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Behind Venezuela's quake devastation: Rare 'seismic doublet', vulnerable location

Anagha Jayakumar
New Delhi, June 25

THE TWIN earthquakes near Venezuela capital Caracas are feared to have killed tens of thousands. The first quake, with a magnitude of 7.2, hit about 160 km west of Caracas late on Wednesday night. Just 39 seconds later, it was followed by a magnitude 7.5 quake. The US Geological Survey (USGS) described the disaster as a "seismic doublet". The second quake was the largest to strike Venezuela or just off its coast since 1900, according to the USGS.

The agency's preliminary death toll estimate ranges from 10,000 to 100,000. Officials warned this could become one of the country's deadliest natural disasters.

What do we know about the quakes?

The first earthquake struck about 24 km from San Felipe in Yaracuy state. The second hit near Morón in neighbouring Carabobo state, about 168 km west of Caracas, according to the USGS.

The shocks from the disaster were felt as far away as neighbouring Colombia, with residents in the capital, Bogotá, reporting

feeling the tremors. *Associated Press* also reported that buildings were evacuated in Manaus, Belém and Macapá in Brazil's Amazon region. Venezuela President Delcy Rodríguez said the worst-affected areas included Caracas and the north-central states of Miranda, La Guaira, Aragua, Carabobo and Falcón. Despite the widespread damage, Venezuela's oil infrastructure did not appear to be affected, according to *Reuters*.

Why was it called a doublet?

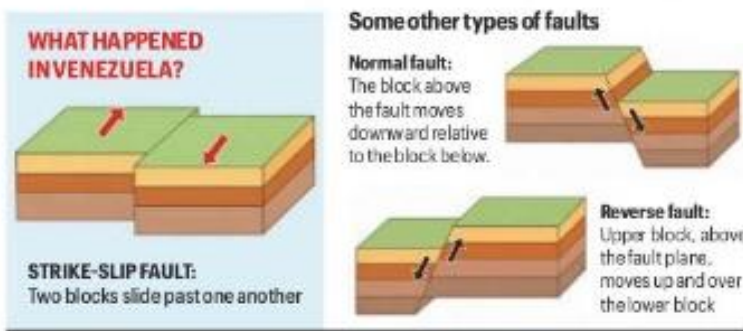
Given that both earthquakes occurred within a short time and distance from each other, the USGS classified the event as a doublet. In a typical sequence, the larger quake is followed by a series of smaller aftershocks. Doublets, however, are generally defined as earthquakes of similar magnitude that originate from distinct but closely related ruptures and occur in quick succession.

What caused the earthquakes?

Venezuela sits in one of the most seismically active regions in northern South America, along the boundary between the Caribbean and South American tectonic

What is a fault?

A fault is a fracture or zone of fractures between two blocks of rock. When these blocks move rapidly, they cause quakes.



plates. These two plates can slide horizontally past each other along faults, in a phenomenon called a strike-slip fault, causing earthquakes.

The country has witnessed about a thousand earthquakes of magnitude 4.0 and higher over the past decade.

According to the USGS, Wednesday night's second, stronger earthquake re-

sulted from shallow strike-slip faulting near the boundary between the two plates.

The USGS classified the magnitude 7.2 earthquake as a foreshock, or a smaller earthquake that occurs before a larger one, and the magnitude 7.5 event as the mainshock, the largest earthquake in a sequence. The agency said the sequence "likely indicates a complex rupture interaction pro-

cess" that formed a seismic doublet. The USGS said quakes of this size should not be viewed as a single point on a map but as the rupture of a much larger section of fault.

Why were they so destructive?

The mainshock occurred at a relatively shallow depth of about 10 km. This meant that the shockwaves reached the surface with high intensity. Worsening the situation was the fact that this was a doublet, distinct from routine aftershocks.

"Aftershocks are largely a result of disturbances or ruptures caused by the main earthquake. Some stress is already present, and it is then amplified by the main earthquake, resulting in another quake. Aftershocks are usually one or more magnitude smaller than the main earthquake, although these are not very tight definitions, and have to be assessed on a case-by-case basis," Vineet Gehlot, director of Dehradun-based Wadia Institute of Himalayan Geology, told *The Indian Express*.

"Doublets are two independent events happening within a very short span of time, a few seconds or a few minutes, or maybe a couple of hours. They are roughly of the

same magnitude and happen in close proximity to each other," he said.

Doublets can also be especially destructive because they prolong the strong ground shaking. A 2016 study in *Nature Geoscience* analysing Pakistan's 1997 Hamai earthquake found that a second major shock, which struck 19 seconds after the first, doubled both the duration of ground shaking and the area affected by the strongest shaking. Thus, buildings weakened by the first quake remain exposed to another major shock almost immediately, increasing the risk of collapse and complicating rescue efforts.

Have doublets occurred in the past?

• **IN 2023**, a doublet quake struck Turkey and Syria, measuring at magnitudes of 7.8 and 7.7. These happened just 96 km and nine hours apart, affecting 14 million people and causing widespread damage.

• **IN 2021**, a major doublet-like event occurred when quakes of magnitudes 8.6 and 8.2 struck the Indian Ocean, near Malaysia.

• **IN 1988**, a "triplet" — a series of three earthquakes just half an hour apart from each other — occurred in Australia.

• WITH INPUTS FROM AMITABH SINHA

- **Key Terms and Explanations**

- **Seismic Doublet:** Unlike a classic earthquake sequence where a massive mainshock is followed by smaller, decaying aftershocks, a seismic doublet involves two independent earthquakes of comparable magnitudes occurring very close to each other in both time and space..
- **Strike-Slip Fault:** A fault structural mechanism where two tectonic blocks slide past one another horizontally along a near-vertical fault plane. The movement is driven by shear stress rather than tension or compression.
 - *Normal Fault:* Occurs under tensional stress where the crust is pulled apart; the block above the fault plane (hanging wall) moves downward relative to the footwall.
 - *Reverse Fault:* Occurs under compressional stress where the crust is squeezed together; the hanging wall moves upward and over the footwall.
- **Focal Depth (Shallow vs. Deep Focus):** The exact point within the Earth where the rupture begins is the hypocenter or focus. Earthquakes with a focal depth of less than 70 km are classified as shallow. The catastrophic event in Venezuela occurred at an incredibly shallow depth of approximately 10 km, preventing the seismic energy from attenuating (weakening) before reaching surface populations.
- **Foreshock vs. Mainshock:** Conventionally, a foreshock is a smaller earthquake that precedes a larger planetary rupture. In the complex rupture interaction observed in northern South America, the initial magnitude 7.2 event acted as a foreshock to the even more massive magnitude 7.5 mainshock that followed just 39 seconds later.

- **Core Concepts and Tectonic Dynamics**

- The physical realities of the dual seismic event near Caracas, Venezuela, challenge traditional disaster response paradigms due to the unique structural compounding of energy.

- **The Mechanism of the Twin Rupture**

- The tectonic architecture of northern South America is defined by the high-friction boundary between the **Caribbean Plate** and the **South American Plate**. These plates do not glide smoothly; they lock, accumulating immense strain over decades. When the fault plane finally slipped 24 km from San Felipe, it did not just release energy—it transferred a massive wave of kinetic and structural stress further along the fault line to the neighboring region of Morón.

- **Why Doublets Amplify Surface Destruction**

- The core problem with a seismic doublet is not just the sum of its magnitudes, but the structural vulnerability it exploits.
- **The Compounding Effect:** The initial magnitude 7.2 shockwave compromises the structural integrity of concrete, brick, and steel infrastructure, creating micro-fissures and weakening foundations.
- **The Secondary Hammer:** Before rescue operations can even be conceptualized, a second, more powerful magnitude 7.5 shock strikes just 39 seconds later. Buildings that were standing but unstable are completely pulverized, drastically reducing the survival window for individuals trapped inside.
- **Rupture Length vs. Point Sources:** Earthquakes of this scale cannot be viewed as a single dot on a map. They represent the violent tearing of a massive, extended section of the earth's crust, meaning the destruction spans hundreds of kilometers simultaneously.

- **Historical Evolution of Seismic Mapping and Doublet Events**

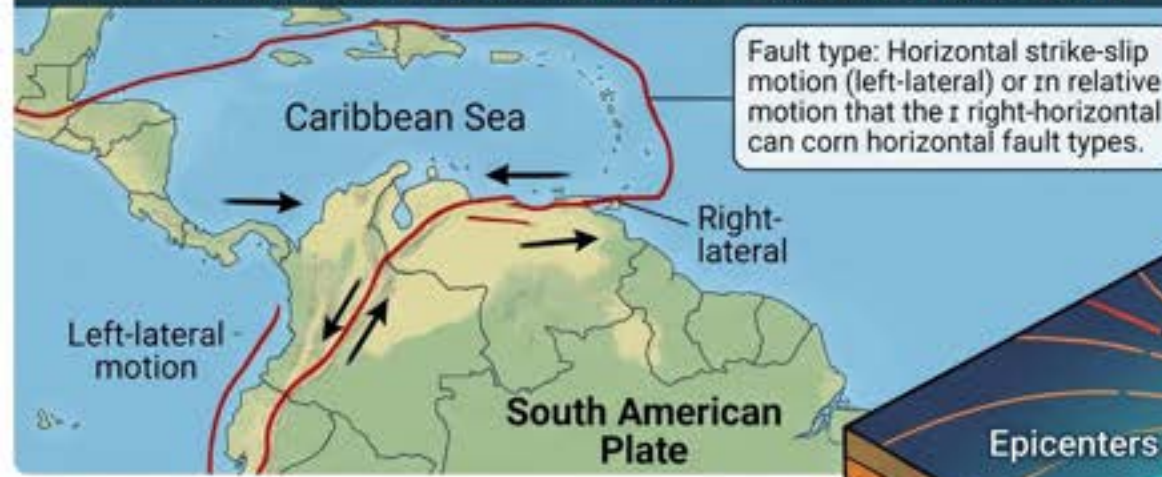
- **The Pre-Instrumental and Early Era:** Prior to the deployment of the Worldwide Standardized Seismograph Network (WWSSN) in the 1960s, closely timed events were often recorded as a single, prolonged earthquake or misidentified as standard aftershocks. The underlying physics of stress triggering remained largely theoretical.
- **The 1988 Australian Milestone:** A major shift in perspective occurred when a rare "triplet" of earthquakes—three distinct events above magnitude 6.0—struck within just half an hour of each other in the Australian interior. This forced seismologists to acknowledge that intraplate and interplate boundaries could experience rapid-fire, independent ruptures.
- **The 1997 Harnai (Pakistan) Breakthrough:** As analyzed in later geophysical reviews, the 1997 doublets demonstrated a terrifying reality: the second shock doubled the absolute duration of violent ground shaking. This historical case study proved that standard engineering codes, which only plan for a single peak acceleration, were fundamentally inadequate.
- **The Modern Paradigm (2021–2023):** The massive 8.6 and 8.2 events in the Indian Ocean (2021) and the catastrophic 7.8 and 7.7 doublet in Turkey and Syria (2023) solidified the need for global disaster management agencies to rewrite their protocols. The current 2026 crisis in Venezuela stands as the latest, most devastating reminder that high-density urban populations situated on shallow strike-slip faults face an existential threat from these rapid-fire phenomena.

- **Way Forward**

- **Advanced Seismic Microzonation:** Governments must move beyond broad seismic zone maps and invest in high-resolution microzonation. This involves mapping local soil types, sediment depths, and hidden fault strands within urban centers to identify exactly which neighborhoods will amplify shallow strike-slip shockwaves.
- **Evolution of Structural Engineering Codes:** Current structural designs are built to survive a single peak ground acceleration (PGA) event followed by minor aftershocks. Engineering mandates must be updated to require **progressive-shock resistance**. Buildings must be designed to retain structural ductility and load-bearing capacity even after suffering severe initial damage.
- **Dynamic Institutional Disaster Protocols:** National disaster response agencies (such as India's NDMA or global equivalents) must rewrite their field manuals. Standard operating procedures must forbid rescue teams from entering compromised structures immediately after a major shock if the tectonic profile of the region indicates a high probability of a doublet. Training must include multi-shock drills.
- **Redundancy in Critical Infrastructure:** Critical lifelines—such as water, power grids, hospitals, and communication networks—must feature built-in structural redundancies. As seen in this crisis, maintaining intact oil infrastructure is an economic relief, but civilian medical and transport networks must be equally decentralized so that the destruction of one hub does not paralyze the entire lifesaving apparatus.

VENEZUELA'S EARTHQUAKE DEVASTATION: A COMPREHENSIVE SEISMIC DOUBLET ANALYSIS

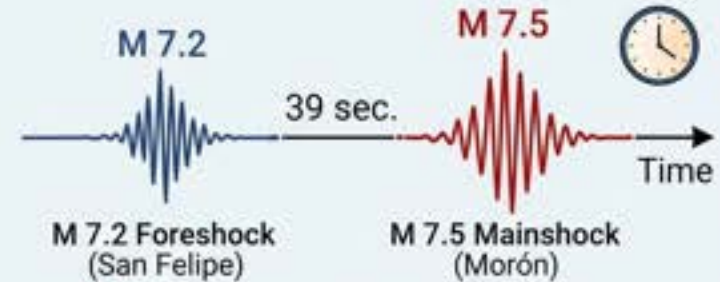
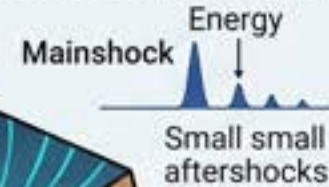
TECTONIC SETTING: MAJOR PLATE BOUNDARY



WHAT IS A SEISMIC DOUBLET?

- A Standard Sequence between the **Doublet** and
- Mainshock with small aftershocks and aftershocks.

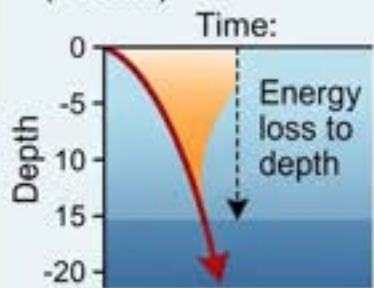
vs. **A Doublet**



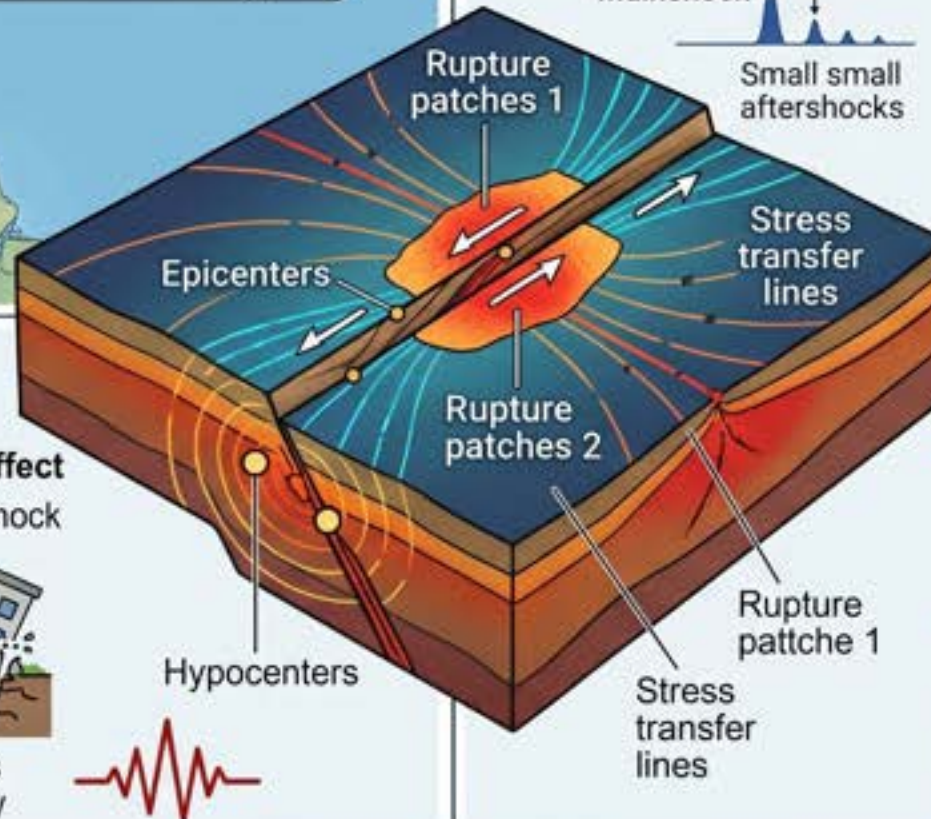
↔ Distinct but Related Ruptures

WHY SO DESTRUCTIVE? AMPHIFICATION OF DESTRUCTION

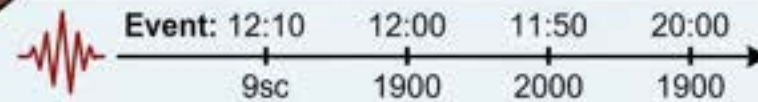
- **Shallow Focal Depth** (~10km)



- **Compound Damage Effect**



KEY FACTS & COMPARISON



- **Event 1:** Magnitude 7.2 (San Felipe)

- **Event 2:** Magnitude 7.5 (Morón), largest in region since 1900

- **Comparison in other historic doublets** from maininuda to 7.6 magnitude 7.5 (Morón), still eart in region since 1900

Revisiting India's ultrasound laws

Technological shifts and rising need for community-based cancer screening suggest that regulatory frameworks should adapt to distinguish between different use cases of ultrasound. An amendment to the PCPNDT Act could legalise community-based ultrasound using a high-frequency linear probe, as it will not impact sex determination.

DEB CHOWDHURY

Pooja Sharma
Senthil Kumar A.R.

Mrs. Janki (name changed), a 40-year-old woman, came to a health-camp organised in rural Assam with a complaint of a painful breast lump. She had noticed the lump three months earlier and reported that it had gradually increased in size. On examination, the doctor suspected breast cancer and advised her to visit a cancer hospital located two hours away for further evaluation.

"But I have no job. The hospital is so far away. There is nobody to come with me to the hospital," Mrs. Janki said. Despite repeated counselling, she refused to seek further care.

Three months later, Janki finally presented to the hospital. By then, she had developed a large, bleeding mass in her breast. She was diagnosed with advanced stage breast cancer and died six months later.

Technological advances, like portable ultrasound machines, have made it possible to bring cancer diagnostics, such as ultrasound imaging and ultrasound-guided biopsies, closer to people's homes. This machine could, perhaps, have given Mrs. Janki a diagnosis a few days ago. However, India's Pre-Conception and Pre-Natal Diagnostic Techniques (PCPNDT) Act bans the movement of an ultrasound machine outside a registered facility as a serious offence, with penalties that can include a minimum of three months' non-failable imprisonment.

