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# CURRENT AFFAIRS MAGAZINE

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Way to a Bright Future

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# Current Affairs

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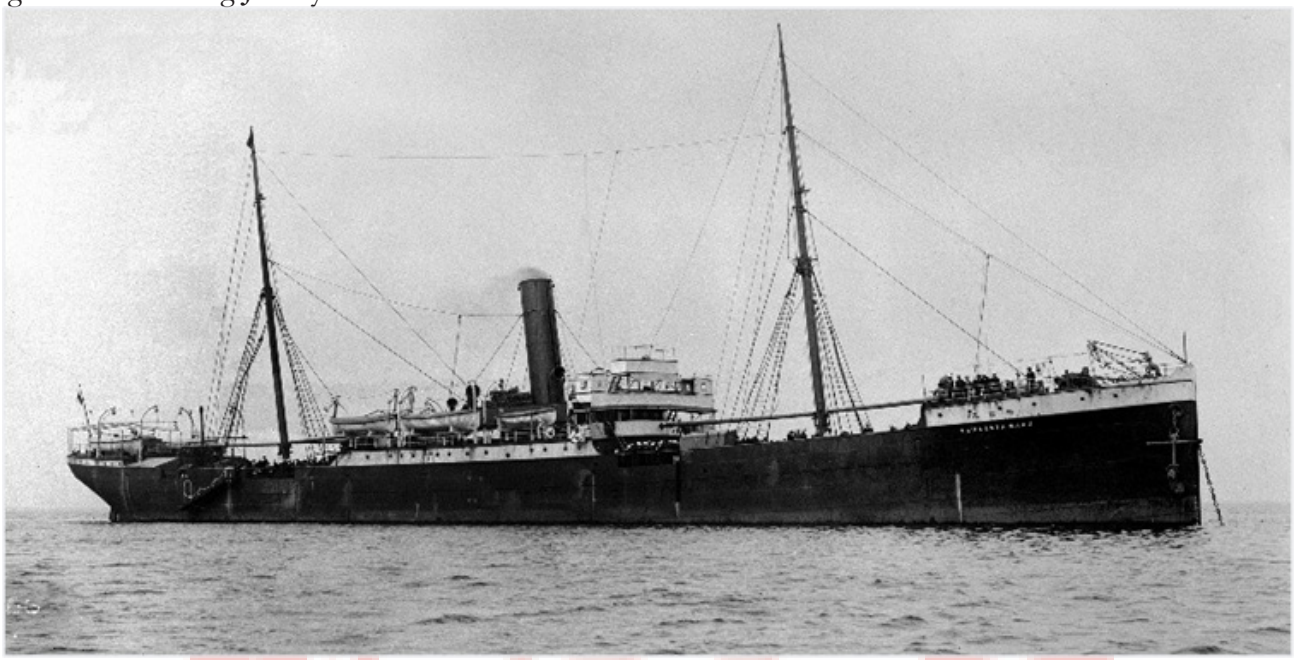
# HISTORY & CULTURE

## The Komagata Maru Incident

### Context:

The Komagata Maru incident was recently highlighted by singer Diljit Dosanjh during his appearance on The Tonight Show Starring Jimmy Fallon.



### The Komagata Maru Incident

### About The Komagata Maru Incident:

### What was it?

- The Komagata Maru incident was a 1914 maritime standoff involving a Japanese steamship chartered by Punjabi entrepreneur Gurdit Singh. The vessel carried 376 passengers—340 Sikhs, 24 Muslims, and 12 Hindus—who were British subjects attempting to emigrate to Canada to build new lives.

### Background:

- Punjab Crisis: In the early 1900s, Punjab was the primary recruiting ground for the British Indian Army, yet the region suffered from rural indebtedness and deadly epidemics. These conditions pushed former soldiers and peasants toward emigration.
- The Ghadar Movement: Expatriate Punjabis in North America formed the Ghadar movement in 1913, dedicated to the armed overthrow of British rule. The Komagata Maru voyage became intertwined with this anti-colonial politics.
- Discriminatory Laws: Canada enacted the continuous journey regulation in 1908, which effectively barred Indian immigrants by requiring a single unbroken journey from their country of birth—a journey impossible to make at the time as direct tickets were not sold from India.

