# ForumIAS

## 7 PM COMPILATION

### 3rd and 4th Week Jan, 2025

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## Social and Political Impacts of AI- Explained Pointwise

Recently, the Ministry of Electronics and Information Technology (MeitY) has released the "Report on AI Governance Guidelines Development," for public consultation. This report addresses India's need for robust and inclusive AI governance, emphasizing on innovation and ethical use of AI technologies. India has launched IndiaAI mission to integrate AI in governance. In this article, we will analyse the social and political impacts of AI.



### What is artificial Intelligence?

**Artificial Intelligence-** Artificial intelligence is intelligence demonstrated by machines. AI is a discipline which focuses on formulating theories and methodologies for constructing machines that emulate human thought processes and behaviours.

Generative AI is a subset of Artificial intelligence which is being increasingly used with wide ranging social and poitical impacts.

**Generative AI-** Generative AI is a type of artificial intelligence technology that can produce various types of content, including text, imagery and audio. The term 'Generative' refers to the ability of the models to create new data based on certain input parameters. **For ex-** A generative model is used to generate facial images by providing a set of parameters such as the eyes, hair, or skin colour etc.

### What are the positive and negative political impacts of artificial Intelligence?

### Positive impacts

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**1. Innovative Policy Development-** AI is being increasingly used in innovative policy development. **For ex-** AI-drafted bills in the US Congress is an example of AI's use in legislative drafting.

**2. Enhanced Political Messaging-** AI is being used to craft resonant political messages through advanced analytics, which is revolutionizing campaign strategies.

**3. New Political Platforms-** AI is being used as a platform for political engagement and political ideological development. **For ex-** Denmark's Synthetic Party using AI Chatbox to shape its political ideology.

**4. Economic Contributions-** AI-driven fundraising and business ventures marks a significant shift in political finance dynamics.

**5. Campaign Strategies-** Generative AI is being used extensively in electoral campaigns, such as live translation of election speeches into multiple languages.

**Negative Impacts**

**1. Promotion of 'Liar's Dividend' through Deepfakes**– Liar's Dividend refers to the situation when an undesirable truth is dismissed as deepfake or fake news. Political leaders have been weaponising deepfakes generated through AI, to replace an actual piece of media and truth. **For Ex-** Donald Trump's deepfake videos blur the line between reality and fake. People start dismissing reality as fake.

**2. Erosion of trust in democratic processes like elections-** Doctored content, most likely in the form of a realistic fake video, is presented as fact to alter public perception and create democratic deficit. **For Ex-** Capitol Hill violence, 2021 was incited by using deep fake media.

**3. Manipulation Risks-** There are concerns about AI swaying elections and public opinion through the spread of false political narratives.

**4. Ethical and Legal Challenges-** The acceptance of AI-generated political contributions or parties raises complex ethical and legal questions about AI's role in democratic processes.

**What are the positive and negative Social impacts of AI?**

**Positive Impacts**

**1. Improving Healthcare System-** AI has the potential to revolutionize the healthcare sector by improving the accuracy of diagnosis. **For ex-** Conversion of X-ray or any CT scan images to real images can improve the accuracy of diagnosis.

**2. Boost to Agriculture-** AI enables precision agriculture, improving crop productivity by providing accurate agronomic and weather data. This is crucial for meeting the needs of a growing population.

**3. Creating empathy for people of War torn regions-** Projects like the Deep empathy project of MIT and UNICEF has been increasing empathy for victims of a disaster region by creating AI-images of war-torn regions like Syria, Yemen.

**4. Voice restoration-** The technology is being used to restore the voices of patients suffering from amyotrophic lateral sclerosis. **For ex-** Launch of various 'Voice cloning initiatives'.

**5. Use in the field of creative art and Entertainment-** The deepfake technology can be used to improve the dubbing of foreign language, films and resurrect dead actors. **For ex-** Samsung artificial intelligence lab in Moscow bringing Monalisa to life by using deep fake technology.

**Negative Impacts**

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**1. Crime against women-** The deepfakes generated through AI are being used as a weapon to attack women dignity and chastity. According to AI company Deeptrace report, over 90% of the deepfake videos are pornographic in nature.

**2. Fuelling Radicalisation and violence-** The non-state actors like ISIS and Al-Qaeda, use fake videos to stir anti-state sentiments among people. **For Ex-** Fake videos showing armed forces committing 'crimes in conflict areas'.

**3. Threat of Job Losses-** There are fears of job losses due to the use of AI technology, which can prove to be more cost-efficient and productive to firms as compared to human capital. **For ex-** Customer service jobs are under threat from the AI chatboxes (Zomato's Zia).

**4. Data Privacy Concerns-** AI's ability to analyze vast amounts of data raises significant concerns over data protection, cybersecurity, and privacy.

**5. Environmental Concerns-** AI systems require a lot of computing power, which have grave implications for the environment. **For ex-** According to analysts, training a transformer model just once with 213 million parameters can emit carbon emissions equivalent to 125 flights between New York and Beijing.

**What is the status of regulation of AI in India and across the globe?**

**India**

**a. Digital India Framework-** India is developing a comprehensive Digital India Framework that will include provisions for regulating AI. The framework aims to protect digital citizens and ensure the safe and trusted use of AI.
**b. National AI programme-** India has established a National AI Programme to promote the efficient and responsible use of AI.
**c. National Data Governance Framework Policy-** India has implemented a National Data Governance Framework Policy to govern the collection, storage, and usage of data, including data used in AI systems. This policy will help ensure the ethical and responsible handling of data in the AI ecosystem.
**d. Draft Digital India Act-** The Ministry of Information Technology and Electronics (MeitY) is working on framing the draft Digital India Act, which will replace the existing IT Act. The new act will have a specific chapter dedicated to emerging technologies, particularly AI, and how to regulate them to protect users from harm.

**Rest of the World**

**a. European Union-** The European Union is working on the draft Artificial Intelligence Act (AI Act) to regulate AI from the top down.

**b. United States-** The White House Office of Science and Technology Policy has published a non-binding Blueprint for the Development, Use, and Deployment of Automated Systems (Blueprint for an AI Bill of Rights), listing principles to minimize potential harm from AI.

**c. Japan-** Japan's approach to regulating AI is guided by the Society 5.0 project, aiming to address social problems with innovation.

**d. China-** China has established the "Next Generation Artificial Intelligence Development Plan" and published ethical guidelines for AI. It has also introduced specific laws related to AI applications, such as the management of algorithmic recommendations.

**What Should be the Way Forward?**

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**1. De-biasing while training the AI-** We must ensure fairness of the information which is being fed into the system, to ensure that AI doesn't perpetuate or amplify social biases, like gender and racial biases.

**2. Transparency of information-** Users should have transparent information about the limitation and risks of AI.

**3. Privacy protection-** The user data and confidentiality must be protected to ensure user privacy. **For ex-** Strict implementation of data protection laws.

**4. Ethical use of AI-** We must ensure that AI is used only for beneficial purposes. The push must be made towards universal adoption of the Bletchley Declaration by all the countries.

Ai has the potential to give society intelligent guidance on how to approach some of the biggest problems, like climate change and pandemics. In the coming times, AI will contribute to longer, healthier, and more fulfilling lives worldwide if used responsibly.

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## The State of Indian Startup Economy- Explained Pointwise

**India's startup ecosystem** has experienced phenomenal growth, becoming the world's third-largest hub for innovation with over 1,30,000 startups today compared to 400 in 2015-16. As per India Startup Ecosystem Report 2024, India is the 3rd largest startup ecosystem in the world with 117 Indian unicorns, only behind the United States & China.



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**What have been the drivers of the startup ecosystem in India across sectors?**

India's thriving startup ecosystem is driven by a combination of policy support, technological advancements, market dynamics, and entrepreneurial culture. These drivers enable startups to innovate, scale, and address challenges across various sectors.

**1. Economic Liberalization and Policy Support-** Liberalized economic policies (Make in India, Digital India and PLI) and initiatives like Startup India provide a conducive environment for startups. **For ex-** Startup India Action Plan offers tax exemptions, seed funding, and easier compliance norms, fostering innovation and EODB across sectors.

**2. Rising FDI-** Foreign investor enthusiasm towards India is high due to the country's stable and open business climate, favorable government policies, and a growing consumer market. **For ex-** In the last financial year, India recorded higher foreign direct investments than China.

**3. Advancements in Technology-** Emergence of AI, IoT, blockchain, and cloud computing allows startups to develop cutting-edge solutions. **For ex-** CRED uses AI for credit card payment management and customer loyalty programs.

**4. Power Law In Consumer Internet-** Power Shoppers in India are individuals who place 50 or more orders per year on ecommerce platforms. **For ex-** Power shoppers make 2% of India's total internet users.

**5. Digital Revolution and Internet Accessibility-** Affordable internet and smartphone adoption have expanded markets for digital services. **For ex-** Jio Effect i.e., Jio's digital revolution provided internet access to millions, enabling startups like Meesho to reach rural customers.

**6. Demographic Advantage-** A young, tech-savvy population fosters demand for innovative solutions and entrepreneurial ventures. **For ex-** Startups like Unacademy leverage the aspirations of India's youth for competitive exam preparation.

**7. Market Potential and Consumer Demand-** A large and diverse market with rising middle-class income drives sectoral innovation. **For ex-** OYO Rooms capitalized on growing demand for affordable travel accommodations.

**8. Corporate and Academic Collaboration-** Partnerships with corporates and academia accelerate R&D and innovation. For ex- Google's Startup Accelerator India supports AI and sustainability-focused startups.

**What is the significance of startups in India across sectors?**

Startups are vital to India's economic and social transformation, driving innovation, employment, and technological progress across multiple sectors.

**1. Economic Growth and Job Creation-** Startups contribute directly to GDP through innovation-driven productivity and indirectly by fostering ancillary industries. **For ex-** Investment of USD 140 billion, ~4% of India's GDP in FY23. Startup India, DPIIT-registered startups create 12.4 lakh direct jobs.

**2. Technology and Digital Transformation-** Startups drive the adoption of emerging technologies like AI, IoT, blockchain, and cloud computing. **For ex-** Zoho Corporation, an Indian SaaS company, empowers global businesses with innovative software solutions.

**3. Financial Inclusion and FinTech Revolution-** Startups enhance financial accessibility and digital payments especially in rural and underserved areas. **For ex-** Paytm revolutionized digital payments in India, while Razorpay simplified payment systems for small businesses.

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**4. Healthcare Innovation-** Startups improve healthcare accessibility, affordability, and efficiency through telemedicine, diagnostics, and AI-driven tools. **For ex-** Practo offers online doctor consultations, and Cure.fit focuses on preventive healthcare and fitness solutions.

**5. Agriculture and Rural Development-** Agritech startups enhance productivity and sustainability through AI, IoT, and data analytics. **For ex-** DeHaat connects farmers with markets, and Ninjacart streamlines the agri-supply chain.

6. Education and Skilling- EdTech startups bridge educational gaps by offering accessible and quality learning solutions. **For ex-** Byju's delivers online learning content, and Unacademy democratizes exam preparation.

**What are the challenges for Startups in India?**

**1. Bootstrapping Challenges and Seed Capital Scarcity**

**a. Limited Early-Stage Funding-** Many startups struggle to secure seed funding, especially in Tier-2 and Tier-3 cities. **For ex-** Despite its innovative approach, startups "Local Banya" shut down.

**b. Angel Drought-** Heavy reliance on venture capital (VC) and private equity (PE) often results in startups losing autonomy over business decisions, lack of angel investors. **For ex-** KisanHub struggles to secure seed funding despite addressing critical rural issues.

**c. Startup Winter-** In 2023, the Indian startup ecosystem saw a staggering 67% drop in funding compared to the previous year.

**d. Disproportionality-** Ecommerce accounted for one-fourth of the funding raised by indian startups since 2014. The top three sectors (ecommerce, fintech, and enterprise tech) accounted for 52% of the total investment poured into Indian startups.

**2. Regional Concentration-** Startup capital, Bengaluru accounts for almost 50% of total Indian startup funding since 2014. The top three hubs (Bengaluru, Delhi NCR, and Mumbai) accounted for 89% of the total investment.

**3. Regulatory and Compliance Burdens**

**a. Complex Tax Structures-** Frequent changes in GST regulations and unclear compliance norms create hurdles. For ex- Changing GST implications on delivery charges.

**b. Regulatory Misalignment-** Despite improvements policy bottlenecks, regulatory uncertainty, bureaucratic red tape and approval delays remain significant in EODB. **For ex-** Startups in the fintech sector, like PayU, face regulatory hurdles around data localization and KYC compliance.

**4. Talent Acquisition and Retention**

**a. Brain Drain-** There's a shortage of highly skilled professionals, especially in niche tech niche areas of AI, blockchain, and data science. **For ex-** In Bangalore there's a massive shortage of peeps skilled in advanced AI tech.

**b. Attrition Rates-** High competition/ hiring wars for skilled employees leads to frequent job-hopping, affecting team stability.

**5. Innovation & Technology**

**a. Innovation Inertia:** Resistance to new technologies.
**b. Tech Talent Tussle:** Competition for skilled developers.

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**c. Data Desert:** Limited access to quality market data.
**d. Scale Scarcity:** Difficulties in scaling technology.

**6. Market Competition and Saturation**

**a. Overcrowding:** Popular sectors like e-commerce, food delivery, and fintech are crowded, leading to price wars and unsustainable growth models. E.g. Collapse of "Zeppery and Dunzo" a food delivery startup, due to intense competition from Swiggy and Zomato.
**b. Competitive Impropriety:** Startups often face challenges from established international players with deep pockets and an unfair competitive edge.
**c. Corporate Governance Issues:** Recent mismanagement (e.g., Byju's, Dunzo) underscores the need for self-regulation, transparency, and ethical conduct.

**7. Infrastructure and Technological Barriers**

**a. Deep Tech Innovation Crunch:** While India excels in creating innovative business models, it lags in deep tech innovations. E.g. R&D spending in India remains low at 0.7% of GDP in 2023, compared to 3.5% in the US.
**b. Rural Digital Divide:** Startups in rural or semi-urban areas struggle with slow internet speeds and unreliable connectivity. E.g. Agri-tech startups face difficulties in scaling due to poor rural digital penetration.
**c. Tech Adoption Resistance:** Small businesses and rural consumers are hesitant to adopt new technologies.

**8. Customer Acquisition and Retention**

**a. High CAC (Customer Acquisition Cost):** Startups often burn cash on aggressive marketing campaigns without guaranteed long-term retention. E.g. Budget-conscious Indian consumers switch platforms frequently, causing high churn rates.
**b. Consumer Trust Issues:** Many startups struggle to build credibility, particularly in new or unfamiliar markets.

