighted the perils of this dependence.

**Insufficient Maintenance and Repair Facilities:** India's lack of large-scale maintenance, repair, and overhaul (MRO) facilities contributed to Go Air's struggles, as grounded aircraft couldn't be quickly repaired and put back into service.

**Increasing Competition:** Go Air faced fierce competition from other airlines, such as IndiGo and SpiceJet, which captured a larger market share and put additional pressure on Go Air's financial performance.

#### What will be the impact of Go Air's insolvency on the Indian aviation Industry?

**Market Consolidation:** Go Air's failure may lead to a more consolidated market, with fewer players dominating the industry. This could result in a duopolistic market structure, limiting consumer choice.

**Higher Airfares:** With less competition, the remaining airlines may increase airfares, negatively impacting consumer welfare and affordability of air travel.

**Opportunity for Competitors:** Go Air's troubles may create opportunities for other carriers to expand their market share and capitalize on available passenger traffic.



**Emphasis on Self-reliance:** Go Air's situation may push the Indian government and aviation industry to focus on enhancing domestic manufacturing, maintenance, and repair facilities, reducing dependence on foreign suppliers.

**Increased Importance of Financial Stability:** Go Air's failure may prompt airlines and investors to prioritize financial stability and risk management, ensuring that companies are better prepared to handle potential challenges in the future.

### What is the potential of the Indian aviation Industry?



Source: TOI

**Rapid Growth:** India's aviation sector has witnessed significant growth in recent years, with domestic passenger traffic increasing at a Compound Annual Growth Rate (CAGR) of around 14.5% over the past six years.

For example, in the 2023-24 fiscal year, India's domestic passenger traffic is projected to rise to 16 crores (160 million) from an estimated 13.75 crores (137.5 million) in the previous fiscal year. By 2029-30, it is expected to reach 350 million. (source: CAPA India projections).

**Large Market Size:** India is currently the world's third-largest civil aviation market and is expected to surpass the United States and China in the coming decade, making it a lucrative market for airlines and related businesses.

**Low Penetration:** India's per capita penetration of domestic air travel (0.13 seats deployed per capita) remains significantly lower than countries like China (0.49) and Brazil (0.57), indicating untapped potential.

**Infrastructure Expansion:** India is investing heavily in aviation infrastructure, with plans to expand existing airports and build new ones, which will help accommodate the rising demand for air travel. Like, India is working on airport expansion projects in major metropolitan cities like Delhi, Bengaluru, Chennai, and Kolkata.

Additionally, greenfield airports such as Noida International Airport and Navi Mumbai International Airport are under development and expected to be operational by the end of next year.

**Demand for Skilled Workforce:** The growth of the Indian aviation industry will create a need for skilled professionals, including pilots, cabin crew, and maintenance staff, creating job opportunities and supporting the growth of the overall economy. For instance, Indian scheduled operators are likely to require 10,900 additional pilots by FY30.

**Boost to MRO and Manufacturing:** India's expanding aviation sector offers potential for the growth of maintenance, repair, and overhaul (MRO) facilities, as well as the development of a domestic aerospace manufacturing industry.

**Must read:** [Why it is said that Indian aviation has become 'the sick man of India'? What are the reforms required to tap the potential of aviation sector?](#)

**What are the government initiatives to boost India's aviation industry?**

**Must read:** [Aviation Sector in India: Status, Opportunities and Challenges - Explained, pointwise](#)

**What are the challenges associated with the Indian aviation Industry?**

**Grounded Aircraft:** Airlines like Air India, SpiceJet, GoAir, and IndiGo face issues with grounded aircraft due to maintenance, engine replacements, and supply chain challenges, impacting their financial performance.

**Supply Chain Disruptions:** Delays in aircraft deliveries, pilot and cabin crew shortages, and supply chain issues with original equipment manufacturers (OEMs) hinder the industry's capacity to meet growing demand.

**Financial Losses:** Indian airlines are projected to record a consolidated loss of \$1.6 to 1.8 billion in FY24, with full-service carriers incurring up to \$1.2 billion in losses.

**Insolvency Cases:** Go First Airline's recent insolvency filing due to mounting cashflow woes and grounded aircraft highlights the financial challenges faced by the industry.

**Insufficient Oversight:** Regulatory bodies like DGCA have faced criticism for not conducting thorough financial audits and ensuring safety and operational standards in the industry.

**Crew Shortages:** A lack of skilled pilots, engineers, and cabin crew members can lead to operational disruptions, affecting airlines' ability to maintain consistent schedules and services.

**Inflated Projections:** Airlines sometimes announce ambitious growth plans without adequate financial security, infrastructure, or personnel, leading to unrealistic expectations and potential failures.

**COVID-19 Impact:** The pandemic has severely affected the aviation industry, causing financial challenges, reduced demand for air travel, and disruptions in training and safety investments.

**Environmental Concerns:** The aviation industry faces increasing pressure to reduce its carbon footprint and adopt sustainable practices, posing a challenge for growth and expansion

**Read more:** [Fasten Your Seatbelt, India – Air India’s huge order has multiple implications, for the airline, for civil aviation, for policy and for manufacturing. Here’s a deep dive](#)

#### What should be done?

To overcome these challenges and boost the aircraft leasing industry, advisory firm Primus Partners released a report that suggests several reforms. These include,

**Financing aircraft leases indigenously:** Encourage domestic financing solutions to reduce dependency on international leasing markets and keep Indian funds within the country.

**Strengthening aircraft repossession:** Improve the implementation of regulations to facilitate faster repossession and redeployment of aircraft.

**Streamlining tax regulations:** Simplify and streamline tax regulations to make the leasing industry more attractive and competitive.

**The ripple effect on the maintenance, repair, and operations ecosystem in India:** Develop an ecosystem that caters to the leasing industry’s maintenance and operations needs, creating a self-sufficient and robust industry within India.

**Read more:** [Explained: Why India has cut windfall tax on diesel, aviation fuel exports](#)

By addressing these challenges and implementing the suggested reforms, India can pave the way for a thriving aircraft leasing industry, making the country a global leasing hub and bolstering the aviation sector.

**Sources:** [The Hindu](#), Indian Express ([Article 1](#) and [Article 2](#)), Business Standard ([Article 1](#) and [Article 2](#)), [Livemint](#), [Financial Express](#), [Economic Times](#) and [Outlook](#)

**Syllabus:** GS 3: Economic development: Infrastructure: Energy, Ports, Roads, Airports, Railways etc.

### Manipur unrest and its impact on regional security – Explained, pointwise

#### Introduction

Manipur has been grappling with unrest and violent protests, recently witnessing the first direct clashes between the Kuki-Zomi tribals and the Meiteis in three decades. With a complex cultural geography divided into ‘valley’ and ‘hill’ districts, the state has experienced longstanding ethnic tensions. The Manipur unrest poses significant challenges to regional security, potentially destabilizing the fragile peace and affecting the broader geopolitical landscape of the region.

#### What are the reasons behind the unrest in Manipur?

##### External factors

**Myanmar crisis:** The military coup in Myanmar in 2021 and subsequent unrest have led to a continuous influx of Burmese refugees into Manipur. Thus complicating the ethnic balance in the state. Many of the refugees share kinship ties with Manipur’s Kuki tribe.

**Drug trafficking and cross-border crime:** The proximity to the Golden Triangle and porous international borders make Manipur vulnerable to drug trafficking and other cross-border criminal activities. These illegal activities can fuel violence and social unrest in the region.

##### Internal Factors

**Demand for Scheduled Tribe status:** The Manipur high court recently asked the state government to send a recommendation to the Centre on the Meiteis' demand for Scheduled Tribe status, which has triggered protests by tribal groups fearing a loss of reservation benefits.

**Land issues:** The Meitei community, which is numerically in the majority, mainly inhabits the Imphal Valley, accounting for just a tenth of the state's total land area. The competition for land and resources has intensified tensions between the Meiteis and hill tribes.

**Historic tensions:** Longstanding tensions between hill tribes and Meiteis in Manipur have contributed to the unrest, as both communities vie for political representation, resources, and cultural recognition.

**Lack of economic development:** Economic underdevelopment in the region has exacerbated inter-ethnic tensions, as communities compete for scarce resources and opportunities.

**Governance issues:** The government's handling of the situation, such as the suspension of mobile internet and the application of the Armed Forces (Special Powers) Act (AFSPA), has been disruptive and has not effectively addressed the root causes of the unrest.

**Must read:** [What is behind Manipur's widespread unrest?](#)

#### **What will be the impact of Manipur unrest on regional security?**

**Border vulnerability:** The unrest in Manipur could lead to increased cross-border criminal activities such as smuggling, drug trafficking, and illegal arms trading. This could make the region's borders more vulnerable and affect overall security.

**Growth of militancy:** Prolonged unrest could provide fertile ground for militant groups to expand their influence and recruit more people, leading to a rise in extremist activities and further destabilizing the region.

**Strained relations with neighbouring countries:** The unrest in Manipur could have implications for India's relations with neighbouring countries like Myanmar, Bangladesh, and China. Increased refugee flows and cross-border crimes can strain relations and hinder diplomatic efforts in the region.

**Hindrance to economic development:** Persistent unrest could deter investment and hinder economic development in the region, leading to increased unemployment and poverty, which in turn could feed into more instability and security challenges.

**Challenges to India's Act East Policy:** The unrest in Manipur could impact India's Act East Policy, which aims to boost economic and strategic ties with Southeast Asia. Ensuring peace and stability in the Northeast region is essential for the success of this policy and for India's broader strategic interests.

**Internal displacement:** Unrest in Manipur may lead to the large-scale internal displacement of people, putting pressure on neighbouring states and resources. This could create additional tensions between various ethnic groups and communities, further complicating regional security.

**Human rights violations:** Prolonged unrest may result in human rights violations, attracting international attention and criticism. This could affect India's image and its ability to advocate for human rights and democratic values in the region and beyond.

**Impact on social cohesion:** The unrest in Manipur can deepen ethnic, religious, and social divisions, weakening social cohesion and harmony. This may lead to long-term challenges for regional security and peacebuilding efforts.

#### **What are the government initiatives to overcome Manipur unrest?**

**Political dialogue:** The government has initiated political dialogues with various ethnic groups and stakeholders to address their grievances and demands, aiming to build trust and find common ground for lasting peace.

For example, the Manipur government held peace talks with several insurgent groups like the United National Liberation Front and Kangleipak Communist Party. These peace talks aim to find a lasting political solution to the ongoing conflict in the state and create a more stable environment.

**Suspension of Operations (SoO) Pact:** The Manipur government has decided to withdraw from the Suspension of Operations (SoO) arrangement with two militant organisations, the Kuki National Army (KNA) and the Zomi Revolutionary Army (ZRA), amid allegations of instigating discontent among forest encroachers.

**Note:** *The SoO agreement with Kuki was signed in 2008 as a ceasefire deal between the Indian government and different Kuki terrorist organisations operating in Manipur and Nagaland. According to the agreement, the Kuki terrorist groups promised to cease their violent actions and report to designated camps that would be supervised by security authorities. In exchange, the Indian government promised to halt operations against Kuki tribes.*

**Development initiatives:** The government has been promoting development initiatives in Manipur, focusing on infrastructure, education, and healthcare to improve living standards and economic opportunities for local communities. Like, the government has launched the Northeast Special Infrastructure Development Scheme (NESIDS) to improve infrastructure in the region, including Manipur.