Provisions of the PCPNDT Act

The PCPNDT Act was introduced in 1994 in response to a sharp decline in the child sex ratio in India, driven by a growing societal preference for male children and the growing misuse of technologies such as ultrasonography for prenatal sex determination, followed by selective abortion of female fetuses. Abortion of female fetuses became more evident from the 1980s, with the increasing availability of imaging technologies, rising women's ethical, demographic, and public health concerns. The legislation, therefore, aimed not only to prevent the misuse of medical technology but also to address the deeper issue of gender discrimination.

The law mandates registration of all genetic clinics, ultrasound centres, and laboratories and strictly prohibits the communication or disclosure of the sex of the foetus. It prescribes detailed record-keeping, monitoring mechanisms, and penalties to ensure compliance.

Under this Act, the purchase of an ultrasound machine is not a routine commercial transaction but a tightly regulated process. A clinic or hospital must first be registered with the district government as a genetic clinic or imaging centre before acquiring a machine. Purchasing one without prior registration is illegal. Standards users or dealers are required to verify the buyer's credentials and obtain a written undertaking that the machine will not be used for sex determination. The sale must be documented with invoice details that match the registered centre, and the transaction is reported to the authorities for monitoring.

Once installed, the machine must remain at the approved location; its details must be recorded in official registers, and strict documentation,



Expanding access Portable, handheld ultrasound devices can make it technically feasible to bring diagnostic services closer to patients' homes. (AP/WIDE)

including patient records for every scan, must be maintained.

Impact of PCPNDT Act

Following the introduction of the PCPNDT Act, the sex ratio at birth in India has shown a gradual improvement at the national level. While this improvement cannot be conclusively attributed to the introduction of the Act, several unintended consequences can be directly attributed to it.

Evidence suggests that families whose first child is a girl tend to have more children in an effort to have a son, compared to families with a firstborn boy. Following restrictions on prenatal sex selection, families experienced a 20% higher child mortality rate among firstborn girls relative to firstborn boys. This could be explained by the decline in parental investment in health, particularly among girls. Fertility also increased in these families, indicating a shift toward having more children when sex selection was not an option. Having a larger number of children also led to dilution of resources, likely reducing overall investment per child. Similar patterns were observed in education as gender disparities widened. These effects were more pronounced among poorer, rural households that were more affected by the restrictions, as they could not afford legal services to abort the child.

Recent reports indicate that sex-selective practices continue despite decades of legal prohibition. In December 2020, authorities uncovered an illegal racket in Karnataka where organised networks were carrying out prenatal sex determination and facilitating abortions, often targeting vulnerable women from rural areas. Similar crackdowns across different States show that such activities are frequently conducted outside formal health systems, using portable ultrasound devices, informal providers, and covert arrangements to evade regulation.

The issue is not confined to India. Reports from the United Kingdom indicate that sex preference may persist among some diaspora communities as well. Reports have also raised concerns that families of Indian origin may be engaging in sex-selective practices even in

settings with stricter oversight, highlighting the deep-rooted nature of gender bias that transcends national boundaries.

Taken together, these patterns underscore a critical limitation of legislative approaches. While laws such as the PCPNDT Act establish an essential regulatory framework, they are insufficient on their own to drive social change.

The case for reform

Available evidence suggests that the PCPNDT Act has not fully achieved its intended objectives and may, in some contexts, have had unintended adverse effects. Additionally, fear of legal repercussions and stringent regulatory requirements has had a chilling effect on service provision.

Moreover, the PCPNDT Act has not kept pace with advances in ultrasound technology. Portable, handheld ultrasound devices, often connected to smartphones or tablets, make it technically feasible to bring diagnostic services closer to patients' homes, which is particularly relevant for early cancer detection in underserved areas. However, the use of such devices at the community level is currently illegal in India.

Modern high-frequency probes used for applications such as cancer detection and the assessment of other superficial conditions cannot be used for foetal sex determination, yet remain subject to the same regulatory restrictions, limiting access to essential diagnostic care.

Recent developments in artificial intelligence (AI) further strengthen the case for a more nuanced regulatory approach. AI-enabled ultrasound systems can assist with image acquisition and interpretation, and in some configurations generate automated reports based on pattern recognition without requiring full image storage or display. Such technologies could enable safe, purpose-specific use of ultrasound for diagnostic applications while substantially reducing the risk of misuse for foetal sex determination.

Recent research has also demonstrated the potential of AI in improving access to reliable ultrasonography. In a pilot study,

portable ultrasound scans performed by individuals with minimal training were combined with AI to identify suspicious breast lesions with high accuracy, correctly flagging all confirmed cancer cases. This suggests that AI-assisted ultrasound could enable frontline health workers to screen patients with breast lumps, refer those with suspicious findings for further evaluation, and reassure those with benign conditions.

For countries such as India, where access to specialist radiologists and diagnostic imaging remains uneven, especially in rural areas where nearly 70% of the population resides, such innovations could substantially improve the timely assessment and treatment of symptomatic patients. Earlier diagnosis and referral have the potential to reduce breast cancer mortality while expanding access to care in rural and underserved areas. This contrasts with many Western countries, where breast cancer control strategies rely more heavily on mammographic screening programmes that detect tumours before symptoms appear but require considerably greater resources and infrastructure.

Serving a greater need

These technological shifts and the rising need for community-based cancer screening in view of the high cancer burden in India suggest that regulatory frameworks need to adapt to distinguish between different use cases of ultrasound. An amendment to the Act could make community-based ultrasound using a high-frequency linear probe legal, as it will not impact sex determination. Additionally, the Act should incorporate provisions addressing emerging technologies, including AI-enabled and subimagined (US) imaging systems designed to prevent the determination or disclosure of foetal sex, irrespective of intent.

Dr. Pooja Sharma is a community physician working at the department of preventive oncology and public health at Cancer Hospital and Research Centre. Dr. Senthil Kumar A.R. is a consultant radiologist and former director of the department of radiology, Aditya Birla Hospital, D.R. Views are personal.

THE GIST

• The PCPNDT Act was introduced in 1994 to curb prenatal sex determination and the selective abortion of female fetuses in response to a declining child sex ratio.

• The law has not kept pace with advances in ultrasound technology, including portable handheld devices that can bring diagnostic services closer to patients' homes.

• For countries such as India, where access to specialist radiologists and diagnostic imaging remains uneven, such innovations could aid early cancer detection, particularly in underserved parts.

- **Key Terms and Explanations**
- **The PCPNDT Act (1994):** The Pre-Conception and Pre-Natal Diagnostic Techniques Act is a landmark federal legislation enacted to stop female foeticide and arrest the declining child sex ratio in India. The law criminalizes the determination and disclosure of the sex of a foetus. For example, any genetic clinic or ultrasound center must be registered, and moving an ultrasound machine outside its registered address is a non-bailable offense.
- **Sex Ratio at Birth (SRB) vs. Child Sex Ratio (CSR):**
 - **SRB** refers to the number of female births per 1,000 male births. It serves as an immediate indicator of prenatal sex selection practices.
 - **CSR** represents the number of girls per 1,000 boys in the 0–6 years age group. It reflects a cumulative mix of prenatal selection and postnatal survival factors like nutrition and medical care.
- **High-Frequency Linear Probe:** A specific type of ultrasound transducer that emits high-frequency sound waves, producing high-resolution images of superficial structures within the body. Crucially, these probes are designed for shallow imaging—such as detecting breast lumps or thyroid nodules—and are technically incapable of penetrating deep enough to perform obstetric scans or determine fetal sex.
- **Point-of-Care Ultrasound (POCUS):** This refers to the use of portable, handheld ultrasound devices at the patient's bedside, whether in an ambulance, a remote rural clinic, or a home setting. Instead of requiring a massive, stationary console machine, POCUS devices connect directly to smartphones or tablets, democratizing diagnostic access.
- **Son Meta-Preference:** A socio-demographic phenomenon where families continue to have children until they achieve their desired number of sons. This leads to the birth of "unwanted" daughters who frequently experience systemic neglect in nutrition, healthcare, and education compared to their male siblings.
- **Main Arguments and Substantive Parts**
- The core debate centers on a structural tension: how to maintain a fierce legislative guard against female foeticide without inadvertently strangling public health innovations that could save thousands of women from non-communicable diseases like breast cancer.
- **The Core Thesis**
- The current enforcement architecture of the PCPNDT Act has inadvertently created an artificial trade-off between gender justice (preventing sex selection) and healthcare equity (preventing cancer mortality). Because the law treats the physical mobility of ultrasound technology as a strict criminal liability, it denies rural populations access to lifesaving, decentralized, community-based early diagnostics.
- **The Impact and Unintended Perversities of the Law**
- **The Chilling Effect on Medicine:** The law mandates rigid record-keeping, strict registration protocols, and severe penalties (such as a minimum of three months' non-bailable imprisonment) for administrative or spatial non-compliance. This has created an atmosphere of fear among medical practitioners, discouraging them from deploying portable imaging technologies in underserved rural pockets.
- **The Sub-text of Son Preference:** While the legislation has driven a gradual, macro-level improvement in the national sex ratio at birth, it has triggered unintended postnatal consequences. Blocked from prenatal sex selection, families driven by son preference often under-invest in the health and survival of subsequent female children. This dynamic explains why mortality rates among firstborn girls remain nearly 25% higher than firstborn boys in certain demographics.
- **The Persistence of Underground Rackets:** Despite decades of strict statutory prohibition, clandestine networks continue to thrive. Recent law enforcement crackdowns (such as those in Karnataka) reveal that informal providers still exploit portable technology through unauthorized, parallel health systems, demonstrating that a ban on technology mobility alone does not eliminate the deep-seated social demand for sex selection.
- **The Technological Disconnect and the Imperative for Reform**
- **Anachronistic Legal Frameworks:** The regulatory provisions drafted in 1994 were designed for an era of bulky, stationary ultrasound consoles. They fail to account for modern, pocket-sized handheld devices that interface with consumer electronics.
- **Form Following Function:** Modern high-frequency linear probes are structurally restricted to superficial imaging. Treating these diagnostic tools with the same level of suspicion as deep-penetration obstetric probes unnecessarily limits their use for early cancer screening and superficial clinical evaluations.
- **Artificial Intelligence as a Safeguard:** Emerging AI-driven ultrasound systems can automate image interpretation and generate pattern-recognition reports locally without storing or displaying a full structural image of a foetus. This technological guardrail minimizes the risk of human misuse while maximizing diagnostic utility at the grassroots level.

- **Historical Evolution of the Issue**
- **Pre-1980s (The Era of Technological Naivety):** Advanced medical diagnostic techniques like amniocentesis and ultrasound imaging were introduced into Indian public and private healthcare systems primarily to detect genetic abnormalities and fetal distress. However, in a society deeply entrenched in patriarchal norms, these tools were quickly diverted to fulfill a widespread desire for male progeny.
- **The 1980s to early 1990s (The Social Crisis and Mobilization):** As affordable, portable ultrasound technology spread rapidly across small towns and rural areas, India witnessed an alarming, unprecedented drop in its juvenile sex ratios. Civil society groups, women's rights organizations, and public health advocates launched sustained campaigns demanding immediate state intervention against what was termed "cold-blooded gender elimination."
- **1994 (The Legislative Landmark):** In response to growing domestic and international pressure, Parliament enacted the Pre-Natal Diagnostic Techniques (Regulation and Prevention of Misuse) Act (PNDT). The law targeted the supply side of the problem by strictly regulating diagnostic laboratories and making the disclosure of fetal sex a severe criminal offense.
- **2003 (Closing the Loopholes - The PC-PNDT Amendment):** Realizing that technologies were moving even upstream to pre-implantation stages, the government amended the law to include "Pre-Conception" techniques. This expanded the statutory net to cover in-vitro fertilization (IVF) clinics and technologies that could filter or select sperm based on sex chromosomes, while also tightening registration and record-keeping mandates.
- **The Present Era (The Clash with Non-Communicable Diseases):** Today, India faces a dual challenge. On one hand, the country is grappling with an exploding burden of breast and cervical cancers, where early detection via community-level screening is critical for survival. On the other hand, rigid, location-centric regulations continue to restrict the mobility of modern point-of-care ultrasound devices, setting the stage for a much-needed legislative recalibration.
- **Way Forward**
- **Implement a Graded, Technology-Specific Regulatory Framework:** The government should amend the PCPNDT rules to distinguish between deep-penetration obstetric ultrasound probes and high-frequency linear probes. Probes designed solely for superficial imaging (such as breast, thyroid, and musculoskeletal scans) should be exempted from location-based restrictions, unlocking their use for community screening camps.
- **Embed AI-Driven Technical Guardrails:** Instead of relying entirely on physical inspections and police crackdowns, regulatory frameworks should embrace technology-based compliance. Regulators can mandate firmware-level restrictions or automated AI protocols on mobile diagnostic devices. These algorithms can automatically blur or block the visualization of pelvic and fetal anatomy while leaving non-obstetric imaging fields fully functional.
- **Create a "Permit-Route" for Decentralized Healthcare Delivery:** The state should establish a monitored, time-bound permission framework for accredited healthcare institutions and non-governmental organizations to operate mobile medical vans. Equipping these vans with handheld point-of-care ultrasound (POCUS) devices will bring essential cancer triage and maternal care directly to remote rural doorsteps.
- **Empower and Train Frontline Health Workers:** Frontline health workers, including ASHAs and ANMs, should be trained to assist specialist radiologists in deploying handheld imaging tools during rural health melas. Combined with cloud-based telemedicine networks, this will allow remote specialists to review suspicious scans instantly, speeding up crucial referrals.
- **Shift from Pure Enforcement to Root-Cause Social Engineering:** While maintaining strict surveillance over illicit obstetric sex determination networks, the state must increase investment in changing social attitudes. True gender balance cannot be achieved by locking down medical technology; it requires dismantling son preference through economic incentives for the girl child, robust social security programs, and community-led behavior-change campaigns.

COMPREHENSIVE ANALYSIS: REVISITING INDIA'S ULTRASOUND LAWS & PUBLIC HEALTH ACCESS.

A Policy Crossroads between Gender Justice and Healthcare Equity.

PCPNDT ACT: STRENGTHS & PERSISTENT CHALLENGES

GENDER JUSTICE

- ORIGINAL OBJECTIVE:
HALT FEMALE FOETICIDE
& CORRECT SEX RATIOS.



Pre-1980 (ULTRASOUND INTRO) 1994 (THE PNDT ACT) 2003 (AMENDMENT FOR CONCEPTION TECHNIQUES)

- PERSISTENT ISSUES: Deep-rooted Patriarchy and Son Meta-Preference.



undesired daughters



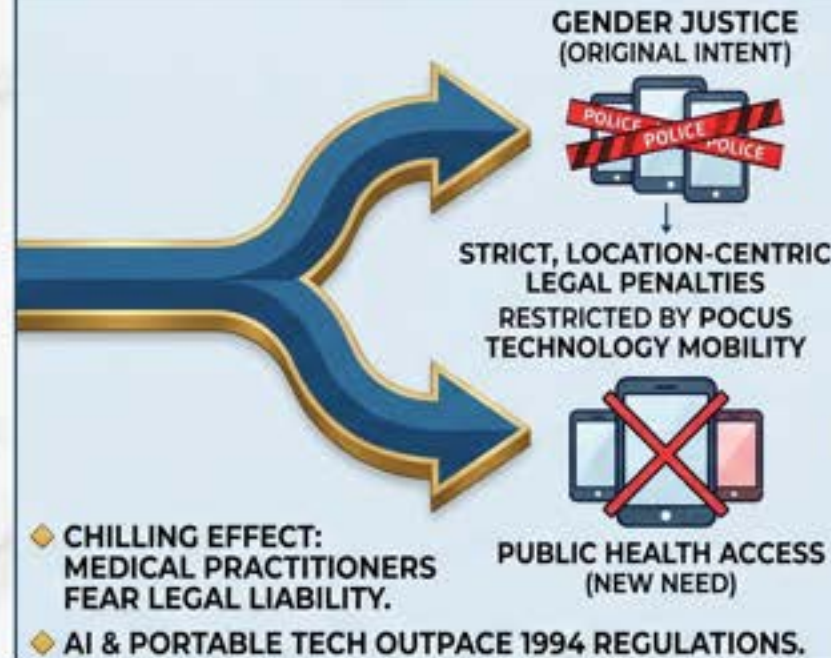
- Persistent Post-Natal Neglect.

SRB & CSR DEFINED

- Number of females per 1000 males at birth (numbert females at birth, year rnnne at birth)
- Number of females at birth per 1000 males at birth 0-6 years

THE REGULATORY TENSION & DISCONNECT

THE CONFLICT OF LAW vs. INNOVATION



WAY FORWARD & KEY INSIGHTS

KEY MULTIDIMENSIONAL IMPERATIVES



SOCIAL
Meta-Preference & Nutrition Neglect



LEGAL
Proportionality & Right to Health vs. Right to Life



ECONOMIC
Catastrophic OOPe & Stifled Med-Tech

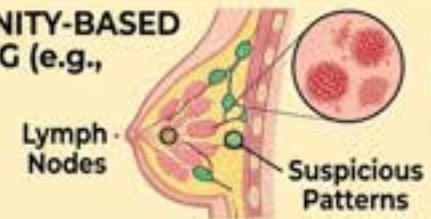


ETHICAL
Beneficence vs. Non-Maleficence

THE CASE FOR REFORM & HEALTHCARE EQUITY

PUBLIC HEALTH EQUITY

- NEED FOR COMMUNITY-BASED CANCER SCREENING (e.g., BREAST CANCER).



- GRADED PROBE CLASSIFICATION.



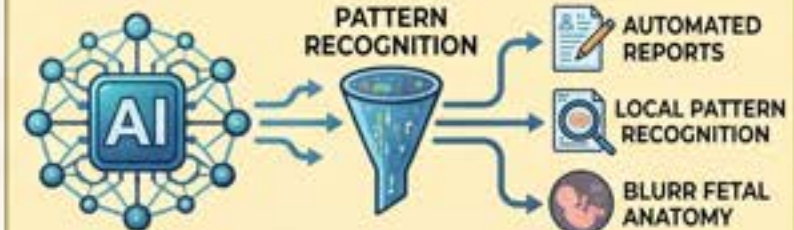
HIGH-FREQUENCY LINEAR PROBE:
Superficial Imaging Only, Non-Obstetric

VS



TRADITIONAL DEEP PENETRATION PROBE

- TECHNOLOGY SOLUTION: AI INTEGRATION AS A SAFEGUARD.



- Trained Frontline Health Workers with mobile POCUS.

REFORM RECOMMENDATIONS

- GRADED REGULATIONS FOR PROBE TYPES
- LEVERAGING AI FOR COMPLIANCE
- ENABLING MOBILE HEALTH VANS
- ADDRESSING SOCIO-CULTURAL MINDSETS

188 dead, 1,500 injured in Venezuela earthquakes

‘Doublet earthquake’ with initial 7.2 magnitude quake was closely followed by a stronger 7.5 one

Aid on the way from U.S., European countries, UN, says interim leader; India, China offer help

Tremors from the strongest earthquake to hit Venezuela in 126 years felt in Colombia, Brazil

Agence France-Presse

LA GUAIRA

A pair of powerful earthquakes that rocked Venezuela have killed at least 188 people and left more than 1,500 hurt, officials said on Thursday as residents searched for loved ones trapped under rubble after many buildings were flattened within minutes.