**9. Scaling and Sustainability**

**a. Profitability Paradox & Unsustainable Growth Models:** Many startups prioritize rapid growth over sustainable profitability, leading to cash flow issues. E.g. "**Housing.com**" faced financial instability.
**b. Operational Inefficiencies:** Scaling operations across different regions with varying consumer behavior and regulations is complex.
**c. Copycat Competition:** Rapid imitation of successful models.

**10. Cultural and Societal Barriers**

**a. Risk Aversion:** Indian culture traditionally values job security, making entrepreneurship less appealing.
**b. Diverse Consumer Base:** Catering to a wide range of cultural, linguistic, and economic backgrounds requires significant customization.
**c. Distribution Desert:** Difficulties reaching Tier 2/3 cities.

**What should be the way forward?**

**S: Support:** Increase funding, improve infrastructure, and provide strong mentorship. E.g. Karnataka ELEVATE program selects top startups for government-funded growth

**T: Talent:** Develop skilled talent and attract global expertise. E.g. Startup Maha-Kumbh.

**A: Accelerate:** Foster innovation through R&D, IP protection, and collaboration. E.g. Startups Intellectual Property Protection (SIPP).

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**R: Reform:** Streamline regulations and improve ease of doing business. E.g. SISFS.

**T: Transform:** Leverage technology for digital transformation and inclusivity. E.g. Maharashtra State Innovative Startup Policy.

**U: Uniqueness:** Focus on unique solutions and foster a culture of risk-taking. E.g. ANIC 2.0.

**P: Promote:** Celebrate success, build a strong brand, and foster a positive ecosystem. E.g. Design Linked Incentives (DLI) scheme for semiconductors.

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## India's Maritime Atmnirbharta- Explained Pointwise

On January 15, 2024, Prime Minister Narendra Modi presided over the commissioning of three naval platforms—**INS Surat (destroyer), INS Nilgiri (frigate),** and **INS Vagsheer (submarine)**—built at **Mazagon Docks**, marking a historic milestone in India's quest for maritime self-reliance **(Atmanirbharta).**

The **Indian Navy's Swavlamban initiative** reflects a commitment to **Atmanirbhar Bharat (self-reliance),** emphasizing innovation and indigenization in defense manufacturing. This aligns with India's broader aspirations of reducing dependency on imports while leveraging domestic capabilities to add value and boost exports.



Source- Naval News

**What is the present status of India's maritime atmnirbharta?**

The Indian Navy's present force level comprises about 150 ships and submarines with 60 large Navy ships, valued around Rs 1.5 trillion, are under construction. India's naval force has made significant strides in domestic production, showcasing a growing reliance on indigenous capabilities. Domestic production for India's Navy includes:

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**1. Indigenous Warship and Submarine Production:**

**a. Warships:** 60 warships and vessels are currently under construction in Indian shipyards, including the Mazagon Dock Shipbuilders Limited (MDL), Garden Reach Shipbuilders and Engineers (GRSE), and Goa Shipyard Limited (GSL). Notable projects are:

**INS Vikrant:** India's first indigenous aircraft carrier, commissioned in 2022.

**Project 15B (Visakhapatnam-class destroyers):** Advanced stealth destroyers being built domestically.

**Project 17A (Nilgiri-class frigates):** Guided missile frigates equipped with state-of-the-art systems.

**b. Submarines:**

**Advanced Technology Vessel (ATV) Project:** Launched in the 1980s and marked India's place in designing and building nuclear-powered submarines, leading to the creation of the Arihant-class submarines.

**INS Arihant and Arighat:** India's indigenous nuclear-powered submarine.

**Kalvari-class submarines (Scorpene):** Built under Project 75 at MDL in collaboration with France, with six submarines inducted/planned.

**2. Indigenous Weapons Systems:**

**BrahMos Missiles:** Jointly developed with Russia and domestically produced; equipped on many Indian Navy ships.

**Varunastra Torpedo:** Indigenously developed heavyweight torpedo used in anti-submarine warfare.

**DRDO-developed missiles and systems:** Advanced missile systems like Barak-8 and underwater surveillance systems.

**3. Indigenous Sensors and Electronics:**

Development of **Combat Management Systems (CMS)** and **radar systems** such as the Rohini radar and Revathi radar, enhancing the Navy's self-reliance.

**Sonars:** Indigenous sonars like HUMSA-NG are deployed on Indian Navy ships and submarines.

**4. Aircraft and UAVs:**

**Naval Tejas:** Efforts are ongoing to operationalize an indigenous Light Combat Aircraft (LCA) for carrier-based operations.

**Dornier 228 Aircraft:** Locally produced multi-role aircraft for maritime patrol.

**Rustom UAV:** Indigenous unmanned aerial vehicles are under development for surveillance purposes.

**What have been the key steps towards maritime atmnirbharta?**

**1. Strategic Vision and Initiatives:** SAGAR (Security and Growth for All in the Region) framework emphasizes an open, secure, and inclusive Indo-Pacific, with India as a first responder in the Indian Ocean.

**2. Evolution of Self-Reliance:**

**Make-in-India (2014)** aimed at attracting foreign manufacturers to set up operations in India for job creation, skill development, and technology transfer.

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**Atmanirbhar Bharat** expands this vision to foster domestic manufacturing (indigenization) and ensure India's capacity to add value to necessary imports.

### 3. Navy's Success in Indigenization:

Since the 1960s, the Navy has indigenously designed 19 warship models and built 121 ships and submarines.

It has developed advanced systems like propulsion mechanisms, sonar, electronic warfare suites, fire control systems, and more, many of which are exported as "world-class" products.

### 4. Focus on Technology & MSMEs:

The Navy's 15-year Science and Technology Roadmap emphasizes cutting-edge areas like AI, robotics, hypersonic missiles, and bio-technical weapons. E.g. DPSUs and MSMEs Collaboration.

MSMEs and start-ups play a crucial role in creating disruptive technologies and supporting special operations. E.g. Green Channel Policy.

### 5. Collaborations & Innovation Structures:

The Navy has established the Naval Indigenisation and Innovation Organisation (NIIO), the Naval Technology Acceleration Council (N-TAC), and vendor-development programs to facilitate partnerships with academia, industry, and global players.

Initiatives like IN STEP engage students to work on naval problem statements.

**What are the needs of maritime atmnirbharta?**

**1. National Security and Strategic Autonomy:**

Dependence on foreign suppliers for maritime defense equipment creates vulnerabilities in times of conflict or geopolitical tensions. **E.g.** Development of the INS Arihant.

Indigenous capabilities ensure India can maintain and deploy its naval assets without external constraints. **E.g.** Nuclear Triad.

**2. Economic Growth and Cost-Effectiveness:**

Developing indigenous shipbuilding and defense technologies reduces reliance on costly imports. E.g. Defense Manufacturing Hubs.

Strengthens India's economy by generating employment, boosting local industries, and fostering innovation. E.g. Construction of warships like the INS Kamorta (anti-submarine warfare corvette) in Kolkata.

**3. Maritime Domain Awareness:**

Advanced, locally developed surveillance systems enable India to better monitor its vast coastline, Exclusive Economic Zone (EEZ), and the Indian Ocean Region (IOR).

Indigenous systems provide better adaptability to India's specific maritime needs. E.g. PierSight's Varuna.

**4. Global Influence and Soft Power:**

A self-reliant maritime industry enhances India's credibility as a regional and global power.

Strengthens partnerships by exporting ships, submarines, and technologies to friendly nations. E.g. Export of OPVs (Offshore Patrol Vessels).

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**5. Aligning with Atmanirbhar Bharat Vision:** Developing indigenous capabilities supports India's broader goal of self-reliance across sectors, reducing dependence on imports. E.g. Construction of the INS Vikrant under Make in India and Defence Acquisition Procedure (DAP) 2020.

**6. Preparedness for Non-Traditional Threats:** With growing challenges such as piracy, terrorism, and climate change, indigenous capabilities ensure quick and customized responses to unique maritime threats. E.g. Information Fusion Centre-Indian Ocean Region (IFC-IOR).

**7. Technology and Innovation Advancement:** Investing in local shipbuilding and maritime R&D fosters technological growth in defense and civilian applications, benefiting the broader economy. E.g. Varunastra torpedo.

**What are the challenges with India's maritime atmnirbharta?**

**1. Global and Regional Context:** While the Indian Navy has earned global recognition for professionalism, it lags behind leading naval powers like the US and China.

**a. True Value Rating (TrV):** India ranks seventh globally, with 103 major naval units and a TrV of 100.5, compared to the US (323.9 TrV) and China (319.8 TrV).

**b. Defence spending disparities reflect the gap:** India's 2023 budget was $84 billion (17-18% for the navy), compared to the US ($916 billion) and China ($330 billion).

**2. Challenges in Indigenisation:** India's naval achievements remain aspirational due to:

**a. Shipbuilding inefficiency:** INS Surat's record 31-month construction contrasts with China's completion of a 4,000-ton frigate in 4.5 months.

**b. Dependence on imports:** Critical ordnance for warships is sourced internationally, with limited indigenous successes like the BrahMos missile.

**c. R&D gaps:** Core military design and technology advancements are slow, hindering progress towards meaningful self-reliance.

**3. Technological and Innovation Gaps:** Dependence on foreign technologies for advanced systems like high-performance turbines, nuclear propulsion, and ASW capabilities limits progress. Slow adaptation to global innovation further hampers competitiveness.

**4. Infrastructure and Skilled Workforce Deficits:** Capacity constraints in shipyards like MDL and GRSE delay asset production, while a shortage of skilled professionals in submarine design and naval weaponry stifles advanced development.

**5. Bureaucratic and Budgetary Challenges:** Complex procurement processes and insufficient defense budgets lead to delays and cost overruns, as seen in nuclear submarine projects like the Arihant class.

**6. Security Vulnerabilities:** Increasing reliance on digital systems, such as those on INS Vikramaditya, exposes naval technologies to cyber threats, requiring robust security measures.

**7. Global Competition and Limited Export:** Indian products face stiff competition in the global defense market from nations like the U.S. and China. Challenges in scaling production and commercializing technologies like the INS Kalvari limit export potential.

**What Should be the Way Forward?**

The way forward should be "DESI NAVY".

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**1. D: Defense R&D:** Prioritize **indigenous research** and **development** in critical naval technologies.

**2. E: Empowerment:** Empower **domestic industries** through **public-private partnerships** and defense offsets.

**3. S: Strategic Partnerships:** Foster **strategic partnerships** with friendly nations for technology transfer and joint ventures.

**4. I: Infrastructure Development:** Invest in **modern shipbuilding** infrastructure and enhance skilled manpower.

**5. N: Naval Doctrine:** Develop and refine a **robust naval doctrine** that addresses evolving maritime security challenges in case of **hybrid and geryzone warfare.**

**6. A: Acquisition Reforms:** Streamline defense procurement procedures to expedite the acquisition of **critical naval assets.**

**7. V: Visionary Leadership:** Provide strong political and bureaucratic leadership to drive the vision of a self-reliant maritime defense.

**8. Y: Youth Engagement:** Encourage and support young talent in **STEM fields** to contribute to advancements in naval technology.

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## Israel-Hamas Ceasefire  Agreement- Explained Pointwise

The recent **Israel-Hamas ceasefire agreement** between Israel and Hamas marks a significant breakthrough in the 15-month-long conflict that began with Hamas's attack on Israel on October 7, 2023. Mediated by Qatar, the United States, and Egypt, the deal focuses on ending hostilities, facilitating the exchange of hostages and prisoners, and delivering humanitarian aid to Gaza. While promising, the ceasefire is fragile, and several critical questions remain unanswered.

**What are the key aspects of the Proposed Agreement?**

The proposed Gaza ceasefire agreement announced on May 6, 2024, for an exchange of detainees and prisoners between Israel and Hamas aims to secure the release of all Israeli detainees in Gaza in exchange for Palestinian prisoners, along with steps toward a ceasefire, reconstruction, and humanitarian relief. It unfolds in three stages over 126 days:

| First Stage (42 days) | |
| --- | --- |
| **Cessation of Hostilities** | a. Mutual halt of military operations; Israeli forces withdraw from densely populated areas to positions near the Gaza border.<br>b. Restrictions on Israeli air operations for 10-12 hours daily. |
| **Humanitarian Relief and Reconstruction** | a. Immediate entry of humanitarian aid, including 600 trucks daily, 50 carrying fuel.<br>b. Resumption of essential services like electricity and healthcare; plans for rubble clearance and shelter for displaced persons. |

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| **Prisoner Exchange** | a. Hamas releases 33 Israeli detainees (alive or dead), including women, children, and the elderly, in return for an agreed number of Palestinian prisoners.<br>b. Phased release schedule, including provisions for women and minors detained after October 2023.<br>c. Israel lifts penalties against prisoners and improves their conditions. |
| **Preparations for Next Stages** | Discussions on the second phase begin by day 16, addressing further prisoner exchanges and conditions. |
| **Second Stage (42 days)** | |
| **Sustainable Calm** | a. A formal ceasefire will be declared.<br>b. Exchange of all remaining Israeli men (civilians and soldiers) for additional Palestinian prisoners.<br>c. Full withdrawal of Israeli forces from Gaza. |
| **Third Stage (42 days)** | |
| **Final Exchange and Reconstruction** | a. Exchange of the bodies of the dead from both sides.<br>b. Long-term reconstruction of Gaza's homes and infrastructure over 3-5 years, with international oversight.<br>c. Complete lifting of the Gaza blockade. |
| *Guarantors of the Agreement: Qatar, Egypt, the United States, and the United Nations will oversee the implementation of the agreement.* | |

**What are the Challenges and Unanswered Questions with the Ceasefire Agreement?**

**1. Hostage and Prisoner Details**– It remains uncertain how many hostages are alive, whether Hamas knows the locations of all hostages, and which prisoners Hamas insists on freeing.

**2. Fragility of the Agreement-**
a. Past ceasefires between Israel and Hamas have often broken down due to skirmishes or escalations.
b. The complex timetable and distrust between the parties mean even minor incidents could derail the process.

**3. Question marks on Israel's Objectives-** While Israel has weakened Hamas's operational and governing capabilities, it has not completely destroyed them, raising questions about the long-term implications of the ceasefire.

**What are the reasons for the Israel-Palestine Dispute?**

**1. Normalisation of Relations between Israel and Arab World-** Abraham Accords was signed between Israel and UAE, Bahrain in 2020. Later Sudan and Morocco joined in 2020. Saudi Arabia and Israel have also been coming together for various economic projects like IMEC. Hamas wants to disrupt this normalisation of relation between Israel and the Arab countries.