**Act East Policy:** India's Act East Policy aims to strengthen economic and cultural ties with Southeast Asian countries, potentially benefiting Manipur and the Northeast region by increasing trade, investment, and connectivity. For instance, the India-Myanmar-Thailand Trilateral Highway project has been advancing, which will improve connectivity between Manipur and Southeast Asia, promoting trade and economic opportunities.

**Skill development programs:** The government has introduced skill development programs to provide better employment opportunities for the youth in Manipur, addressing some of the root causes of unrest. For example, the National Skill Development Corporation (NSDC) partnered with the Manipur State Rural Livelihoods Mission to train and provide employment opportunities to 5,000 youths from the state.

**Security measures:** The government has deployed additional security forces to maintain law and order and protect citizens from violence during periods of unrest.

**Counter-narcotics operations:** In recent years, the government of Manipur has intensified its efforts to combat drug trafficking and cultivation, which has been fueling instability in the region. For example, Manipur police destroyed illegal poppy plantations spread over 90 acres in the Tengnoupal district. Such operations aim to reduce the influence of criminal organizations and improve security in the region.

**Read more:** [Who are Meiteis: Protest against ST demand turns violent in Manipur, curfew imposed in entire state](#)

### What are the challenges associated with resolving unrest in Manipur?

**Complex ethnic dynamics:** Manipur's diverse ethnic landscape, with multiple tribes and communities, makes it difficult to address the grievances of all parties. The ongoing tensions between Meiteis, Nagas, Kukis, and other tribes make it challenging to find a solution that satisfies everyone.

**Presence of armed groups:** Numerous armed groups operate in Manipur, each with its own objectives and demands. Their presence complicates the peace process and makes it difficult for the government to establish law and order in the region.

**External influences:** The unrest in Manipur is influenced by events in neighbouring countries like Myanmar, where the military coup and subsequent crackdown have led to an influx of refugees. These external factors add another layer of complexity to the situation in Manipur.

**Lack of development:** The Northeast region, including Manipur, faces significant developmental challenges, including poor infrastructure, limited access to resources, and high unemployment. These factors exacerbate existing tensions and make it harder to resolve unrest.

**Inadequate policy implementation:** Although the government has introduced various initiatives to address the issues in Manipur, the implementation of these policies often falls short, limiting their impact on the ground. This has led to a lack of trust between the local population and the government, which hinders progress in resolving unrest.

**AFSPA:** The continued implementation of the Armed Forces (Special Powers) Act (AFSPA) in Manipur has been a contentious issue. While the government argues that it is necessary to maintain order, critics argue that the act has led to human rights abuses and fueled resentment among the local population.

**Read more:** [Cabinet approves continuation of Schemes of Ministry of Development of North Eastern Region](#)

#### What should be done?

**Inclusive dialogue:** Engage all stakeholders, including various ethnic groups, in a dialogue to understand their grievances and find common ground. The Mizoram Accord of 1986 between the Government of India and the Mizo National Front (MNF) serves as an example of successful engagement with all stakeholders.

**Strengthen governance:** Improve governance by addressing corruption, and inefficiency, and strengthening local administration. This can be modelled on the successful decentralization efforts in Kerala, which have empowered local communities and improved the delivery of public services.

**Promote economic development:** Invest in infrastructure, education, and job creation to foster economic development and reduce poverty. The success of the Gujarat model in India, which emphasizes industrialization and infrastructure development, can serve as a blueprint.

**Reevaluate AFSPA:** Review the implementation of the Armed Forces (Special Powers) Act and consider alternative security measures that protect human rights and promote trust between security forces and the local population. The withdrawal of AFSPA from Tripura in 2015 could serve as a model for a phased reduction of the act in Manipur.

**Address border issues:** Strengthen cooperation with neighboring countries, particularly Myanmar, to manage cross-border issues such as smuggling, infiltration, and refugee influx. The cooperation between India and Bangladesh on border management can serve as a model for enhancing security along the Manipur-Myanmar border.

**Encourage civil society involvement:** Empower civil society organizations to play an active role in conflict resolution and peacebuilding. The work of organizations like the Naga Mothers Association and the Northeast India Women Initiative for Peace in Manipur can be further supported and expanded.

**Cultural Exchange Programs:** Promote cultural exchange programs within Manipur and between the state and other regions of India to foster a better understanding and appreciation of diverse cultures. This can be inspired by the European Union's Erasmus+ program, which encourages cross-cultural learning and interaction among students and educators.

**Read more:** [Problems associated with North Eastern states: A more meaningful commitment to the Indian republic](#)

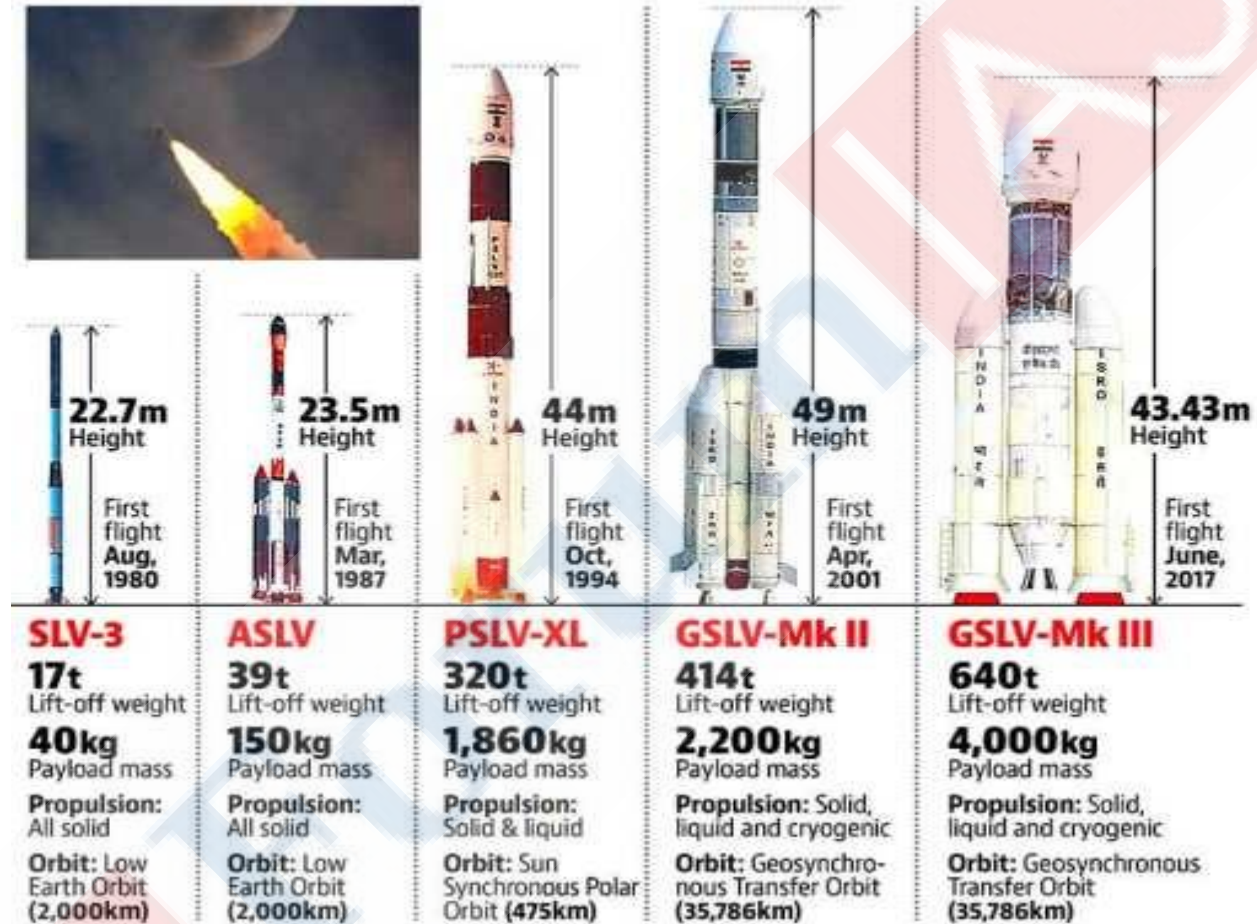
**Sources:** The Hindu ([Article 1](#), [Article 2](#) and [Article 3](#)), Indian Express ([Article 1](#) and [Article 2](#)), The Times of India ([Article 1](#) and [Article 2](#)).

**Syllabus:** GS 3: Security issues – Internal Security

## [Yojana May 2023 Summary] Innovation in Space Tech – Explained, pointwise

**Introduction**

Since its inception, the Indian Space Research Organisation (ISRO) has played a vital role in driving innovation in space technology across various domains. From its beginnings in Thumba to becoming a global player, ISRO's 53+ year journey has seen remarkable advancements. Especially in areas such as space transportation, infrastructure, science, applications, human exploration, robotics, artificial intelligence, and quantum technologies.

**How has Innovation in Space Tech Shaped the Evolution of India's Space Transportation System?**

Source: Hindustan Times

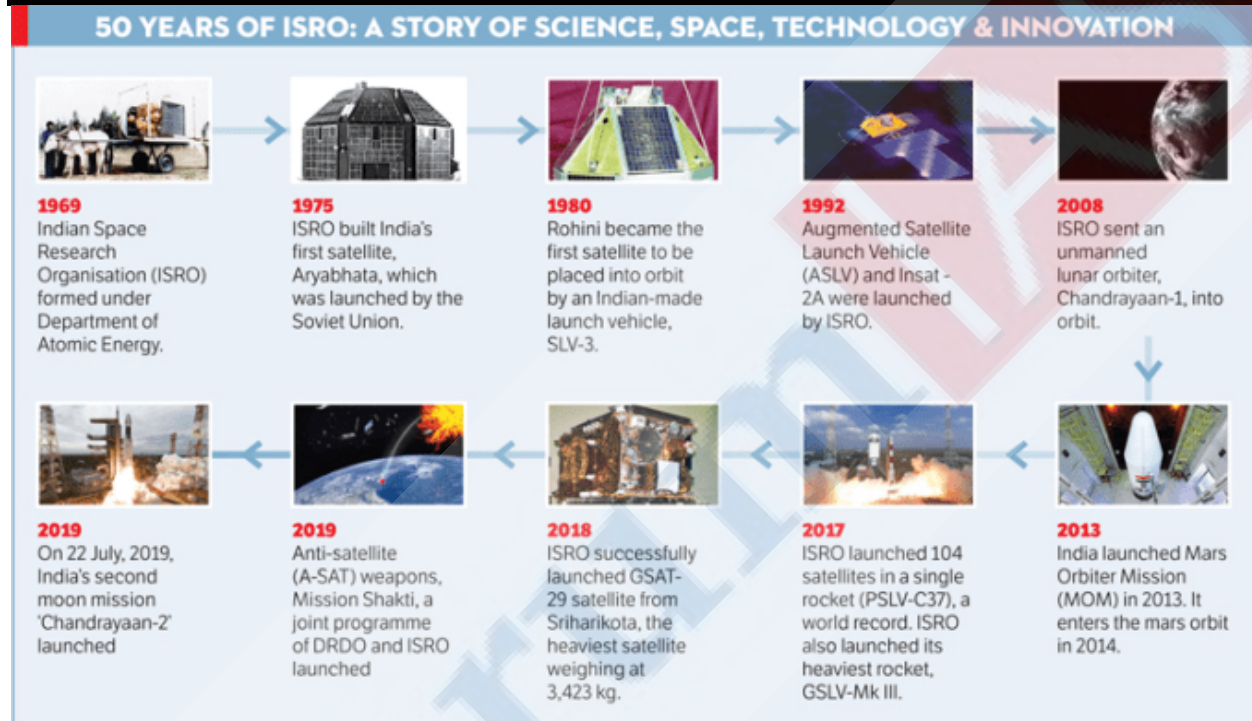
**From Sounding Rockets to SSLV:** India's journey in space transportation began with the development of solid-propulsion-based Sounding Rockets in the 1970s, followed by the first generation Satellite Launch Vehicles (SLV) and Augmented SLV (ASLV). The integration of solid and liquid propulsion technologies paved the way for the second-generation workhorse, the Polar Satellite Launch Vehicle (PSLV).