### Key Events:

- Arrival and Standoff: The ship reached Vancouver on May 23, 1914, but was refused docking. Passengers remained anchored offshore for two months, facing shortages of food and water.
- Legal and Physical Battle: The British Columbia Court of Appeal upheld the exclusionary laws. On July 19, passengers fought off an attempt by 150 armed police to board the vessel using coal and scrap metal.

- Departure: Following the dispatch of a naval cruiser by Prime Minister Robert Borden, the ship was forced to leave on July 23. Only 22 passengers were allowed to stay in Canada.

### Post-Event: The Return to India

- The Budge Budge Riot: British authorities, suspicious of the passengers' ties to the Ghadar movement, refused to let them dock in Hong Kong or Singapore. When the ship reached Calcutta in September, a confrontation with police turned violent.
- Casualties: Police fired upon the passengers, killing 20 and imprisoning many others. Gurdit Singh escaped but eventually surrendered in 1920 at the request of Mahatma Gandhi.

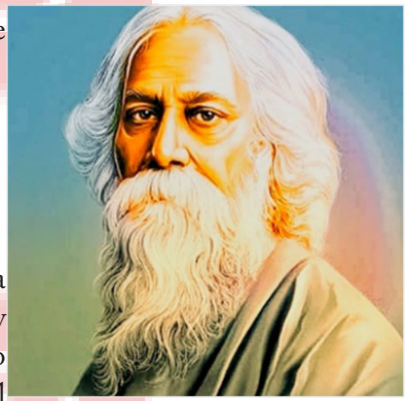
### Significance:

- The incident fueled the Ghadar movement, leading to a surge in recruitment and an attempted armed uprising in Punjab in 1915.
- It took over a century for Canada to formally apologize; Prime Minister Justin Trudeau delivered a formal apology in the House of Commons in 2016.
- The event demonstrated that the British Empire's promise of equal subjecthood for all its citizens was a fallacy, reinforcing racial and colonial hierarchies.

## Gurudev Rabindranath Tagore

### Context:

Prime Minister of India paid heartfelt tributes to Gurudev Rabindranath Tagore on the occasion of Pochishe Boishakh.



### Gurudev Rabindranath Tagore

### AboutGurudev Rabindranath Tagore:

### Who He Was?

- Rabindranath Tagore (1861–1941) was a myriad-minded polymath—a poet, writer, philosopher, musician-composer, painter, and visionary educationist. Known as the Bard of Bengal, he was the first Asian to win theNobel Prize (Literature, 1913) and served as a global cultural ambassador of Indian heritage.
- His core philosophy was rooted in Harmony, believing in the inherent unity of the world and the noble ideals of human emotion.

### Early Days:

- Birth: Born on May 7, 1861 (25 Baishakh 1268 B.S.), into the distinguished Jorasanko Tagore family in Bengal.
- Influences: He grew up during the nineteenth-century Bengal Renaissance, a period of intense intellectual and cultural awakening.
- Family Heritage: He was the son of Maharshi Debendranath Tagore, who significantly shaped the Brahmo Samaj.

### Contribution to India's Freedom Movement:

- Mantra of Atmashakti: Although he often eschewed active party politics, he captivated the nation's soul with the concept of Atmashakti (self-reliance), teaching people the importance of social and moral strength over mere political agitation.
- National Anthems: He is the unique composer of the national anthems of two nations: India (Jana Gana Mana) and Bangladesh (Amar Shonar Bangla).
- Rural Reconstruction: He actively put his philosophy of self-reliance into practice through innovative experiments in rural development in East Bengal and by establishing Sriniketan in 1922.
- Protest Against British Rule: He famously renounced his Knighthood in 1919 as a protest against the Jallianwala Bagh Massacre, reflecting his deep commitment to human rights and national dignity.

### Literary & Creative Works:

- Versatility: He was equally adept at poetry, novels, short stories, and plays.
- Major Works: His most famous collection of poems, Gitanjali (Song Offerings), won him international acclaim. Other notable works include Ghare-Baire (The Home and the World) and Gora.
- Music and Art: He created a unique genre of music known as Rabindra Sangeet and took up painting in his later years, producing thousands of works.
- Educational Innovation: He founded Santiniketan (1901) and Visva-Bharati University (1921), based on the motto Yatra visvam bhabatyeknidam—where the world makes a home in a single nest.