**2. Hamas's aim of taking leadership of Palestinian cause from the Palestinian Authority(PA)-** The Palestinian Authority (PA) is the official government of the Palestinians that signed the Oslo Peace Accords with Israel but it never resulted in the promised Palestinian state. The PA today is riddled with corruption, misgovernance and has lost legitimacy. Hamas through this attack has been trying to take leadership of the Palestinian cause from the PA.

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**3. Support to Hamas operations by Hezbollah ,Iran and Qatar-** Hamas is being provided logistical, technological and intelligence support by terrorist organisations like Hezbollah operating in Lebanon and funding by Iran and Qatar.

**4. Unresolved Jerusalem Dispute-** Both Israel and the Palestinians hold competing claims to the city. Israel, which occupied the formerly Jordanian-held eastern part in 1967, regards the whole of Jerusalem as its capital. The Palestinians insist on East Jerusalem as their future capital. This has resulted in Intifada like the Al-aqsa intifada.

**5. Increasing Israeli Settlements in West Bank-** Since 1967, Israel has built about 140 settlements in the occupied West Bank and East Jerusalem. They are considered illegal by most of the international community, though Israel disputes this. Palestinians say all settlements must be removed for a Palestinian state to be viable.

**6. Border Dispute-** Israel and Palestine have dispute on the border. Palestinians insist on borders based on ceasefire lines which separated Israel and East Jerusalem, the West Bank, and Gaza between 1949 and 1967. However, Israel insists on an extended eastern border stretching up to the Jordan River.

**7. No Consensus on Palestinian Statehood-** No consensus has been developed over the status of Palestinian Statehood among PLO and Israeli officials. Further Israel insists that any peace deal must include Palestinian recognition of it as the "nation-state of the Jewish people".

**8. Political Division among Palestinians-** The Palestinians remain politically divided between Fatah and Hamas, and thus are unable to negotiate jointly. Further, Israel is unwilling to negotiate with the violent group Hamas.

**9. Lack of pursual of peace process-** Both Israel and Hamas have not been following the path to achieve peace in the region. Israel has continued to build settlements in the West Bank, raising security barriers and checkpoints, limiting Palestinian movements, and never hesitating to use force or collective punishment to keep organised Palestinians under check. But the recent attacks from Hamas killing 700 Israelis does not help the Palestinian cause. It has only escalated the conflict.

**What should be the other ways forward?**

**Adoption of the Arab Peace Initiative offer-** This offer was proposed by the Saudi Arabia in the name of all Arab countries in 2002. This offer required the creation of a Palestinian state on the lands Israel occupied in the Six-Day War of 1967. In return, Israel would be fully recognised and accepted. .This offer can be the only basis for a lasting peace between Israelis and Palestinians.

**Need to treat it as Israel-Arab conflict rather that Israel-Palestine(Hamas) conflict-** The conflict is not only between Israel and Palestine but also with other Arab countries such as Egypt, Jordan, Iran, Syria. All of them should participate in the negotiations and the final agreement should be recognized formally by each one of them along with UN general assembly and security council.

**UNSC must step up-** UNSC must broker a peace talk between the two warring fractions. Global leadership platforms must be used to not let middle east become another theatre for warfare.

**Ensure proper adherence to UNSC resolution 2334-** UNSC resolution 2334 concerns the Israeli settlements in Palestinian territories occupied since 1967, including East Jerusalem.The illegal Israel settlements in West Bank must be removed at the earliest.

**Follow the ICC ruling of February 2021-** The February 2021 International Criminal Court (ICC) ruling should be implemented in spirit. It allows the ICC to investigate persons committing war crimes in the Palestinian Territories of the West Bank and Gaza Strip.

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**India should act as a mediator-** India has good relations with both the Arab World and Israel. Instead of India choosing side in the war, it must use its soft power and diplomatic outreach to solve the dispute.

The ceasefire is a temporary pause in a protracted conflict, with both sides leveraging its terms for strategic gains. The agreement underscores the need for sustained diplomatic efforts to address the underlying issues and achieve lasting peace in the region.

## Pillars for development of Indian Agriculture- Explained Pointwise

Indian agriculture, the backbone of the nation, faces a dual challenge: ensuring food security and sustainable rural livelihoods while promoting modernity and inclusivity. Despite significant advancements in productivity, India's agricultural sector remains largely traditional, with limited technological adoption.

To transform agriculture into a developed sector by 2047, several critical imperatives need to be addressed through a holistic and inclusive approach. The roadmap for achieving a "Viksit Bharat" (Developed India) hinges on the modernization of inputs, production, processes, post-production, and cross-cutting interventions. By focusing on these pillars, the country can ensure a resilient, efficient, and sustainable agricultural sector.



Source- The Indian Express

**Pillars for Development**

**A. Input Modernization**

**1. Land Reforms:** To ensure efficient land use and provide equitable access to resources, digitizing land records and enabling land leasing reforms are crucial. Platforms such as Telangana's *Dharani* portal simplify land transactions, enhancing transparency. Additionally, the calibrated extension of the *PM SWAMITVA Yojna* can further promote efficient land utilization.

**2. Climate-Smart Water Management:** Water scarcity is a major challenge for Indian agriculture. To address this, there is an urgent need to scale micro-irrigation technologies in water-scarce regions. The *PM Krishi*

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*Sinchayee Yojana* is already working to ensure water-use efficiency. Moreover, the development of climate-resilient seeds like flood-tolerant rice varieties, such as "Swarna Sub1," in collaboration with ICAR, would enable farmers to mitigate climate-related risks.

**3. Access to High-Quality Seeds:** Promoting genetically modified (GM) crops and hybrid seeds tailored to local conditions is crucial for enhancing productivity. India's success with BT cotton provides a roadmap for other crops. Varieties like DMH-11 Mustard and IMH 223-ICAR corn hold potential for boosting yields in a variety of climates.

**4. Fertilizers and Pesticides:** Sustainability must be a key focus in agricultural inputs. Promoting bio-fertilizers, nano-fertilizers, and bio-pesticides can minimize environmental harm. The success of *Nano-Urea* by IFFCO exemplifies this approach, ensuring precision in nutrient delivery. Likewise, adopting precision technology through drones and IoT can further reduce chemical use.

**5. Farm Mechanization:** Subsidizing farm equipment like drones, smart tractors, and robotics for small and marginal farmers can significantly enhance productivity. The *FAAS* (Farming as a Service) model can help increase accessibility to expensive technologies, enabling small farmers to adopt mechanized practices.

**6. Access to Credit:** Expanding the *Kisan Credit Card* (KCC) scheme and including tenant farmers can enhance financial inclusion in the agricultural sector. Agrifintech platforms like YONO Krishi provide innovative solutions to farmers' financial needs.

**7. Robotics and Automation**: Develop low-cost robotic solutions tailored for small farms like seeders and sprayers, being offered machinery as a service (MAAS) model. E.g. Tractor Junction.

**B. Production Modernization**

**1. Monitoring Nutrients, Water, and Pests:** Utilizing AI, IoT, and satellite technology for precision farming can transform agricultural practices. For example, Telangana's *T-Fiber* project uses IoT for real-time crop health monitoring, helping farmers make informed decisions regarding irrigation and pest control.

**2. Integrated Pest Management (IPM):** A combination of biological, mechanical, and chemical methods can help achieve sustainable pest control. The use of neem-coated urea, for instance, reduces pest infestations and is an eco-friendly approach to pest management.

**3. Harvesting and Mechanized Tools:** To reduce labor costs and improve efficiency, farmers must have access to automated harvesting tools. Mechanized harvesters such as combine harvesters and rice transplanters are already being used in states like Punjab, reducing the need for manual labor and improving productivity.

**4. Government Interventions:** The *PM-PRANAM scheme* incentivizes the use of organic and bio-fertilizers by providing states with 50% of saved fertilizer subsidies. Other schemes like *Mission Amrit Sarovar* help improve water storage and irrigation infrastructure across India.

**C. Process Modernization**

**1. Digital Twins in Agriculture:** The adoption of digital twin technologies can revolutionize agricultural research. By simulating crop growth and weather conditions virtually, farmers and researchers can accelerate the development of new crop technologies without relying on lengthy field trials. Collaborations with AgTech firms like *CropIn* can foster innovations in this area.

**2. Farmers' Training and Skill Development:** Training farmers in modern agricultural practices is essential. Establishing more *Krishi Vigyan Kendras* (KVKs) and introducing techniques like hydroponics and vertical

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farming can significantly improve agricultural practices. Training on sustainable practices, such as *Zero-Budget Natural Farming* (ZBNF), can also ensure environmentally-friendly production systems.

**3. Sustainable Practices:** Promoting organic and regenerative farming practices is essential to ensure long-term sustainability. Initiatives such as Andhra Pradesh's *ZBNF* program, covering millions of farmers, highlight the importance of moving towards chemical-free farming. Regenerative practices, including crop rotation and bio-fertilizer use, can restore soil health and increase yields.

**4. Technology Adoption:** Leveraging mobile-based platforms like *e-NAM* for direct market access and AI apps for pest detection, such as in Madhya Pradesh, can help farmers maximize their returns and reduce losses.

**5. Government Interventions**: Digital Agriculture Mission, Expansion of Digital India Mission for AgriTech penetration, Scaling PM-Kisan Samriddhi Kendras as centers for innovation and advisory etc.

**D. Post-Production Optimization**

**1. Logistics and Supply Chains:** Efficient post-production systems are critical to reduce losses and ensure market accessibility. Investing in cold storage facilities, like the *Mega Food Parks* under the Ministry of Food Processing Industries, can help store perishable goods. Additionally, building climate-controlled warehouses in rural areas will further enhance storage capabilities.

**2. Market Linkages:** Strengthening the *National Agriculture Market* (e-NAM) can improve market access and ensure fair prices. States like Rajasthan have already demonstrated that e-NAM can lead to higher prices for farmers.

**3. Value Addition and Agri-Exports:** Developing agro-processing industries and export-oriented zones for high-value crops such as spices and fruits can enhance India's position as a global player in the agricultural market. Programs like APEDA have already helped export mangoes to the Middle East, demonstrating the potential for agricultural exports.

**4. Blockchain Technology:** Blockchain, though in its infancy, has immense potential in agriculture for traceability and ensuring fair pricing. Karnataka has piloted blockchain in coffee production to ensure transparency in the supply chain.

**5. Government Interventions**: Project VISTAAR 2025: The initiative aims to enhance the efficiency and effectiveness of the agricultural extension system through digitalization,

**E. Cross-Cutting Interventions**

**1. Market-Based Pricing and Reform of MSP:** Shifting from a subsidized pricing system to market-based pricing will incentivize efficiency and sustainability in agriculture. The Minimum Support Price (MSP) system needs to be reformed to avoid overproduction of crops that strain resources like water and power.

**2. Welfare vs. Populism:** While welfare programs are necessary, policies should not encourage dependency. Instead, reforms should empower farmers by investing in R&D, infrastructure, and rural education.

**3. Research and Development:** To achieve long-term agricultural growth, India must invest in R&D for drought-resistant seeds, AI-based crop management systems, and innovative farming solutions. The government should collaborate with private and public sectors to foster innovation.

**Conclusion**

By embracing technological advancements, promoting sustainable practices, and enhancing the efficiency of agricultural processes, India can modernize its agricultural sector and achieve the vision of a "Viksit Bharat" by

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2047. This transformation will ensure food security, elevate rural livelihoods, and make India a global agricultural powerhouse.
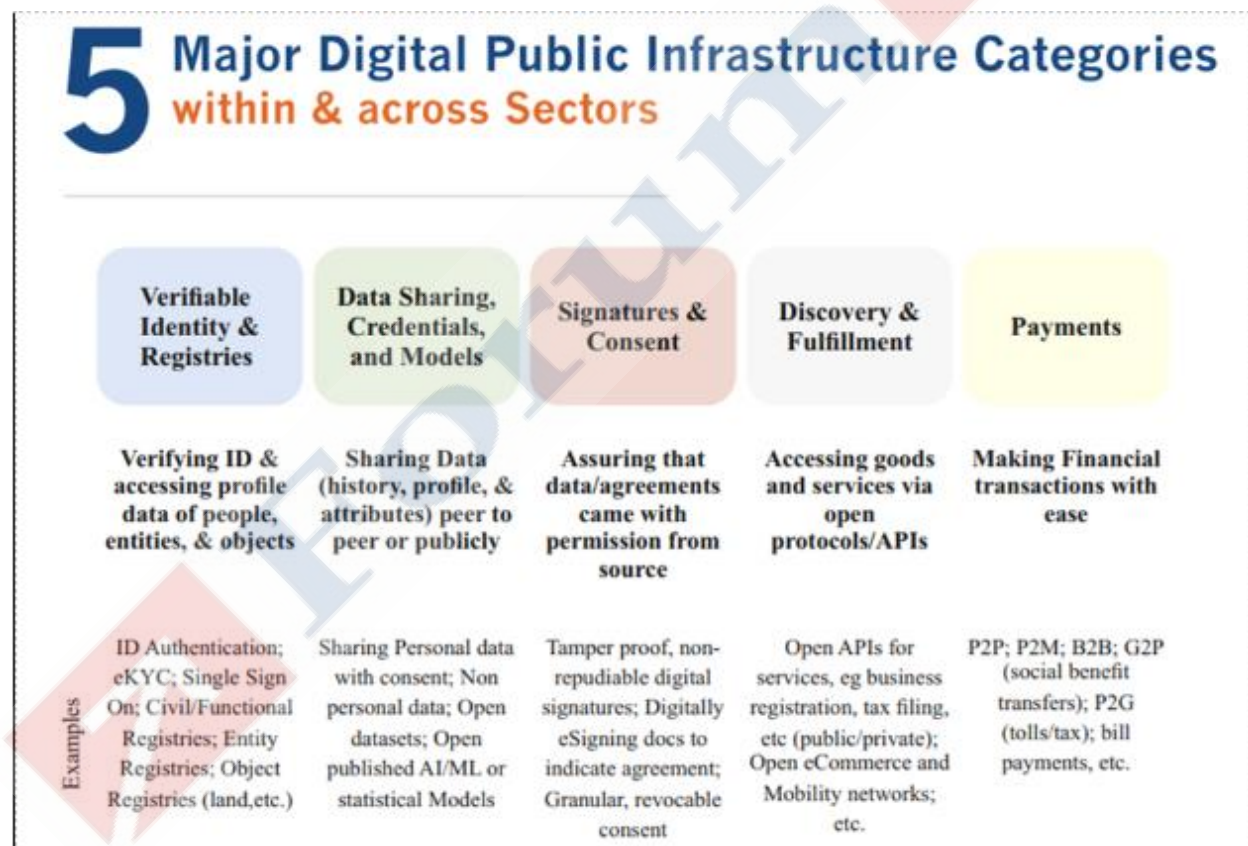
**Read more-** The Indian Express
UPSC Syllabus- GS 3- Indian Agriculture

## India's Drive to Globalize Digital Public Infrastructure- Explained Pointwise

India's **Digital Public Infrastructure** (DPI) has emerged as a pioneering model for digital transformation, gaining global attention and accolades, particularly during India's G20 presidency. The country's DPI has been praised for its comprehensiveness and ability to address socio-economic challenges. Prominent figures such as Bill Gates have recognized India's efforts in building an infrastructure that leverages technology to achieve societal goals.