**Cryogenic Engine and GSLV Launch Vehicles:** The indigenous development of a cryogenic propulsive engine marked a significant leap in technology, leading to the creation of third-generation GSLV launch vehicles capable of placing a 2000 kg payload in Geo-Synchronous Transfer Orbit (GTO).

**Launch Vehicle MK3 (LVM3) and Heavy Payloads:** LVM3 was powered by the world's 3rd largest solid boosters and high-capacity engines. This advanced LVM3 was developed to launch high throughput communication satellites, with the capability of putting a 4000 kg payload in GTO.

**Small Satellite Launch Vehicle (SSLV) and Quick Turnaround:** The latest addition to ISRO's rocket family is the SSLV, a three-stage launch vehicle designed for quick turnaround and the ability to launch a 500 kg satellite into a 500 km planar orbit.

**How has Innovation in Space Tech Contributed to the growth of India's space infrastructure?**



**Source:** SP Aviation

**The Birth of India's Space Infrastructure:** In the early 1970s, ISRO laid the foundation for designing, building, and operating spacecraft. This led to the launch of India's first satellite, 'Aryabhata', on 19 April 1975, and subsequent experimental missions like Bhaskara and APPLE.

**Advancements in Key Spacecraft Technologies:** ISRO's self-reliance in spacecraft technology was bolstered by the indigenous development of advanced propulsion, power systems, thermal systems, deployable structures, space bus systems, communication systems, and more.

**Evolution of Remote Sensing and Communication Capabilities:** India's remote sensing capabilities have grown from a coarse 1 km resolution to a fine 28 cm resolution, with day & night and all-weather functionality. Communication transponders have also expanded from a single unit to 317 numbers.

**Expanding Space Infrastructure Portfolio:** Today, India's space infrastructure includes 25 Earth observation satellites, 22 communication satellites, 7 navigation satellites, 2 space science satellites, and various experimental, small, and student satellites.

**Read more:** [\[Yojana January Summary\] India as a Space Power – Explained, pointwise](#)



## How has innovation in space tech-enabled India's Space Science and Interplanetary Missions?



**Figure 3: Glimpses of ISRO's space science and planetary missions**

**Source: Yojana**

**Journey to the Moon and Beyond:** ISRO successfully reached the Moon and Mars, opening a new era of planetary exploration. Chandrayaan-1, India's first lunar orbiter mission, achieved the scientific breakthrough of discovering water on the Moon.

**Exploring Mars with Mangalyaan:** India's first interplanetary mission, Mars Orbiter Mission (MOM), made India the first Asian nation to reach Martian orbit and the first nation globally to do so on its maiden attempt. MOM explored Mars' surface, mineralogy, and atmosphere with five onboard scientific instruments.

**Developing Key Technologies for Interplanetary Missions:** During MOM, ISRO developed crucial technologies for designing, planning, management, and operations of interplanetary missions, such as orbit raising maneuvers, trans-Mars injection, trajectory correction maneuvers, and Mars orbit insertion.

**AstroSat's Multi-Wavelength Space Astronomy:** AstroSat, a multi-wavelength space astronomy mission, served astronomers from nearly 50 countries and made breakthrough

discoveries, such as detecting UV emissions from star formation in a galaxy 9.4 billion years away.

**Read more:** [Indian Space Association \(ISpA\) – Explained, pointwise](#)

### How has Innovation in Space Tech Revolutionized Space Applications for India?

**Meeting Diverse Earth Observation Needs:** ISRO's Earth Observation (EO) applications have been institutionalized across various sectors, including national security, agriculture, disaster management, and resource mapping, contributing to India's major flagship programs.

**Advancements in Ground Infrastructure and Imaging Technologies:** Significant development in ground technologies, such as multiobject tracking radar, polarimetric Doppler weather radar, and advanced ground stations, has facilitated uninterrupted satellite services usage.

**Innovative Imaging Technologies for Earth Observation:** Technological advancements in imaging, such as push-broom, stereo imaging, and synthetic aperture radar (SAR), have allowed ISRO to accomplish 47 missions with varying spatial, temporal, and spectral resolutions.

**Read more:** [India and Outer Space: Issues & Challenges – Explained, pointwise](#)

### How has Innovation in Space Tech contributed to Human Space Exploration in India?

**Gaganyaan – India's Maiden Human Spaceflight Mission:** ISRO's Gaganyaan mission is a complex project that aims to send astronauts to space and safely return them to Earth, involving the development of numerous technology elements.

**Key Technology Developments:** These include human-rated launch vehicles, crew escape systems, habitable orbital modules, life support systems, and crew management activities for onboard safety.

**Successful Tests and Progress:** ISRO has conducted successful tests such as the Crew Module Atmospheric Re-entry Experiment (CARE), pad abort test, and Integrated Main Parachute Airdrop Test (IMAT) for the Gaganyaan mission, which is now at an advanced stage of realization.

### What are the Latest Innovations in Space Tech and their applications in India?

**Reusable Launch Vehicles and Air Breathing Propulsion:** ISRO is developing reusable launch vehicles, air-breathing two-stage to-orbit vehicles, and scramjet engines for cost-effective future space transportation systems.

Recently, ISRO made a significant development in RV technologies with an RV landing experiment (RLV-LEX) demonstrating the autonomous landing of a winged vehicle on a runway. Its Current focus is on the development of critical technologies towards the realization of a vehicle-integrated scramjet engine called the Hypersonic Air Breathing Vehicle with Airframe integrated system (HAVA).

**PSLV Orbital Experimental Module (POEM):** ISRO has innovatively repurposed the spent 4th stage of PSLV for carrying out scientific experiments under the name POEM. It provides a microgravity platform for conducting various scientific experiments in space. The opportunities are open for academic institutions and industries to utilize this unique and cost-effective platform for conducting their experiments in a space environment.

**Space Robotics and 3D Printing:** ISRO has pursued research and development in space robotics, including Vyommित्रा (a humanoid robot), landers and rovers for the Chandrayaan-3 mission, and on-orbit satellite refuelling. Additionally, they are exploring 3D printing in space.

**Quantum Communication:** ISRO has demonstrated free-space quantum communication over a distance of 300 m, developing key technologies such as entangled-photon sources and polarization compensation techniques.

**Space Data Economy and Smart Cities:** Space data, combined with artificial intelligence and machine learning, contribute to smart city applications, smart manufacturing, and supply chain management.

**Societal Applications and Spin-offs:** Technological advancements in the space sector have led to societal applications, such as ventricular assist devices, microprocessor-controlled limbs, and medical ventilators.

**Growing Private Sector Participation:** Space sector reforms encourage the involvement of nongovernmental entities, fostering a thriving space ecosystem and driving scientific and technological progress.

**Read more:** [Space Industry in India: Potential and Challenges – Explained, Pointwise](#)

**Source:** Yojana

**Syllabus:** GS 3: Science and Technology – indigenization of technology and developing new technology.

### **Ad-hoc faculty recruitment system and their impact on higher education– Explained, pointwise**

#### **Introduction**

The incident of a Delhi University lecturer's death brings focus on the serious problems in India's ad-hoc faculty recruitment system. His unsuccessful attempt to secure tenure, despite five years of temporary teaching, shows the tough conditions faced by these educators and how it can affect the quality of our higher education.

About the procedure for the Ad-hoc faculty recruitment system

The ad-hoc faculty recruitment system is typically utilized in situations where there are vacant positions that need to be filled on a temporary basis, often due to faculty shortages.

The process begins with **the identification of a need for additional faculty**, often due to vacancies left by permanent staff. Once this need is identified, the university or institution advertises the open positions. These advertisements may occur periodically.

**Upon selection, ad-hoc teachers are hired on a temporary basis, often for a duration of 120 days.** After the initial period of 120 days, **there is a one-day notional break, after which their services can be renewed, again on a temporary basis.** This renewal is not guaranteed and is subject to the institution's requirements and the individual's performance.

It's important to note that the use of ad-hoc faculty is intended to be a temporary measure. According to UGC norms, non-permanent teachers should not exceed 10% of the total sanctioned posts. However, this limit is often surpassed in practice due to the ongoing faculty shortages.

**Read more:** [Delhi University ad hoc teacher suicide: Chronicle of a tragedy foretold](#)

#### **What is the need for Ad-hoc faculties in higher education institutes?**

**Filling Vacant Positions:** Ad-hoc faculty are often needed to fill vacant positions in higher education institutions. For instance, Delhi University had 900 vacancies, creating a significant shortage of faculty. Ad-hoc faculty can step in to fill these gaps and ensure that classes are taught and students' educational needs are met.

**Providing Flexibility:** Ad-hoc faculty provide a level of flexibility to educational institutions. They can be brought in to cover for permanent faculty who are on leave, or to handle increased enrolment in certain courses.

**Addressing Budget Constraints:** Budget constraints can also necessitate the use of ad-hoc faculty. Hiring full-time, permanent faculty can be a significant financial commitment for institutions. Adhoc faculty, who typically do not receive the same level of benefits as their permanent counterparts, can be a more budget-friendly option.

**Meeting Specialized Needs:** Sometimes, institutions need faculty with specialized knowledge for a limited period or for specific courses. In such cases, it might not be feasible to hire a full-time faculty member. Ad-hoc faculty with the required specialization can be brought in to meet these specific needs.

For example, if a university is offering a new course on a specific emerging technology, they might hire an ad-hoc faculty member who is an expert in that area to teach that course.

**Handling Academic Restructuring:** Academic restructuring can lead to a rise in the need for ad-hoc teachers. Changes in the academic system, like the shift from an annual system to a semester system, or the introduction of new programs, can create a temporary need for additional faculty, which can be filled by ad-hoc appointments.

What are the issues with the ad-hoc faculty recruitment system in higher education institutions?

**Over-reliance on Ad-hoc Faculty:** Universities often rely heavily on ad-hoc faculty due to persisting faculty vacancies, leading to an imbalance in the teaching ecosystem.

For instance, the proportion of ad-hoc teachers at Delhi University has surpassed 50% of the total teachers' strength, violating the permissible UGC norm of a maximum of 10% of the sanctioned posts through non-permanent teachers.