### Last Days:

- Legacy of Peace: In the post-World War I era, he focused heavily on spreading a message of global peace and ancient Indian wisdom to a fractured world.
- Passing: Gurudev relinquished his mortal form on August 7, 1941 (22 Shravana 1348 B.S.).
- Enduring Light: Even today, he is remembered as a lambent light who guards against intellectual parochiality and moral darkness, remaining a permanent fixture in India's cultural and spiritual identity.

## Hanamkonda's Thousand Pillar Temple

### Context:

The Archaeological Survey of India (ASI) completed the 42-year-long restoration of the 12th-century dance pavilion (Kalyana Mandapam) at the Thousand Pillar Temple in Hanamkonda.

- The structure, which had sunk into the ground due to foundational failure, was rebuilt piece-by-piece using indigenous Kakatiya-era sandbox technology.

### Hanamkonda's Thousand Pillar Temple

### About Hanamkonda's Thousand Pillar Temple:

### What it is?

- The Thousand Pillar Temple is an iconic 12th-century monument and a popular pilgrimage center. It is a Trikutalaya, dedicated to a troika of deities: Lord Shiva, Vishnu, and Surya Deva.
- Location: Hanamkonda, part of Warangal City, Telangana.
- Built By: Constructed in 1163 AD by the ruler Rudra Deva.

### Key Characteristics:

- Architectural Style: Depicts the typical Chalukya style of architecture, showcasing the finest arts of the Kakatiyas.

- Star-Shaped Structure: The temple features a unique star-shaped architecture, a testimony to the expertise of medieval craftsmen.
- Monolithic Nandi: Houses a massive Nandi sculpture made of a single black basalt stone, recently restored with a complete tail and folded leg.
- Intricate Pillars: The temple is supported by richly carved pillars; it carries the name Thousand Pillar because many columns have vertical carvings that give the impression of multiple pillars.
- Historical Resilience: The dance pavilion was ransacked during the conquest of Ulugh Khan in 1323-24 and lay in ruins for centuries until this recent restoration.

### AboutKakatiya-era Sandbox Technology:

### What it is?

- Sandbox technology is an ancient geotechnical engineering technique where a building is constructed on a sand-filled pit rather than a conventional hard-rock foundation.
- Developed During: It was a unique architectural hallmark developed during the Kakatiya dynasty (12th–14th century) in Southern India.

### How does it Works?

- Preparation: A deep pit is dug where the foundation is to be laid.
- Binding Mixture: The pit is filled with a mixture of sand, lime, jaggery (as a binder), and karakkaya (black myrobalan fruit).
- Construction: The heavy stone structure, including pillars and beams, is then raised on this sandbox.

### Key Features:

- Earthquake Resistance: The sandbox acts as a cushion; vibrations from earthquakes lose their intensity as they pass through the sand before reaching the building's foundation.
- Vibration Reduction: Laboratory experiments show that a sandbox can reduce the impact force of vibrations by nearly 60%.
- Durability: Unlike modern rubber-based isolation techniques that wear out in 40 years, sand has a very slow weathering rate, allowing monuments like the Thousand Pillar and Ramappa temples to last for hundreds of years.
- Cost-Effective: It is an economical and environmentally sustainable technique as sand is naturally available.
- Limitations: While highly effective for shear-predominant structures common in India, it is not suitable for modern skyscrapers or extremely tall buildings.

## Maharana Pratap

### Context:

The Prime Minister of India paid floral tributes to the legendary Rajput warrior Maharana Pratap on his birth anniversary (Jayanti).

### Maharana Pratap

### AboutMaharana Pratap:

### Who He Was?

- Maharana Pratap (1540–1597) was the 54th ruler of the Kingdom of Mewar in present-day Rajasthan.
- A member of the Sisodia Rajput clan, he is celebrated as one of India's greatest warriors for his relentless resistance against the expansionist policies of the Mughal Emperor Akbar.
- Unlike many of his contemporaries who became Mughal vassals, Pratap chose a life of struggle to protect the sovereignty and dignity of his motherland.

### Early Days:

- Birth & Lineage: Born on May 18, 1540, to Rana Udai Singh II and Jaiwanta Bai.
- Accession: Following his father's death in 1572, the nobles of Mewar crowned Pratap at Gogunda, bypassing his half-brother Jagmal Singh.