The country's DPI model, structured around open-source, interoperable systems, is being increasingly adopted by nations across the globe, especially those in the Global South. This article delves into India's journey in globalizing its DPI, its core components, benefits, global recognition, and the challenges and opportunities in scaling it further.



**5 Major Digital Public Infrastructure Categories within & across Sectors**

| Verifiable Identity & Registries | Data Sharing, Credentials, and Models | Signatures & Consent | Discovery & Fulfillment | Payments |
|---|---|---|---|---|
| Verifying ID & accessing profile data of people, entities, & objects | Sharing Data (history, profile, & attributes) peer to peer or publicly | Assuring that data/agreements came with permission from source | Accessing goods and services via open protocols/APIs | Making Financial transactions with ease |
| ID Authentication; eKYC; Single Sign On; Civil/Functional Registries; Entity Registries; Object Registries (land,etc.) | Sharing Personal data with consent; Non personal data; Open datasets; Open published AI/ML or statistical Models | Tamper proof, non-repudiable digital signatures; Digitally eSigning docs to indicate agreement; Granular, revocable consent | Open APIs for services, eg business registration, tax filing, etc (public/private); Open eCommerce and Mobility networks; etc. | P2P; P2M; B2B; G2P (social benefit transfers); P2G (tolls/tax); bill payments, etc. |

*(Examples)*

Source- Copyright infringement not intended

**What is India's DPI?**

India's Digital Public Infrastructure is a comprehensive system designed to enable inclusive and equitable development through technology. According to the "G20 Task Force on Digital Public Infrastructure," DPI is described as an infrastructure-based approach that leverages technology to achieve societal goals. It does so

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through an ecosystem comprising technology, markets, and governance built in the public interest, while also allowing for private innovation within regulatory guardrails.

India's DPI is built upon three interconnected layers, collectively referred to as the "India Stack":

1. **Identity Layer:** This includes Aadhaar, India's digital identity system, e-KYC (electronic Know Your Customer), and other systems that verify identity electronically.
2. **Payment Layer:** This encompasses systems like UPI (Unified Payments Interface), Aadhaar Payment Bridge, and other payment systems that facilitate digital financial transactions.
3. **Data Governance Layer:** This includes platforms like DigiLocker, which enables secure document storage, and the Account Aggregator, which facilitates data sharing in a privacy-conscious manner.

**Core Components of India Stack**

India Stack, the foundation of India's DPI, consists of several key components that have collectively transformed how citizens interact with government services and the private sector:

* **Aadhaar:** A nationwide digital identity infrastructure, Aadhaar enables citizens to access services by linking their identity to a unique number.
* **UPI (Unified Payments Interface):** A real-time payment system that enables instant money transfers across banks via mobile phones.
* **e-KYC:** A digital solution for paperless identity verification, making processes faster and more efficient.
* **DigiLocker:** A secure platform for storing and sharing documents digitally.
* **eSign:** An electronic signature framework that facilitates paperless agreements and transactions.
* **Data Empowerment and Protection Architecture (DEPA):** A system that allows individuals to control their data, ensuring privacy while sharing data with service providers.

**What has been the Evolution and Impact of India's DPI?**

**1. Origins and Expansion:** India's DPI journey began in 2009 with the launch of Aadhaar, marking the beginning of a digital identity initiative. Over time, this initiative expanded to include UPI, the JAM (Jan Dhan Yojana, Aadhaar, and Mobile) trinity, and platforms like Co-WIN, which was crucial in managing India's COVID-19 vaccination drive.

**2. Financial Inclusion Success–** One of the most significant successes of India's DPI is in the area of **financial inclusion**. According to the Reserve Bank of India (RBI), India achieved 80% financial inclusion within six years—an achievement that, according to a study by the Bank for International Settlements, would have otherwise taken 47 years. This rapid financial inclusion is largely due to the integration of Aadhaar with government welfare programs and financial services.

**3. Sectoral Impact–** Beyond financial inclusion, DPI has also had a positive impact on sectors such as **healthcare**, **education**, and **sustainability**, helping address challenges on a large scale. The ability to access services like healthcare through digital platforms has improved quality of life, particularly in rural and underserved areas.

**What are the Key Features and Benefits of India's DPI?**

India's DPI model is characterized by several key features that make it adaptable, scalable, and efficient:

**1. Open Source and Open APIs:** The open-source nature of India's DPI allows for transparency and collaboration, ensuring that the infrastructure can be continuously improved and adapted to new challenges. Open APIs enable third-party developers to create innovative solutions, promoting innovation across sectors.

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**2. Interoperability:** DPI's focus on interoperability ensures that different platforms and systems can communicate and work together, enabling seamless integration across various services, both public and private.

**3. Privacy by Design:** Privacy is a core tenet of India's DPI, with mechanisms in place to ensure that personal data is protected. Platforms like DigiLocker and the Account Aggregator allow individuals to maintain control over their data, enhancing trust and confidence in digital services.

**4. Inclusive Design and Universal Access:** DPI is built to be accessible to all, including marginalized groups such as women, rural populations, and people with disabilities. Its design focuses on ensuring equitable access to digital services, which has been instrumental in reducing disparities.

**5. Promotion of Innovation and Transparency:** By preventing vendor lock-in and fostering collaboration, DPI promotes innovation, transparency, and accountability. The ability to integrate third-party services and platforms has led to the creation of a vibrant digital ecosystem in India.

**What is Global Recognition and the challenges associated with India's DPI?**

**1. Global Recognition:** India's DPI gained prominence during the G20, where nations like France and Germany lauded platforms like UPI. Developing countries, particularly low- and middle-income nations (LMICs), have expressed keen interest in adopting India's DPI to accelerate their digital journeys.

**2. International Adoption:** Eight countries—Armenia, Sierra Leone, Suriname, Antigua, Barbados, Trinidad and Tobago, Papua New Guinea, and Mauritius—have signed MoU's to adopt India's DPI at no cost and with open-source access.

**3. Support:** Despite initial lukewarm responses, developed nations gradually supported DPI globalization. E.g. The Quad endorsed DPI principles.

**4. UN Recognition:** The UN has incorporated DPI as a priority in its Global Digital Compact, with the Special Envoy for Technology launching safeguards to ensure DPI development aligns with fundamental principles.

**5. DPI as a Service (DaaS): A New Solution by India**

**a.** India introduced a "DaaS" model, offering pre-packaged DPI building blocks as cloud solutions. This approach enables smaller nations with limited technical capacity to adopt DPI affordably and efficiently.

**b.** Collaborative efforts in 2024 gained support from hyperscalers and systems integrators, making the DaaS model a practical alternative.

**Challenges in Globalizing DPI**

Despite the widespread adoption of India's DPI, there are several challenges in scaling its impact globally:

- **Deployment Complexity:** Deploying DPI systems requires identifying a responsible government department, designing solutions, integrating them with existing administrative systems, and rolling them out across the country. Countries with limited administrative capacity may face significant hurdles in this regard.
- **Global Governance and Privacy:** There is a pressing need for a global governance structure and standardized regulations to ensure seamless DPI adoption across different countries. While privacy is a foundational principle of DPI, addressing global concerns about data protection remains a critical challenge.

**Way Forward: For Global Advancement of DPI "GLOBAL DPI"**

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**G: Global South Focus:** Prioritize partnerships and knowledge sharing with developing nations facing similar challenges.

**L: Leadership & Collaboration:** Cultivate global leadership on DPI development and foster international cooperation.

**O: Open Standards & Interoperability:** Promote open standards and interoperability to ensure seamless integration and scalability across borders.

**B: Building Trust & Confidence:** Build trust and confidence among international partners through transparent and inclusive engagement.

**A: Adaptation & Customization:** Tailor DPI solutions to the specific needs and contexts of different countries and regions.

**L: Leveraging Technology:** Utilize cutting-edge technologies like AI, blockchain, and big data to enhance the efficiency and impact of DPI.

**D: Democratic Governance:** Ensure that DPI development and deployment are aligned with democratic principles and respect human rights.

**P: Public-Private Partnerships:** Foster strong public-private partnerships to drive innovation and accelerate the adoption of DPI solutions.

**I: Inclusive & Equitable Development:** Ensure that DPI initiatives are inclusive and equitable, reaching all segments of society, including marginalized and vulnerable populations.

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> UPSC Syllabus- GS 2- Government Policies and Interventions for development in Various sectors

## Critical Minerals- Explained Pointwise

According to a study by the Council on Energy, Environment and Water (CEEW), just 15 countries hold at least 55% of the identified critical minerals, indicative of concentration in critical minerals supply. As per IEA, the rising demand for clean energy has translated into an increased demand for critical minerals with an expected four-fold increase by 2040. India's dependence and vulnerability on critical minerals has increased as it is 100% import-dependent for lithium, cobalt, and nickel.

In lieu of this exacerbated dependence, India has announced a Critical Mineral Mission as part of Budget 2024-25. Through this mission, India aims to boost the domestic output and recycling of critical minerals like copper and lithium. These Minerals have strategic importance in sectors like defence, agriculture, energy, pharmaceutical, telecom. However, these minerals face supply chain vulnerabilities, due to their lack of availability and concentration in a few geographical locations. Hence, India has been focusing on securing the supplies of critical Minerals.

### What are Critical Minerals? What is the classification criterion and identified list of critical Minerals in India?

**Critical Minerals-** These minerals are essential for economic development and national security as they are used vital for development of materials for defense, aerospace, nuclear, and space applications. There are associated risk of supply chain vulnerability and disruption with these minerals, due to their lack of availability, and concentration of existence, extraction or processing of these minerals in few geographical locations.

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**Factors Affecting Criticality-**



Source- Ministry of Mines

| Economic Importance (EI) | Supply Risk (SR) |
|---|---|
| 1. Disruption Potential | 1. Governance-weighted Material Concentration |
| 2. Substitutability Index (SI) | 2. End-of-life Recycling Rates (EOL-RR) |
| 3. GVA Multiplier Score | 3. Import Reliance (IR) and SelfSufficiency (SS) |
| 4. Cross-Cutting Index (CCI) | 4. Substitutability Index (SR) |

**Critical Minerals Identified in India-** The Government of India identified 30 minerals as Critical in July 2023.

| | | |
|---|---|---|
| Antimony | Lithium | Strontium |
| Beryllium | Molybdenum | Tantalum |
| Bismuth | Niobium | Tellurium |
| Cobalt | Nickel | Tin |
| Copper | PGE | Titanium |
| Gallium | Phosphorous | Tungsten |
| Germanium | Potash | Vanadium |
| Graphite | REE | Zirconium |
| Hafnium | Rhenium | Selenium |
| Indium | Silicon | Cadmium |

**What is the Importance of Critical Minerals for India?**

**1. Push to India's Economic Development-** These Minerals give a push to India's economic development as industries such as high-tech electronics, telecommunications, transport, and defense rely heavily on these minerals. Their growth can lead to job creation, income generation, and innovation in these sectors. **For ex-** India's push to become semiconductor manufacturing hub rests on the availability of these minerals.

**2. Energy transition towards Net-zero Emissions-** These minerals are the foundation of modern technologies like solar panels, wind turbines and advanced batteries, which will help in energy transition and would give a push to India's goal of net-zero emission by 2070.

**3. Competitive Value chain establishment in India-** The discovery of critical mineral wealth and identification of areas of their potential use in advanced technologies will help in establishing competitive value chain in India. This would help in attracting foreign direct investments from countries like UK, USA as part of their China+1 strategy.

**4. National Security-** These minerals are vital for defense, aerospace, nuclear, and space applications due to their usage in development of high-quality and reliable materials capable of withstanding extreme conditions and performing complex functions. These would in turn help in bolstering India's national security.

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**5. Reducing India's import Bill-** Currently most of the critical minerals are imported in India. The exploration and increased production of these minerals would help in reducing India's import burden and Current Account Deficit.

| Sl. No. | Critical Mineral | Percentage (2020) | Major Import Sources (2020) |
|---------|------------------|-------------------|------------------------------|
| 1. | Lithium | 100% | Chile, Russia, China, Ireland, Belgium |
| 2. | Cobalt | 100% | China, Belgium, Netherlands, US, Japan |
| 3. | Nickel | 100% | Sweden, China, Indonesia, Japan, Philippines |
| 4. | Vanadium | 100% | Kuwait, Germany, South Africa, Brazil, Thailand |
| 5. | Niobium | 100% | Brazil, Australia, Canada, South Africa, Indonesia |
| 6. | Germanium | 100% | China, South Africa, Australia, France, US |
| 7. | Rhenium | 100% | Russia, UK, Netherlands, South Africa, China |
| 8. | Beryllium | 100% | Russia, UK, Netherlands, South Africa, China |
| 9. | Tantalum | 100% | Australia, Indonesia, South Africa, Malaysia, US |
| 10. | Strontium | 100% | China, US, Russia, Estonia, Slovenia |
| 11. | Zirconium(zircon) | 80% | Australia, Indonesia, South Africa, Malaysia, US |
| 12. | Graphite(natural) | 60% | China, Madagascar, Mozambique, Vietnam, Tanzania |
| 13. | Manganese | 50% | South Africa, Gabon, Australia, Brazil, China |
| 14. | Chromium | 2.5% | South Africa, Mozambique, Oman, Switzerland, Turkey |
| 15. | Silicon | <1% | China, Malaysia, Norway, Bhutan, Netherlands |

Table.1 The net import reliance for critical minerals of India (2020) (Source: A report on 'Unlocking Australia-India Critical Minerals Partnership Potential' by Australian Trade and Investment Commission, July 2021)

Source- Ministry of Mines

**What are the Challenges with Critical Minerals?**

**1. Geopolitical and oligopolistic Monopoly-** The concentration of critical minerals in few countries, has led to geopolitical monopoly with only a few countries dominating these mineral resources. This leads to oligopolistic (domination by a few large firms) markets. **For ex-** Australia controls 55% of lithium reserves, and China has 60% of rare earths.

**2. China's dominance in the processing and refining sector-** China is a central player in the global critical mineral supply chains, particularly in processing and refining. It accounts for about 60% of worldwide production and 85% of processing capacity. China's dominance leads to political leverage over other countries.