**Delayed or Irregular Recruitment Processes:** The recruitment process for permanent positions is often delayed or not conducted at all, leading to an increase in the hiring of ad-hoc faculty. Delhi University, for example, advertised teaching posts in 2015, 2017, and 2019 but failed to conduct interviews in the majority of the departments and colleges.

**Lack of Clear Pathway to Permanent Positions:** In the existing recruitment system, there seems to be no clear pathway for ad-hoc teachers to transition to permanent positions. This lack of a structured process for absorption into permanent roles results in ad-hoc teachers remaining in temporary positions for extended periods.

**Low Quality of Applicants:** The quality of applicants is sometimes seen as a reason for not filling vacancies with permanent hires, leading to increased reliance on ad-hoc teachers.

According to the former vice-chancellor of the University of Allahabad, poor training of PhD candidates and selection based on non-academic considerations like caste, religion or politics lead to a poor quality of applicants.

**Failure to Regularize Ad-hoc Faculty:** Despite ad-hoc faculty often meeting the same eligibility criteria as permanent professors, there is a marked difference in their service conditions. Even though they work full-time and in substantive posts, they are not absorbed into permanent positions.

**Read more:** [The ad-hoc epidemic – DU lecturer's suicide should occasion introspection on recruitments in universities and colleges. Government must regularise posts, fill vacancies](#)

#### What are the challenges faced by ad-hoc faculties?

**Denial of Benefits:** Ad-hoc teachers are deprived of several benefits that are available to their permanent counterparts. They do not receive annual increments, promotions, medical benefits, or maternity leaves. This disparity is evident despite these teachers working full-time on substantive posts.

**Fear of Displacement:** Ad-hoc faculty often live in fear of being replaced when permanent positions are finally filled. In the wake of recent faculty recruitments at Delhi University, about 70% of ad-hoc faculty were displaced, leading to increased anxiety among these temporary staffs.

**Low Pay and Delays in Payment:** The compensation for ad-hoc faculty is often significantly lower than for permanent staff. Furthermore, their pay is subject to delays and can be cut due to holidays. A guest faculty at the University of Madras, for example, receives about 20,000 rupees per month, which can be subject to delays and cuts.

**Increased Workload:** With a shortage of permanent faculty, ad-hoc teachers often bear a larger workload, including teaching, curriculum development, admissions procedures, and other departmental activities. This increased burden can even double their teaching hours in some weeks.

**Limited Career Growth Opportunities:** Ad-hoc faculty have limited opportunities for career growth due to the temporary nature of their position. Without a clear pathway to permanent positions, these teachers may find their professional development stunted.

### What should be done?

**One-Time Absorption Regulation:** The Delhi University Teachers' Association (DUTA) has called for a one-time bill or regulation to absorb ad-hoc teachers into permanent positions. This would provide job security and full benefits to thousands of teachers who have been serving in temporary roles.

**Increase in Budgetary Expenditure on Education:** To address the faculty shortage, some suggest increasing the budgetary expenditure on education. This could help in overcoming the faculty shortage problem and reduce the workload on current professors.

**Routine Recruitment:** There's a need for recruitment to be done on a routine basis. This would prevent a build-up of vacant positions and reduce the reliance on ad-hoc faculty.

**Better Treatment of Ad-hoc Teachers:** In the interim, it's important that ad-hoc teachers are treated with respect and are given fair compensation for their work. They should also be provided with better work conditions, including reasonable work hours and prompt payment.

**Improve Infrastructure and Location of Universities:** Universities located in remote areas often struggle to attract qualified faculty, leading to a greater need for ad-hoc faculty. Improving the infrastructure and location of universities could attract more qualified professors to permanent positions, reducing the need for ad-hoc faculty.

**Permanent Positions Filling:** The government and university authorities must focus on filling all vacant posts with permanent teachers. This would ensure students receive quality education and teachers engage in institution-building.

**Sources:** The Hindu ([Article 1](#) and [Article 2](#)), Indian Express ([Article 1](#) and [Article 2](#)), [Times of India](#), [Financial Express](#)

**Syllabus:** GS 2 – Social Justice: Issues relating to development and management of Social Sector/Services relating to Education

## Ban on diesel vehicles by 2027: Reasoning and Challenges – Explained, pointwise

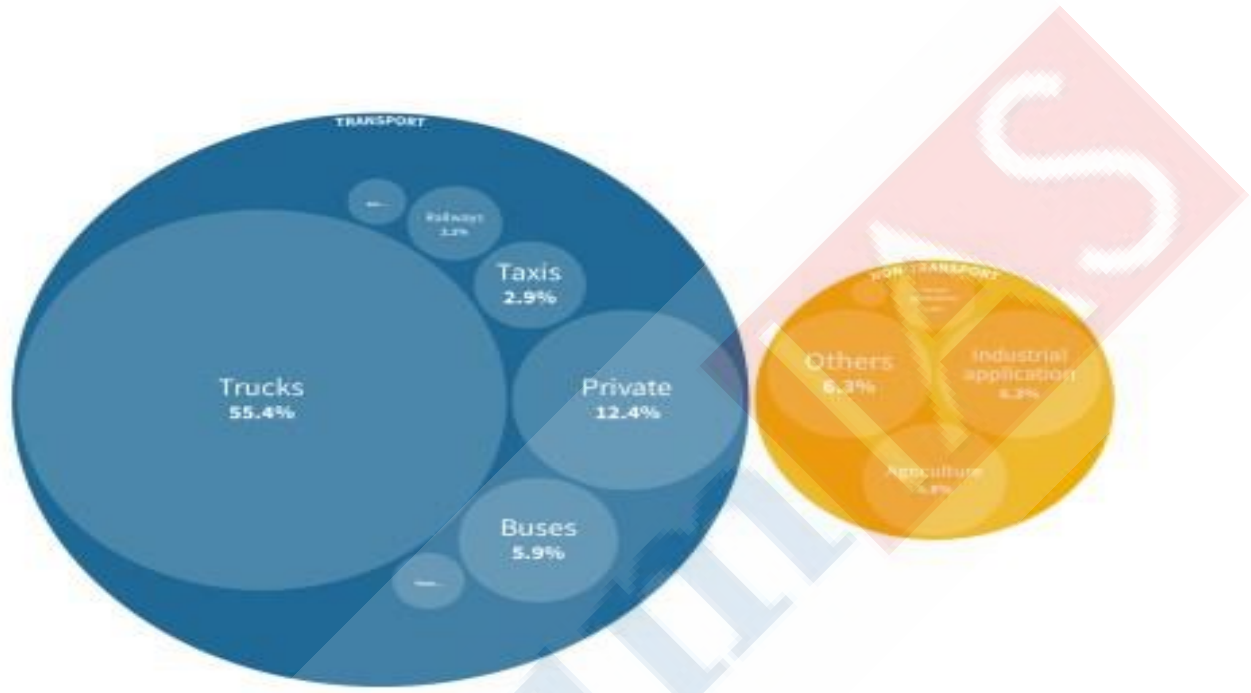
### Introduction

As environmental concerns take centre stage, India contemplates a significant shift in its automotive industry. A government panel, the Energy Transition Advisory Committee (ETAC), recommends a ban on diesel vehicles in cities with a population of over a million by 2027.

This bold step aims to curb emissions and promote a transition to electric and gas-fueled vehicles. However, the proposed ban brings its own set of challenges, from upsetting the automotive industry to disrupting public transport and logistics.

**What are the recommendations of the Indian government panel to Ban on diesel vehicles?****Diesel consumption (%) by sector (2021)**

The transport sector consumes 80.7% of diesel as against the non-transport sector's 19.3%.



Source: The Green Shift, Ministry of Petroleum and Natural Gas - The Hindu Graphics

Source: The Hindu

**Ban on Diesel Vehicles in Major Cities:** The panel recommends banning the use of diesel-based four-wheeler vehicles by 2027 in cities with a population of over a million (10 lakh) and in polluted towns.

**Transition to Electric and Gas Vehicles:** They proposed a transition to electric and gas-fuelled vehicles in such places to reduce emissions.

**No New Diesel Buses:** The committee suggests that by 2030, no city buses should be added which are not electric, and diesel buses for city transport should not be added from 2024 onwards.

**Promotion of Electric Vehicles (EVs):** The panel advises the government to extend the incentives under the Faster Adoption and Manufacturing of Electric and Hybrid Vehicles scheme (FAME) beyond March 2024 to promote the use of EVs.

**Increase Use of Railways and Gas-Powered Trucks:** The panel also recommends ramping up the use of railways and gas-powered trucks for transporting cargo.

These recommendations aim to help the Indian government reach its goal of reducing greenhouse gas emissions and producing 40% of its electricity from renewables to meet its 2070 net zero goal.

**What is the rationale behind the recommendation to Ban on diesel vehicles?**

**Environmental Impact:** A shift to electric and gas-powered vehicles would likely result in significant reductions in greenhouse gas emissions and air pollution, which is a major issue in many Indian cities. This could improve public health and contribute to global efforts to combat climate change.

**Health Concerns:** Diesel vehicles contribute significantly to air pollution. They emit higher levels of particulate matter (PM) and noxious gases, which can lead to severe health issues like heart and lung diseases. For instance, the Automotive Research Association of India reported that the transport sector contributes up to 20% of the PM 2.5 emissions, a key air pollutant.

**Alignment with Global Trends:** Many countries are moving towards cleaner energy sources for transportation to meet their climate goals. Banning diesel vehicles aligns India with these global trends. For example, European countries like France and the UK have already announced plans to phase out diesel and petrol vehicles in the coming years.

**Fostering Clean Technology:** Banning diesel vehicles can stimulate the development and adoption of cleaner technologies, such as electric and hybrid vehicles. Such as, with a clear end date for diesel vehicles, automakers would be incentivized to invest more in developing and improving electric vehicle technology.

**Read more:** [India to work towards zero-emission cars by 2040](#)

**What are the other countries which are looking to ban diesel vehicles?**

Many countries around the world have announced plans to ban diesel vehicles in the coming years to combat air pollution and climate change. Here are a few:

**United Kingdom:** The United Kingdom has planned to ban the sale of new petrol- and diesel-engined cars by 2030, while all new cars and vans sold must be fully zero emission by 2035.

**France:** has pledged to stop selling fossil fuel cars by 2040.

**Germany:** German cities started putting restrictions on older diesel vehicles that emit larger amounts of pollutants in 2018.

**Norway:** wants to ditch fossil fuel-powered cars by 2025, much before other countries.

**Netherlands:** The Netherlands aims to have only emissions-free vehicles on its roads by 2030. United States: announced it would ban the sale of diesel and petrol cars by 2030.

**European Union:** European Parliament gave the green light to new legislation to ban the sale of petrol and diesel cars from 2035. Under the law, all cars and vans sold in the European Union must be zero-emission by 2035.

**Read more:** [Explained:How cars can run on hydrogen fuel Cell](#)

**What will be the impact of the Ban on diesel vehicles?****Impact on Environment**

**Reduction in Air Pollution:** With diesel vehicles off the roads, there will be a significant reduction in the emission of particulate matter and harmful gases. This will improve air quality, especially in cities.

**Lower Carbon Emissions:** As electric vehicles (EVs) replace diesel cars, CO2 emissions will decrease, helping India meet its climate change commitments and move towards a more sustainable future.