An international outpouring of aid quickly followed the tremors on Wednesday evening, which the United States Geological Survey (USGS) measured as magnitude 7.2 and 7.5, centred west of the capital Caracas. Tremors from the earthquakes were also felt in neighbouring Colombia and Brazil.

Interim President Delcy Rodríguez said that intense rescue efforts were going on, noting that the State of La Guaira was hit hard.

“Dozens of buildings

have collapsed, and we are currently carrying out very intense rescue efforts to save as many lives as God allows us to save,” Ms. Rodríguez said on state television on Thursday.

“La Guaira State is a true tragedy, and has become a disaster zone.”

The first earthquake, with an epicentre 21 kilometres west of the coastal town of Morón, occurred at 6.04 p.m. local time on Wednesday, the USGS said. Within a minute, a 7.5-magnitude earthquake struck about 45 kilometres away. They struck at depths of 22 kilometres and 10 kilometres, respectively.

Scores of rescuers from the U.S. and several European countries and UN specialists were on their way to help search for survivors, Ms. Rodríguez said while nations including China, India, Brazil, and war-battered Iran offered help. However, threatening



Lost in seconds: A woman holds a boy near a collapsed building in Caracas, Venezuela, on Thursday following the earthquakes. AFP

to complicate the relief effort, the international airport near Caracas was closed due to “serious damage,” she said, with social media videos showing the terminal’s ceiling collapsing over travellers.

Officials were trying to

make the most of the daylight hours to rescue people believed to be trapped under the rubble, the Interim President said.

‘Big logistical role’

“Deeply saddened by the devastation caused by the

severe earthquakes in Venezuela,” Prime Minister Narendra Modi said in a statement. “We pray for the speedy recovery of those injured and stand in solidarity with all those affected... India stands ready to extend all possible assis-

tance,” he said.

The U.S. “stands ready, willing, and able to help,” President Donald Trump said in a social media post.

“We have a whole-of-government response. It will be big, it will be fast, and it will be effective,” U.S. Secretary of State Marco Rubio told reporters during a visit to Bahrain, saying his country’s military would play a “big logistical role”.

Washington is closely involved in oil-rich Venezuela after U.S. forces captured President Nicolas Maduro in January.

The strongest earthquake to hit Venezuela in 126 years will require “massive collective efforts”, the United Nations’ aid chief Tom Fletcher said in a statement. He said the UN was “fully mobilised” to send aid.

Parts of the capital Caracas lost power and cell-phone coverage while subway services were

suspended and natural gas shut off, the interim President. Classes will also be canceled for several days, and the Ministry of Education said some school buildings would be used as shelters and donation centers.

On Thursday, the UN human rights mission in Venezuela called on the government to lift local restrictions on social media.

“In the coming hours and days, timely access to reliable information and communication channels will be essential for the protection of the lives, safety, and well-being of the population,” the mission said in a statement.

The strongest tremors in earthquake-prone Venezuela’s recent history occurred in the northeast in 1997, killing 73 people, and in Caracas in 1967, when 236 people died.

(With inputs from AP and Reuters)

- **Key Terms and Explanations**
- **Doublet Earthquake**
 - A doublet earthquake refers to a rare seismic phenomenon where two powerful earthquakes of nearly identical magnitude occur very close to each other in both time and geographic space. Unlike standard aftershocks, which are significantly smaller and result from the adjustments of a ruptured fault, the second shock in a doublet involves a distinct fault segment or an adjacent fault being triggered immediately.
- **Shallow-Focus Earthquakes**
 - Earthquakes are classified by their depth of focus or hypocenter. Shallow-focus earthquakes occur at depths of less than 70 kilometers below the Earth's surface. Because the seismic waves travel a shorter distance to reach the surface, they lose very little energy, resulting in severe surface shaking and catastrophic destruction to human infrastructure. The events under analysis occurred at shallow depths of 22 kilometers and 10 kilometers, explaining the rapid collapse of multi-story structures.
- **Disaster Diplomacy**
 - This term describes the strategic use of humanitarian assistance and disaster relief (HADR) operations by nation-states to further their geopolitical objectives, alter bilateral relations, or project soft power during a major crisis. When a resource-rich or strategically vital nation suffers a catastrophic event, international aid offers from global rivals often intersect with broader geopolitical maneuvering, transforming a humanitarian arena into a diplomatic interface.
- **Critical Infrastructure Vulnerability**
 - This concept evaluates the susceptibility of essential physical and organizational structures—such as international airports, power grids, and telecommunication systems—to sudden operational failure during hazards. When a primary logistics hub like a major airport experiences structural collapse during a disaster, it creates an immediate systemic bottleneck, paralyzing both domestic rescue efforts and the influx of foreign medical and rescue teams.
- **Main Arguments and Substantive Parts**
- **Compounding Physical Destruction of Multi-Shock Disasters**
 - The core thesis of this situation revolves around how consecutive, high-magnitude seismic hazards comprehensively break down state capacity and infrastructure. When a doublet earthquake strikes, the initial shock destabilizes building foundations and fractures utility lines. Before a community can process the shock or activate emergency protocols, the second, more intense rupture occurs. This immediate succession causes progressive structural collapse, trapping citizens under heavy rubble and overwhelming local rescue capabilities instantly.
- **The Critical Gateway Bottleneck**
 - A major operational challenge during large-scale disasters is the vulnerability of primary logistical transport hubs. The structural failure of an international airport's terminal and runways instantly transforms a localized physical disaster into an international relief logjam. Because heavy rescue machinery, medical supplies, and specialized international search teams require functioning airports, damage to this critical infrastructure severely delays the "Golden Hour" response window, driving up mortality rates.
- **Geopolitical Dimensions of Humanitarian Relief**
 - Disaster response on the international stage rarely happens in a political vacuum. In regions experiencing intense political transitions or holding major natural resources like oil reserves, the deployment of foreign military assets for disaster relief is highly complex. While foreign aid from diverse global actors is indispensable, the heavy logistical involvement of external superpower militaries can introduce sovereign friction, balancing genuine humanitarian altruism with strategic geopolitical positioning.
- **Information Control vs. Public Survival**
 - A critical counterargument emerges regarding the state's control over communication channels during emergencies. Governments often restrict digital platforms to prevent panic, counter misinformation, or maintain public order. However, international observers and human rights bodies argue that suppressing social media during a disaster cuts off a vital lifeline. Without open digital communication, trapped individuals cannot broadcast their locations, and communities cannot coordinate decentralized, life-saving volunteer efforts.

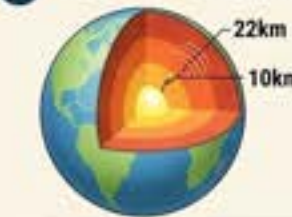
- **Historical Evolution of the Issue**
 - **Pre-20th Century Baselines:** Historically, the northern coast of South America, sitting along the active boundary between the Caribbean and South American tectonic plates, has faced severe seismic activity. Early colonial and post-colonial settlements were built without an understanding of plate tectonics, establishing major administrative and population centers directly over active fault lines.
 - **Mid-20th Century Rapid Urbanization:** The mid-1900s brought rapid, dense urban expansion. The devastating 1967 earthquake near Caracas, which resulted in 236 fatalities, exposed the dangers of high-rise construction on soft alluvial soils without seismic reinforcements. This historical milestone forced civil engineers to reconsider urban planning paradigms in active tectonic zones.
 - **Late 20th Century Policy Shifts:** The 1997 Cariaco earthquake, which claimed 73 lives in northeastern regions, marked a shift in disaster response policy. It highlighted the vulnerability of semi-urban masonry and school buildings, prompting governments to draft formal seismic building codes and establish specialized national seismological networks to monitor crustal movements.
 - **21st Century Complex Disasters:** Today, natural hazards intersect with deep economic and political challenges. Modern disaster management has evolved beyond simple rescue operations. A contemporary disaster is a multi-layered crisis where physical destruction occurs alongside political transitions and digital information blockades, requiring a sophisticated, multi-dimensional response strategy.
-
- **Way Forward**
 - **De-Politicizing Humanitarian Corridors**
 - The international community, under the guidance of the United Nations, needs to establish permanent, de-politicized humanitarian corridors that activate automatically during high-magnitude natural disasters. These mechanisms must ensure that search-and-rescue teams, medical supplies, and technical experts receive immediate access, independent of prevailing political shifts, economic sanctions, or diplomatic disputes.
 - **Building Redundancy into Critical Infrastructure**
 - To prevent a total logistical shutdown during consecutive disasters, critical infrastructure must be engineered with built-in operational redundancies. International airports and emergency communication centers in seismically active zones should be built to the highest earthquake-resilient standards, featuring independent backup power, satellite-linked communication terminals, and alternative secondary runways to keep relief lifelines open.
 - **Protecting Open-Channel Crisis Communication**
 - Access to information during life-threatening emergencies should be recognized as an essential component of the right to life. Legal frameworks should prevent the complete shutdown of digital communication networks during natural disasters. Instead, governments should work alongside telecommunication providers to deploy localized, mesh-networking technologies that keep emergency channels active, allowing citizens to share information and coordinate rescue efforts.
 - **Elevating Local First Responders**
 - While international aid is valuable for long-term recovery, the immediate "Golden Hour" response depends heavily on local capacity. Nations should invest in training and equipping community-level first responders and local civil defense units. Building decentralized rescue networks ensures that even if primary airports or highways are blocked, well-trained local teams can begin effective search-and-rescue operations immediately.

KEY TERMS & EXPLANATIONS

1 Doublet Earthquake
 Rare seismic phenomenon: two powerful earthquakes of similar magnitude occur close together. Second shock triggers adjacent fault immediately. Rapid compounding effect.



2 Shallow-Focus Earthquakes
 Depth of focus < 70km. Seismic waves travel 70km. Seismic waves travel short distance, lose little energy, severe surface shaking & damage.



3 Disaster Diplomacy
 Humanitarian aid - Use of aid (HADR) to further geopolitical goals, alter relations, project soft power during major and crisis.



LOGICAL & PHILOSOPHICAL BASE

Logic of Compounding Stress Transfer
 Stress transfer to adjacent fault already near failure threshold

Cosmopolitanism
 Shared human vulnerability creates global moral obligation transcends borders



Realism
 Stress transcending Aid as power/influence/resources

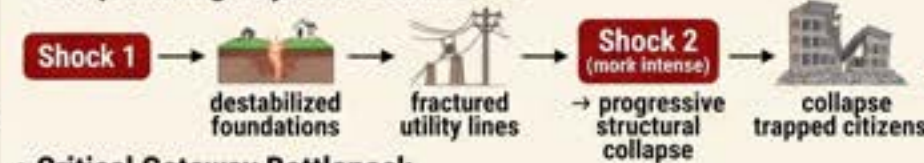
Realism vs. Human Security
 Preservation of individual life/dignity/wellness



Epistemological Right to Information
 Information access as survival tool, open decentralized data is vital

MAIN ARGUMENTS & SUBSTANTIVE PARTS

• Compounding Physical Destruction



• Critical Gateway Bottleneck



HISTORICAL EVOLUTION

Pre-20th Century	Mid-20th Century	Late 20th Century	Present Day
Unregulated Settlements Administrative centers on fault lines	Rapid Urbanization Dangerous high-rise construction, 1967-rises 1967 Caracas example	Code Formulation Policy shifts, seismic codes, policy, seismic codes, 1997 Caracas example.	Complex Geopolitical Crises Natural hazards + economic/political challenges + info blockades

MULTIDIMENSIONAL ANALYSIS

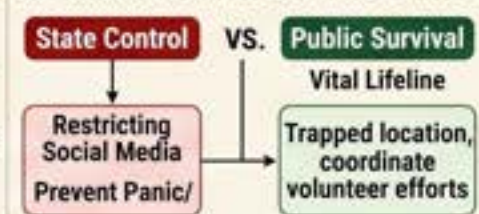


HERDING & SCIENCES

Geopolitical Dimensions of Relief



Information Control vs. Public Survival



LINKAGES WITH NCERTS

- Class XI Physical Geography
- Movements/Earthquake: 'Movements/Earthquakes', Movements and tectonics: World Causation
- Class XI India - Physical Environment - Natural Hazards
- Class XII Contemporary World Politics - Security

LINKAGES WITH UPSC CSE SYLLABUS

- GS Papers 1, 2, 3, 4, Essay & Optionals
- GS 1 Important Geophysical Phenomena
- GS 2 IR & Governance
- GS 3 Disaster Management
- GS 4 Ethics

WAY FORWARD



ALL PREVIOUS YEARS' UPSC & APSC QUESTIONS

- Sample Prelims and Mains Question Titles: Ranans Comascations to dompnies, Natural Hazardst- Bosia and Power Sudbnmental Suntwor Becsnatortors.
- Sample Prelims and Mains Question Title: Gontand Masenie to fruits, Procurement ests.
- ALL Previous Year' eniles & APSC Questions.

3 States close ranks on Tungabhadra basin



Joining hands: Chief Ministers D.K. Shivakumar, N. Chandrababu Naidu, and A. Revanth Reddy share a stage on Thursday. ANI

Kumar Buradikatti
KALABURAGI

Karnataka, Andhra Pradesh, and Telangana on Thursday signalled a “historic” broader political and administrative consensus on protecting the interests of farmers in the Tungabhadra basin and pursuing long-term solutions to irrigation and water-sharing issues.

At an event organised by the Karnataka government and the Tungabhadra Board in Koppal district to mark the inauguration of the newly installed 33 spillway gates of the reservoir in Vijayanagara, Karnataka Chief Minister D.K. Shivakumar and his Telangana and Andhra Pradesh counterparts, A. Revanth Reddy and N. Chandrababu Naidu, stressed the need for cooperation in addressing the concerns of lakhs of farmers dependent on the inter-State project.

The Chief Ministers said the three States have arrived at a historic consensus to safeguard the interests of farmers in the Tungabhadra basin.

Tungabhadra desilting

Ahead of the inauguration, the three Chief Ministers held a nearly hour-long meeting with Union Jal Shakti Minister C.R. Patil to

discuss key irrigation issues concerning the three States.

Desilting of the Tungabhadra reservoir, where an estimated 33 tmcft of silt has accumulated over the years significantly affecting its storage capacity, was discussed.

Mr. Patil said the Union government will first dredge the Tungabhadra dam as part of its larger plan to desilt major reservoirs.

He said the Chief Ministers had expressed their commitment to extend full cooperation in the exercise.

Pointing out that silt accumulation had reduced the storage capacity of many dams, including the Tungabhadra, Mr. Patil said that, as per the proposed programme, the Centre will provide the technical support, and the dredging would be completed at the earliest possible time with the involvement of the three States.

Calling the replacement of all the 33 spillway gates of the Tungabhadra dam “historic”, Mr. Shivakumar said it was done in the larger interest of farmers and the long-term safety of the reservoir.

- **Key Terms and Explanations**

- **Tmcft (Thousand Million Cubic Feet):** This is a standard volumetric unit used in India to measure large quantities of water, particularly in reservoirs and river inflows. To visualize this, 1 tmcft is equivalent to roughly 28.31 billion litres of water. For example, a single tmcft can fulfill the drinking water needs of a major metropolitan city for several weeks or irrigate thousands of hectares of agricultural land.
- **Reservoir Siltation and Desilting:** Siltation is the natural process where running water carries soil, sand, and organic debris down a river basin and deposits it at the bottom of a reservoir. Over decades, this accumulation creates a thick layer of mud that severely compromises both the "dead storage" (water below the lowest outlet) and "live storage" (usable water) capacities. Desilting, or dredging, is the highly technical process of excavating and removing these sediment layers to restore the reservoir's original water-holding capacity.
- **Spillway Gates:** These are critical structural components of a dam designed to safely release excess floodwaters downstream when the reservoir reaches its maximum operating level. They act as safety valves; if spillway gates are compromised or structural integrity fails, it can lead to catastrophic upstream submergence or downstream flooding.
- **Integrated River Basin Management (IRBM):** A holistic approach that advocates for planning, coordinating, and managing water, land, and related resources across an entire geographical river basin. Instead of treating rivers as fragmented political assets divided by state borders, IRBM looks at the entire ecological continuum from source to mouth.
- **Cooperative Federalism:** A constitutional concept where the central government and state governments work horizontally and vertically as collaborators to solve common national challenges. In water management, it shifts the focus away from long-drawn-out legal battles toward negotiated administrative consensus.

- **Main Arguments and Substantive Parts**

- The core discourse surrounding modern water management centers on a paradigm shift: moving away from historical, adversarial litigation over water allocations and moving toward a collaborative, asset-protection framework.

- **The Crisis of Ecological and Structural Decay**

- The primary challenge facing mature water infrastructure is no longer just how to share the water, but how to preserve the asset that holds it. Decades of unmanaged sediment inflow have drastically altered reservoir dynamics. This loss of capacity directly translates into reduced water availability for agricultural irrigation during dry seasons, aggravating agrarian distress across regional lines. Furthermore, infrastructure aging—manifested by the urgent need to completely replace vital components like all 33 spillway gates—underscores a growing national vulnerability regarding dam safety.

- **The Convergence of Stakeholders**

- Resolving these deep-seated structural issues demands a unique tripartite alignment between upper-riparian states, lower-riparian states, and the Union government. The central argument posits that mechanical problems like siltation and aging gates cannot be solved through isolated state actions. It requires a synchronized political and administrative consensus where beneficiary states align their executive machinery. The Centre's role is conceptualized as an enabler—providing critical technical expertise and overarching fiscal support—while the states provide execution compliance and local administrative coordination.

- **Challenges and Counter-Perspectives**

- While a political consensus is highly welcome, practical execution poses immense challenges:

- **The Logistical Nightmare of Dredging:** Removing tens of millions of tonnes of wet sediment from a live reservoir without disrupting downstream flows or destroying local aquatic ecosystems is exceptionally difficult.

- **The Disposal Problem:** Finding appropriate land to dump 33\text{ tmcft} of extracted silt is an environmental challenge in itself, though it offers an opportunity if the nutrient-rich topsoil can be successfully redirected back to depleted agricultural fields.

- **Financial Sustainability:** Splitting the massive financial burden of reservoir restoration between the Centre and competing states often tests the resilience of even the strongest political agreements, particularly during periods of fiscal deficit or changing political regimes.