**3. Geopolitical Risks-** The geographical concentration of the these minerals makes them vulnerable to geopolitical risks. Geopolitical tensions, conflicts, trade disputes, or sudden policy changes in those regions can impact their supply. **For ex-** The civil war in Democratic Republic of the Congo, has affected the global supply chain of cobalt, as 70% of the world's reserves of cobalt are located in DRC.

**4. Resource Nationalism-** The geographical concentration of these minerals has led to resource conflicts. This has increased resource nationalism, and trade fragmentation. **For ex-** Rising resource nationalism in Africa.

**5. Price Volatility-** Unlike oil, most critical materials are not widely traded on exchanges, and this limits opportunities to hedge against price volatility. Further, insufficient data on consumption, production, and trade of minerals causes uncertainty, price volatility and delays in investments.

**6. Rising Import Bill-** Between FY22 and FY23, there has been a 34% rise in imports of critical minerals, totaling nearly Rs. 91,000 crore. India's heavy reliance on imports for these minerals, poses a risk to its industrial and energy security.

**7. Environmental Concerns-** Mining activities of these can lead to biodiversity loss, land use change, water depletion and pollution, waste contamination, and air pollution. **For ex-** Lithium mining in the fragile landscapes of the Chilean Atacama desert is water-intensive.

**8. Long Gestation Period for Alternatives-** Development of alternative sources and processing capabilities of critical minerals, like India's plans with Australia, can take over 15 years, delaying self-reliance.

**What initiatives have been taken by the Government for Critical minerals in India?**

| Amendment to Mines and Minerals (Development and Regulation) Act, 1957 | Through the MMDR Amendment Act, 2023, the Central Government is empowered to auction blocks of 30 critical minerals. The amendment permits private sector entry through auctions. |
|---|---|
| FDI liberalisation | In 2019, India has allowed 100% foreign direct investment. Certain minerals which were previously classified as atomic have been reclassified, facilitating private-sector mining. |
| International Collaboration | India joined the Mineral Security Partnership, which is a US led initiative involving 13 countries and the EU. Khanij Bidesh India is assisting Argentina in lithium exploration and discussing lithium and cobalt blocks in Australia. |
| Institutional Initiatives | The Geological Survey of India has initiated over 250 projects to explore deep-seated critical minerals. India has launched startup challenges to develop advanced processing technologies. |
| Budgetary Support 2024 | **Customs Duty Removal-** Customs duties on 25 critical minerals, such as lithium, nickel, copper, and cobalt, have been removed to enhance domestic manufacturing of advanced technologies like electric vehicles (EVs) and energy storage systems. **Concessional Customs Duty Extension-** The concessional customs duty of 5% on lithium-ion cells has been extended until March 2026. |
| Critical Mineral Mission | In the Budget 2024, Critical Mineral Mission has been announced to give a boost to India's critical minerals Sector. |

**Significance of Critical Mineral Mission**

1. Promotion of domestic production and recycling of critical minerals by increasing the capacities of India in terms of refining and processing
2. Identification of minerals which are critical, which will help the country to plan for the acquisition and preservation of such mineral assets taking into account the long term need of the country.
3. Reduction of India's import dependency as India is 100% import dependent for certain elements.
4. Expedited exploration, overseas mineral acquisition, resource efficiency, recycling of minerals, and finding substitutes through suitable R&D.

**What Should be the Way Forward?**

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**1. Implementation of the recommendations of expert committee on critical Minerals-** Setting up of the Centre of Excellence for Critical Minerals (CECM) as a dedicated wing in the Ministry of Mines. This can be on the lines of CSIRO which is an Australian government corporate entity. The centre of excellence can collaborate with international agencies or Khanij Bidesh India Ltd (KABIL) for the strategic acquisition of foreign assets of these minerals.

**2. Push for Expansion of Mineral Security Partnership (MSP)-** Along with India, more countries in the Global South can be part of the alliance, especially critical mineral-rich African countries. The MSP can become an international platform that reports on the status and future of critical mineral markets.

**3. Encourage FDI in Domestic Mining-** Rising foreign direct investment (FDI) will not just support businesses like battery and EV manufacturing. It will also bring the expertise of international mining firms to aid in exploring critical minerals for the country's benefit.

**4. Investment in Beneficiation and Processing Facilities-** India should invest in beneficiation and processing facilities in Africa to promote local economies and sustainable relationships.

**5. Path to Global Leadership-** India can emulate Indonesia's success in nickel to become a global leader in these minerals, utilizing access to both domestic and international raw materials.

**6. Alignment of Mineral Incentives-** The production-linked incentive scheme for minerals should align with global aspirations, creating employment opportunities.

> Read More- The Hindu
> UPSC Syllabus- GS 3- Indian Economy and infrastructure

## Ad Hoc Judges of HC- Explained Pointwise

Recently the Supreme Court suggested the temporary appointment of retired judges as ad hoc judges to address the increasing backlog of criminal cases in High Courts. This recommendation of SC, based on Article 224A of the Indian Constitution, while having its advantages comes with its own set of challenges.

**What is the status of Judicial pendency in India?**

Case Backlogs: According to the National Judicial Data Grid (NJDG), over 50 million cases are currently pending across Indian courts, with the majority in the subordinate courts.

| Court | Pendency of Cases |
|---|---|
| Supreme Court | 71411 Cases |
| High Court | 6 million Cases |
| Subordinate Courts | 41 million |

**What is the constitutional basis of appointment of Ad Hoc Judges?**

**Article 224A Provision:** Article 224A allows the Chief Justice of a High Court (CJHC) to request a retired HC judge to act as a judge, with the President's consent.

**Features:**
a. Appointees enjoy the same powers and privileges as regular judges.
b. Both the retired judge and the President must agree to the appointment.
c. These judges are entitled to allowances as decided by the President.

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**Procedure:**
Based on the 1998 Memorandum of Procedure (MOP):
a. The CJHC forwards the retired judge's consent and appointment details to the state's Chief minister.
b. The Chief Minister passes the recommendation to the Union Law Minister.
c. The Law Minister consults the Chief Justice of India (CJI) and forwards the recommendation to the Prime Minister.
d. The PM advises the President to approve or reject the proposal.

**2021 SC Ruling:** The **Lok Prahari v. Union of India case** mandated that such recommendations must be routed through the Supreme Court Collegium, comprising the CJI and two senior-most SC judges. It also laid out guidelines for initiating ad hoc appointments.

**Criteria for Ad Hoc Judge Appointments**

1. SC's Guidelines (2021):

a. Ad hoc judges can only be considered when regular appointment recommendations cover less than 20% of vacancies.

b. Trigger Points:
i. HC vacancies exceed 20% of sanctioned strength.
ii. More than 10% of pending cases are older than 5 years.

c. Recommendations for ad hoc appointments should prioritize:
i. A panel of retired or soon-to-retire judges.
ii. A term of 2-3 years for 2-5 ad hoc judges per HC.
iii. Periodic review of appointments.

**2. Concerns:** The SC emphasized that Article 224A should not become an alternative to regular judge appointments but a supplementary measure.

**3. Recommendations:** Chief Justices should prepare a panel of retired and soon-to-retire judges for ad hoc appointments, subject to periodic review.

**Historical Instances of Ad Hoc Judge Appointments**

**1. Rare Usage:** Only three recorded instances under Article 224A:

**a. Justice Suraj Bhan (Madhya Pradesh HC, 1972) –** Appointed for one year to handle election petitions.
**b. Justice P. Venugopal (Madras HC, 1982) –** Appointed for one year, renewed in 1983.
**c. Justice O. P. Srivastava (Allahabad HC, 2007) –** Appointed for the Ayodhya title suits.

**2. Dormancy:** No ad hoc judges have been appointed since the SC's 2021 ruling.

**3. Key Concerns:**
a. SC expressed concerns that Article 224A could delay regular judge appointments.
b. Emphasis on ensuring Article 224A is used only after initiating processes for regular appointments.

**What are the advantages of Retired Judges as Ad Hoc Judges?**

**1. Utilizing Judicial Expertise:** Retired judges bring decades of legal experience, enabling faster resolution of complex cases. **For example-** Justice O.P. Srivastava was appointed under Article 224A in 2007 to handle sensitive Ayodhya title suits.

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**2. Cost and Efficiency:** Ad hoc judges provide an immediate, cost-effective solution compared to appointing and training new judges. **For example-** Justice P. Venugopal's reappointment in the Madras High Court (1982) helped clear pending cases without straining resources.

**3. Parliamentary Support:** The 133rd report of the Parliamentary Standing Committee on Personnel, Public Grievances, Law, and Justice underscores the need for a comprehensive strategy to alleviate case backlogs, including the use of ad hoc judges.

**4. Addressing the Judicial Pendency-** 50 million cases are currently pending across Indian courts, with the majority in the subordinate courts. The appointment of ad hoc HC judges would aid in addressing the Judicial pendency.

**What are the Challenges in the Appointment of Ad Hoc Judges?**

**1. Judicial Independence:** Frequent reliance on ad hoc judges may undermine the judiciary's independence. Retired judges may face perceived or actual pressure from the executive.

**2. Resource Allocation:** Ad hoc judges require allowances and resources, potentially straining already limited budgets. Funds allocated for retired judges may divert resources from upgrading court infrastructure.

**3. Temporary Nature:** Ad hoc judges lack long-term accountability and consistency. For example, a judge serving for 2–3 years may not follow through on long-running cases, leading to disruption.

**4. Executive Overreach:** Appointments require executive approval, raising concerns about political influence. Delays or biases in the appointment process could undermine judicial integrity.

**5. Quality and Suitability:** Identifying retired judges with the requisite expertise and physical capacity can be difficult. Cases involving technical matters, like intellectual property disputes, may require specialized knowledge unavailable among retired judges.

**Way Forward: "AD-HOC"**

**A: Alignment:** Ensure ad hoc appointments strictly adhere to constitutional principles and judicial standards.

**DH: Defined Horizon:** Clearly define the scope and duration of ad hoc appointments, avoiding their misuse or becoming a permanent feature.

**O: Objectivity:** Establish objective and transparent criteria for selecting and appointing ad hoc judges, minimizing potential for bias.

**C: Constitutionalism:** Safeguard the independence and impartiality of the judiciary, ensuring ad hoc appointments do not compromise these fundamental principles.

While ad hoc appointments can provide temporary relief to reduce pendency, addressing structural issues like judicial vacancies, case management, and systemic inefficiencies is essential for long-term judicial reform.

## The Paris Agreement and Climate Challenges- Explained Pointwise

The Paris Agreement, adopted in 2015, is a landmark global effort to combat climate change. Signed by 196 nations, it seeks to limit global temperature rise to below 2°C, with an aspirational goal of 1.5°C. However, it faces challenges, including the U.S. withdrawal under President Donald Trump, who claimed the agreement was unfair and economically harmful to the U.S. This article explores the agreement's origins, the implications of the US withdrawal, its challenges, and its potential to address the climate crisis.

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# PARIS CLIMATE AGREEMENT



Source- Yale Sustainability

**What is the Paris Agreement and what are its goals?**

**Historical Context:** Despite the unprecedented terror attacks in Paris in 2015, 196 countries gathered to create the Paris Agreement, which was hailed as a political success designed to mitigate global temperature rise and demonstrate international unity in the fight against climate change.

**Goals of the Agreement:** The primary aim was to limit the global average temperature increase to "well below 2°C," with efforts to reach a target of 1.5°C above pre-industrial levels. This effort is driven by Nationally Determined Contributions (NDCs) from member states, with progress being evaluated through periodic "Global Stocktake" reviews.

**What are the immediate implications of the U.S. withdrawal and its global impact?**

The U.S. declared a national energy emergency, prioritizing increased oil and gas production under the slogan "Drill, baby, drill," and sought to reverse Biden-era environmental policies. The U.S. also planned to cancel the Inflation Reduction Act (Biden's major climate initiative) and end efforts to promote electric vehicles and federal leasing for wind farms.

**1. U.S. Exit from the Agreement:**
**a.** This move could lead to an additional 4 billion tonnes of CO2 emissions by 2030 and 27 GtCO2e by 2050, undermining efforts to limit global warming.
**b.** By doing so, the U.S. joins Iran, Yemen, and Libya as one of only four nations not part of the agreement to limit warming to well below 2°C, ideally 1.5°C.
**c.** The withdrawal process will take a year, and the U.S. will not submit new emissions targets due in February 2025.

**2. Policy Reversals:**
**a.** Trump's administration sought to weaken climate-related policies, boost fossil fuel extraction, and halt wind farm approvals, intensifying the climate crisis.
**b.** These decisions could also result in geopolitical tensions, with Europe likely imposing a Carbon Border Adjustment Mechanism in response.

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### 3. Immediate Global Impact:

**a.** The 2017 U.S. withdrawal significantly eroded U.S. credibility in climate diplomacy.

**b.** Other countries, including China and India, took on leadership roles, with China meeting its renewable energy targets six years ahead of schedule and leading in solar and wind power installations.

## What are the future implications of the withdrawal?

### 1. Climate Inequality and the Role of the Super-Rich:

**a.** According to Oxfam, the richest 1% of the global population are responsible for 15.9% of CO2 emissions, while the poorest 50% contribute only 7.7%.

**b.** The wealthiest 1% exhausted their share of the annual global carbon budget within the first 10 days of 2025, and to meet the 1.5°C target, they must cut their emissions by 97% by 2030.

### 2. Global Commitments and Distrust:

**a.** Wealthy nations missed their $100 billion annual climate finance commitment by two years.

**b.** The current pledge stands at $300 billion annually until 2035 (COP-29 The Finance Cop).

**c.** Distrust towards developed nations persists due to unmet promises and inequitable burden-sharing.

### 3. Financial Ramifications:

**a. Climate Finance Cuts:** Trump revoked the U.S. International Climate Finance Plan, which had aimed to contribute $11 billion annually by 2024. This withdrawal exacerbates the funding gap, leaving developing countries in need of $5–6 trillion by 2030 to meet their climate goals.

**b. Private Sector and Global Finance:** Large U.S. banks and investors are no longer required to support climate technologies, and U.S. veto power at the World Bank may shift priorities away from climate finance.

### 4. Domestic Environmental Rollbacks:

**a.** Trump's withdrawal was accompanied by over 100 deregulatory actions, including easing restrictions on coal-fired power plants and rolling back fuel efficiency standards. While these were framed as job-boosting measures, they undermined emissions reduction efforts.

**b.** Critics argue that the U.S. missed opportunities in the $2 trillion global clean energy market and the creation of millions of clean energy jobs.