**Impact on Carmakers**

**Need for Technological Shift:** Car manufacturers will have to invest heavily in EV technology and other technology and associated infrastructure. This might prove to be challenging, especially for those heavily invested in diesel technology.

**Potential Financial Loss:** Companies that have recently invested in making their diesel engines compliant with new emission standards might face financial losses if a diesel ban is implemented.

### Impact on Consumers

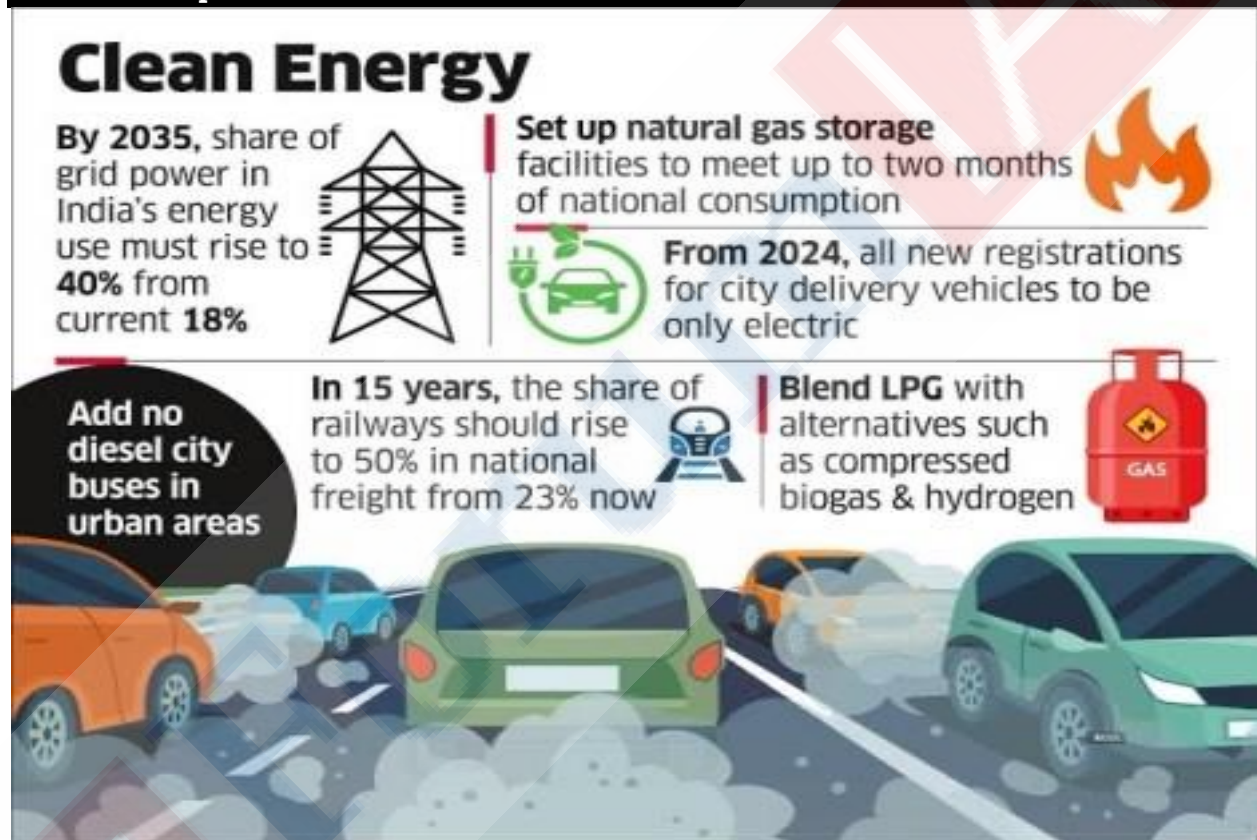
**Initial High Costs:** EVs typically have a higher upfront cost than diesel vehicles. This could make the transition difficult for some consumers, especially those in lower income brackets. Changes in

**Maintenance and Running Costs:** While the initial cost of EVs is high, they have lower running and maintenance costs compared to diesel vehicles. Over time, this can offset the initial investment.

**Need for Infrastructure:** The lack of adequate charging infrastructure might be a challenge for potential EV owners. However, with the government's push for EVs, infrastructure development is expected to improve.

Read more: [Why railways around the world are ditching diesel for hydrogen](#)

What are the potential alternatives to diesel vehicles?



Source: The Economic Times

**Electric vehicles (EV):** It is one that operates on an electric motor, instead of an internal-combustion engine that generates power by burning a mix of fuel and gases. However, The most significant disadvantage of electric vehicles is that they must be charged regularly.

**Compressed Natural Gas (CNG) Vehicles:** CNG vehicles use compressed natural gas, a cleaner-burning alternative to diesel. CNG vehicles produce fewer emissions and are often cheaper to run than diesel vehicles. However, the shortage of CNG stations and reduced storage space due to large CNG tanks are the major disadvantages of this vehicle.

**Fuel Cell Vehicles (FCVs):** FCVs use hydrogen gas to power an electric motor. They produce no tailpipe emissions, with water vapour being the only by-product. However, the infrastructure for hydrogen fueling is less developed compared to other alternatives.



**Biofuel Vehicles:** Biofuel vehicles run on fuels derived from organic materials, such as corn or sugarcane. These fuels can be used in traditional internal combustion engines and can help reduce greenhouse gas emissions. However, there are concerns about the impact of large-scale biofuel production on food supply and prices.

**Liquefied Petroleum Gas (LPG) Vehicles:** LPG, also known as autogas, is a clean-burning fossil fuel that can be used in internal combustion engines. LPG vehicles produce fewer emissions than diesel vehicles and are often cheaper to run.

**Must read:** [Adoption of EVs: Challenges and Solutions – Explained, pointwise](#)

#### What are the challenges in executing the ban on diesel vehicles?

**Infrastructure for Alternatives:** One of the major challenges is establishing the infrastructure for alternative fuels or electric vehicles. For instance, electric vehicles require a network of charging stations, which are currently not as widely available as diesel refuelling stations.

**Investment Recovery:** Automakers have invested heavily in diesel technology to meet existing emission standards. The proposed ban could lead to significant financial losses for them.

**Transition of Commercial Vehicles:** Commercial vehicles, including trucks and buses, mostly run on diesel. Transitioning this sector to cleaner alternatives will be challenging due to the specific requirements of these vehicles, such as the need for high torque and long-range capabilities.

**Consumer Acceptance:** Changing consumer behaviour and preferences is always challenging. Consumers may have concerns about the cost, performance, and reliability of alternative vehicles.

**Read more:** [State-run oil marketing companies to buy biodiesel made from used cooking oil](#)

#### What should be done?

**Incentives for Clean Vehicles:** The government should provide incentives to consumers and manufacturers for adopting cleaner vehicles. This could be in the form of tax rebates, subsidies, or discounts on electric vehicles (EVs).

**Investment in Infrastructure:** Significant investment should be made in developing the necessary infrastructure for alternative vehicles, especially charging stations for EVs. For example, Public and private entities could collaborate to establish charging stations at convenient locations like shopping centers, public parking lots, and along major highways.

**Public Awareness Campaigns:** Public awareness campaigns should be conducted to educate consumers about the benefits of clean vehicles and the potential harm caused by diesel emissions.

**Support for Commercial Vehicles:** Specific programs should be implemented to support the transition of commercial vehicles from diesel to cleaner alternatives. For instance, subsidies could be offered to transport companies to offset the cost of replacing their diesel trucks with electric or hybrid models.

**Phased Implementation:** Instead of an abrupt ban, a phased implementation could be considered. This allows consumers and manufacturers time to adjust and plan accordingly. Such as the ban could start with major cities and gradually extend to smaller towns. It could also start with specific types of vehicles, like public buses or delivery vehicles, before expanding to all types of diesel vehicles.

**Research and Development:** Encourage research and development in cleaner technologies and alternative fuels. This can be done through government funding and by fostering partnerships between academia and industry. Like, a government-funded research program could be

established to develop more efficient batteries for electric vehicles or more effective emission control technologies for biofuel vehicles.

**Sources:** [Indian Express](#), Times Now ([Article 1](#) and [Article 2](#)), [The Hindu](#), [Economic Times](#), [The Hindu Businessline](#)

**Syllabus:** GS – 3: Environment and Bio-diversity: Conservation

## India's nuclear doctrine after 25 years of Pokhran – Explained, pointwise

### Introduction

Marking 25 years since the Pokhran tests, India's nuclear doctrine has seen significant evolution. With noteworthy advancements such as the Agni-V missile and the S-4, India's third indigenous nuclear ballistic missile submarine, India has certainly bolstered its nuclear capabilities. However, it still grapples with challenges in securing the sea and air components of its nuclear triad and building a robust ballistic missile defence system. Furthermore, the swift expansion of China's nuclear arsenal presents a fresh set of challenges. This milestone is an opportune time to reflect on the doctrine's journey and its future direction in a shifting geopolitical landscape.

### What are the key features of India's Nuclear Doctrine?

Key features of India's Nuclear Doctrine are:

**No First Use (NFU):** India committed to not being the first to use nuclear weapons in a conflict but would retaliate if attacked with such weapons.

**Credible Minimum Deterrence:** India would maintain a sufficient number of nuclear weapons to deter a nuclear attack, but it would not seek to match other countries' arsenals in size.

**Non-use Against Non-Nuclear Weapon States:** India would not use or threaten to use nuclear weapons against countries that do not possess them.

**Retaliation to a Nuclear Attack:** If India is subject to a nuclear attack, it would retaliate, causing massive damage to the aggressor.

### What is the evolution of India's nuclear doctrine?

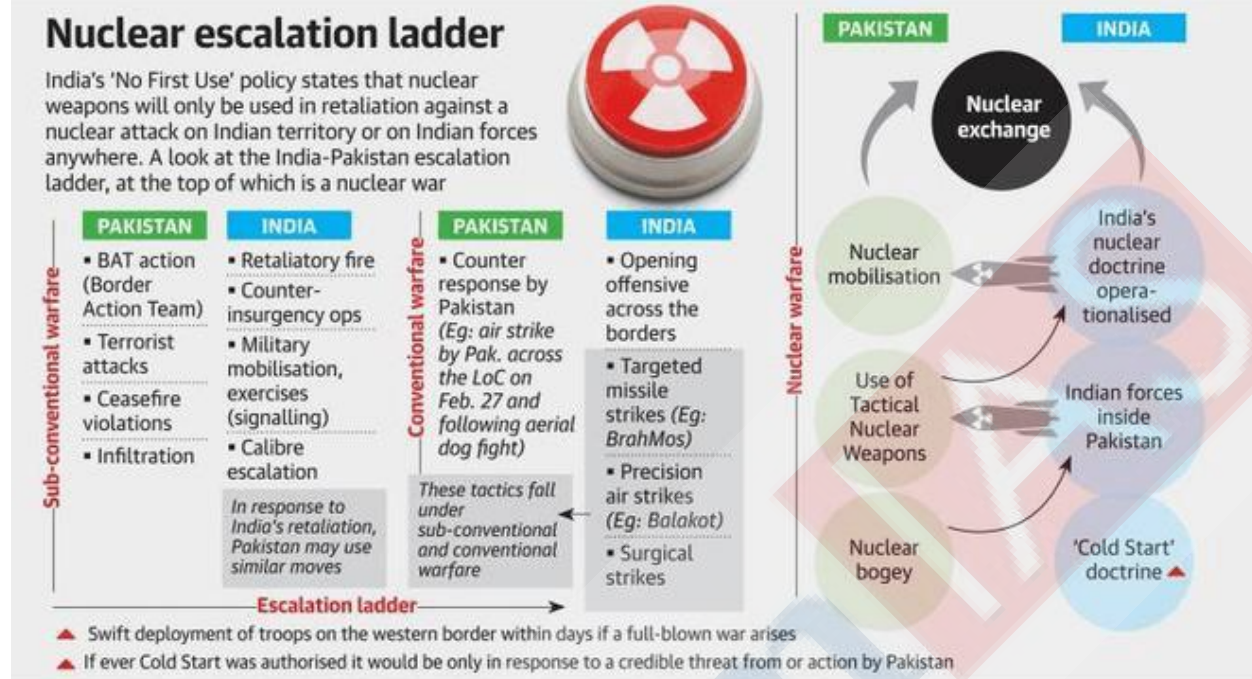
**Origin of India's Nuclear Doctrine:** India's nuclear doctrine originated in the years following its first nuclear test in 1974, which was termed as a 'peaceful nuclear explosion.' However, the real evolution of its nuclear doctrine began after the 1998 nuclear tests, when India declared itself a nuclear weapon state.