- **Historical Evolution of the Issue**
- **Pre-Independence and Early Frameworks (Late 19th Century to 1947)**
 - The roots of water utilization in this sub-basin of the Krishna River lie in the colonial-era friction between the Madras Presidency and the Princely State of Mysore. The landmark agreements of 1892 and 1924 established early frameworks for water sharing and storage across British India and princely territories. These early compacts prioritized territorial rights and basic agricultural security, though they frequently lacked the holistic scientific and ecological insights needed for long-term basin preservation.
- **Post-Independence and the Linguistic Reorganisation (1947–1956)**
 - The construction of the Tungabhadra Dam began as a joint project between the Kingdom of Hyderabad and the Madras Presidency. Following independence, the project was completed in 1953. However, the linguistic reorganization of states in 1956 dramatically changed the geopolitical landscape. The dismantling of Hyderabad State and the redrawing of boundaries placed the physical structure of the dam within Karnataka (then Mysore State), while large parts of the command area fell into Andhra Pradesh. To manage this split jurisdiction equitably, the central government established the statutory Tungabhadra Board under the Interstate River Water Disputes Act of 1956, tasked with regulating water release and maintaining the main canal systems.
- **The Tribunal Era and Capacity Degradation (1969–Present)**
 - As upstream abstraction grew, the Krishna Water Disputes Tribunal (KWDT-I) was constituted in 1969 under Justice R.S. Bachawat to allocate water among Maharashtra, Karnataka, and Andhra Pradesh. The KWDT-I award integrated specific allocations for the Tungabhadra sub-basin. Decades later, the KWDT-II (established in 2004) had to grapple with a new reality: the allocations made on paper no longer matched actual reservoir volumes due to severe siltation.
 - The bifurcation of Andhra Pradesh in 2014 added another layer of complexity by introducing Telangana as a third immediate stakeholder state in the basin. This turned bilateral issues into intricate trilateral negotiations. Today, the focus has expanded beyond merely debating numerical allocations to executing urgent, joint structural actions—such as the recent replacement of all 33 spillway gates—to protect aging infrastructure from physical failure.
- **Way Forward**
 - **Formulating a National Policy on Sediment Management:** India needs a comprehensive National Reservoir Sedimentation Policy. This framework should mandate regular, standardized hydrographic surveys using satellite remote sensing to track silt levels in real time, moving away from reactive, ad-hoc dredging measures.
 - **Creating a Circular Economy for Extracted Silt:** To offset the massive costs of dredging, governments should look to commercialize the extracted silt. The nutrient-dense topsoil can be sold to local farmers to restore degraded lands, while the coarser sand elements can be redirected into the construction sector, creating a self-sustaining funding model.
 - **Implementing Upstream Catchment Area Treatment (CAT):** Long-term solutions mean addressing siltation at its source. Deploying extensive Catchment Area Treatment plans—focused on afforestation, check-dam construction, and enforcing sustainable farming practices upstream—will help bind the soil and drastically reduce sediment run-off into reservoirs.

COMPREHENSIVE ANALYSIS: INTER-STATE WATER GOVERNANCE IN INDIA

HISTORICAL: LITIGATION OVER ALLOCATIONS



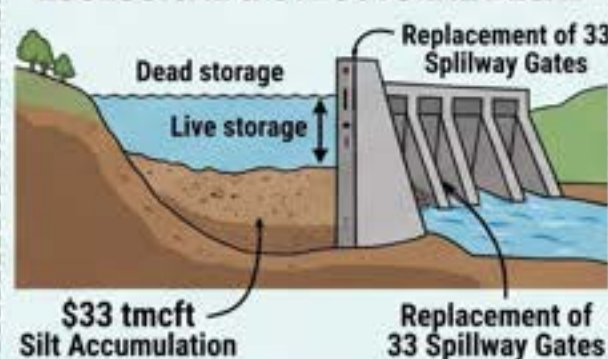
Historical: litigation over Allocations



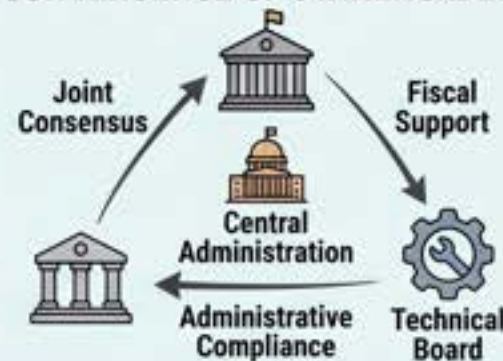
MODERN: COLLABORATIVE ASSET PROTECTION



ECOLOGICAL & STRUCTURAL DECAY



CONVERGENCE OF STAKEHOLDERS



KEY TERMS & CONCEPTS



Tmcft

(Volumetric Unit, billions of litres)



Reservoir Siltation & Desilting (Dredging)
Volumetric of Resilting Drought Mitigation



Spillway Gates
(Safety, Excess Flow Release)



Integrated River Basin Management (IRBM)
Integrated Federated River Basin Management



Cooperative Federalism
Consensus, Technical & Support

MULTIDIMENSIONAL INTERCONNECTEDNESS

SOCIAL



SOCIAL
• Agrarian Livelihoods
• Urban Needs

POLITICAL



POLITICAL
• Cooperative Federalism
• De-escalating Politics

LEGAL



LEGAL
Article 262 & Dam Safety Act

ETHICAL



ETHICAL
• Intergenerational Equity
• Environmental Justice

ECONOMIC



ECONOMIC
• Protecting Agri-GDP
• Circular Economy

HISTORICAL EVOLUTION ROADMAP



Colonial Accords
(Pre-1947, Madras vs. Mysore)



Linguistic States
(1953-56, Project Completion, Tungabhadra Board)



Tribunal Era
(1969-Present, KWDT I & II)



Modern Multilateral Consensus
(Joint Structural Rehab)

WAY FORWARD: STRATEGY ROADMAP

INSTITUTIONAL



INSTITUTIONAL
• Joint River Boards

TECHNICAL



TECHNICAL
• National Sediment Policy
• Hydrographic Surveys

ECOLOGICAL



ECOLOGICAL
• Catchment Area Treatment CAT
• Afforestation

FINANCIAL



FINANCIAL
Circular Economy: Silt for Farming & Construction

NCERT & UPSC CSE RELEVANCE



NCERT Class X & XI



GS Papers

Prelims:

- Tributaries of Krishna River (Theme: Mapping River Basins)
- Provisions of the Dam Safety Act (NCDS roles, scope)

NCERT introduces 1975 Emergency in Class 9 text

This is the first time a reference has been made to the Emergency at the Class 9 level, while earlier references were limited to Class 12 textbook; it also mentions democratic traditions of early times

The Hindu Bureau
NEW DELHI

The National Council of Educational Research and Training (NCERT) has introduced the 1975 Emergency in India in its Class 9 textbook *Understanding Society: India and Beyond*. The reference in a chapter examining the strengths and challenges of Indian democracy presents the Emergency as "one of the major challenges to democracy in India".

This is the first time a reference has been made to the Emergency at the Class 9 level, while earlier references were limited to the Class 12 political science textbook. India recently observed 50 years since the declaration of the Emergency.

"In the early 1970s, public dissatisfaction with the government led by Indira Gandhi was growing. Rising unemployment, inflation and allegations of mis-governance led to widespread protests. In June 1975, a National Emergency was imposed by the government on grounds of

NCERT has done the right thing by adding a section on Emergency, so that the future generations should know and understand such 'dark deeds', and so that such a situation does not arise again

DHARMENDRA PRADHAN
Union Education Minister



internal disturbance," reads a section in the chapter under the political science component of the social science textbook.

"During this period, a majority of fundamental rights were suspended, the press was censored, and numerous political leaders and activists were arrested. Democratic institutions came under severe strain, and citizens' freedom was restricted," it adds. The section also highlights the role of Jayaprakash Narayan in the movement against the Emergency.

"Mass movements led by Jayaprakash Narayan – a political leader and socialist thinker, popularly known as Lok Nayak – mobilised students and citi-

zens, especially in Bihar and Gujarat. The Emergency was lifted in 1977, and general elections were held, allowing people to express their will through the ballot. The defeat of the ruling government demonstrated the strength of Indian democracy and highlighted the importance of democracy," reads an excerpt from the book.

In a statement, Union Education Minister Dharmendra Pradhan said, "NCERT has done the right thing by adding a section on Emergency, so that the future generations should know and understand such 'dark deeds', and so that such a situation does not arise again. NCERT has done a good job."

The textbook also traces the democratic traditions of early times and discusses their contemporary relevance. It mentions the Election Commission and its role in conducting "free and fair elections".

Women's rights

Also, a full page on women's rights and women's reservation in local bodies has been added.

"In a number of countries, women had to wage a long and difficult struggle to secure the right to vote... In contrast, women in India were granted the right to vote... However right to vote does not automatically ensure equal participation. Social prejudices continue to act as barriers and affect women's adequate participation in politics," the excerpt states.

The section on "Challenges to Democratic Practices in India" mentioned spread of fake news, misinformation, damaging public property, violation of public rules, poverty, regionalism, social discrimination, and gender inequality as challenges to democratic practice.

- **Key Terms and Explanations**
- **National Emergency (Article 352):** A constitutional provision that allows the Central government to assume extraordinary powers when the security of India or any part of it is threatened by war, external aggression, or armed rebellion. In the context of the 1975 crisis, the ground used was "internal disturbance"—a term so vague it allowed for extensive executive overreach before being amended.
- **Press Censorship:** The systemic suppression of free speech and media by governmental authorities. During an emergency, this translates into "prior restraint," where news houses must clear their prints with government censors before publication, directly neutralizing the press as the fourth pillar of democracy.
- **Lok Nayak / Total Revolution (Sampoorna Kranti):** A political philosophy and mass movement spearheaded by Jayaprakash Narayan (JP) in the mid-1970s. It advocated for a holistic transformation of society, encompassing social, economic, political, and cultural dimensions, to combat corruption and authoritarian tendencies in governance.
- **Democratic Backsliding:** A gradual decline in the quality of democracy, driven by the weakening of institutional checks and balances, the erosion of political pluralism, and the targeting of civil liberties by an elected executive.
- **Substantive vs. Formal Democracy:** Formal democracy is characterized by regular elections and constitutional frameworks. Substantive democracy goes deeper, ensuring real equality, active citizen participation, and the complete absence of social prejudices that prevent marginalized groups, such as women, from exercising true political power.
- **Main Arguments and Substantive Parts**
- The decision to introduce critical historical events like the 1975 Emergency into secondary education curricula represents a major shift in pedagogical philosophy. The core arguments surrounding this issue focus on historical transparency, institutional resilience, and contemporary civic challenges.
- **The Pedagogical Shift for Democratic Resilience:** The primary thesis is that exposing students to the vulnerabilities of democracy at an earlier age (Class 9 instead of Class 12) builds an informed, vigilant citizenry. Rather than romanticizing state systems, education must present historical challenges to help future generations recognize and prevent democratic backsliding.
- **The Litmus Test of the 1977 Elections:** A crucial element of this historical analysis is the inherent self-correcting mechanism of Indian democracy. The 1977 general elections demonstrated that even after the suspension of fundamental rights and extensive political detentions, the ultimate sovereignty rests with the electorate, who used the ballot box to restore constitutional order.
- **Broadening the Definition of Modern Threats:** Modern challenges to democracy have evolved beyond direct state coercion. Contemporary threats include the rapid spread of fake news, digital misinformation, social discrimination, and systemic gender inequality, all of which weaken democratic practices from within.
- **The Paradox of Political Franchise for Women:** The analysis presents a compelling contrast between the formal granting of voting rights and actual political representation. While India granted universal adult suffrage to women at independence—avoiding the long struggles seen in Western nations—social prejudices still limit women's substantive participation, highlighting the need for structural interventions like reservations in local governance.

- **Historical Evolution of the Issue**

- **The Colonial Precedent:** The roots of state overreach can be traced to colonial laws like the Rowlatt Act and the Defense of India Rules, which prioritized state security over individual liberty. The post-independence state retained elements of these frameworks to preserve national unity during partition and early geopolitical conflicts.
- **The 1975–1977 Watershed Moment:** On June 25, 1975, the government invoked Article 352 on the grounds of "internal disturbance." This 21-month period saw the centralization of power through the 42nd Amendment, the imprisonment of opposition leaders, and strict press censorship, fundamentally altering the relationship between the citizen and the state.
- **The Constitutional Corrective (1978):** The Janata Party government passed the 44th Constitutional Amendment Act to prevent future misuse of emergency powers. It replaced "internal disturbance" with "armed rebellion," required a written recommendation from the Cabinet, and made Articles 20 and 21 non-suspendable even during a national emergency.
- **Evolution of the Educational Narrative:** For decades, contemporary political history was reserved for senior secondary students. The recent curricular changes signify a move toward integrating these sensitive but crucial political realities into lower secondary textbooks, ensuring that democratic education adapts to modern civic needs.

- **Way Forward**

- Addressing modern threats to democracy while maintaining historical transparency requires balanced institutional, pedagogical, and social reforms.
- **Ensuring Pedagogical Neutrality:** Educational updates must remain objective, empirical, and free from partisan influence. Textbooks should focus on institutional analysis and constitutional lessons rather than political finger-pointing, keeping the focus entirely on civic awareness.
- **Building a Media Literacy Framework:** To counter modern threats like fake news and misinformation, school curricula should include dedicated digital hygiene modules. Students must learn how to fact-check information and think critically about digital media.
- **Strengthening Institutional Protections:** Safeguards for institutions like the Election Commission of India and the Judiciary must be continuously updated. Ensuring transparent appointment processes and protecting these bodies from executive overreach is vital for holding free and fair elections.
- **Promoting Substantive Gender Representation:** While women's reservation in local bodies has been a successful step forward, similar legislative measures should be consistently pursued at the state and national levels. This must be paired with community-level initiatives to dismantle the social prejudices that limit women's political leadership.

KEY TERMS & EXPLANATIONS



NATIONAL EMERGENCY (ARTICLE 352)

Extraordinary powers, vague terms like "internal disturbance" amended to "armed rebellion."



PRESS CENSORSHIP

Systemic suppression, prior restraint, 4th pillar neutralized.



LOK NAYAK / TOTAL REVOLUTION (SAMPOORNA KRANTI)

JP Narayan's philosophy for holistic societal transformation to combat corruption.



DEMOCRATIC BACKSLIDING

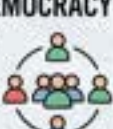
Gradual decline, weak checks, targeting civil liberties.



SUBSTANTIVE VS FORMAL DEMOCRACY

Formal: elections, constitutional framework.

Substantive: real equality, active citizen participation, lack of prejudices.



MULTIDIMENSIONAL ANALYSIS



UNDERSTANDING DEMOCRACY: EVOLUTION, CHALLENGES, & RESILIENCE - A COMPREHENSIVE ANALYSIS FOR IAS ASPIRANTS.

MAIN ARGUMENTS



PEDAGOGICAL SHIFT FOR DEMOCRATIC RESILIENCE

- Expose vulnerabilities earlier (Class 9 instead of Class 12) for an informed citizenry.



LITMUS TEST OF 1977 ELECTIONS

- Inherent self-correcting mechanism,
- sovereignty with electorate,
- ballot box restoration.



BROADENING MODERN THREATS

- Evolution beyond direct coercion to fake news, digital misinformation,
- social discrimination, gender inequality.



PARADOX OF POLITICAL FRANCHISE FOR WOMEN

- Formal voting right at independence, but substantive representation limited by social prejudice.

LINKAGES WITH NCERTS



CLASS 9:
Democratic Politics - I
(What is Democracy?, Constitutional Design, etc.)

CLASS 11:
Indian Constitution at Work
(Fundamental Rights, Exec, Jud)

CLASS 12: Politics in India Since Independence
(Crisis of Democratic Order, JP movement)

HISTORICAL EVOLUTION

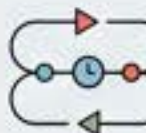


LOGICAL & PHILOSOPHICAL BASE



CONSTITUTIONALISM & LIMITED GOVERNMENT

Independent judiciary, institutional checks vital.



COLLECTIVE HISTORICAL MEMORY

Facing failures to safeguard future, earlier education.



DELIBERATIVE & ACTIVE CITIZENSHIP

John Stuart Mill ideas, debate, prevent apathy.

WAY FORWARD



PEDAGOGICAL NEUTRALITY

Objective, empirical history, no finger-pointing.



MEDIA LITERACY FRAMEWORK

Digital hygiene, fact-checking.



STRENGTHENING INSTITUTIONAL PROTECTIONS

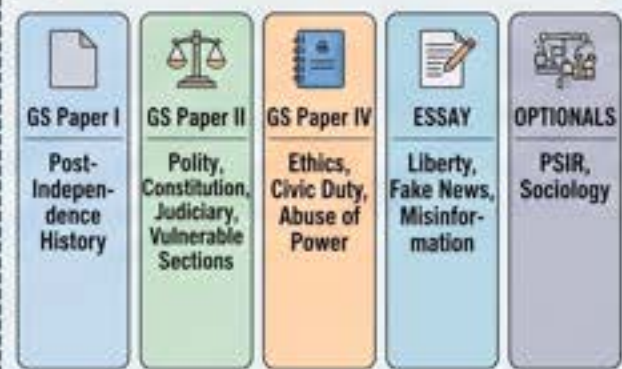
Safeguard ECI, judiciary, prevent overreach.



SUBSTANTIVE GENDER REPRESENTATION

Pursue reservations at state and national levels, paired with community initiatives to dismantle prejudice.

LINKAGES WITH UPSC CSE SYLLABUS



CBI scours 80 locations in 15 States and Delhi over 'digital arrest' cases

Devesh K. Pandey
NEW DELHI

In a crackdown on the cybercrime infrastructure facilitating "digital arrest" scams, the Central Bureau of Investigation (CBI) searched more than 80 locations across the country over the past week in connection with 200-plus cases. It arrested two accused so far – Naresh from Chennai, Tamil Nadu, and Sanjib Saha of Kolkata, West Bengal.

Under Operation Chakra-VI, the agency formed 60 special teams and conducted coordinated searches in 15 States – Punjab, Gujarat, Maharashtra, Haryana, Tamil Nadu, Telangana, Andhra Pradesh, Uttar Pradesh, Madhya Pradesh, Rajasthan, Assam, West Bengal, Manipur, Karnataka, and Od-

On the trail

The CBI formed 60 teams to crack down on 'digital arrests'

- Searches were conducted in Punjab, Gujarat, Delhi, Maharashtra, Haryana, T.N., Telangana, A.P., U.P., M.P., Rajasthan, Assam, West Bengal, Manipur, Karnataka, and Odisha
- The CBI seized documents, devices, transaction records and evidence that shows foreigners too may have been duped



isha, and Delhi. "The searches were carried out as part of an ongoing investigation aimed at dismantling a targeted operational network involved in over 200 cases of digital arrest scams," said the agency.

The arrested accused were involved in the incorporation of shell companies and the opening and operation of mule bank accounts. These accounts were used for laundering about ₹2 crore of suspected proceeds of crime, the

CBI said.

Recently, the agency unearthed a fraudulent website with a URL deceptively similar to the official website of the Supreme Court. The fraudsters allegedly used the registered domain to defraud victims. Based on a complaint received from the Registry of the Supreme Court, the agency registered a case and launched an investigation.

"Leveraging advanced forensic tools and techni-

cal expertise, the CBI identified critical elements of the criminal infrastructure operating both within India and abroad. Investigation has revealed that the perpetrators uploaded forged documents, including fake orders resembling those issued by courts and various law enforcement agencies, to lend credibility to their fraudulent activities," the agency said.