### 5. Erosion of Global Momentum:

**a.** Trump's actions emboldened other nations to scale back their climate commitments.

**b.** According to the International Energy Agency, global energy-related CO2 emissions increased by 1.7% in 2018, reversing prior declines.

### 6. Climate Tipping Points and Risks: A 2-meter rise in sea levels could expose 480 million people to annual flooding, and economic losses from Amazon dieback could exceed $1 trillion.

## What are the challenges within the Paris Agreement?

**1. The 1.5°C Target:** Although politically significant, the 1.5°C threshold is often seen as a symbolic target, particularly for small island nations most vulnerable to warming. However, it does not account for latent heat in oceans, which could lead to further warming.

**2. Symbolic and Practical Value:** The 1.5°C target has been a catalyst for legal actions to hold governments and corporations accountable for emissions.

**3. Unmet Targets:** Four UN climate summits in 2024 failed to produce meaningful agreements, and the world is on track to exceed the 1.5°C target, with climate feedbacks and irreversible changes becoming more likely.

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**4. Shortcomings of the Agreement:** The NDCs are not legally binding, and many reports from countries contain data gaps. The agreement lacks enforceable commitments or specific implementation targets.

**What is the impact of U.S. Withdrawal on India?**

**1. Weakened Global Climate Action:** The U.S. withdrawal diminishes global momentum to address climate change, leaving India with increased pressure to meet ambitious climate goals without collective global action.

**2. Funding and Technology Gaps:** India relies on climate finance, particularly from the Green Climate Fund, to finance its renewable energy projects. The U.S. withdrawal further delays these initiatives due to funding shortages.

**3. Increased Fossil Fuel Competition:** Trump's push for expanded U.S. oil and gas production could undercut global energy prices, making India's renewable energy transition less competitive. India's focus on solar power (92 GW installed capacity) might face challenges as fossil fuels become cheaper globally.

**4. Geopolitical and Trade Tensions:** With the U.S. stepping back, China may dominate the clean energy market, creating geopolitical challenges for India. The U.S. withdrawal could also undermine trust in climate diplomacy, affecting India's international collaborations.

**5. Strain on India's Climate Goals:** India's target of net-zero by 2070 and renewable energy capacity of 500 GW by 2030 may be delayed due to reduced international cooperation.

**Way Forward: Moving from "Drill, Baby, Drill" to "Drill Will Kill."**

**US-PARIS:**

**U: Unified Global Action**: Countries should re-engage with global efforts to combat climate change.
**S:Sustainable Solutions**: Invest in clean energy technologies and renewable energy sources.
**P: Public-Private Partnerships**: Encourage collaboration between governments, industries, and academia.
**A: Adaptation Strategies**: Develop robust strategies to mitigate climate impacts.
**R: Research & Development**: Invest in climate change research and innovation, including carbon capture and storage.
**I: International Cooperation**: Re-establish leadership in international climate negotiations.
**S: Sustainable Consumption & Production**: Promote responsible consumption and production to reduce emissions.

> Read more- The Hindu
> UPSC Syllabus- GS 3 – Conservation, environmental pollution and degradation, environmental impact assessment

## Beti Bachao Beti Padhao: Achievements and Challenges- Explained Pointwise

Ten years ago, on January 22, 2015, Prime Minister Narendra Modi launched the Beti Bachao Beti Padhao (BBBP) initiative with the ambitious goal of addressing the declining Child Sex Ratio (CSR) and promoting the survival, protection, and education of the girl child.

To mark its 10th anniversary, a nationwide celebration from January 22, 2025, to March 8, 2025, is underway, aligning with India's Viksit Bharat 2047 vision. However over the past decade, the scheme has seen both significant achievements and notable challenges, shaping its legacy as a transformative program for gender equity in India.

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**What is the overview of the BBBP Scheme?**

**Launch and Objectives:** BBBP was introduced in Panipat, Haryana, with the core objectives of:
**a.** Arresting the decline in Child Sex Ratio (CSR)
**b.** Preventing gender-biased sex selection.
**c.** Promoting the survival, protection, and education of girls.

Initially targeting 100 districts, the program expanded to cover 61 additional districts in 2015-16 and was eventually implemented across all 640 districts in India.

**Integration with Mission Shakti:** BBBP is now part of Mission for implementation during the 15th Finance Commission period from 2021-2022 to 2025-2026, focusing on women's safety and empowerment. It has two sub-schemes-
**a. Sambal:** Ensures safety through One Stop Centres, Women Helpline (181), and Nari Adalat for grievance redressal.
**b. Samarthya:** Promotes empowerment via Shakti Sadans, Sakhi Niwas, Palna-Creche, and Pradhan Mantri Matru Vandana Yojana (PMMVY) for maternal health.

**Additionally, the SANKALP-HEW (Hub for Empowerment of Women)** serves as a single-window mechanism for women's welfare schemes.

**Key Objectives:**
**a.** Improve Sex Ratio at Birth (SRB) by 2 points annually.
**b.** Sustain institutional deliveries at 95% or above.
**c.** Increase first-trimester Ante-Natal Care (ANC) registration by 1% annually.
**d.** Boost girls' enrollment in secondary education and skill development.
**e.** Reduce dropout rates among girls.
**f.** Promote awareness of Menstrual Hygiene Management (MHM).

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**Target Groups**
**a. Primary:** Young couples, expecting parents, adolescents, and communities.
**b. Secondary:** Schools, Anganwadi Centers, medical professionals, PRIs, SHGs, media, and religious leaders.

**Financial Structure**

**Funding:** 100% centrally sponsored under Mission Shakti's Sambal vertical**.**
**Allocation:**
**a. Rs. 40 lakh/year** for districts with **SRB ≤918.**
**b. Rs. 30 lakh/year** for **SRB 919-952.**
**c. Rs. 20 lakh/year** for **SRB >952.**

**What is the current performance and progress of BBBP?**

**1. Sex Ratio at Birth (SRB): Mixed Progress**
**a. Aim**: Improve SRB by 2 points annually in critical districts.
**b. National SRB**: Improved from 918 (2014-15) to 930 (2023-24, provisional).
**c. State-wise Performance**:

- **Improvement**: 13 out of 22 states saw an increase in SRB (e.g., Rajasthan, Haryana, Himachal Pradesh, Gujarat).
- **Decline**: 9 states saw a drop (e.g., Odisha, Karnataka, Bihar).
- **No Change**: Maharashtra remained the same.

**2. Gender Gap in Under-Five Child Mortality: Progress Made**
**a. Aim**: Reduce gender differentials in under-five mortality by 1.5 points annually.
National Progress: Gender gap reduced from 7 points (2014) to 2 points (2020).
**b. State-wise Performance**:

- **Negative Differential (Girls < Boys)**: Himachal Pradesh, Kerala, Delhi, Gujarat, Madhya Pradesh.
- **Equal**: 3 states.
- **Higher than National Average**: Jammu & Kashmir, Punjab, Assam, Bihar, Rajasthan, Chhattisgarh.

**3. Increase in Institutional Births: Significant Improvement**
**a. Aim**: Sustain institutional deliveries at 95% or above.
**b. National Progress**: Institutional deliveries rose from 78.9% (2015-16) to 88.6% (2019-21).
**c. State-wise Performance**: Almost all states saw an increase.

**4. Rising Antenatal Checkups (ANC): Positive Trend**
**a. Aim**: Increase 1st trimester ANC by 1% annually.
**b. National Progress**: ANC in the first trimester rose from 58.6% (2015-16) to 70% (2019-21).
**c. State-wise Performance**: Increased in most states, except Punjab and Chhattisgarh.

**5. Enrollment of Girls in Secondary Education: Target Missed**
**a. Aim**: Increase enrollment to 82% by 2018-19.
**b. National Progress**: Enrollment rose from 75.5% (2014-15) to 76.9% (2018-19), falling short of the target.

**What are the transformative initiatives to raise awareness among target groups and stakeholders?**

BBBP's success also hinges on innovative grassroots campaigns:

**1. Digital Guddi-Gudda Board:** A digital platform displaying gender disparity in birth rates and disseminating information on girl child welfare schemes.

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**2. Udaan – Sapne Di Duniya De Rubaru:** Enables girls to shadow professionals in fields of their choice, inspiring career aspirations.

**3. Collector Ki Class:** Free coaching and career counseling for underprivileged girls in public schools and colleges.

**4. Bal Cabinet:** A youth leadership program simulating government cabinets to address societal issues.

**5. Yashaswini Bike Expedition (2023):** 150 women bikers covered 10,000 km, symbolizing empowerment.

**6. Kanya Shiksha Pravesh Utsav (2022):** Re-enrolled 100,786 out-of-school girls.

**What is the overall assessment of the program?**

**Achievements:**

**1. Enhanced Awareness:** The campaign successfully shifted perceptions in many communities where daughters were once considered a burden.

**2. Grassroots Impact:** Village-level celebrations of girl child births and initiatives like "Guddi-Gudda Boards" fostered community engagement.

**3. Legislative Backing:** Strengthened laws like the Pre-Conception and Pre-Natal Diagnostic Techniques (PCPNDT) Act, 1994.

**4. Improved Gross Enrollment Ratio (GER):** GER for girls in secondary education improved over the years.

**5. Institutional Deliveries:** A notable rise in safe deliveries across India.

**Challenges:**

**1. Disparities in CSR:** While some states show improvement, others face persistent or worsening trends.

**2. Secondary Education Enrollment:** The program failed to meet its target for girls' enrollment in secondary schools.

**3. Regional Disparities:** Uneven implementation and resource allocation in states with varying socio-economic conditions.

**4. Dropout Rates:** Persistently high dropout rates, especially among adolescent girls.

**What are the future Goals of the program?**

**1. Enforcement of PCPNDT Act:** Strengthening its implementation is crucial to prevent gender-biased sex selection.

**2. Tackling Dropouts:** Focused measures are needed to address dropout rates and expand skill development opportunities for girls.

**3. Female Labour Force Participation (FLFP):** At 41.7% (2023-24), FLFP remains low. Promoting employment opportunities and recognizing care work as a profession could help bridge the gap.

**4. Economic Impact:** Addressing gender gaps could boost global GDP by 20%, aligning with India's trillion-dollar economy goal.

**Way Forward: The "MERI-BETI" Framework**

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**1. M: Monitoring:** Strengthen data collection and analysis through district-level dashboards and third-party audits.

**2. E: Evaluation:** Conduct regular impact assessments and utilize feedback for program refinement.

**3. R: Resource Allocation:** Ensure equitable and targeted distribution of funds based on district needs.

**4. I: Innovation:** Implement creative approaches like gamification to engage and empower girls.

**5. B: Behavioral Change:** Promote social change by involving men and boys as allies in the fight against gender bias.

**6. E: Empowerment:** Focus on skill development, economic independence, and leadership opportunities for girls.

**7. T: Technology:** Use technology to improve access to education, healthcare, and information for girls.

**8. I: Inclusion:** Ensure marginalized communities have equal access to program benefits.

**Conclusion**

The Beti Bachao Beti Padhao scheme has made significant strides in addressing gender inequality, improving SRB, and promoting education and health for girls. However, challenges like regional disparities, unmet enrollment targets, and persistent gender bias demand renewed focus. By amplifying inclusive policies, sharpening implementation, and fostering community involvement, BBBP can continue to pave the way for a gender-equitable India, aligning with the vision of Amrit Kaal's Vision@2047.

> **Read more-** The Indian Express
> **UPSC Syllabus- GS –** Welfare schemes for vulnerable sections of the population

## Annual Status of Education Report (ASER) 2024- Explained Pointwise

The Annual Status of Education Report (ASER) 2024 has been released by the NGO Pratham Foundation. It provides a comprehensive analysis of learning outcomes among school students in rural India. The ASER 2024 report highlights improvements in preschool enrollment, foundational literacy and numeracy (FLN), digital literacy, and the impact of government initiatives such as the National Education Policy (NEP) 2020 and NIPUN Bhara.

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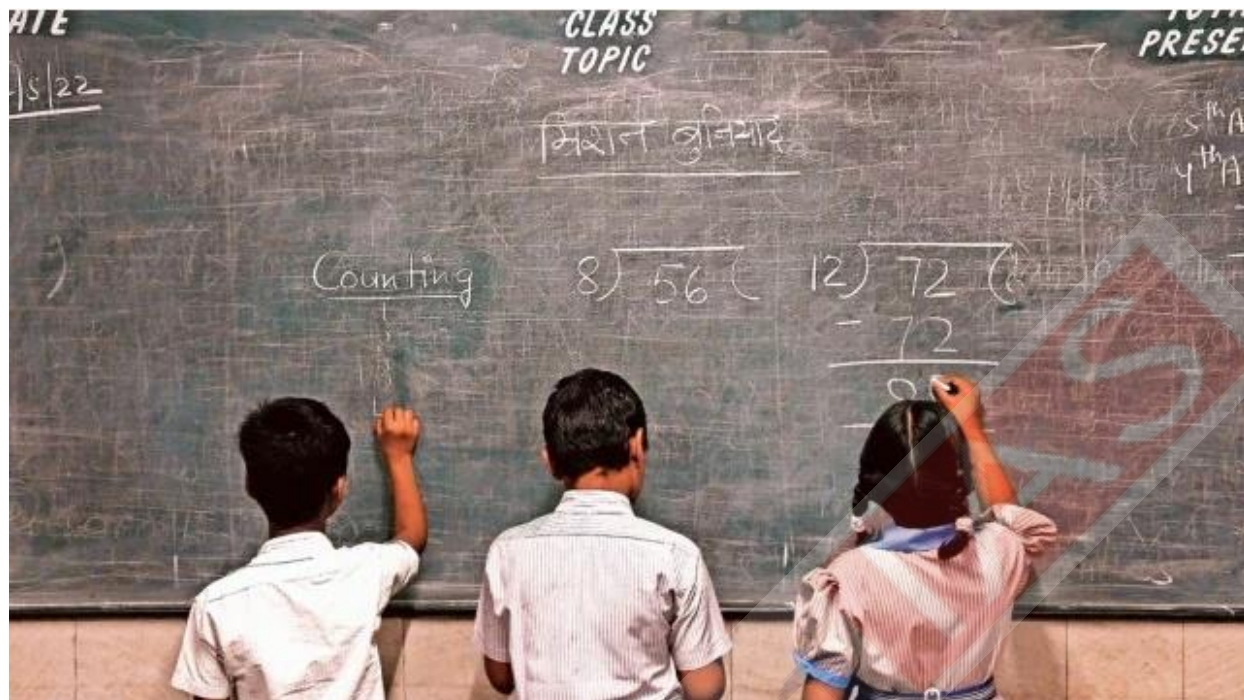
Source- The Indian Express

**What is the Annual Status of Education Report (ASER)? What is the methodology used?**

**ASER–** The ASER report is facilitated by Pratham Education Foundation since 2005. The ASER report examines the schooling status and foundational learning of children across districts and states of rural India. Originally it was an annual publication but after 2016, it has become a biennial report. ASER reports are usually referred to by the government while formulating policies.