**Draft Nuclear Doctrine (1999):** Following the 1998 tests, the National Security Advisory Board (NSAB) of India released a Draft Nuclear Doctrine in 1999. This draft provided the basic framework of India's nuclear policy, emphasizing a policy of 'No First Use' (NFU) and asserting that nuclear weapons would only be used for retaliation against a nuclear attack.

**Official Nuclear Doctrine (2003):** In 2003, the Indian government reviewed and released the official nuclear doctrine. It retained the core principles of the 1999 draft but added more details. The 2003 doctrine emphasized "Credible Minimum Deterrence," reasserted the 'No First Use' policy, and stated that India would not use nuclear weapons against non-nuclear weapon states.

**Current Debates:** Given the evolving regional security environment, especially the growing nuclear capabilities of China and the persisting threat from Pakistan, there are ongoing debates in India about whether changes or clarifications to the nuclear doctrine are necessary. Some argue for a review of the 'No First Use' policy, while others believe that the principle of 'Credible Minimum Deterrence' might need to be reinterpreted in the face of new threats.

## What are the advantages of India's nuclear doctrine?



**Source:** The Hindu

**Credibility and Clarity:** India's nuclear doctrine provides a clear and credible stance on the country's position regarding the use of nuclear weapons. The "No First Use" policy clearly signals that India views nuclear weapons primarily as a deterrent and not as an offensive tool, which contributes to regional stability.

**Promotes peace and stability:** The doctrine, particularly the "No First Use" and "Non-use Against Non-Nuclear Weapon States" provisions, contributes to regional and global peace and stability. These principles assure non-nuclear weapon states that they will not be threatened or attacked with nuclear weapons by India.

**Supports Disarmament Goals:** The "Credible Minimum Deterrence" stance aligns India with global disarmament goals and reduces the chances of a costly arms race.

**Reinforces India's Responsible Image:** The doctrine's principles, especially the "No First Use" policy and "Non-use Against Non-Nuclear Weapon States", reinforce India's image as a responsible nuclear power. This has strategic benefits for India in terms of its international standing and relations with other countries.

**Mitigates the Risk of Accidental Nuclear War:** The doctrine's "No First Use" policy reduces the risk of an accidental nuclear war, as it removes the pressure for a rapid decision to launch in a crisis. This allows for a more measured response, potentially averting catastrophe.

### What are the challenges raised against India's nuclear doctrine?

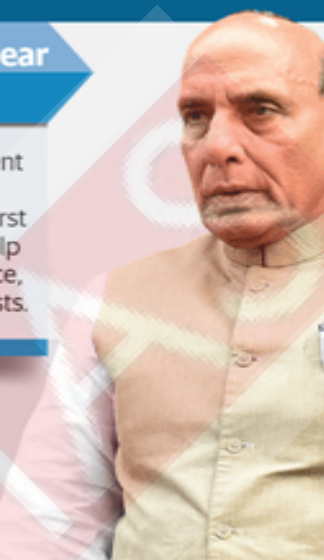
**MINT GRAPHITI**

## NUCLEAR REACTION

The Indian position	The Pakistani doctrine	The new nuclear option
<b>NEW DELHI</b> has held that it will not be the first to initiate a nuclear strike, but will retaliate should deterrence fail.	<b>ISLAMABAD</b> does not espouse a no-first use policy. Its doctrine promises 'massive retaliation' to any aggression.	<b>ADDING</b> an element of flexibility to unconditional no first use posture can help underpin deterrence, according to analysts.

Pokhran witnessed Atalji's firm resolve to make India a nuclear power and yet remain committed to the doctrine of 'no first use'. India has adhered to this. What happens in future depends on the circumstances.

**RAJNATH SINGH**, Defence minister



Source: Live Mint

**Changing Regional Dynamics:** India's nuclear doctrine is being tested by the rapidly changing security dynamics in its region. The modernization and expansion of China's nuclear capabilities pose a significant challenge to India's policy of minimum deterrence. This transformation in the nuclear landscape could potentially strain India's ability to respond effectively in a crisis.

**Pakistani Tactical Nuclear Weapons:** Pakistan's development of tactical nuclear weapons challenges India's NFU policy. The use of such weapons in a limited war scenario could potentially escalate the conflict, putting India in a difficult position given its NFU commitment.

**Credibility of No First Use Policy:** The NFU policy's credibility has also been questioned. Doubts arise about whether India would stick to its NFU commitment if it had reliable information about an imminent nuclear strike. This ambiguity could potentially undermine the doctrine's deterrence value.

**Credibility of Deterrence:** India's commitment to a "Minimum Credible Deterrence" raises questions about whether it possesses enough nuclear weapons to effectively deter potential aggressors, particularly given China's rapid military modernisation and nuclear expansion.

**Lack of Counter-Force Strategy:** India's nuclear doctrine does not explicitly mention a counter-force strategy, focusing on enemy military assets. Critics argue that this could potentially limit India's strategic options in the event of a nuclear conflict.

**Vulnerability to First Strike:** The "No First Use" policy potentially exposes India to a damaging first strike from an adversary. Critics argue that in such a case, India's ability to launch a retaliatory strike could be significantly compromised.

### What are the implications of shifting from the present nuclear doctrine?

**Elevated Regional Tensions:** If India were to abandon its "No First Use" policy, it could escalate tensions in the region, particularly with Pakistan and China, who might interpret such a move as a sign of increased aggression.

**Arms Race:** A shift in India's nuclear doctrine could potentially trigger an arms race, with neighbouring countries feeling the need to expand their own nuclear arsenals in response to India's perceived shift in stance.

**International Reputation:** India has traditionally been viewed as a responsible nuclear state, due in part to its “No First Use” policy and commitment to minimum credible deterrence. Altering this doctrine could tarnish that reputation and lead to international criticism.

**Destabilize the region:** The current doctrine contributes to strategic stability in the region by making it clear that India’s nuclear weapons are purely for deterrence and defensive purposes. A shift in this policy could destabilize the region by creating uncertainty around India’s intentions.

**Resource Allocation challenges:** A change in doctrine, particularly one leading to the expansion of India’s nuclear arsenal, would require substantial financial resources. This could divert funds from other critical areas like conventional military capabilities or economic development.

### What should be done?

**Maintain Strategic Restraint:** India should continue to adhere to its current nuclear doctrine of “No First Use” and “Credible Minimum Deterrence”. These policies have served India well by maintaining regional stability and preserving its international reputation as a responsible nuclear state.

**Engage in Dialogue:** India should engage in regular strategic dialogues with its nuclear-armed neighbours, China and Pakistan. This can help in managing mutual concerns, reducing misunderstandings, and preventing potential conflicts.

**Strengthen Conventional Capabilities:** While maintaining a credible nuclear deterrent, India should also focus on strengthening its conventional military capabilities. This can help deter conventional conflicts that may escalate to the nuclear level.

**Promote Nuclear Disarmament:** India should continue advocating for global nuclear disarmament and non-proliferation. This includes supporting international treaties aimed at nuclear disarmament and urging other nuclear states to adopt “No First Use” policies.

**Enhance Crisis Management Mechanisms:** India should work with other regional actors to enhance crisis management mechanisms. This could include establishing hotlines, conducting joint military exercises, and agreeing on confidence-building measures to prevent accidental escalation during times of crisis.

**Invest in Missile Defense Systems:** To counter the growing threat from China’s modernizing nuclear arsenal, India should invest in developing and deploying advanced missile defense systems. This could offer an additional layer of protection against potential nuclear strikes.

**Cooperate with Allies:** India should continue to cooperate with its allies and partners, such as the United States, to deter potential aggressors. This could involve sharing intelligence, conducting joint military exercises, and coordinating on defence strategies.

**Sources:** Indian Express ([Article 1](#), [Article 2](#) and [Article 3](#)), [The Hindu](#), ORF ([Article 1](#) and [Article 2](#)), [Times of India](#) and [South Asian Voice](#)

**Syllabus:** GS 2: International Relations – India’s Nuclear Policy.

## Supreme Court ruling on administrative services in Delhi – Explained, pointwise

### Introduction

The Supreme Court of India, in a significant ruling, has affirmed the elected Delhi government’s control over administrative services in the National Capital Territory of Delhi (NCTD). The judgment clarifies a long-standing dispute between the Delhi government and the Centre, determining that the Lieutenant Governor (LG) of Delhi is bound by the advice of the Delhi government council in matters of legislative scope. The decision is expected to reshape the dynamics of governance in the capital, making officers more accountable to the elected

government. However, ambiguity remained due to the presence of the National Capital Territory of Delhi (Amendment) Act, 2021.

### What are the issues with the functioning of administrative services in Delhi?

**Control over Administrative Services:** One of the central issues has been the control over administrative services, such as the Indian Administrative Service (IAS). There has been a power tussle between the elected Delhi government and the Central government appointed LG over who holds the authority over these services. This tussle has often led to a deadlock in decision-making, affecting the smooth functioning of the administration. For example, the Delhi government's proposal for doorstep delivery of rations was stalled due to disagreement with the LG over who had the final say in implementing such policies.

**Division of Powers:** The Delhi government does not have full statehood and thus does not have complete control over the police, land, and public order. This division of powers has created operational issues. The Delhi government has often complained that it has limited powers to execute its policies effectively.

**Legislative Ambiguity:** The lack of clarity in the legislative text about the distribution of powers between the Delhi government and the LG has also created problems in the administration. The ambiguity in the reading of Article 239AA of the Constitution, which outlines the powers of the Delhi government, has often resulted in disagreements.

**Political Differences:** Political differences between the elected Delhi government and the Central government have also been a cause for administrative issues. When the two are led by different political parties, as has often been the case, conflicts tend to arise.

**The National Capital Territory of Delhi (Amendment) Act, 2021:** This Act passed by the Central government gave more powers to the LG, leading to power tussle and confusion over decision-making in Delhi's administration.