- The Conflict Begins: Akbar attempted several diplomatic missions (led by Man Singh, Todar Mal, and others) to bring Mewar under Mughal suzerainty. Pratap rejected all terms that required personal submission or matrimonial alliances with the Mughals.

### Legacy in Indian History:

- The Battle of Haldighati (1576): A pivotal moment in Indian history where Pratap's force of 3,000 cavalry and Bhil archers faced the 10,000-strong Mughal army led by Raja Man Singh. Though wounded and forced to retreat, the Mughals failed to capture him, making it a futile victory for Akbar.
- Guerrilla Warfare: Pratap pioneered the use of guerrilla tactics in the Aravalli hills to harass the much larger Mughal forces. His methods later inspired figures like Malik Ambar and Chhatrapati Shivaji Maharaj.
- Reconquest of Mewar: Between 1585 and 1597, taking advantage of Mughal preoccupations in the northwest, Pratap recaptured most of Mewar, including Udaipur and Gogunda, except for Chittorgarh and Mandalgarh.
- Patronage of Arts: Despite being in constant conflict, he fostered the Chavand school of art and provided refuge to many poets and writers at his capital, Chavand.

### Last Days:

- Unwavering Resolve: On his deathbed, Pratap reportedly made his successor, Amar Singh I, swear never to submit to the Mughals and to continue the struggle to reclaim the ancestral capital of Chittor.
- Death: He died at the age of 56 on January 19, 1597, from injuries sustained during a hunting accident at Chavand.

### Significance:

- He is viewed as a folk hero across India, representing the spirit of self-sacrifice for cherished principles.
- His defiance served as a blueprint for anti-colonial revolutionaries in Bengal and other parts of India during the freedom struggle.

## The Revolt of 1857

### Context:

India marked the 169th anniversary of the Revolt of 1857, which officially broke out in Meerut on this day in 1857.

- The occasion serves to remember the legacy of the First War of Independence and the foundational sacrifice of Sepoy Mangal Pandey.

### The Revolt of 1857

### About The Revolt of 1857:

### What it is?

- The Revolt of 1857, often called the Sepoy Mutiny by British historians and the First War of Indian Independence by Indian nationalists, was a major, armed uprising against the rule of the British East India

Company. It began as a mutiny of sepoys in the Company's army but soon expanded into a broad-based popular rebellion involving peasants, artisans, and dispossessed royalty.

### Background and Causes:

- Annexation of Awadh (1856): The treacherous takeover of Awadh on grounds of misgovernance deeply hurt the sentiments of the sepoys, as nearly 75,000 soldiers in the British army hailed from this region.
- The Greased Cartridges: The immediate spark was the introduction of the Enfield rifle. Its cartridges were rumored to be greased with beef and pork fat, offending both Hindu and Muslim religious sentiments.
- Economic Distress: The confiscation of land from taluqdars and high revenue demands under the land settlement of 1856 turned the peasantry against the British.
- Mangal Pandey's Mutiny: On March 29, 1857, Mangal Pandey of the 34th Bengal Native Infantry fired at his European officers in Barrackpore. His execution on April 8, 1857, became a rallying cry for soldiers across North India.

### Major Events:

- The Outbreak (May 10, 1857): Soldiers in Meerut refused the cartridges, killed their officers, and broke open the jail to release their comrades.
- March to Delhi: On May 11, the Meerut sepoys reached the Red Fort and proclaimed the elderly Mughal Emperor, Bahadur Shah II, as the Shah-en-shah-i-Hindustan (Emperor of India).
- Spread of Rebellion: The revolt spread rapidly to Kanpur, Lucknow, Jhansi, Gwalior, and Bihar.
- The Fall of Delhi: After a prolonged struggle, the British recaptured Delhi on September 20, 1857, marking the beginning of the end for the rebels.

### Major Leaders:

- Bahadur Shah Zafar: The symbolic head of the revolt in Delhi.
- Rani Lakshmibai (Jhansi): Fought heroically against the British until her death in June 1858.
- Nana Saheb (Kanpur): Led the revolt in Kanpur and later escaped to Nepal.
- Tantiya Tope: A brilliant guerrilla warfare strategist who continued the struggle until his betrayal and execution in 1859.
- Begum Hazrat Mahal: Led the rebellion in Lucknow in the name of her dispossessed son.