**ASER 2024 Methodology–** The ASER 2024 survey was conducted in 17,997 villages across 605 rural districts. It reached 649,491 children aged 3 to 16 years and assessed the reading and arithmetic skills of over 500,000 children aged 5 to 16 years. The primary focus areas included:

**1. Enrollment**: ASER monitors school and preschool enrollment patterns, identifying progress and challenges across different states and age groups.

**2. Learning Outcomes**: It evaluates fundamental reading and arithmetic abilities, providing insights into children's academic progress at the primary and secondary levels.

**3. Digital Literacy**: ASER 2024 examines the smartphone proficiency of older children, assessing skills such as setting alarms, browsing, and messaging.

**What are the key findings of the ASER report?**

| | |
|---|---|
| **Preschool Enrollment (Age Group 3-5 Years)** | **1.** Preschool enrollment for children aged 3-5 years increased significantly, reaching 77.4% in 2024. <br> **2.** More children are now enrolled in institutions such as LKG, UKG, and Anganwadis, reflecting improved awareness of early childhood education |
| **Improvement in Foundational Skills (Age Group 6-14 Years)** | **1. Reading Levels** <br> **a. Class III:** The percentage of children able to read a |

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| | |
|---|---|
| | Class II-level text increased from 20.5% (2022) to 27.1% (2024). **b. Class V:** The proportion of students who can read at least a Class II-level text improved from 42.8% (2022) to 48.8% (2024). **2. Arithmetic Proficiency** **a. Class III**: Two-thirds of students struggle with basic subtraction. **b. Class V:** 30.7% can perform division, up from 27.9% in 2018. **c. Class VIII:** Marginal improvement in arithmetic proficiency (45.8% in 2024 vs. 44.1% in 2018). **3. Despite improvements, significant gaps remain**: 76% of Class III students, 55.2% of Class V students, and 32.5% of Class VIII students cannot read a Class II-level text. **4.** The report also notes recovery from learning losses caused by the Covid-19 pandemic |
| **State-wise Improvements** | **1. Low-performing states** such as Uttar Pradesh, Bihar, Madhya Pradesh, and Tamil Nadu demonstrated notable recovery. For example, Uttar Pradesh's Class III reading levels rose from 16.4% (2022) to 27.9% (2024). **2. High-performing states** such as Himachal Pradesh and Maharashtra also recorded appreciable gains. |
| **Digital Literacy** | **1.** Over 90% of rural adolescents (15-16 years) have access to smartphones. **2.** 89% of 14–16-year-olds have access to smartphones, and 31.4% own their own devices. **3.** Gender disparities in digital skills: 80.1% of boys vs. 78.6% of girls could browse for information. **4.** In some southern states, girls performed at par or better than boys. **5.** Boys demonstrated higher awareness of phone safety features (e.g., 62% know how to block/report profiles). |
| **School Readiness Programs** | **1.** Over 75% of government schools have implemented a three-month readiness program for Grade 1. **2.** Government-led directives, teacher training, and provision of learning materials have contributed to positive FLN outcomes. |
| **Government Schools Drive Recovery** | Government schools outperformed private schools in learning recovery, although private schools continue to lag behind pre-pandemic levels. |

**What are the effects of the National Education Policy (NEP) 2020?**

**1. Structural Changes:**
**a.** NEP integrates the 3-6 age group into the education framework.
**b.** Emphasis on achieving universal FLN by 2026-27.

**2. NIPUN Bharat Initiative:**
**a.** Launched in 2021 to enhance reading and numeracy skills.
**b.** 83% of schools received directives to implement FLN activities.
**c.** 78% of schools reported at least one teacher trained in FLN, and 75% received learning materials.

**Why is Early Childhood Care and Education (ECCE) important and its related challenges?**

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**1. Importance of ECCE:**
**a.** NEP recommends Class 1 enrollment at age six for cognitive and social readiness.
**b.** Focus on preparing children in the three years before Class 1.

**2. Role of Anganwadis:**
**a.** Over one-third of children aged 3-5 are enrolled in Anganwadis.
**b.** States are providing specialized training to Anganwadi workers.
**c.** Anganwadis help bridge the gap between families and schools.

**3. State Variations:**
**a. Himachal Pradesh and Punjab**: Shift towards pre-primary classes in schools.
**b. Rajasthan**: Rise in dual enrollment in Anganwadis and private LKG/UKG classes.

**Highlighted Challenges**

The **ASER Report 2024** highlights several challenges in Early Childhood Care and Education (ECCE):

**1. Data Collection** – A need for continuous and comprehensive data on ECCE through ASER and UDISE for better policy planning.

**2. Budget and Resources** – Ensuring long-term financial commitment to ECCE, along with recruitment and training of specialized teachers as per NEP 2020.

**3. Anganwadi Strengthening** – Additional resources are required to enhance the role of Anganwadis in delivering quality early childhood education.

**What are the other unique insights of the report?**

**1. Parental Involvement:** The survey underscores the crucial role of parental engagement in early education. Community-based Anganwadis facilitate stronger parent-teacher collaboration compared to formal schools, fostering a supportive learning environment.

**2. Holistic Development:** Early childhood education extends beyond academics, encompassing social, emotional, and physical growth. Programs like Anganwadis, which integrate nutrition and immunization, play a pivotal role in a child's overall well-being.

**3. Private Sector's Growing Role:** The increasing enrollment in private LKG/UKG, particularly in states like Rajasthan, highlights the expanding role of private institutions in early education. This trend necessitates robust regulatory frameworks to ensure quality education and affordability.

**4. Digital Divide:** While 90% of rural adolescents have smartphone access, a significant gender gap in digital literacy persists. Targeted interventions are essential to bridge this divide, particularly for girls, to ensure equitable learning opportunities.

**5. Teacher-Student Ratio in Early Education:** The survey indirectly highlights the need for improved teacher-student ratios in pre-primary education to provide personalized attention and enhance learning outcomes.

**What are the different government initiatives taken for the improvement of school education?**

**1. Sarva Siksha Abhiyaan (SSA)-** Sarva Shiksha Abhiyan (SSA) is a comprehensive and integrated flagship programme of Government of India to attain Universal Elementary Education (UEE), covering the entire country in a mission mode.

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**2. PM-POSHAN Scheme/Mid-Day Meal Scheme**– The Mid-Day Meal Scheme is a school meal programme in India designed to better the nutritional standing of school-age children nationwide. The scheme has been renamed as PM-POSHAN Scheme.

**3. SWAYAM Programme**– SWAYAM is a programme initiated by Government of India and designed to achieve the three cardinal principles of Education Policy that is access, equity and quality.

**4. Beti Bachao Beti Padhao Abhiyan**– School Management Committees which achieve 100% transition of girls at different levels of education to be awarded under part of the scheme.

**What is the way Forward: "PRATHAM" Approach?**

**1. P**: **Policy Reinforcement** – Strengthening NEP 2020 implementation and tailoring state-specific FLN programs.

**2. R**: **Resource Allocation** – Increasing funding for government schools and investing in teacher training.

**3. A**: **Access and Equity** – Ensuring equitable access to education and expanding digital infrastructure.

**4. T**: **Technology Integration** – Leveraging EdTech tools for improved FLN outcomes.

**5. H**: **Holistic Development** – Encouraging socio-emotional learning and parental involvement.

**6. A**: **Accountability Mechanisms** – Conducting regular assessments to track learning progress.

**7. M**: **Multi-Stakeholder Collaboration** – Encouraging public-private partnerships and community engagement.

**Conclusion**

The ASER 2024 survey highlights significant progress in preschool enrollment and foundational learning levels, reflecting the impact of NEP 2020 and NIPUN Bharat. However, challenges persist in achieving universal foundational skills and strengthening early childhood education. Addressing these issues requires data-driven policies, increased funding, improved teacher training, Anganwadi strengthening, and bridging the digital divide.

> **Read more**– The Indian Express
> **UPSC Syllabus- GS 2**– Issues relating to development and management of Social Sector/Services relating to Education.

## Stampede Disaster and its Management in India- Explained Pointwise

Recently, a stampede occurred at the Maha Kumbh in Prayagraj, Uttar Pradesh, on January 29, resulting in 30 deaths and over 60 injuries. This is not the first time when a large number of people have lost their lives in a stampede at a religious gathering. This is the third such incident in recent months and highlights India's recurring issue of fatalities during religious gatherings. 79% of all stampedes in India from 1954-2012 have taken place in religious mass gatherings.

This calls for a detailed look into the issue of Stampede Disaster and the measures needed to be taken to manage it.

**What is stampede? What are the infamous stampede cases in India?**

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**Stampede-** Stampede is the disruption of the orderly movement of crowds which leads to injuries and fatalities. This impulsive mass movement of crowd often takes place in response to a perceived danger, loss of physical space or a will to attain something as gratifying.

**Process of a Stampede**
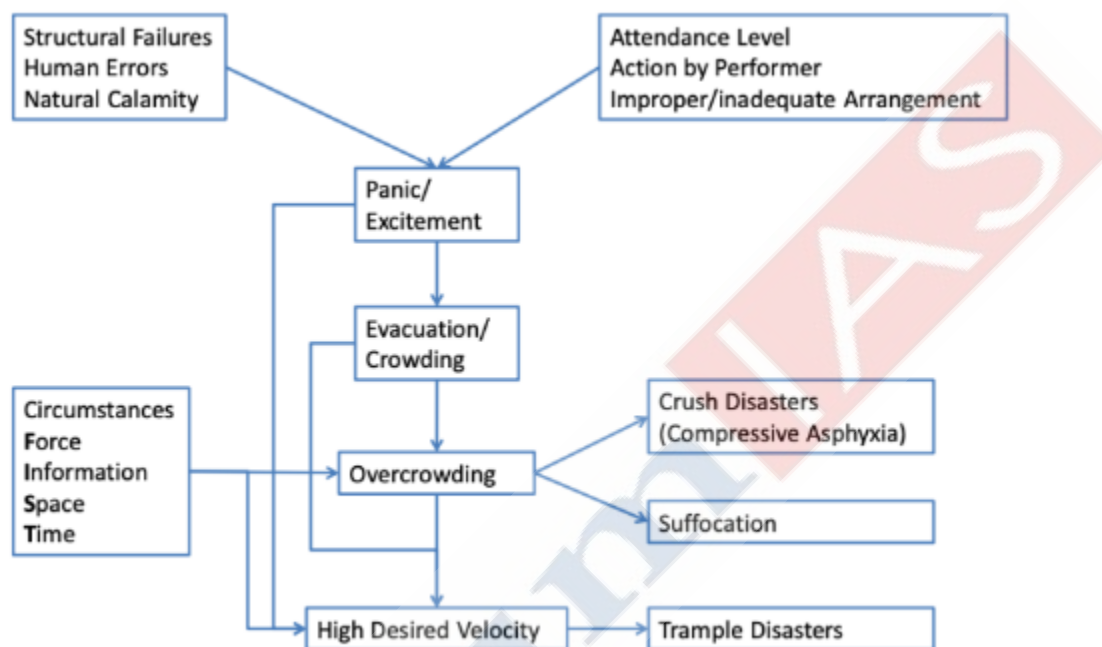


Source- NDMA Disaster Guidelines
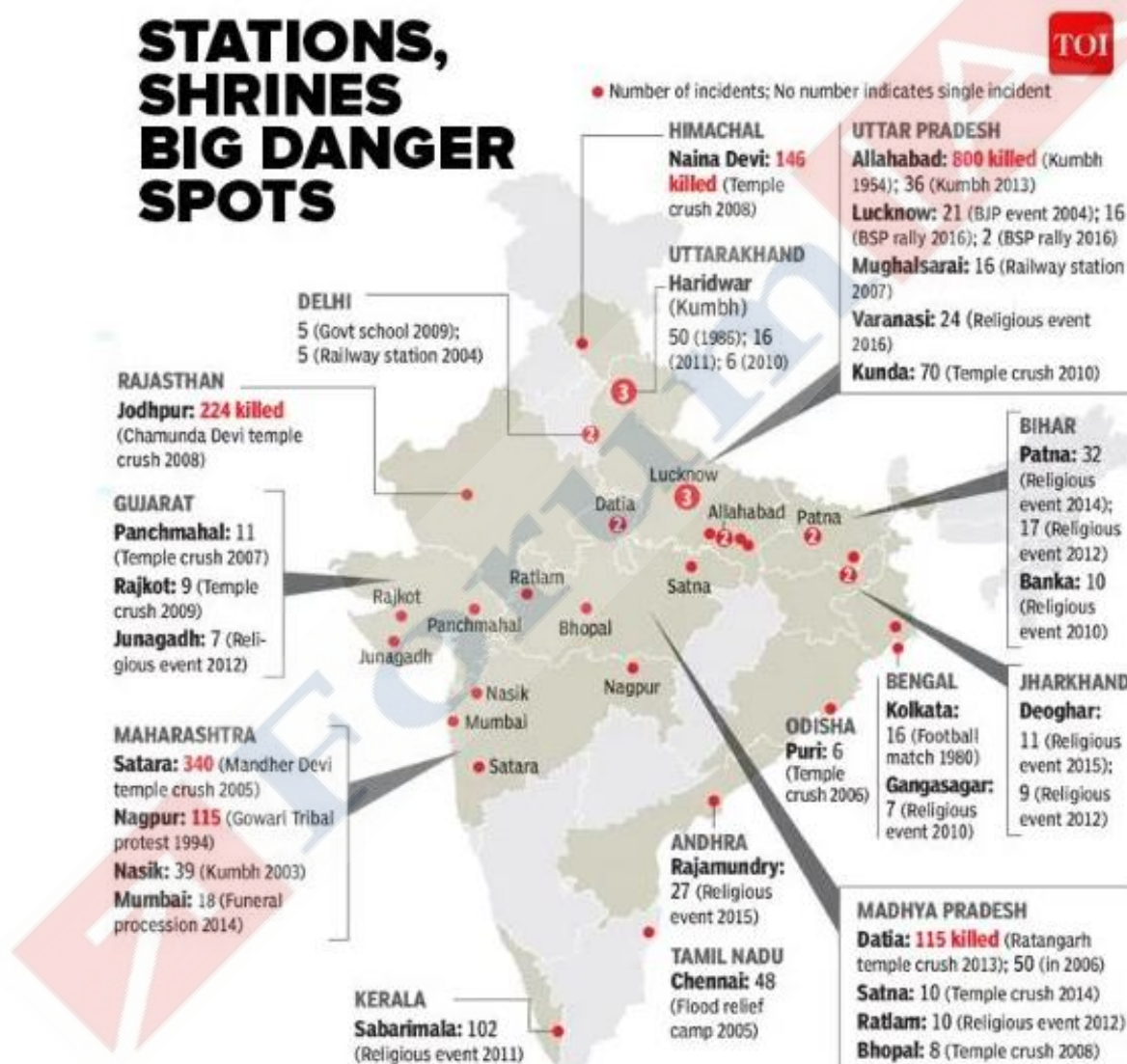
**Some Notable Deadly Stampede Disasters in India**

| Allahabad Kumbh Mela Stampede (1954) | It is the most fatal Kumbh Mela stampede in history. It resulted in the loss of around 800 lives. |
|---|---|
| Wai Stampede (2005) | The stampede at the Mandhardevi temple in Maharashtra's Satara district resulted in the death of 340 people. |
| Naina Devi Temple Stampede (2008) | Rumors of landslide started the stampede at the Naina Devi Temple in 2008. It resulted in the death of atleast 145 people which included dozens of women and children. |
| Jodhpur Temple Stampede (2008) | The stampede at the Chamunda Devi Temple resulted in the death of at least 168 people. |
| Allahabad Railway Stampede (2013) | Last-minute change in the platform for the pilgrims who had gathered for the Khumbh Mela, created panic and resulted in a stampede. It led to the loss of around 36 lives. |
| Mumbai pedestrian bridge Stampede (2017) | The stampede at the crowded Pedestrian Bridge connecting the two Mumbai railway stations resulted in the death of 22 people and injured 32. |

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| Mata Vaishnav Devi shrine (2022) | The Stampede at the Mata Vaishno Devi Shrine resulted in the death 22 people and injured 32. |
|---|---|
| Hathras Stampede (2024) | During a religious gathering in Uttar Pradesh's Hathras district on July 2, 2024, at least 121 people (almost all women) lost their lives. |

**Stampede Statistics In India**

According to the National Crime Records Bureau figures, from 2000 to 2013, almost 2,000 people died in stampedes in India.