During the searches, the CBI seized several incriminating documents, digital devices, phones and records relating to bank transactions. It found evidence indicating that several foreign nationals too may have been cheated by the same network. The law enforcement agencies of the jurisdictions concerned are being alerted through appropriate channels, the agency said.

- **Key Terms and Explanations**
- **Digital Arrest:** This is a form of cyber-extortion where fraudsters impersonate law enforcement officers, tax authorities, or judicial officials over video calls. They falsely inform the victim that their identity has been linked to criminal activities, placing them under "virtual confinement" by demanding they stay on camera continuously under threat of immediate physical arrest.
- **Operation Chakra (specifically Phase VI):** A strategic, multi-phased central enforcement initiative led by the Central Bureau of Investigation (CBI) in coordination with state police forces and international agencies. Its primary goal is to systematically dismantle transnational organized cyber-crime networks, targeting their underlying technical and financial infrastructure.
- **Mule Bank Accounts:** These are legitimate bank accounts used by criminal networks to receive and quickly launder illegally acquired funds. The account holders (money mules) are often compromised individuals, students, or financially vulnerable people who lend their accounts in exchange for a small commission, effectively masking the identity of the actual cyber-criminal.
- **Shell Companies:** These are paper corporations that exist only on document registries without any active business operations, physical offices, or employees. In cyber-fraud networks, these entities are deliberately incorporated to layer financial transactions, obscuring the paper trail of illicit money transfers and making asset recovery incredibly difficult for investigators.
- **Domain Spoofing / Typosquatting:** A technical deception technique where criminals register website URLs that look almost identical to the official domains of trusted institutions, such as the Supreme Court or central ministries. This subtle manipulation tricks unsuspecting victims into believing they are interacting with legitimate official portals.
- **Main Arguments and Substantive Parts**
- The structural core of this issue highlights a fundamental shift in criminal operations: cyber-fraud is no longer a scattered menace run by isolated hackers, but a highly institutionalized, corporate-style industry that exploits systemic vulnerabilities in our socio-economic framework.
- **The Institutionalization of Cyber-Extortion**
- Modern cyber-crime cartels operate with structured hierarchies, mimicking legal enterprises. They utilize dedicated teams for technological execution, corporate creation (shell companies), and complex financial routing (mule accounts). This level of organization allows them to scale up operations across multiple states simultaneously, executing hundreds of coordinated extortion attempts while operating seamlessly across domestic and international borders.
- **Psychological Manipulation and Institutional Hijacking**
- The core thesis of these crimes rests on weaponizing the societal fear of state authority and judicial processes. By constructing incredibly accurate, forged judicial orders, arrest warrants, and cloned official portals—including those deceptively similar to the Supreme Court—perpetrators eliminate the victim's skepticism. The fraud relies entirely on psychological coercion, creating an artificial environment of panic where the victim's rational decision-making is completely neutralized.
- **The Challenge of Transnational Laundering**
- A critical aspect of these operations is the speed and complexity of the laundering network. Illicit proceeds are routed through a web of shell corporate accounts within minutes of extraction. This infrastructure is not only used to target Indian citizens but is increasingly being scaled to defraud foreign nationals, converting local currency into cross-border digital assets or untraceable foreign transfers, which directly challenges the jurisdictional limits of local law enforcement.
- **Counter-narratives and Operational Hurdles**
- While widespread enforcement crackdowns like Operation Chakra-VI show that central agencies can mobilize immense technical expertise to map criminal infrastructure, a major institutional bottleneck remains. Law enforcement is often forced into a reactive cycle. Dismantling 80 locations across 15 states is highly commendable, but until structural gaps in bank account opening procedures and domain registration verification are closed, new criminal nodes will continue to pop up faster than older ones can be shut down.

- **Historical Evolution of the Issue**
 - **The Pre-2000s Era of Physical Crimes:** Before the digital revolution, financial frauds and extortions were overwhelmingly physical. They relied on forged paper documents, manual signature misrepresentations, and localized impersonation of authority. The legal response was strictly governed by the traditional Indian Penal Code, 1860, which was built for a tangible, geographical world.
 - **The Legislative Dawn (2000–2010):** With the birth of the internet age, India introduced the Information Technology (IT) Act, 2000. This decade saw the rise of primitive cybercrimes like lottery scams and basic identity theft through emails. Fraudsters began realizing the potential of digital anonymity, though the attacks were still uncoordinated and largely relied on mass spamming rather than targeted psychological manipulation.
 - **The Digital Explosion and Financial Inclusion (2010–2020):** The rapid rollout of the Jan Dhan-Aadhaar-Mobile (JAM) trinity and the Unified Payments Interface (UPI) fundamentally transformed India's economy. However, this sudden influx of tech-naïve users opened up a massive playground for criminals. This period witnessed the rise of hyper-localized cyber-crime hubs, like Jamtara, which mastered basic voice phishing (vishing) and digital wallet fraud.
 - **The Deep-Tech and Virtual Confinement Era (2020–Present):** The post-pandemic acceleration of digital workflows completely altered the cyber-threat landscape. Simple phishing evolved into "digital arrests," using advanced tools, high-speed video conferencing, deepfakes, and cloned judicial domains. In response, India shifted to a highly coordinated institutional approach, marked by the setting up of the Indian Cyber Crime Coordination Centre (I4C) and the launch of the CBI's Operation Chakra series to tackle organized, cross-border cyber syndicates.
-
- **Way Forward**
 - **Technological Fortification and Zero-Trust Frameworks**
 - National institutions and judicial bodies must implement strict **Zero-Trust architecture** and robust domain protections, such as DMARC (Domain-based Message Authentication, Reporting, and Conformance), to prevent criminals from spoofing official communication channels. Public platforms should feature prominent, real-time verification badges. Additionally, central agencies must continue deploying advanced AI-driven forensic tools to scan the internet and flag fraudulent domains before they can be used against the public.
 - **Structural Reforms in the Banking and Telecom Sectors**
 - The Reserve Bank of India (RBI) needs to mandate stricter, real-time monitoring of newly opened bank accounts to spot unusual transaction patterns, which will cut off the supply of mule accounts. Automated systems should instantly flag any account that receives and quickly disperses large volumes of money across various states. Similarly, telecom authorities must tighten regulations around bulk SIM card issuance and crack down on spoofed VoIP calls originating from overseas.
 - **Enhancing Inter-State and International Operational Agility**
 - Building on the success of operations like Operation Chakra-VI, the Indian Cyber Crime Coordination Centre (I4C) should establish a permanent, cross-jurisdictional task force. This group would bring together central intelligence agencies, state cyber cells, financial intelligence units, and digital service providers under one roof. On the global stage, India must leverage its diplomatic influence to streamline MLAT processes and work closely with Interpol to dismantle cyber cartels operating out of safe havens.
 - **Comprehensive Mass Awareness and Empirical Literacy**
 - The ultimate defense against psychological extortion is an informed citizen. The government, banks, and civil society must collaborate on massive, localized awareness campaigns using clear, simple messaging. The public must be taught a basic, undeniable fact: **no judicial body or law enforcement agency in India conducts legal proceedings, issues warrants, or places individuals under arrest via WhatsApp or Skype video calls.**

CRACKDOWN ON 'DIGITAL ARREST' CASES: A COMPREHENSIVE STUDY FOR UPSC CSE

► UNDERSTANDING CYBERCRIME, LEGAL TRUTH, & REFORMS

I. THE CRIMINAL NETWORKS' MODUS OPERANDI (DECEPTION)



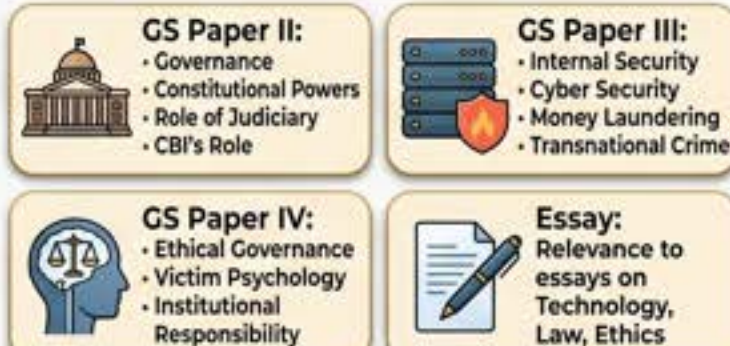
II. THE LEGAL REALITY: DEBUNKING 'VIRTUAL CUSTODY'



III. STRATEGIC REFORMS & GOVERNANCE CHALLENGES



IV. UPSC/APSC SYLLABUS LINKAGES



V. PREVIOUS YEARS' QUESTION THEMES

- Cybersecurity & internal security
- Technology and the rule of law
- Ethics of digital platforms
- Money laundering & state response

VI. HISTORICAL EVOLUTION



Mahesh Dixit, IPS officer of 1993 batch, named new IB chief

Vijaita Singh
NEW DELHI

Mahesh Dixit, a 1993 batch Indian Police Service (IPS) officer of the Andhra Pradesh cadre has been appointed as Director, Intelligence Bureau (DIB), a government order said.

He succeeds Tapan Kumar Deka, who held the post since 2022. His tenure ends on June 30.

Mr. Dixit, a medical doctor by education, has led the Jammu and Kashmir (J&K) desk and has also served in Nagaland and Bihar.

He was Deputy Director of IB in J&K from 2009-12 and from 2012-15, he was posted in Nagaland.

He took charge of the Subsidiary Intelligence Bureau (SIB) of J&K in 2020 and served there till 2024, overseeing the security preparedness and intelligence-based operations post revocation of Article 370 in the erstwhile State.

He is among the Home Ministry officials who are engaged in talks with civil society leaders of Ladakh.

The Appointments Committee of the Cabinet (ACC) on Thursday

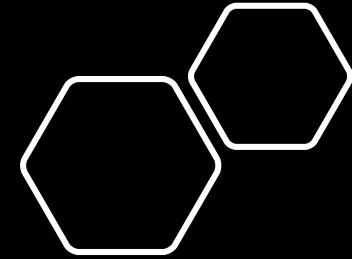


Mahesh Dixit

He served in J&K from 2020 to 2024, in the period post the revocation of Article 370

approved the appointment of Mr. Dixit, Special Director, IB as Director, Intelligence Bureau for a tenure of two years from the date of assumption of the charge of the post or until further orders, whichever is earlier, the order said.

Due to retire in August 2027, he has been granted extension in service under the provisions of FR 56d) and Rule 16 (IA) of All India Services (Death cum Retirement Benefits) Rules, 1958, the order said.



- **Key Terms and Explanations**

- **Intelligence Bureau (IB) & Subsidiary Intelligence Bureau (SIB):** The Intelligence Bureau is India's premier domestic intelligence agency, operating under the Ministry of Home Affairs (MHA). It is tasked with monitoring internal security, counter-intelligence, counter-terrorism, and border security. The Subsidiary Intelligence Bureaus (SIBs) are its state-level field units. They act as the eyes and ears of the central government on the ground, working in close coordination with state police forces to neutralize localized security threats.
- **Appointments Committee of the Cabinet (ACC):** This is one of the most powerful Cabinet Committees in India, chaired by the Prime Minister with the Union Home Minister as a key member. The ACC is the final authority responsible for approving all high-level appointments to top bureaucratic, security, and military positions, including the Chiefs of the IB, R&AW, CBI, and the Chiefs of the Armed Forces.
- **Fundamental Rule 56(d) [FR 56(d)] & AIS Rules:** Fundamental Rules govern the service conditions of central government employees. Under FR 56(d), along with specific clauses of the All India Services (Death-cum-Retirement Benefits) Rules, 1958, the Union Government possesses the legal authority to grant service extensions to crucial administrative and security heads (such as the Cabinet Secretary, Home Secretary, and Intelligence Chiefs) beyond their standard retirement age. This is done to preserve operational continuity during sensitive national security transitions.
- **Intelligence-Led Operations:** A modern policing and security paradigm where strategic action is driven by systematic data collection, analysis, and threat assessment rather than reactive force. For instance, in highly volatile zones, intelligence-led operations use targeted electronic and human intelligence to neutralize insurgent modules with minimal collateral damage, ensuring civilian safety.
- **Civil Society Engagement in Conflict Zones:** This refers to formal and informal dialogue between government representatives and non-state actors—such as community leaders, student unions, and local activists—in regions experiencing political or ethnic instability. It serves as a non-kinetic tool of statecraft designed to build trust, address regional aspirations, and de-escalate tensions without relying on military interventions.

- **Main Arguments and Substantive Parts**

- The architecture of internal security requires an intricate balance between rigid bureaucratic frameworks and the fluid, unpredictable nature of national security challenges. The foundational principles governing top-tier security appointments emphasize specific priorities.
- **The Primacy of Tactical and Field Experience**
 - The selection of leadership in apex intelligence agencies increasingly prioritizes extensive, hands-on experience in complex conflict theaters over standard administrative seniority. Managing volatile internal security environments requires leaders who have directly operated within the unique socio-political ecosystems of troubled regions. Deep institutional familiarity with critical zones—such as the post-bifurcation landscape of Jammu & Kashmir or the ethnically complex tribal dynamics of the Northeast—equips a leader with tactical nuance that cannot be replicated through desk-bound administrative roles.
- **Continuity as a National Security Imperative**
 - The state frequently leverages legislative provisions to extend the tenures of security chiefs, demonstrating that institutional continuity is valued over rigid adherence to standard retirement ages. In the realm of intelligence, ongoing counter-terrorism operations, cross-border infiltration monitoring, and sensitive regional dialogues rely heavily on personal relationships and long-term institutional memory. Abrupt leadership changes during delicate geopolitical or internal transitions can disrupt active intelligence pipelines. Therefore, ensuring a stable, multi-year tenure for an intelligence chief is seen as necessary for safeguarding national integrity.
- **The Integration of Kinetic and Non-Kinetic Statecraft**
 - Effective internal security management requires a dual approach that combines hard security measures with soft, diplomatic engagement. While intelligence agencies must maintain robust, intelligence-led operations to deter active threats, they must simultaneously engage in peace-building dialogues with civil society leaders in sensitive border regions. This balanced approach acknowledges that long-term stability cannot be achieved through force alone; it requires addressing structural regional grievances through institutional dialogue.

- **Historical Evolution of the Issue**

- **The Colonial Foundations (1887–1947):** The roots of modern Indian domestic intelligence trace back to the Central Intelligence Department established by the British Secretary of State for India in 1887. Its primary objective was political surveillance to monitor and suppress the Indian national movement. Following independence in 1947, this apparatus was rebranded as the Intelligence Bureau (IB) under the Ministry of Home Affairs, with its mandate pivoting from imperial preservation to national integration and domestic threat assessment.

- **The Strategic Split of 1968:** Originally, the IB handled both domestic and international intelligence. However, the intelligence gaps exposed during the 1962 Sino-Indian War and the 1965 Indo-Pakistani War forced a structural reassessment. This led to the creation of the Research and Analysis Wing (R&AW) in 1968, which assumed responsibility for foreign intelligence, leaving the IB to focus exclusively on internal security, counter-subversion, and domestic counter-espionage.

- **The Kargil Watershed and Institutional Synergy (1999–2001):** The Kargil War highlighted significant intelligence gaps and a lack of inter-agency coordination. The landmark Kargil Review Committee (KRC) and the subsequent Group of Ministers (GoM) report on National Security recommended a sweeping overhaul. This led to the establishment of the Multi-Agency Centre (MAC) housed within the IB, which standardized real-time intelligence sharing among central intelligence agencies, military intelligence, and state police forces.

- **The Post-26/11 Refurbishment and Current Era:** The 2008 Mumbai terror attacks exposed further vulnerabilities in coastal security and urban counter-terror mechanisms. This catalyzed the creation of the National Investigation Agency (NIA) and the strengthening of the IB's field units (SIBs). Concurrently, to ensure that the leadership of these vital agencies was not vulnerable to frequent political or administrative disruptions, the government institutionalized fixed two-year tenures for security chiefs, utilizing specialized provisions like FR 56(d) to grant strategic extensions during sensitive geopolitical transitions.

- **Way Forward**

- **Introducing Statutory Backing for Intelligence Agencies**

- India could consider enacting comprehensive legislative charters for its premier intelligence agencies, including the Intelligence Bureau. Providing a clear statutory basis—similar to frameworks used in other parliamentary democracies—would clearly define operational mandates, codify powers, and establish structured legislative or judicial oversight. This would strengthen institutional legitimacy while protecting civil liberties.

- **Institutionalizing Transparent Appointment and Extension Protocols**

- To maintain high morale and clear career progression across elite cadres, the process for top-tier security appointments and tenure extensions should follow a standardized protocol. The government could establish a high-powered, institutionalized selection panel that operates with predefined criteria. This would balance the executive's need for continuity during security crises with transparent standards for career advancement.

- **Strengthening Institutional Synergy and Technology Integration**

- The Multi-Agency Centre (MAC) framework requires continuous upgrades to meet evolving security challenges. This involves enhancing data sharing between central intelligence networks and state-level SIBs through secure, AI-driven data analytics platforms. Standardizing joint training exercises between federal intelligence officers and state police units would also help bridge operational gaps on the ground.

- **Expanding Non-Kinetic Conflict Resolution Frameworks**

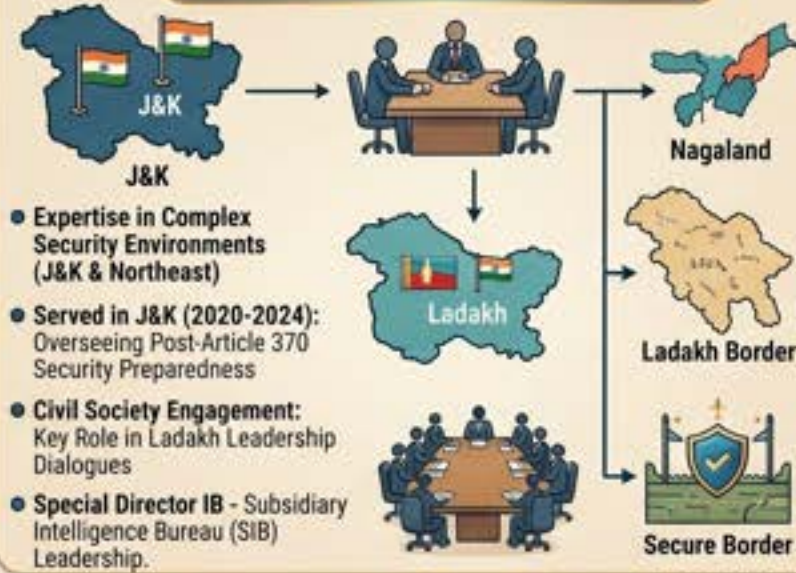
- Long-term internal stability depends on sustaining political and civil dialogue. Security strategies should consistently integrate kinetic operations with proactive civil society engagement. Training intelligence and security personnel in local languages, cultural nuances, and mediation techniques can help the state address regional grievances early, preventing localized discontent from escalating into broader security threats.



AXIA
IAS ACADEMY

AXIA IAS ACADEMY: COMPREHENSIVE ANALYSIS- NEW IB CHIEF & INDIA'S INTERNAL SECURITY.