**Read more:** [NCT of Delhi \(Amendment\) Bill, 2021 is against the Principle of Federalism](#)

### What are the viewpoints of the Centre and Delhi government regarding the administrative services in Delhi?

#### Centre's Viewpoint on Administrative Services in Delhi

**Necessary to have control over administrative services:** The Centre has consistently maintained that Delhi, being the national capital, holds a special status that necessitates the Union having control over administrative services. The Centre argues that the absence of this control would impede its ability to discharge its national and international responsibilities effectively.

**Delhi's ministers have adequate powers:** The Centre also argues that the Delhi government already has sufficient control over the bureaucracy through the Transaction of Business Rules, 1993, which grants Delhi's ministers adequate powers to ensure supervisory and functional control over civil services.

**Delhi's status as a Union Territory:** The Centre further claims that the LG should retain considerable power due to Delhi's status as a Union Territory. The 2021 National Capital Territory of Delhi (Amendment) Act supports this viewpoint by giving the L-G more powers.

#### Delhi Government's Viewpoint on Administrative Services in Delhi

**Need power to implement their policies:** The Delhi government, argue that as an elected government, they should have the power to implement their policies effectively and hold civil servants accountable.

**Article 239AA :** They have contested the Centre's interpretation of the Constitution, stating that Article 239AA gives the Delhi government legislative and executive powers similar to other states, excluding matters of public order, police, and land.

**2021 Amendment Act- overreach by the Centre:** The Delhi government has also contested the 2021 Amendment Act, viewing it as an overreach by the Centre into the administrative affairs of Delhi, and an attempt to undermine the powers of the democratically elected government.

**Limiting LG power:** They believe that the LG should act on the 'aid and advice' of the Council of Ministers, as per the 2018 Supreme Court ruling, and that the L-G's power should not extend to matters within the legislative assembly's scope.

**Read more:** [GNCT of Delhi Amendment Bill 2021 and Supreme Court's Verdict](#)

**About SC ruling on administrative services in Delhi**

**'LG bound by ministers' aid, advice'**

**What the court said**

- 1 The elected government of Delhi has legislative power over the city's 'services' so that it can control officers executing its policies
- 2 It reiterated that the LG is bound by the aid, advice of the government's council of ministers except 'public order', 'police', and 'land'

**What it means**

The state government will be in control of appointing, transferring officers in the Delhi administration, a power so far exercised by the LG

**WHAT HAPPENS NOW**

- 1 Delhi CM Kejriwal has announced that there will be a bureaucratic reshuffle in the Capital. The services secretary was removed on Thursday evening itself.
- 2 Several projects on hold over the past four years or so are likely to now take off

**Source:** Hindustan Times

**Supreme Court's Ruling on Control of Services:** The Supreme Court has ruled that the Delhi government has legislative and executive power over all administrative services in the national capital, except those related to land, law and order, and the police. This means that the elected government in Delhi can now control the bureaucracy and hold civil servants accountable.

**Impact on the 2015 Notification:** The ruling partially overturns a 2015 notification by the Ministry of Home Affairs, which had given control of all services to the LG. This means the LG can no longer exercise unilateral control over all services.

**Role of the LG:** The court has reiterated that the LG is bound by the aid and advice of the Delhi government's council of ministers in matters within the legislative scope of the NCT).

**Enhancement of Democracy and Federalism:** The ruling upholds the principles of democracy and federalism by emphasizing the importance of elected governments and their role in serving the needs of their electorate.

**Read more:** [The Government of National Capital Territory of Delhi \(Amendment\) Act, 2021](#)

### What is the extent of the Delhi government's powers on administrative services?

The Delhi government has legislative and executive power over all administrative services in the NCTD, as per the Supreme Court's ruling. However, this power doesn't extend to matters related to land, law and order, and the police, which remain under the exclusive domain of the Centre. Here's what this means in more detail:

**Control Over Bureaucrats:** The Delhi government now has control over bureaucrats, including the Indian Administrative Service (IAS) officers serving in Delhi, and can hold them accountable for their performance. This includes powers over transfers, postings, and appraisals of these officers.

**Policy Implementation:** The elected government has the authority to direct civil servants in the implementation of its policies. This means that government schemes and initiatives can be executed more effectively.

### What are the implications of the SC ruling on administrative services in Delhi?

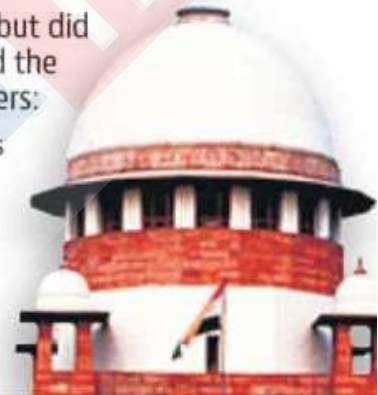
## CONTENTIOUS ISSUES YET TO BE DECIDED

The five-judge SC bench outlined broad constitutional contours but did not go into specifics on certain issues between the AAP govt and the LG. Here are 3 matters that will be tested separately, among others:

**1** MHA's notification that says the LG shall, in matters connected with 'services', exercise powers and discharge functions of the central government to the extent delegated to him

**2** MHA's notification that Delhi's anti-corruption branch shall not take any cognisance of offences against officers, employees and functionaries of Centre

**3** Delhi government's appointment of a commission of inquiry to investigate a CNG fitness scam. The move was declared illegal by the Delhi high court



A big victory for the people of Delhi... a big victory for democracy...

ARVIND KEJRIWAL, Delhi CM



We welcome the decision of the Supreme Court and sincerely hope that better sense will prevail on both sides...

RANDEEP SURJEWALA, Congress



It's a good verdict by the Supreme Court. The LG and Delhi government have to work harmoniously. They can't always have confrontation.

SOLI SORABJEE, Ex-attorney general



If somebody is celebrating a win even after his loss, then his name is Kejriwal

SAMBIT PATRA, BJP spokesperson



**Source:** Hindustan Times

**Empowerment of the Elected Government:** The ruling affirms the power of the elected government in Delhi, enabling it to exercise greater control over the bureaucracy. This should, in theory, allow for more efficient and responsive governance, as the government can directly hold officials accountable.

**Greater accountability of officials:** With the elected government having control over administrative services, officials are expected to be more answerable to the government. This could lead to increased accountability and, potentially, better public service delivery.



**Potential for improved policy implementation:** The elected government's increased control over administrative services could lead to more effective implementation of its policies and schemes, as it now has the power to direct and manage the civil servants responsible for executing these initiatives.

**Continued legal and political debates:** Despite the clarity provided by the Supreme Court's ruling, the power dynamics between the Delhi government, the Lieutenant Governor, and the Central Government may continue to be a subject of legal and political contention, especially given the National Capital Territory of Delhi (Amendment) Act 2021 which gives more powers to the LG.

**Boost to Federalism:** By affirming the powers of the elected government in Delhi, the ruling strengthens the principle of federalism in India. It balances the power between the Centre and the states (or in this case, Union Territory), thereby upholding the spirit of cooperative federalism.

**Precedent for Other Union Territories:** While the ruling is specific to Delhi, it could set a precedent for other Union Territories with legislative assemblies, like Puducherry, potentially leading to a reassessment of the Centre-UT power dynamics.

**Read more:** [The NCT of Delhi Act, 2021 Enhances Cooperative Federalism](#)

#### What should be done?

**Effective Implementation of the Ruling:** All relevant parties, including the Delhi government, the Lieutenant Governor, and the Central Government, should respect and implement the Supreme Court's ruling. This includes empowering the elected government in Delhi to exercise its authority over administrative services.

**Cooperative Governance:** The Delhi government, the Lieutenant Governor, and the Central Government should work cooperatively to ensure smooth and efficient governance in the National Capital Territory. This includes respecting each other's roles and responsibilities as defined by the Constitution and the Supreme Court's ruling.

**Clarification of the NCT of Delhi (Amendment) Act, 2021:** Given the potential for conflict between the Supreme Court's ruling and the provisions of the National Capital Territory of Delhi (Amendment) Act, 2021, further legal clarification may be needed. This could be pursued through the courts or potentially through legislative amendments.

**Increased Accountability Measures:** With the elected government in Delhi now having greater control over administrative services, it should implement robust accountability measures to ensure that civil servants are effectively serving the public interest.

**Ongoing Review:** The implementation and impact of this ruling should be reviewed on an ongoing basis to ensure that it is promoting effective and accountable governance in the National Capital Territory of Delhi.

**Sources:** Indian Express ([Article 1](#), [Article 2](#) and [Article 3](#)), The Hindu ([Article 1](#) and [Article 2](#)), [Hindustan Times](#), [Times of India](#) and South Asian Voice

**Syllabus:** GS 2: Indian Constitution and Polity: Issues and challenges pertaining to the federal structure.

## [Yojana May 2023 Summary] Cybersecurity challenges in the 5G age – Explained, pointwise

### Introduction

The ultra-fast speed of 5G indeed holds the promise of revolutionary changes in communication and Internet consumption. The country is estimated to have over 150 million 5G users by the end of 2024 – a tiny fraction of the current 1.2 billion mobile phone users. This number will expand significantly once the 5G network is progressively deployed in tier-2 and tier-3 geographies. Along with the spread, the cybersecurity challenges in the 5G age will also increase many folds.

### What is 5G Technology?

Read here: [5G Technology](#)

Every few years, a new generation of mobile communications takes shape and is described as 1G, 2G, 3G, 4G networks, and so on. Each of these new generations brings higher data transfer speeds and lower latency rates.

The high speed and low latency of 5G will enable the connected devices to communicate in real-time, offering better and more reliable performance. This will benefit household purposes (such as IoT-enabled smart homes) and the industrial sector (for example, smart factories and automated manufacturing). According to one study, by 2035, 5G will enable USD 13.2 trillion of global economic output and support 22.3 million jobs.

5G will subsequently impact edtech, autonomous and robotic systems, telemedicine and precision agriculture.

### What are the benefits of 5G technology?

Must read: [5G Impact: Traffic To Teaching, Factories To Farming](#)

### What are the geopolitical fights associated with 5G technology?

**Commercial motives:** Leading tech-powered nations have strived to attain the ‘first mover’ advantage in 5G technology. So, major world telecom leaders may have taken the lead in developing 5G technology. For instance, Chinese telecom companies have been aggressively penetrating new markets by commercialising the technology and offering it at cheaper rates.

**The Chinese threat:** There are apprehensions that China might **weaponise 5G technology** by coercing the Chinese telecom companies to share their consumer data with the government or even force them to shut down 5G networks in times of geopolitical tumult.

Various instances and allegations of Chinese telecom companies **engaging in cyber espionage in many countries** have only reinforced these concerns. For example, the Australian government report on Papua New Guinea’s National Cyber Security Centre built by China said that the project had multiple cybersecurity issues, which exposed confidential government data.

**The US counter on China:** The United States has spearheaded a campaign to counter the Chinese telecom companies’ dominance in the 5G market. For instance, the US government has designated Huawei and ZTE as national security threats and also banned the sale and import of new communications equipment from five other Chinese companies. Further, the US has also persuaded its allies not to use Chinese equipment in their domestic 5G networks.