A 2013 study published by International Journal of Disaster Risk Reduction (IJDRR) points out that religious gathering and pilgrimages have been venues for 79% of the stampedes in India.



Source-TOI

**What are the major causes of Stampedes in India?**

**Structural Causes**

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The stampedes occur due to structural and design failures in the buildings, bridges etc. This includes the following causes-

(a) Structural collapse of makeshift bridges, railings, temporary structures

(b) Improper and unauthorised built structures

(c) Railings of the bridge collapsing due to panic triggered by rumours

(d) Difficult terrain (famous religious sites built on top of hills that are difficult to access)

(e) Narrow streets with very few entry/exits

(f) Absence of emergency exits

**Fire/Electricity causes**

This includes the following causes-

(a) Fire in a makeshift facility or a shop, and illegal and unauthorised structure

(b) Non-availability of fire extinguishers in working condition

(c) Building and fire code violations, unauthorized fireworks in enclosed places

(d) Electricity supply failure creating panic and triggering a sudden exodus

(e) Illegal electric connections and faulty electric equipment

**Crowd Behaviour**

The stampedes are either triggered or made worse by panic. Crowd behaviour plays an important role in it. Following are some crowd behaviour causes-

(a) Craze- In large group settings, this "craze" percolates to every member and can make them act in detriment to their own individual interests. **For ex-** One of the major causes behind the recent Hathras Stampede has been the rush to touch the preacher's feet and trying to collect soil from where he walked.

(b) Crowds forcing to entrance/exits a venue after the start/closing time

(c) Rush during distribution of disaster relief supplies

(d) A large (much more than expected) anxious and competitive crowd gathering at promotional events

(f) Unruly and irresponsible crowd behaviour

(g) Last minute change in platform for train arrival/departure resulting in lots of movements within short period of time

**Security Issues**

This includes:

**(a) Security Personnel**

(i) Under deployment of security staff and deployment of untrained staff

(ii) Lack of adequate rehearsals and briefing of security personnel on crowd control

(iii) Lack of adequate scientific planning in making police arrangement to deal with crowd with proper sectoral deployment, and lack of proper wireless deployment

(iv) Ineptitude of the police in effectively managing the crowd and enforcing prohibitory orders

**(b) Surveillance**

(i) Lack of adequate observation towers with proper wireless communication to monitor and regulate crowd

(ii) Lack of adequate CCTV surveillance of the crowd

(iii) Absence of public announcement systems or effective wireless system with the police;

**(c) Infrastructure**

(i) Lack of adequate road opening parties to secure the routes

(ii) Lack of adequate metal detectors and frisking of pilgrims entering the pilgrimage area or persons entering the gathering area

**Lack of Coordination between Stakeholders**

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This includes the following issues-

(a) Coordination gap between agencies (e.g. Police and District Magistrate; PWD, Fire Service, Forest officials, Revenue officials, Medical officers etc.)

(b) Poor infrastructure (Plans on paper but no implementation due to lack of funds, resources, or will)

(c) Inadequate water, medical assistance, public transport/parking facilities

(d) Communication delays

(e) Vacant/late/delayed posting of key personnel

**What are the Impact of these Stampedes?**

Stampedes at religious gatherings in India have significant impacts on local communities. Mentioned below are some of the major impacts.

**1. Trauma and Loss-** Witnessing a stampede tragedy and the resultant deaths and injuries causes immense trauma, especially for those who lost loved ones. **For ex-** Deadly stampede killing 121 people in Hathras.
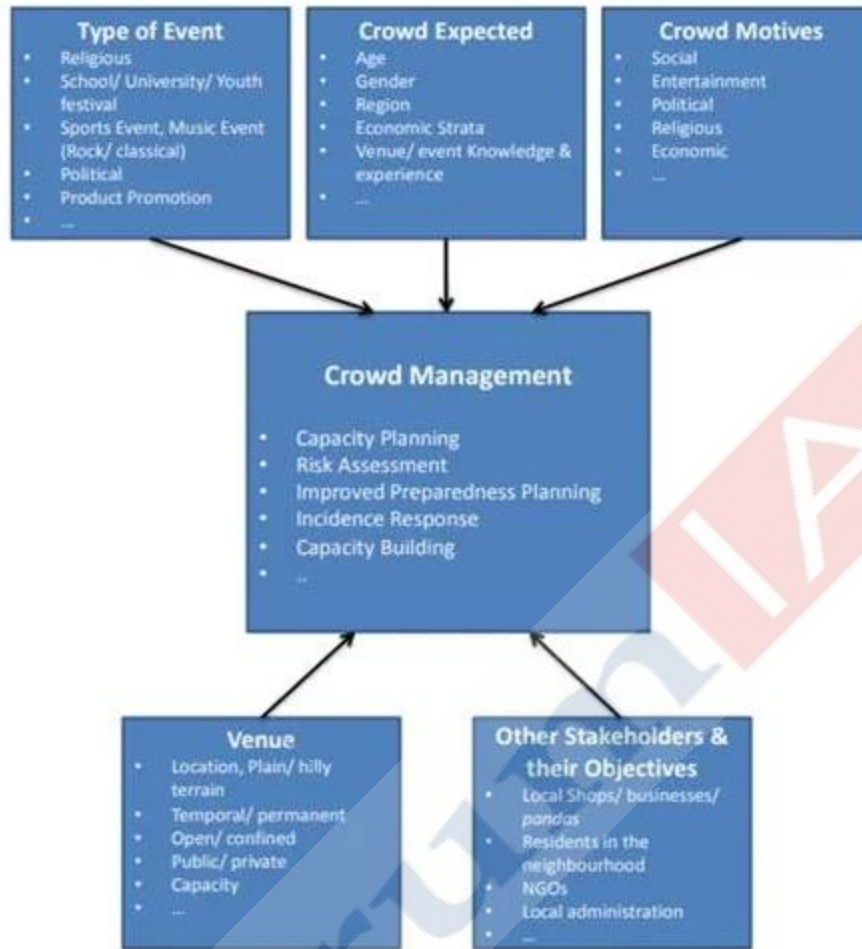
**2. Economic Hardship-** The majority of victims in such stampedes come from lower castes and poor backgrounds. Their deaths leave families without primary breadwinners, causing economic hardship in the community. Also the cost of funerals and medical expenses further strain already limited resources.

**3. Erosion of Trust-** Repeated stampedes at Indian religious festivals due to similar failures further undermine faith in the ability of organizers to keep devotees safe. **For ex-** Gross negligence like poor planning, with insufficient exits, inadequate crowd control, and lack of emergency preparedness, by organizers and authorities erodes trust in religious institutions.

**4. Loss of Social and Human Capital-** Many young children and women are the victims of these stampede tragedies. This leads to loss of the productive social and human capital of the country.

**What are the NDMA Guidelines for the prevention of Stampedes in India?**

In view of the recurring stampedes at places of mass gathering, including religious places, and typically ad-hoc responses to those, the National Disaster Management Authority (NDMA) has prepared 'Suggestive Framework for Preparation of Crowd Management Plan for Events/Venues of Mass Gathering'.

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Source- NDMA

| | |
|---|---|
| **Understanding venue, visitors and stakeholders** | It requires understanding of-<br>a. Type of event (such as religious, schools/ university, sports event, music event, political event)<br>b. Expected Crowd (age, gender, economic strata)<br>c. Crowd Motives (such as social, academic, religious, entertainment, economic etc.)<br>d. Venue (location, topography of area, temporal or permanent, open or closed)<br>e. Role of other stake holders (such as NGOs, neighbours of event venue, local administrators etc.) |
| **Crowd Handling** | a. Proper regulation of Traffic around the mass gathering venues.<br>b. A route map for venues along with emergency exits route maps.<br>c. Barricade facility to control the movement of crowd queues.<br>d. Snake line approach should be followed in case large crowd queues<br>e. The organizers of crowded events/venue managers should discourage general admissions and have plans to handle VIP visitors. |

| | |
|---|---|
| **Safety and Security** | a. The venue Organisers should ensure authorised use of electricity, use of fire safety extinguishers as per the safety guidelines. <br> b. Use of CCTV cameras to monitor crowds and use of mini UAV in case of big crowd spread. |
| **Communication** | A public address system, with loudspeakers installed at all crowded points, to communicate with the crowds. |
| **Medical and Emergency care** | Medical first-aid rooms and emergency operations centres to handle post-disaster emergencies should be set up |
| **Role of Event Managers** | The event organizers and venue managers should develop, implement, review and revise the disaster management plan in coordination with others including local administration and police. |
| **Role of Civil society** | Event/venue managers should involve NGOs and civil defence in traffic control, people flow control, medical assistance, sanitation and mobilization of local resources in case of disaster. |
| **Role of police** | The police should actively participate in venue assessment and preparedness checks and guide crowd and traffic movements. |
| **Role of Media** | (a) Educational- Media can educate public about the possible disaster threats, ways to prevent them and how to be better prepared in the face of a disaster <br> (b) Critical- Media can critically evaluate the disaster management plans to highlight the gaps for correction; |
| **Capacity Building** | Capacity building, conduction of drills, periodic assessment of training of security personnel, police is essential to prevent crowd disasters |

**Use of ICT in Stampede Management**

| ICT for Disaster mitigation and Prevention | ICT in Disaster response and relief |
|---|---|
| Technology <br> • GIS, Remote Sensing <br> • Radio, Television, telephone <br> • SMS, UMS, Cell Broadcasting, Internet/Social Media <br> • RFID <br> • Space based sensors and balloons | Technology <br> • PA system, SMS, UMS, Cell Broadcasting, Inter-operability of mobile service providers <br> • Emergency lighting, alarms <br> • RFID Tags <br> • Registration database software <br> • Space based sensors and balloons |
| Typical Usage <br> • Early warning system, Potential Risks, Vulnerabilities <br> • Registration of visitors, Virtual Queues, RFID <br> • Information dissemination <br> • To regulate flow of visitors <br> • Prepositioning of resources | Typical Usage <br> • To ensure rumours do not spread <br> • Registering missing persons <br> • Search and rescue <br> • Keeping track of relief organizations, Camps of displaced persons <br> • Insurance processing <br> • Resource inventory management |

Source- NDMA Guidelines for ICT use in Disaster Management

**What are the Challenges in the implementation of these Guidelines?**

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**1. Lack of adoption and implementation-** The state governments and local authorities have not yet properly implemented the NDMA guidelines on crowd management.

**2. Rapidly rising population-** With rising population and rapid urbanization, urban areas have become more susceptible along with places of frequent mass gatherings like temples.

**3. Greater tolerance to crowd-** According to several psychologists, there is very high tolerance for crowded places in India, because Indians don't feel uncomfortable until it's very packed. Hence, large-scale events in India become more susceptible to stampedes because of a greater tolerance for high-density crowds.

**4. Governance and accountability-** Agencies responsible for issuing permissions/ licences for mass gatherings, events often fail to follow the guidelines and the requirements. Further, there is lack of accountability on part of the authorities.

**What Should be the Way Forward?**

**1. Legislation, Rules and Regulations for Stampedes-** Supreme Court in Uphaar Cinema Tragedy observed that there is a need for a comprehensive legislation dealing with tortuous liability of the State.

**2. Specialisation and Professionalism-** India needs to emphasize effective communication, sensitive on-ground interventions, specialized personnel training, safety insurance, online customer feedback system, transparency, statutory compliances and professionalism, to maintain the decorum of the crowd in huge events.

**3. Use of technology-** Latest technology such as CCTV surveillance with HD IP cameras with VMS (Video Management Software), mobile control room, drones for roof level surveillance and public address system, face recognition among crowds and robotic support should be deployed extensively in crowded places.

**4. Capacity Evaluation-** There should be proper evaluation of the capacity of a location or structure before holding mass gatherings. Existing infrastructural problem should be addressed to avoid mishaps.

**5. Crowd Behaviour Management-** Every mass event must have a public address system for the officials to stop rumours from getting out of hand, calm panicking crowds, and help people exit in a systematic manner.

**6. Penalties-** Stricter penalties, revocation of licenses for construction/fire safety violations, random checks and inspections, must be adopted ensure effective compliance.

**7. Engaging Civil Society-** The Local Civilian Organisations like NGOs must be actively engaged in the event for capacity building of event managers etc, for easy mobilization of local resources, better preparedness and traffic control.

**8. Learning from Global Best Practices-** The learnings from Global Best Practices in Crowd Management must be adopted for effective management of Stampedes in India. **For ex-** Crowd management during Haj Pilgrimage in Makkah.

Read More- The Indian Express
UPSC Syllabus- GS 3 Disaster Management

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