Maresh Dixit, IPS (1993): CRUCIAL ROLES & EXPERIENCE



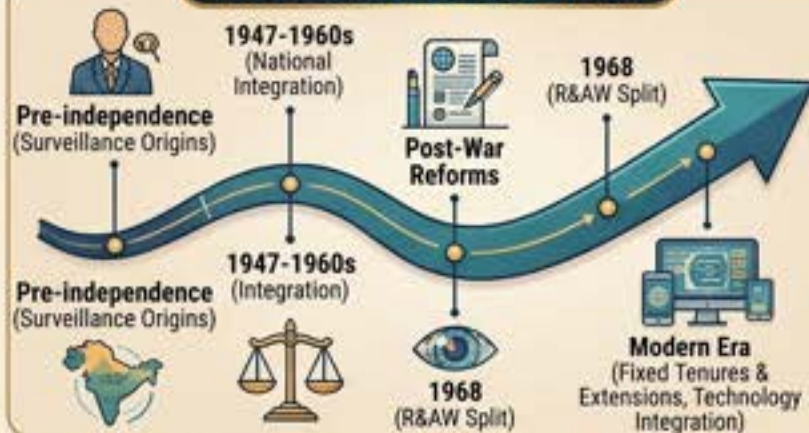
APPOINTMENT PROCESS & LEGAL PROVISIONS



MULTIDIMENSIONAL ANALYSIS

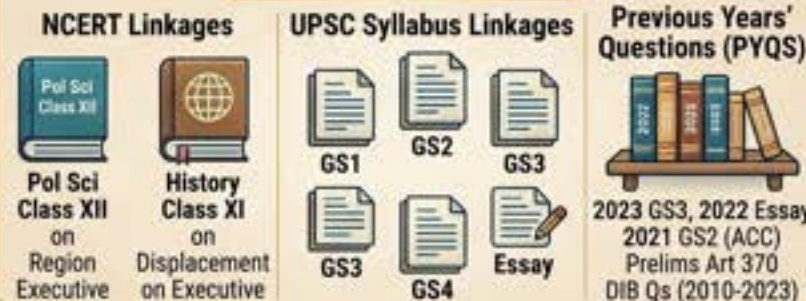


HISTORICAL EVOLUTION



THE NEW IB CHIEF & INTERNAL SECURITY STRATEGY

LINKAGES & PYQS



WAY FORWARD



'MSMEs must lead India's innovation push to achieve Viksit Bharat goal'

B. Narayan
BENGALURU

India's micro, small and medium enterprises (MSMEs) will play a decisive role in determining whether the country achieves its ambition of becoming a developed economy by 2047, with policy-makers and industry leaders calling for a stronger focus on innovation, design, talent and technology adoption at the fifth edition of The Hindu BusinessLine MSME Growth Conclave, co-powered by Central Bank of India.

Across discussions on manufacturing, electronics, skilling and entrepreneurship, a common theme rose: India can no longer rely solely on low-cost production and must move up the value chain.

Setting the tone for the conclave, Karnataka Minister for Medical Education and Skill Development Dr. Sharanaprakash Rudrappa Patil urged businesses to think beyond manufacturing. "We should move from 'Made in India' to 'Designed, Engineered and Owned in India'," he said, adding India's MSMEs would determine whether the country becomes a global innovation hub or the world's factory floor.

Addressing the forum, B.V. Naidu, chairman of the Karnataka Digital Economy Mission (KDEM), said India is on track to become a \$32 trillion economy by 2047, but warned that achieving developed nation status would require a substantial rise in per-capita income. He argued that MSMEs would play an even greater role than large enterprises in driving economic growth because of their agility and ability to



Crucial areas: Sharanaprakash Rudrappa Patil at the Hindu BusinessLine MSME Growth Conclave Bengaluru 2026. ANUR AGGARWAL

innovate. Mr. Naidu also highlighted the growing importance of the digital economy, noting that Karnataka's digital sector contributes between 35% and 40% of the state's economy. He said government support in areas such as market access, infrastructure, financing and talent development would be crucial, particularly as smaller firms grapple with the rapid adoption of AI.

Focus on IP

That sentiment echoed through the electronics manufacturing panel, where speakers argued that India should focus on building IP and specialised capabilities rather than attempting to replicate China's manufacturing model.

"If anyone thinks we can compete with China by being cheaper, it is not the game," said Sachin Dhirana Naik, founder and chief executive of Curo Labs. Sonam Motwani, founder and chief executive of Karkhana.io, noted that India still has a long way to go

before matching China's manufacturing scale, while emphasising on the need to build strengths in niche sectors and proprietary technologies.

Electronics opportunity

Ashok Chandak, president of IESA and SEMI India, said opportunities in electronics manufacturing were expanding rapidly across sectors from telecom and industrial equipment to automotive and defence. "Make in India is already done. Got to go beyond, that is, design in India, build in India, secure in India and get trusted worldwide," he said.

Talent and productivity emerged as another key concern. Industry leaders highlighted the widening gap between academic curricula and industry requirements and stressed on the need for closer collaboration between educational institutions and businesses. Several speakers also pointed to artificial intelligence as a force multiplier that could help

MSMEs improve productivity without significantly increasing costs.

"I think it's very important to have the people strategy or the people design, from where you're going to get people, what skills are required, and companies need to go down and collaborate with institutions," said Nitin Dave, CEO, Staffing Solution, Queso Corp.

But on an optimistic note, Milky Mist CMD Gaurish Kumar urged entrepreneurs to think bigger. "Most of the time entrepreneurs are underestimating India. It is an enormous opportunity," he said.

The overarching takeaway from the conclave was that India's MSMEs have a historic opportunity ahead of them – but success will depend on their ability to innovate, embrace technology and move up the value chain.

The event is co-powered by Central Bank of India. The Associate Partners for the conclave are Bank of Baroda, Tally, Punjab National Bank, SSVM Institutions, Canara Bank, Kerala Bureau of Industrial Promotion (KBIP), Karnataka Bank, Karnataka Power Corporation Ltd, Department of Industries – Government of Bihar, Indian Overseas Bank, Mysore Sales International Ltd and Karnataka Cooperative Milk Producers' Federation Limited. The Luxury Realty Partner is Parivankara and Education Partner is Presidency University, while SUV Partner is Mahindra. The State partner is RAMP Programme (supported by the Government of India and World Bank, and implemented by the Government of Karnataka).

- **Key Terms and Explanations**
 - **Viksit Bharat 2047:** This represents the formal vision of the Government of India to transform the nation into a fully developed economy by the centenary year of its independence in 2047. The blueprint demands a multifaceted leap across macroeconomic stability, high per-capita income, human development indices, and cutting-edge technological self-reliance, moving beyond the traditional metric of aggregate gross domestic product (GDP) growth.
 - **Micro, Small, and Medium Enterprises (MSMEs):** Classified under the MSMED Act, these are the economic engines defined by a composite criteria of investment in plant and machinery alongside annual turnover. For example, a 'Micro' unit involves an investment of up to ₹1 crore and a turnover of up to ₹5 crores. They serve as the primary source of non-agricultural employment across semi-urban and rural landscapes.
 - **Value Chain Upgradation:** The structural transition of an enterprise or economy from low-margin, basic assembly functions to high-margin, sophisticated phases of production. In practical terms, this means moving away from simply assembling imported electronic components (low value-add) toward conceptualizing, designing, and fabricating indigenous proprietary technologies (high value-add).
 - **Intellectual Property (IP) and Proprietary Technology:** Legal rights resulting from intellectual activity in industrial, scientific, and artistic fields. For small scale industries, owning proprietary tech (such as a unique software algorithm or a patented semiconductor architecture) ensures market dominance, protects margins from cost-cutting competition, and builds global brand trust.
 - **Technology Adoption and Force Multipliers:** A force multiplier is a capability that, when added to an existing system, significantly increases its performance potential. In modern manufacturing, artificial intelligence (AI), machine learning, and advanced automation act as force multipliers, allowing small units to drastically improve production accuracy and volume without a corresponding exponential increase in overhead costs.
 - **RAMP Programme (Raising and Accelerating MSME Performance):** A World Bank-assisted Central Sector Scheme formulated to strengthen institutional governance, improve center-state centerpieces, enhance market access, and address the critical challenges of delayed payments and credit flow within the MSME ecosystem.
-
- **Main Arguments and Substantive Parts**
 - The structural core of India's future economic growth rests on a vital realization: the traditional models of low-cost, mass-assembly manufacturing are no longer sufficient to propel a nation into high-income status.
 - **The Innovation Imperative vs. The Assembly Trap**
 - A central thesis emerging in contemporary economic policy is that India cannot achieve its developed nation ambitions by merely acting as the "world's factory floor." Competing globally based solely on cheap labor is a race to the bottom, especially when competing with highly optimized industrial setups like China's. Instead, the focus must shift from a basic "Made in India" ethos to a more sophisticated "Designed, Engineered, and Owned in India" paradigm.
 - **Agility as a Strategic Asset**
 - While large conglomerate enterprises possess immense capital, smaller enterprises possess structural agility. This flexibility enables them to adapt swiftly to disruptive paradigms like artificial intelligence and green manufacturing. However, this agility is often constrained by systemic vulnerabilities, including:
 - Limited long-term financing options
 - Inadequate specialized infrastructure
 - Poor market access
 - Governments must step in to bridge these gaps, turning these nimble businesses into drivers of disruptive innovation.
 - **The Electronics and Digital Frontier**
 - Niche sectors—such as semiconductor design, automotive electronics, telecommunications hardware, and defense systems—offer substantial growth potential. True success in these sectors requires a comprehensive strategy:
 - "Design in India, build in India, secure in India, and get trusted worldwide."
 - Achieving this requires moving past simple reverse engineering and focusing heavily on building unique intellectual property.
 - **The Human Capital and Productivity Paradox**
 - There is a widening mismatch between current academic curricula and the fluid demands of modern industry. While tools like artificial intelligence offer massive opportunities to boost productivity without raising operational costs, small businesses cannot deploy them effectively without a skilled workforce. Closing this gap requires deeper, institutionalized partnerships between academia and industry.

-
- **Historical Evolution of the Issue**
 - The trajectory of India's small-scale industries reflects the broader evolution of the nation's macroeconomic philosophy, moving from highly protective state isolation toward integration into global value chains.

Phase / Era	Policy Focus & Key Milestones	Structural Impact on Small Industries
Pre-Independence Era	Focus on village and cottage industries; Swadeshi movement spearheaded by Mahatma Gandhi to promote self-reliance (<i>Gram Swaraj</i>).	Kept indigenous handicraft skills alive but lacked the technological modernization required to scale up efficiently.
Post-Independence (1948–1991)	Industrial Policy Resolutions (1948, 1956); setting up of the Karve Committee (1955). Direct policy of reserving specific products exclusively for Small Scale Industries (SSIs).	Protected small units from large-scale domestic monopolies, but unintendedly created a "dwarfism" effect where firms avoided growing larger to retain state benefits.
Post-1991 Liberalization	Economic reforms opening up the market; dismantling of the license raj and gradual reduction of the reserved item list for SSIs.	Exposed small businesses to intense global competition, forcing a shift away from state protection toward market-driven competitiveness.
The Formalization Era (2006)	Enactment of the Micro, Small and Medium Enterprises Development (MSMED) Act, 2006 . Combined both manufacturing and service sectors under a unified framework.	Provided a clear legal identity to MSMEs and introduced institutional mechanisms to handle structural problems like delayed payments.
The Modern Digital Era (2014–Present)	Launch of targeted campaigns like <i>Make in India</i> , <i>Atmanirbhar Bharat</i> , the revised composite definition of MSMEs (2020), and the rollout of the World Bank-backed <i>RAMP</i> initiative.	Shifted focus from survival to global competitiveness, driving digital onboarding via portals like GeM and Udyam, while prioritizing innovation and IP creation.

- **Way Forward**
- **Institutionalizing Academia-Industry Integration**
 - We should establish formal, regional innovation consortia that link technical universities directly with local industrial clusters. Engineering and technology curricula need regular updates to include practical skills in artificial intelligence, Internet of Things (IoT) architectures, and advanced chip design. These updates should be guided by direct input from industry experts to ensure graduates meet current market needs.
- **Democratizing Intellectual Property Creation**
 - The government can set up dedicated Intellectual Property (IP) facilitation centers within existing industrial hubs. These centers should offer micro and small enterprises affordable legal advice, technical support for patent searches, and streamlined fast-track patent processing.
 - Expanding sovereign patent-filing subsidies can dramatically lower financial barriers, encouraging small businesses to secure original proprietary designs.
- **Facilitating Access to Patient Capital and Blended Finance**
 - Traditional banking often struggles to assess the value of intangible assets like software or intellectual property, making it difficult for innovative small firms to secure credit.
 - To bridge this gap, the state can introduce specialized blended finance funds and venture debt instruments. These financial tools should evaluate creditworthiness based on technical merit and IP potential rather than requiring physical collateral.
- **Developing Specialized, High-Tech Clusters**
 - Rather than building generic industrial zones, future infrastructure investments should prioritize specialized technology parks tailored for high-growth sectors like defense systems, automotive electronics, and green technologies. These clusters ought to feature shared, state-of-the-art facilities, including testing labs, advanced prototyping centers, and high-speed digital infrastructure, reducing upfront capital requirements for small innovators.
- **Strengthening Institutional Support Frameworks**
 - We should maximize the reach of comprehensive initiatives like the World Bank-assisted RAMP programme. Enhancing coordination between central and state agencies will streamline the formalization of small businesses, speed up the resolution of delayed payments through systems like MSME Samadhaan, and provide targeted training programs to help traditional entrepreneurs adopt modern digital business models.



KEY TERMS & CONCEPTS



MSME
(By MSME (by act criteria)
(by Act Velisat Bharrar 2047)



Technology Adoption
(AI/ML Force Multipliers)



Viksit Bharat 2047 Vision
Definitions and position to restate and ungramionis industrial MSME crass



Value Chain Upgradation
Value chain upgradation toan and incleas to upgradation and industnment organizations



Intellectual Property (IP) & Proprietary Technology
Intellectual Property (IP) & Proprietary technology, & Technology Adoption (AI/ML Force Multipliers)

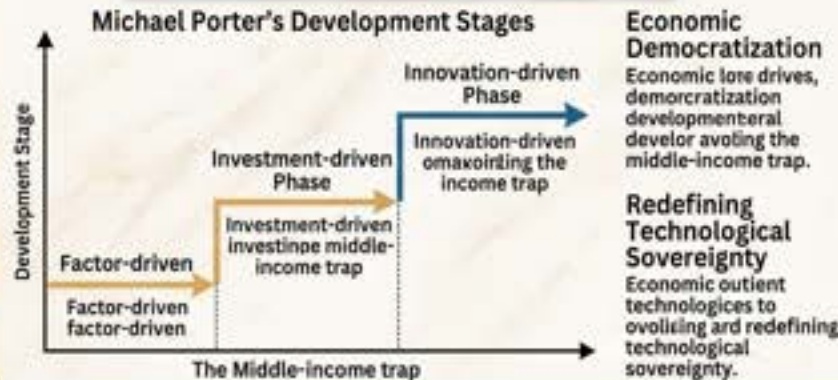


RAMP Programme
Feogelemms reduring the RAMP programme.

HISTORICAL EVOLUTION



LOGICAL & PHILOSOPHICAL BASE



TRANSFORMING INDIA'S MSMEs: A BLUEPRINT FOR VIKSIT BHARAT 2047

ANCHOR FLOW

[TRADITIONAL ASSEMBLY TRAP] → [TARGET INNOVATION PARADIGM]



Limited Margins,
Value Capture

VS.



High IP Creation,
Sustained Wealth

[TARGET INNOVATION PARADIGM]

Made in India

FROM

R&D center



VS.

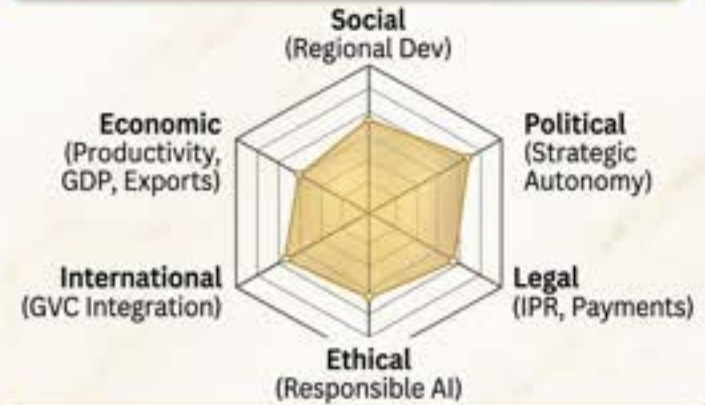


Made in India

→

Designed, Engineered,
and Owned in India.

A MULTIDIMENSIONAL TRANSFORMATION



UPSC & NCERT SYLLABUS LINKAGES

- | Standard NCERT classes | GS Papers |
|---|-------------------------------|
| • Class XI Indian Economic Development | • GS Paper 1, Essay themes |
| • Class XII Indian Economic Development | • GS Paper 1, 2, Essay themes |
| • Class XII Indian Esstoetconomics | • GS Paper 1, 3, Essay themes |
| • Class XII Macroeconomics | • GS Paper 1, 4, Essay themes |

WAY FORWARD & POLICY REFORMS

- Institutionalizing Academia-Industry Integration
- Democratizing IP Creation, Patient Capital & Blended
[Innovative MSME] → [FinTech/Blended Finance] → [Sustained Tech Expansion]
- Developing Specialized Clusters
(Developing Specialized clusters: (zones, shared facilities)
- Strengthening Institutional Support
(Strengthening Institutional support; RAMP, resolution)

PRACTICE & ANALYSIS (PREVIOUS YEARS QUESTIONS)

- Highlighted focus on sample PYQ snippets — Prelims and Mains.
- Definitions, MSME rotee, etc., definitions, MSME roles, etc.
- Definitions, MSME roles, connemunication, etc.
- Definitions, MSME roles, net conceloreanalities, etc.

Netra, India's airborne surveillance platform, gets final operational nod

Hemanth C.S.
BENGALURU

The indigenous Netra Airborne Early Warning and Control (AEW&C) system, which played a pivotal role as a force multiplier for the Indian Air Force in the 2019 Balakot strikes and Operation Sindoor last year, was accorded final operational clearance (FOC) on Thursday.

Developed indigenously by the Bengaluru-based Centre for Airborne Systems (CABS), the Netra AEW&C is integrated on the Brazilian Embraer EMB-145I aircraft platform.

The system encompasses a sophisticated suite of mission equipment, including an Active Electronically Scanned Array (AE-SA) radar, Identification Friend or Foe (IFF), mission computer, secure communication networks, electronic support measures (ESM) and communi-



Air Marshal Awadhesh Kumar Bharti and others, pose during a ceremony marking the FOC of NETRA on Thursday. MURALI KUMAR K

cation support measures. India is the fifth country in the world to develop this capability, as Netra can detect, track, identify and monitor airborne and maritime targets enhancing the network-centric operations capabilities of the IAF.