**Democratic states and authoritarian regime fight:** There have been efforts to bring together like-minded and leading democratic states to jointly tackle the tech challenge posed by authoritarian regimes such as China and Russia. For example,

–**The idea of D-10:** The former UK Prime Minister floated the idea of D-10, a coalition of ten democracies, to create an alternative supply chain for 5G and other emerging technologies.

-The **Quadrilateral Security Dialogue**, or the **Quad** has pledged to advance interoperability and security and work on 5G supplier diversification and Open RAN technology.

On the other hand, authoritarian regimes are pursuing emerging technologies beyond 5G.

**Read more:** [5G technology in India – importance, challenges and solutions](#)

**What are the potential cybersecurity challenges in the 5G?**



**Source:** Yojana

With 5G there will be an increased tendency among threat actors to target critical national infrastructure.

5G will play in a crucial role in national development and economic growth. So, it can undoubtedly be regarded as a critical infrastructure. Hence, 5G communication networks will represent a valuable target for cyberattacks, including sabotage.

Threat actors will exploit **several vulnerabilities of the 5G network** and ecosystem. Such as,

- a)** Due to the complexity of technology, there are **many moving parts in the 5G ecosystem**. This raises uncertainty about the resilience of each of those parts. For instance, If some systems in the network are not fully patched, they can potentially act as the weakest link in cyber defence.
- b)** Due to the higher speeds and enhanced capacity, 5G requires more access points and network edges, where the local network or device connects with the internet. This shifts much of the **core network functions closer to the end user**, making it challenging to enforce the requisite security compliance and ensure trusted third-party vendors.

c) There are **mixed types of networks** — 5G systems with legacy systems such as 4G. This also exposes the 5G network to the vulnerabilities of previous-generation networks.

d) Unlike 4G, 5G have a much smaller area of coverage. Hence, they require several smaller antennas and base' stations. This can allow precise location tracking of mobile phone or internet users inside and outside, thereby **increasing privacy risks**.

e) The 5G network will bring about a wider proliferation of **IoT-enabled devices**. According to one estimate, by 2025, there will be approximately 27 billion connected IoT devices. This magnifies the threat canvas, as these devices will offer new malware and botnet distribution vectors.

These will bring increased avenues for attacks such as Distributed Denial-of-Service attacks or Man-in-the-Middle attacks. For example, in 2016, the Mirai botnet exploited unsecured IoT devices' vulnerabilities to disrupt the functioning of thousands of routers, security cameras, and digital video recorders.

f) 5G **inherits the vulnerability from previous generation protocols**, i.e., threat actors can get hold of the International Mobile Subscriber Identity (IMSI)

**Note:** The IMSI number is used to identify and authenticate subscribers on the mobile network.

By seizing the IMSI, threat actors can intercept mobile traffic in a defined area to monitor an individual user's activity, including tracking location and intercepting calls.

**Read more:** ["5G Technology" roll-out in India](#)

#### What needs to be done to limit the cybersecurity challenges in the 5G?

5G will require an enhanced focus on the security of the connections, devices, and applications.

**Explore next-generation technologies:** Leading tech companies and global partnerships have already started exploring next-generation technologies. For instance, The **Quad countries** have announced plans to **collaborate on space-based 6G** to ensure that security-by-design and best cybersecurity practices are incorporated as the technology takes shape.

China is also formulating plans to advance research and innovation in 6G technologies.

**Formulate a cyber resilience plan:** 5G technology and network are not secure by design. So, countries adopting 5G, including India, must have a dedicated cyber resilience plan in place.

**Constant update of policies:** the cyber and information-security policies of the 5G network ecosystem must adopt adequate security protocols. This will need constant updating and upgrading since threat actors continue exploiting emerging vulnerabilities.

**Enhance awareness of end-user:** End users' cyber hygiene — their understanding of safe practices in cyberspace — can help them better tackle the threats and protect themselves. So, the government should take steps to increase awareness among end user.

**Source:** Yojana

**Syllabus:** GS 3: Security Issues: basics of cyber security.

### Tiger translocation project: Need and significance – Explained, pointwise

#### Introduction

The Tiger Translocation Project in India, the country's first interstate endeavour, aimed to bolster the tiger population in Odisha's Satkosia Tiger Reserve. This involved moving tigers from well-populated reserves in Madhya Pradesh, like Bandhavgarh and Kanha. However, the project faced significant hurdles, and the relocated tigers couldn't adapt to their new habitat. Despite these challenges, the project remains a crucial learning experience, emphasising the need for strategic conservation efforts to protect India's rich biodiversity.

**About the Tiger Translocation project**

Launched in 2018, the Tiger Relocation Project aimed to boost Odisha's Satkosia Tiger Reserve's tiger population. Two tigers, Mahavir from Kanha and Sundari from Bandhavgarh in Madhya Pradesh, were moved to Satkosia.

The project had two goals: **a)** to lessen territorial conflicts by reducing tiger numbers in overcrowded areas, and **b)** to reintroduce tigers in regions where their populations had dwindled. The project, titled "Augmentation and Recovery of Tiger Population in Satkosia Tiger Reserve," had a budget of Rs 19 crore. The plan was to move six tigers (three pairs) from various Madhya Pradesh reserves to Odisha. So far, the National Tiger Conservation Authority (NTCA) has spent Rs 8 crore of the total budget.

*Note: Recently, India has inked a memorandum of understanding with Cambodia "on biodiversity conservation with a special focus on tiger reintroduction in Cambodia."*

**Read more:** [Tiger – Endangered Species](#)

**What is the need for the Tiger translocation project?**

**Overpopulation:** The need for tiger translocation arises when certain tiger reserves face overpopulation. This overpopulation can lead to insufficient prey and territorial disputes among tigers, thus causing a threat to their survival. For example, in some reserves of Madhya Pradesh, the surplus population of tigers created a need for relocation.

**Declining Tiger Populations:** Tiger translocation is needed when certain regions experience a significant decline in their tiger populations due to reasons like poaching, habitat loss, and human-animal conflict. In such cases, introducing new tigers can help rebuild the population. This need was clearly seen in the case of the Satkosia Tiger Reserve in Odisha, where the tiger population had dwindled to only two by 2018.

**Rising Human-Tiger Conflicts:** In areas with high tiger density, instances of human-tiger conflicts often increase. This creates a need for tiger translocation to other areas with fewer tigers to reduce these conflicts and protect both human and tiger lives. This need was prevalent in areas like the Kanha Tiger Reserve in Madhya Pradesh, where high tiger populations led to increased human-tiger interactions.

**Ecosystem Imbalance:** One need for tiger translocation is to restore the balance within ecosystems. Tigers are apex predators, and their presence helps maintain the health of the entire ecosystem by regulating prey populations. Translocating tigers to areas with diminished populations can help restore the balance and prevent potential imbalances caused by overpopulation of prey species.

**Read more:** [Explained: How many tigers are too many](#)

**What are the reasons behind the failure of India's first tiger translocation project?**

The failure of India's first tiger relocation project, involving the translocation of tigers from Madhya Pradesh to the Satkosia Tiger Reserve in Odisha, was attributed to a number of factors:

**Lack of Community Engagement:** A key reason was the lack of effective engagement with local communities. The villagers living on the fringes of the reserve were not adequately consulted or informed prior to the translocation. This resulted in severe protests as villagers feared that the tigers would threaten their lives, livestock, and livelihoods.

**Inadequate Preparations and Planning:** The translocation was reportedly done in haste, without adequate preparation. The capacity for tiger monitoring was poor, and protection measures were not up to the mark. This left the relocated tigers vulnerable to threats like poaching and human-tiger conflict.

**Territorial Disputes:** The presence of an existing tigress in the Satkosia reserve led to territorial disputes. The new tigress, Sundari, was chased away from the core area of the reserve and ended up venturing into human habitation, leading to increased human-tiger conflict.

**Poaching and Human-Tiger Conflict:** Within months of the translocation, one of the relocated tigers, Mahavir, was found dead due to poaching. Sundari, the relocated tigress, allegedly mauled two villagers to death, leading to her tranquilization and eventual return to Madhya Pradesh.

**Relocation of Local Villages:** The translocation was also complicated by the displacement of local villagers from their homes within the reserve. This sparked opposition and led to additional conflicts between the reserve's management and the local communities.

**Read more:** [Tiger Reserves in India \(Updated 2023\)](#)

#### **What are the advantages of the Tiger translocation project?**

**Preserving Genetic Diversity:** Translocation can also help maintain genetic diversity among tiger populations. Introducing new tigers into a different population can bring new genetic material, reducing the risks associated with inbreeding and helping to maintain a healthy and diverse tiger gene pool.

**Promoting Ecotourism:** Tigers are a major draw for ecotourism, which can bring significant economic benefits to local communities. By increasing tiger populations in certain areas through translocation, these projects can help boost local economies by attracting tourists.

**Educational Opportunities:** Such projects provide excellent opportunities for research and learning about tiger behaviour, ecology, and conservation needs, which can be useful for future conservation strategies.

**Inspiring Conservation Efforts:** Successful translocation projects can inspire and inform similar conservation efforts for other species, contributing to broader biodiversity conservation goals.

**Read more:** [What numbers do not reveal about tiger conservation](#)

#### **What are the lessons learnt from the Tiger translocation project?**

**Engaging Local Communities is Essential:** The hostility of local communities to the relocated tigers was a significant factor in the failure of the Satkosia project. Future projects must prioritize building trust with local communities, clearly communicating the benefits of the project, and addressing their concerns.

**Robust Monitoring and Protection Measures are needed:** The death of Mahavir due to poaching underlines the need for strong protection and monitoring mechanisms. Future projects must ensure robust anti-poaching measures and continuous monitoring of the relocated tigers.

**Consideration of Tiger Behavior and Habitat Suitability:** The fact that Sundari shows that understanding tiger behaviour and careful selection of release sites is crucial. Future projects should prioritize areas that can sustain additional tigers and avoid human-tiger conflict.

**Preparedness of the Field Staff and Management:** Future projects must ensure that all involved parties are well-prepared and trained to handle the challenges of such a complex operation.

**Clear and Coordinated Inter-State Cooperation:** The prolonged process of relocating Sundari back to Madhya Pradesh due to lingering between the two states suggests that clear protocols and strong cooperation between states are required for the smooth execution of inter-state translocation projects.

#### **What should be done?**

**Strengthening Monitoring and Protection Measures:** More robust measures need to be put in place to safeguard relocated tigers. These could include increased patrolling, the use of technology like GPS tracking collars, and stricter anti-poaching laws.

**Training Field Staff and Management:** Field staff and management need to be adequately trained to handle the challenges associated with tiger translocation. They should be prepared to monitor and protect the relocated tigers and manage any issues that arise.

**Prioritizing Voluntary Relocation of Villages:** Where possible, voluntary relocation of villages from core tiger habitats should be prioritized. This will help in creating inviolate spaces for tigers and reducing instances of human-tiger conflict.

**Read more:** [Increasing tiger population in India and government initiatives – Explained, pointwise](#)

**Sources:** [The Hindu](#), [Indian Express](#), [DTE](#), The Times of India ([Article 1](#) and [Article 2](#)), [Financial Express](#) and [Hindustan Times](#)

**Syllabus:** GS 3 – Environment and Bio-diversity: Conservation