Dedication

At an event to mark the occasion, scientists and IAF officers dedicated the

achievement to colleagues killed in a tragic air crash in 1999. The seeds of India's airborne warning and control system (AWACS) were sown in the early 1980s.

However, the tragic crash of a modified HS-748 Avro aircraft near Arakkonam in Tamil Nadu, with eight people aboard, including four IAF personnel and four scientists, on January 11, 1999 resulted in the programme being

abandoned temporarily.

The programme took off again after being sanctioned afresh in 2004. During this intervening period, scientists kept their perseverance and hoped for the best.

"On January 11, 1999, the ill-fated aircraft had a crash. I salute personnel who were on board, who made their supreme sacrifice. Today we have shown that their sacrifice has not gone in vain. This FOC is dedicated to them," Director-General of Aeronautics Cluster of the Defence Research and Development Organisation (DRDO), K. Rajalakshmi Menon said.

The Initial Operational Clearance (IOC) for the Netra was accorded in 2015 and it was inducted into the IAF in 2017.

The Cabinet Committee on Security (CCS) has approved the development of six more AEW&C Mk-1A systems by the CABS.

- **Key Terms and Explanations**

- **Airborne Early Warning and Control (AEW&C) System:** This is essentially an "eye in the sky." It consists of a radar system mounted on an aircraft platform designed to detect aircraft, ships, and vehicles at long ranges, while also commanding and controlling the battlespace by directing strikes.
- **Active Electronically Scanned Array (AESA) Radar:** A sophisticated type of phased array radar where the radio waves can be electronically steered in different directions without physically moving the antenna. It offers higher resistance to electronic jamming, greater detection range, and the ability to track multiple targets simultaneously.
- **Force Multiplier:** A capability or attribute that, when added to a combat force, significantly increases its combat potential and enhances the probability of a successful mission. The integration of an AEW&C platform allows existing fighter jets to operate with exponentially higher efficiency.
- **Initial Operational Clearance (IOC) vs. Final Operational Clearance (FOC):**
 - **IOC** signifies that the system has met its basic developmental milestones and is safe for induction into service under specified operational envelopes.
 - **FOC** is the ultimate validation, certifying that the system has successfully cleared all rigorous testing, met all combat parameters, and is fully battle-ready for unrestricted operational deployment.
- **Network-Centric Operations (NCO):** A military doctrine that turns an information advantage—enabled by the networking of geographically dispersed forces—into maximum combat power. It ensures real-time data sharing between sensors, commanders, and shooters.
- **Identification Friend or Foe (IFF):** An encrypted electronic radio-interrogation system designed for command and control. It enables military interrogation systems to recognize friendly aircraft and distinguish them from potential adversaries, preventing fratricide (friendly fire).

- **Main Arguments and Substantive Parts**

- The core theme revolves around India's achievement of a crucial defense milestone: granting Final Operational Clearance (FOC) to its indigenous Netra surveillance platform, as illustrated in image_ad22bc.jpg. This represents a massive stride toward strategic self-reliance in cutting-edge aerospace engineering.
- **Validation of Indigenous Capability:** The journey of the Netra platform proves that Indian defense institutions like the Centre for Airborne Systems (CABS) and the Defence Research and Development Organisation (DRDO) can develop highly complex, network-centric warfare tools. Netra is integrated onto a modified Brazilian Embraer EMB-145I aircraft, showcasing a successful model of cross-border platform customization.
- **Proven Combat Pedigree:** Unlike systems tested only in simulated environments, this platform has already served as a critical force multiplier during real-world operations. It played a defining role during the 2019 Balakot strikes and Operation Sindoor, validating its tactical utility in high-stakes electronic warfare and airspace management.
- **Breaking the Global Oligopoly:** Aerospace surveillance technology has historically been monopolized by a handful of Western nations and Russia. With Netra's formal maturity, India firmly establishes itself as the fifth country globally to master this capability, bridging a vital strategic asymmetry in the subcontinent.
- **A Stepping Stone for Scale:** The institutional confidence gained from this project has directly paved the way for future scaling. This is evident from the Cabinet Committee on Security (CCS) approving the development of six additional, more advanced AEW&C Mk-1A systems, ensuring that indigenous technology remains the backbone of India's air defense architecture.

- **Historical Evolution of the Issue**
- **The Early 1980s (The Genesis):** The seeds of India's independent airborne warning and control systems (AWACS) were sown during this period. Recognizing the growing capabilities of regional neighbors, Indian defense planners realized that ground-based radars left critical blind spots due to the curvature of the Earth.
- **January 11, 1999 (The Tragic Setback):** A modified HS-748 Avro aircraft carrying an indigenous radar testbed crashed near Arakkonam, Tamil Nadu. The tragedy resulted in the loss of eight precious lives, including four senior defense scientists and four IAF personnel. This immense loss led to the temporary abandonment of the active project, dealing a severe blow to indigenous military aviation R&D.
- **2004 (The Resurrection):** Recognizing that importing foreign systems was economically draining and strategically restrictive, the government sanctioned the program afresh. Scientists persevered, rebuilding the technological blueprint from scratch with enhanced safety and superior design parameters.
- **2015 to 2017 (The Milestone Transition):** The relentless efforts of CABS and DRDO bore fruit when the Netra platform was accorded Initial Operational Clearance (IOC) in 2015. This was swiftly followed by its formal induction into the Indian Air Force fleet in 2017, where it began active service.
- **The Present Horizon:** Achieving the Final Operational Clearance (FOC) marks the culmination of this evolutionary phase. It transforms the project from a successful technological demonstration into a fully optimized, battle-hardened asset ready for an expanded manufacturing run through the approved Mk-1A program.
- **Way Forward**
- **Accelerating the Mk-1A and Mk-2 Timeline:** Bureaucratic delays must be minimized to ensure the swift production of the six approved Mk-1A systems. Simultaneously, development should speed up on the larger AWACS Mk-2 systems, which are being designed on commercial wide-body aircraft airframes to provide extended range and 360-degree radar coverage.
- **Deepening Public-Private Partnerships (PPP):** While design houses like CABS retain core intellectual property, manufacturing sub-systems should be aggressively outsourced to Tier-1 and Tier-2 private domestic defense vendors. This will optimize production speeds and strengthen the wider defense manufacturing ecosystem.
- **Advanced Sensor Fusion and AI Integration:** Future upgrades should incorporate Artificial Intelligence (AI) and machine learning algorithms into the system's mission computers. This will automate target identification, speed up threat assessment, and seamlessly fuse data from satellites, ground radars, and airborne assets.
- **Securing Against Cyber and Electronic Warfare:** As network-centric operations expand, these airborne assets will become prime targets for enemy cyber-attacks and advanced electronic jamming. Continuous investment in quantum-encrypted, un-jammable communication links is absolutely essential.
- **Developing a Proactive Defense Export Strategy:** India should look into exporting tailored variants of its indigenous AEW&C systems to friendly nations across Southeast Asia, Africa, and Latin America. This would lower per-unit costs through economies of scale and establish India as a reliable high-tech security exporter.



LOGO.jpeg



AXIA IAS ACADEMY

RISE ABOVE THE REST



UPSC & APSC
EXAM PREPARATION

INDIA'S INDIGENOUS NETRA AEW&C PLATFORM GETS FINAL OPERATIONAL CLEARANCE (FOC)

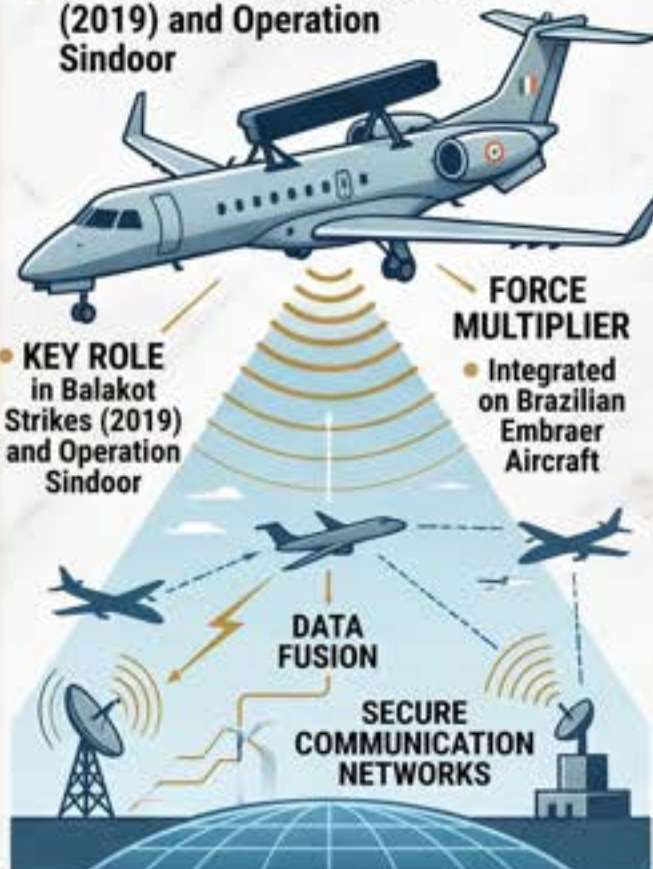
KEY CAPABILITIES



STRATEGIC SIGNIFICANCE



• KEY ROLE in Balakot Strikes (2019) and Operation Sindoor



• KEY ROLE in Balakot Strikes (2019) and Operation Sindoor

FORCE MULTIPLIER

• Integrated on Brazilian Embraer Aircraft

DATA FUSION

SECURE COMMUNICATION NETWORKS

PROGRAM HISTORY & DEDICATION



UPSC CSE / APSC LINKAGES

- GS Paper 3:**
- Science & Technology
 - Indigenization
 - Internal Security
 - Border Management
- GS Paper 2:**
- International Relations
 - Strategic Autonomy
- GS Paper 3:**
- International Roles
 - Indigenization
- GS Paper 2:**
- International Relations
 - Strategic Autonomy

Emergency was a direct assault on Constitution: Modi

The Hindu Bureau
NEW DELHI

Prime Minister Narendra Modi on Thursday said the Emergency was a direct assault on the Constitution, as it involved the suspension of civil liberties, curbs on freedom of expression, and the arrests of political leaders, journalists, and social workers.

In a post on X on the 51st anniversary of the imposition of the Emergency, Mr. Modi paid homage to all those who steadfastly defended democratic values during "one of the darkest chapters in India's history".

Noting that the period witnessed an assault on institutions that are the bedrock of Indian democracy, the Prime Minister said: "At the same time, it also revealed the extraordinary courage of countless citizens who refused to remain silent and upheld the ideals enshrined in our Constitution."

"For all of us, our Constitution is an embodiment of the aspirations, rights and duties of 140 crore Indians. We reaffirm our collective commitment to safeguarding constitutional values. Guided by the spirit



Narendra Modi

of our Constitution, we will build an India that remains ever committed to justice, liberty, equality and fraternity," Mr. Modi said.

Bharatiya Janata Party (BJP) chief Nitin Nadin said the Congress, which had launched "the greatest attack on democracy", was now ironically attempting to represent itself as the "foremost self-appointed defenders" of the Constitution.

"If Parliament does not function, the government is blamed. If elections are lost, the system is blamed. If the public does not offer support, institutions are blamed," he said, asking why the Congress had "never offered an unconditional apology" to the country for the Emergency.

- **Key Terms and Explanations**

- **National Emergency (Article 352):** A constitutional provision that allows the Central government to assume extraordinary powers when the security of India or any part of it is threatened by war, external aggression, or armed rebellion.
- **Constitutionalism:** The political philosophy that argues government authority is derived from and limited by a body of fundamental law. It stands in direct opposition to arbitrary governance and absolute power.
- **Civil Liberties:** The fundamental rights and freedoms guaranteed to citizens, protecting them from arbitrary state interference. These include freedom of speech, peaceful assembly, and the right to life and personal liberty.
- **Preventive Detention:** The detention of a person without a trial or conviction by a court, not to punish them for a past offense, but to prevent them from committing an offense in the future.
- **Habeas Corpus:** A Latin term meaning "to have the body." It is a judicial writ issued by courts to protect an individual against unlawful and arbitrary detention, commanding the detaining authority to produce the person before the court.

- **Main Arguments and Substantive Parts**

- The historical experience of the 1975 Emergency, as referenced in contemporary political reflections, offers profound insights into the vulnerability and resilience of democratic systems.
- **The Thesis of Executive Supremacy:** The core argument centers on how the misuse of constitutional provisions can lead to an absolute concentration of power in the executive. When checks and balances fail, institutional mechanisms designed to protect the state can be turned against its own citizens, resulting in what is frequently described as a direct assault on the Constitution.
- **The Systematic Erosion of Rights:** A primary characteristic of this era was the complete suspension of fundamental rights, particularly the right to move courts for the enforcement of the right to life and personal liberty. This was accompanied by strict press censorship, demonstrating how easily public discourse can be monopolized by the state when legal safeguards are removed.
- **The Capitulation vs. Resilience of Institutions:** The narrative presents a dual reality. On one hand, key state institutions—including parts of the higher judiciary and the bureaucracy—failed to resist executive overreach. On the other hand, the ultimate resilience of Indian democracy was proven not by its state machinery, but by the extraordinary courage of citizens, journalists, and underground movements that refused to remain silent.
- **The Question of Accountability and Apology:** Modern political discourse emphasizes that true democratic healing requires an unconditional acknowledgment of past institutional failures. The ongoing debate regarding the lack of a formal, cross-party consensus on historical wrongs highlights that the legacy of the Emergency remains an active legal and moral touchstone in Indian politics.

- **Historical Evolution of the Issue**

- The trajectory of emergency powers in India reflects a constant struggle between state security and individual freedom, evolving significantly from the colonial era to the present day.
- **Colonial Precedents (Pre-1950):** The roots of extraordinary executive power lie in colonial laws like the Government of India Act 1935 (Section 102), which gave the Governor-General sweeping powers during emergencies. The Rowlatt Act of 1919 also normalized preventive detention, establishing a legacy of state securitization over civil rights.
- **The Constituent Assembly Debates (1946–1949):** The inclusion of Part XVIII (Articles 352-360) faced fierce resistance. Visionary leaders like H.V. Kamath warned that these provisions would create a totalitarian state. However, the chaotic backdrop of Partition and the integration of princely states convinced the framers that a strong central hand was necessary to preserve national unity.
- **The Era of External Emergencies (1962 & 1971):** The first two National Emergencies were declared due to external threats—the Indo-China War (1962) and the Indo-Pakistani War (1971). These periods enjoyed broad political consensus as the focus was entirely on national defense.
- **The Internal Emergency Watershed (1975–1977):** The imposition of an emergency on the grounds of "internal disturbance" marked a radical shift. This period witnessed the controversial 42nd Amendment, which attempted to place constitutional amendments beyond judicial review and reduce the power of the high courts.
- **The Corrective Era (1978–Present):** The post-Emergency Janata Government enacted the **44th Constitutional Amendment Act, 1978**, to prevent future misuse. It replaced "internal disturbance" with "armed rebellion," mandated that an emergency can only be declared via a written cabinet recommendation, and declared that Articles 20 and 21 cannot be suspended even during an emergency. Subsequent judgements like *S.R. Bommai (1994)* further subjected emergency declarations to strict judicial review.

- **Way Forward**

- **Codifying Bureaucratic Independence:** There is an urgent need to insulate the civil services from political victimization. Implementing the recommendations of the Hota Committee and Administrative Reforms Commission (ARC) regarding fixed tenures and transparent transfer policies will help civil servants uphold the law without fearing political backlash.
- **Deepening Constitutional Literacy:** A democracy is only as resilient as its citizenry. Integrating robust human rights and constitutional education into school curricula will cultivate a public consciousness that prioritizes civil liberties, ensuring that future generations recognize and resist early signs of authoritarianism.
- **Strengthening Judicial Appointments:** To maintain a fiercely independent judiciary capable of checking executive overreach, the appointment process must remain transparent and free from executive dominance. Safeguarding the independence of the higher judiciary is our ultimate structural defense against constitutional subversion.
- **Protecting Press Freedom and Civil Society:** Independent media and active civil society organizations act as an early-warning system for democracy. Creating robust legal protections for investigative journalists and institutional space for peaceful dissent ensures that the executive remains continuously accountable to the public.

1. KEY TERMS & EXPLANATIONS



National Emergency (Article 352)

- Extraordinary powers for Union govt against war, external aggression, armed rebellion.
- Transforms federal structure to virtually unitary.



Constitutionalism

- Balanced scales and limited authority.
- Government limited by fundamental law, opposes arbitrary governance.



Civil Liberties

- (No people) A book of rights, megaphone, or key for fundamental freedoms protecting against state interference.
- Example: Publishing a critical op-ed.



Preventive Detention

- Detention without trial to prevent offenses.
- Historical reference to MISA.



Habeas Corpus

- Judicial writ protecting against arbitrary detention.
- Commanding production of the person.



2. MAIN ARGUMENTS: THE 1975 EXPERIENCE

ASSAULT ON THE CONSTITUTION



THESIS OF EXECUTIVE SUPREMACY

Checks and balances failure, absolute power concentration



SYSTEMATIC EROSION OF RIGHTS

Suspension of fundamental rights, press censorship, direct assault on rights and liberty.

CAPITULATION VS RESILIENCE OF INSTITUTIONS



Institutions failed But extraordinary citizen/journalistic/underground courage

- Proven resilience of democracy.

ACCOUNTABILITY & APOLOGY
Moral healing requires acknowledgement.

3. HISTORICAL EVOLUTION



(Colonial)

(Colonial)
• GOI Act 1935 (Sec 102)
• Rowlatt Act 1919
• Sweepings powers



(1946-1949)

Constituent Assembly Debates
• Kamath warning vs necessity for strong central hand



(1962 & 1971)

External Emergencies (Indo-China, Indo-Pak)
• Broad consensus for defense



(1975-1977)

THE INTERNAL EMERGENCY (Watershed):
"Internal disturbance,"
42nd Amendment overreach



(1978-Present)

CORRECTIVE ERA:
• 44th Amendment
• Armed rebellion, written cabinet, Art 20 & 21 non-suspension)
• S.R. Bommai (Judicial Review)

ANALYSIS OF NATIONAL EMERGENCY IN INDIA (ARTICLE 352): AN EXAM-ORIENTED GUIDE

5. MULTIDIMENSIONAL IMPACT OF AN EMERGENCY

SOCIAL

- Atmosphere of fear
- Institutional suspicion
- Targeted vulnerable populations
- Aggressive programs (e.g., sterilization drives)

POLITICAL

- Extreme centralization
- Destruction of federalism
- Imprisoned opposition
- De facto one-party state

LEGAL

- Institutional capitulation
- ADM Jabalpur (dark hour, right to life suspended)
- Judicial system as executive tool

ETHICAL

- Bureaucracy "crawled" (L.K. Advani quote)
- Collapse of administrative independence
- Public servants must uphold Constitution

INTERNATIONAL

- Democratic image hurt
- Global criticism
- Comparison to dictatorships
- Isolation

ECONOMIC

- Unpredictable policy
- Plummeted market confidence
- Hidden systemic inefficiencies
- 20-Point Program focus (forced redevelopment)

4. LOGICAL & PHILOSOPHICAL BASE



Social Contract Dilemma

Hobbes (Absolute sovereign)
Locke (Limited government)
• State survival vs Individual liberties
• Conflation of regime survival with state security



Doctrine of Constitutional Morality

- Constitution is only as good as those who administer it
- Inner commitment to norms



Principle of Limited Government

- Temporary unlimited government tested
- Absolute executive power is incompatible with human dignity

6. WAY FORWARD & REFORMS



Codifying Bureaucratic Independence

- Insulate civil service
- Hota Committee, ARC recommendations (fixed tenures)



Deepening Constitutional Literacy

- Public consciousness of civil liberties
- Human rights education



Strengthening Judicial Appointments

- Transparent process free from executive dominance
- Safeguard independence



Protecting Press Freedom & Civil Society

- Early-warning system
- Investigate journalists, space for dissent

7. LINKAGES

NCERTs

- Class XII Politics in India Since Independence (Chapter: Crisis of Democratic Order)
- Class XI Indian Constitution at Work

UPSC CSE Syllabus

- GS II (Constitution, separating powers)
- GS IV (Ethics)
- Essay
- PSIR Optional

• POLICY

If passport is not proof of citizenship, what is



DEEPTIMAN TIWARI

THE MINISTRY of External Affairs (MEA) Wednesday clarified that a passport is primarily a travel document and not a standalone proof of citizenship. The statement, made on Passport Seva Drive, triggered confusion. For most Indians, the passport is the most authoritative document issued by the state — carrying the Republic's name, accepted across the world and issued only after verification by government authorities.

The MEA's clarification, however, reflects a longstanding position: a passport is issued because the government is satisfied a person is an Indian citizen, but it does not create citizenship, nor is it conclusive proof of citizenship if challenged in law.

Citizenship a legal status

Articles 5 to 11 of the Constitution and the Citizenship Act, 1955 define who is an Indian citizen. Significantly, neither identify any single document as proof of citizenship.

Instead, citizenship is treated as a legal status arising from facts such as birth, parentage, domicile, or naturalisation. Documents serve as evidence of those facts. For a person born in India, citizenship depends on when they were born and, in certain cases, the citizenship status of their parents. For someone naturalised, it depends on compliance with statutory conditions.

This distinction is reflected in an answer given by the Ministry of Home Affairs in Parliament in February 2020. Asked whether Aadhaar, passport, voter ID, PAN card or birth certificate constitute valid proof of citizenship, the government said: "Acquisition of Indian Citizenship is governed by The Citizenship Act, 1955 and rules made thereunder. Citizenship of India can be acquired by birth or descent or registration or naturalisation or incorporation of territory. The eligibility criteria for acquisition and determination of citizenship is as per the provisions of the Citizenship Act, 1955."

Notably, it did not identify any of the documents as citizenship documents. Yet, under the Citizenship Rules, 2003, those seeking Indian citizenship under certain provisions produce a copy of their parent's

• WHO IS AN INDIAN CITIZEN?

Under the Citizenship Act of 1955, there are four ways to obtain citizenship

1. Citizenship by birth. For birthright citizenship, those born in India between 1950 and 1987 are citizens.

• For those born between 1987 and 2003, citizenship is accorded only if either parent is a citizen of India at the time of their birth.

• For those born after 2003, citizenship is accorded if only if either parent is a citizen at the time of their birth and the other is not an illegal immigrant.

2. Citizenship by descent. A person born outside India and who has at least one Indian parent will be granted citizenship, provided that the birth is registered within one year with the Indian consulate in the jurisdiction.

3. Citizenship by registration. This is for persons related to an Indian citizen through marriage or ancestry.



4. Citizenship by naturalisation. Naturalisation certificate can be granted to a person who isn't an illegal immigrant and has lived in India for 12 months continuously before applying.

• In the 14 years before the 12-month period, the person must have lived in India for at least 11 years. This is relaxed for some categories.

- Citizenship is treated as a legal status arising from facts such as birth, parentage, domicile or naturalisation.
- Documents serve as evidence of those facts. A passport is issued because the government is satisfied a person is a citizen. It does not create citizenship.

Waiver clause: If the Centre believes the applicant has rendered distinguished services to science, philosophy, art, literature, world peace or human progress, it may waive all or any of the conditions in the Act. This is how the Dalai Lama or Ashraf Sami, the Pakistani singer, got Indian citizenship.

—BY APURVA VISHWANATH

passports to prove they are Indian citizens.

Eligibility for passport

Section 20 of the Act empowers the Centre to issue a passport or travel document even to non-Indian citizens if it considers such issuance necessary in public interest.

MEA sources said the provision is used in special cases. "Largely, cases where say an Indian origin person becomes stateless due to geo-political developments, or someone stateless is in India and must travel abroad," an official said. Historically, Tibetan refugees and Sri Lankan Tamils in India have been issued special travel documents when visiting other countries, sources said. In 2023, the Madras High Court asked the Centre to grant a passport to a Sri Lankan Tamil Refugee under Section 20 of the Passport Act.

What courts have held

During hearings on the Special Intensive Revision 030 of electoral rolls in Bihar last year, a Supreme Court bench of Justice Surya Kant and Justice Jayashree Jagdish observed: "We would like you to clarify... we have repeatedly passed orders that the bill of materiality indicates 11 documents... if you see those 11, apart from passport and birth certificates, none are conclusive proof of citizenship."

The observation appeared to place pas-

Common principle

In the UK and US, too, passports are issued because the state has determined that a person is a citizen; they do not themselves create citizenship.

• The difference is that both countries have more robust civil registration systems and, for naturalised citizens, formal citizenship certificates.

ports and birth certificates in a higher evidentiary category than other documents accepted by the Election Commission for voter verification. Yet, in cases dealing directly with citizenship disputes, courts have often looked beyond passports.

In 2003, the Bombay High Court refused relief to four persons accused of being illegal immigrants despite their producing passports (which were later terminated), Aadhaar cards and birth certificates.

In the 2003 *Jarbanwala Somwaj v Union of India* judgment, the Supreme Court underscored that the burden of proving citizenship rests on the person claiming it. "There is good and sound reason for placing the burden of proof upon the person concerned who asserts to be a citizen of a particular country," the court said.

In *State of Andhra Pradesh v Abdul Khader* (1962), the SC treated a passport as evidence of nationality but examined constitutional criteria such as birth, domicile and migration history for citizenship.

The bigger problem

Unlike many countries, India does not have a universal citizenship certificate for all citizens. Certificates of citizenship are for a limited category of people — those who acquire citizenship through registration or

naturalisation under sections 3 and 6 of the Citizenship Act. But the overwhelming majority of Indians are citizens by birth.

India's civil registration system evolved unevenly, and universal birth registration is not a widely sought phenomenon. For millions of older Indians, citizenship has traditionally been inferred from a combination of records — electoral rolls, school certificates, land records, birth certificates, passports and other government documents — rather than through a single definitive credential.

The closest India came to creating such a document was through the National Register of Citizens (NRC). The legal architecture was put in place under the Nagoya government through the Citizenship Rules, 2003. The rules envisaged a National Register of Indian Citizens, along with local and state-level registers, and contemplated the issuance of identity cards linked to citizenship. The idea resurfaced during the UPA years in a tussle between the Home Ministry and the UIDAI over whether identity verification should precede citizenship verification.

In a conversation with *The Indian Express*, former Union Home Secretary R K Singh recalled that senior Home Ministry officials repeatedly argued that Aadhaar could not serve as proof of citizenship. "At that time, we said it would enable large number of infiltrators to get documents. The PM held a meeting on this. Nandan Nilekani was there. We put our point. I was very clear it cannot be a proof of citizenship. Nilekani agreed that his verification was peripheral."

"As far as passport is concerned, its verification is even stronger. But passport was not designed to be a document of citizenship. It was always imagined as a travel document. The idea of NRC was to provide a proof of citizenship," he added.

However, the NRC was never rolled out nationwide. The exercise became politically contentious and was eventually overtaken by the controversy surrounding the Citizenship (Amendment) Act and fears of a nationwide citizenship verification exercise.

The only large-scale implementation occurred in Assam between 2015 and 2019, where applicants had to establish their eligibility records predating March 24, 1971. Nearly 39 lakh people were left out of the final list, many because of documentary inconsistencies, spelling variations, missing records and difficulties in proving family linkages.

- **Key Terms and Explanations**
- **Citizenship vs. Nationality:** While often used interchangeably in casual conversation, they are legally distinct. Nationality denotes a person's geopolitical ties and place of birth, acting as an empirical fact of origin. Citizenship, conversely, is a specific legal status under municipal law, granting a bouquet of civil, political, and constitutional rights. For instance, an individual might hold Indian nationality by birth, but their legal status as a citizen is contingent upon satisfying the criteria laid down in the Constitution and the Citizenship Act, 1955.
- **Conclusive Proof vs. Evidentiary Document:** A conclusive proof is a document that establishes a fact beyond legal challenge, shutting out any further evidence to the contrary. An evidentiary document merely serves as a piece of admissible evidence to suggest a fact, which can still be disproved or rebutted in a court of law. In India, documents like Passports, Aadhaar cards, and Voter IDs are evidentiary; they indicate a presumption of identity or residency but do not constitute absolute, unassailable proof of citizenship.
- **Jus Soli and Jus Sanguinis:** These are the two primary philosophical doctrines of citizenship. *Jus Soli* (right of the soil) confers citizenship based on the place of birth, regardless of parental nationality. *Jus Sanguinis* (right of blood) determines citizenship based on the nationality of one or both parents. India's citizenship regime has progressively shifted from a liberal *Jus Soli* framework at independence towards a strict *Jus Sanguinis* model to check illegal migration.
- **Section 20 of the Passport Act, 1967:** This statutory provision empowers the Central Government to issue passports or travel documents to persons who are not citizens of India, if it deems such issuance necessary in the public interest. A practical example includes the issuance of specialized identity/travel documents to Tibetan or Sri Lankan Tamil refugees residing in India, demonstrating that possessing an Indian travel document does not automatically equate to possessing Indian citizenship.
- **Universal Citizenship Certificate:** A single, definitive document issued by a sovereign state that universally certifies an individual's citizenship status from birth. While naturalized or registered citizens in India receive certificates of naturalization, the vast majority of native-born Indians do not possess a standalone "citizenship certificate," relying instead on a constellation of secondary records.
- **Main Arguments and Substantive Parts**
- The core administrative paradox in India is that while the state demands proof of citizenship for various civil and security exercises, the legal framework does not recognize any single document as absolute proof of that status.
- **The Functional Purpose of Identity Documents**
- The executive position, as reiterated by the Ministry of External Affairs, establishes that a passport is fundamentally a travel document designed to facilitate international transit. While the state issues a passport only after a rigorous verification process where it satisfies itself of the applicant's status, the document remains *prima facie* evidence rather than absolute proof. It does not create citizenship; it merely reflects an administrative presumption that can be challenged and overturned in a court of law. Similarly, Aadhaar is strictly a proof of residence and identity, explicitly barred from being used as a test for citizenship.
- **The Judicial Concordance on Burden of Proof**
- The judiciary has consistently maintained a strict approach regarding the evidentiary value of identity documents when citizenship is contested. High Courts and the Supreme Court have ruled that even the concurrent possession of a passport, a birth certificate, and an Aadhaar card cannot prevent an inquiry into a person's legal status if credible doubts are raised.
- Furthermore, under the jurisprudence established by cases like *Sarbananda Sonowal v. Union of India (2005)*, the burden of proof rests squarely on the individual claiming citizenship, rather than on the state alleging illegal status. This creates a high evidentiary threshold for individuals who must prove a negative fact—that they are not foreigners.
- **The Legislative Gap and its Consequences**
- Articles 5 to 11 of the Constitution and the Citizenship Act, 1955, delineate the pathways to acquire and lose citizenship but deliberately stop short of prescribing a singular, universally accessible document to certify it. Instead, citizenship remains an inferred status derived from a combination of birth, parentage, and long-term domicile records. This structural gap creates administrative vulnerabilities, where minor clerical errors, variations in the spelling of names across historical land records, or missing birth certificates can jeopardize an individual's legal safety, as observed during the localized implementation of the National Register of Citizens (NRC).

- **Historical Evolution of the Issue**
- **The Constitutional and Statutory Foundation (1950–1955)**
 - At independence, the makers of the Constitution faced the monumental task of defining the polity amid the chaos of Partition. Articles 5 to 11 provided an inclusive framework based heavily on domicile and birth. To provide a permanent statutory mechanism, Parliament enacted the Citizenship Act, 1955. In its original form, the Act embraced *Jus Soli*, granting citizenship to almost anyone born on Indian soil between January 26, 1950, and July 1, 1987, reflecting a confident, civic model of statehood.
- **Geopolitical Pressures and Statutory Amendments (1986–2003)**
 - Massive irregular migration, particularly highlighted by the anti-foreigner agitation in Assam during the late 1970s and early 1980s, forced a radical re-evaluation of this open-door policy. The Citizenship (Amendment) Act, 1986, altered the rules of birthright citizenship: for those born after 1987, it was no longer enough to be born in India; at least one parent had to be an Indian citizen.
 - The tightening reached its peak with the 2003 Amendment under the Vajpayee administration. This amendment mandated that for births after 2003, citizenship by birth would only be granted if both parents were citizens, or if one parent was a citizen and the other was not an illegal migrant. Crucially, the 2003 Rules also introduced the legal architecture for a National Register of Indian Citizens (NRI).
- **The Modern Crisis of Proof (2015–Present)**
 - The abstract provisions of the 2003 Rules found a concrete, highly contentious trial ground in Assam between 2015 and 2019. Conducted under Supreme Court monitoring, the Assam NRC required residents to produce legacy data linking them to ancestors living in India prior to March 24, 1971. The exercise revealed the fragility of India's documentary ecosystem, leaving nearly 1.9 million people out of the final list due to minor spelling errors, missing links, and structural lack of documentation among marginalized populations. This clarified that the historical absence of a universal citizenship certificate remains an unresolved challenge in administrative law.
- **Way Forward**
- **Modernization and Harmonization of Civil Registries**
 - Instead of launching sudden, high-stakes verification drives that rely on historical legacy data, India must focus on modernizing and strengthening its current civil registration system. Ensuring universal, error-free registration of births and deaths under the Registration of Births and Deaths Act is the most effective way to build a reliable database. The state should work toward linking municipal databases with centralized identity registries to reduce the need for citizens to produce multiple historical documents.
- **Legislative Clarification on Evidentiary Value**
 - Parliament should consider amending relevant statutes to clarify the evidentiary hierarchy of state-issued documents. If a passport or a voter identity card is issued after rigorous field verification by state authorities, it should carry a strong legal presumption of citizenship. The state should only be able to challenge this presumption if it presents clear evidence of fraud or misrepresentation, rather than placing the entire burden of proof on the individual during routine inquiries.
- **Institutionalizing Administrative Redress and Compassion**
 - Any identity verification process must include robust, accessible administrative grievance mechanisms. Standard operating procedures should be established to handle common issues like spelling mismatches, variations in surnames post-marriage, and missing ancestral documents due to poverty or natural disasters. Administrative tribunals should be staffed with trained judicial officers who prioritize substantial justice over minor clerical technicalities, ensuring that no genuine citizen is disenfranchised due to systemic paperwork failures.
- **Formulation of a Humane and Rule-Based Refugee Policy**
 - To resolve the issues arising from provisions like Section 20 of the Passport Act, India should develop a clear, domestic statutory framework for refugees and asylum seekers. Differentiating clearly between economic migrants, irregular infiltrators, and persecuted refugees would allow the state to manage its borders effectively while upholding its long-standing humanitarian traditions on the international stage.

ADMINISTRATIVE PARADOX: DOCUMENTS vs. STATUS



Evidentiary, presumptive, not conclusive. Serve as travel/residency documents.
NOT CONCLUSIVE



Inferred legal status derived from Constitution (Articles 5-11) and Citizenship Act, 1955.
(NO SINGLE CONCLUSIVE PROOF)



COMPREHENSIVE ANALYSIS: THE INDIAN CITIZENSHIP PARADOX & THE BURDEN OF PROOF

A DEEP DIVE FOR UPSC PREPARATION



4 MECHANISMS FOR OBTAINING CITIZENSHIP

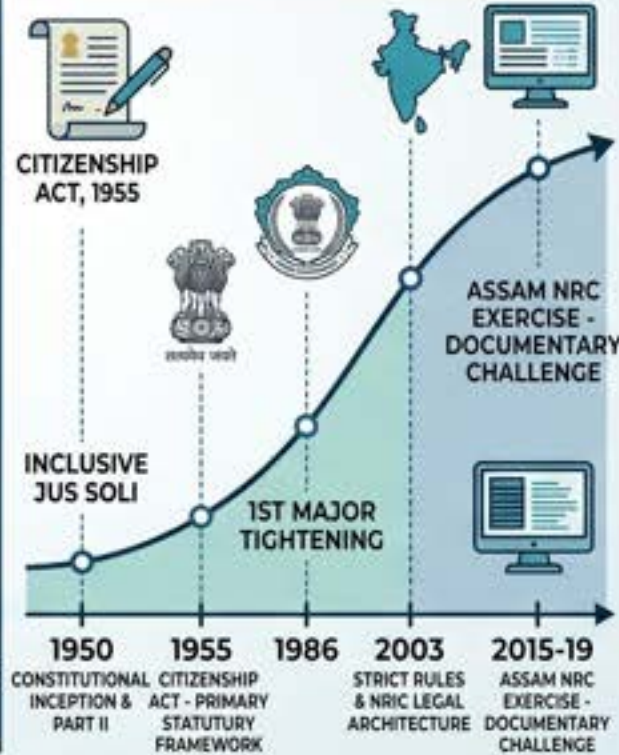
(UNDER CA, 1955)



(4) NATURALIZATION
For foreigners meeting detailed connections or procedures.

(3) REGISTRATION
In foreigners meeting detailed requirements (e.g., 11+ years in India). Waiver for distinguished service.

HISTORICAL EVOLUTION TIMELINE



MULTIDIMENSIONAL IMPACT MATRIX

	SOCIAL	POLITICAL
SOCIAL	 Vulnerable groups, illiterate populations	 Electoral roll weaponization, federal friction
LEGAL	 Burden of Proof under archaic Foreigners Act, litigation stress	 Human cost, structural statelessness

THE WAY FORWARD & ADMINISTRATIVE REFORMS

- (1) UNIVERSAL CIVIL REGISTRATION**
error-free data linkage
- (2) LEGISLATIVE CLARITY**
Stronger evidentiary value for state documents
- (3) ADMINISTRATIVE REDRESS**
Fair SOPs, specialized tribunals with judicial oversight
- (4) HUMANE REFUGEE POLICY**
Domestic statutory framework



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