### Implications on the Freedom Movement:

- End of Company Rule: The most significant outcome was the Government of India Act 1858, which transferred power from the East India Company to the British Crown.
- Change in British Policy: The Queen's Proclamation of 1858 announced a policy of non-intervention in religious matters and promised support for native princes to prevent future uprisings.
- Birth of Indian Nationalism: Despite its failure, the revolt provided a patriotic and progressive precedent. It bridged the gap between different social classes (soldiers and peasants) against a common foreign enemy.

## The Baiga Tribe

### Context:

Thirteen children from the Baiga tribe were recently rescued from a major human trafficking and bonded labor network in Chhattisgarh's Kabirdham district.

### The Baiga Tribe

### About The Baiga Tribe:

### Who They Are?

- The Baiga are an ethnic group of central India and are recognized as one of the Particularly Vulnerable Tribal Groups (PVTGs) by the Government of India.
- The name Baiga translates to sorcerer or medicine man, reflecting their traditional role as healers and spiritual guides. They are categorized as a Scheduled Tribe in states like Madhya Pradesh and Uttar Pradesh.

### Habitat and Origin:

- Primary Regions: They are found mostly in Madhya Pradesh (specifically the Baiga-chuk region in Mandla and Balaghat districts).
- Other States: Smaller populations reside in Chhattisgarh, Uttar Pradesh, and Jharkhand.
- Ancestry: It is believed their ancestors spoke an Austroasiatic language, though modern Baigas primarily speak Baigani (an Indo-Aryan language influenced by Chhattisgarhi and Gondi) and Hindi.

### Key Characteristics:

- Livelihood (Shifting Cultivation): They traditionally practice shifting cultivation called 'bewar' or 'dahiya'. They hold a deep spiritual belief against plowing the land, as they consider it a sin to scratch the breast of Mother Earth.
- Cuisine: Their staple diet consists of coarse grains like kodo millet and kutki. A significant part of their diet is Pej, a drink made from ground maize or rice water. They also rely heavily on forest produce, small game, and fish.
- Social Customs: Live-in relationships are common and socially accepted. Their marriage system often involves a reverse dowry where the man compensates the woman's family with money or mahua liquor for the loss of a working member.
- Sub-castes: The community is divided into several sub-castes including Bijhwar, Narotia, Bharotiya, Nahar, Rai maina, and Kath maina.
- Tattooing Culture: Baiga women are known for their extensive and intricate tattoos, which are an integral part of their identity and are often believed to accompany them into the afterlife.

### Implications:

- Due to their declining population, low literacy rates, and pre-agricultural level of technology, they are prioritized for special protection and development schemes under the 75 notified PVTGs in India.
- The community has faced significant challenges due to forced evictions since the 1960s, often carried out in the name of tiger conservation projects (like Kanha), which has impacted their traditional way of life.

## The Somnath Temple

### Context:

Prime Minister of India participated in the 'Somnath Amrut Parv' in Gujarat, marking the 75th anniversary of the temple's reconstruction.

### The Somnath Temple

### About The Somnath Temple:

### What it is?

- The Somnath Temple is one of the most sacred pilgrimage sites in India, revered as the first among the twelve Jyotirlinga shrines of Lord Shiva. Known as The Eternal Shrine, it has a legendary history of being destroyed and rebuilt multiple times, symbolizing the immortal spirit and resilience of Indian civilization.

### Location:

- State: Gujarat, India.
- Region: Situated in Prabhas Patan, Veraval, on the western coast of the Saurashtra peninsula.
- Geographical Context: It is located at the confluence of three rivers—Hiran, Kapila, and Saraswati—known as the Triveni Sangam.

### History:

- Ancient Origins: The temple's first structure is believed to have been built in gold by the Moon God (Soma), followed by silver, wood, and stone versions by various deities and kings.
- Invasions and Destruction: The temple was famously attacked and plundered multiple times, most notably by Mahmud of Ghazni in 1024 AD, followed by subsequent destructions by the Delhi Sultanate and Aurangzeb.

- Modern Reconstruction: Following India's independence, the Iron Man of India, Sardar Vallabhbhai Patel, took a solemn resolve to reconstruct the temple.
- Pran Pratishtha (1951): The modern temple was completed and the idol was consecrated on May 11, 1951, by Dr. Rajendra Prasad, the first President of India.

### Architectural Features:

- Māru-Gurjara Style: The current temple is built in the Māru-Gurjara style (Chaulukya style) of Hindu temple architecture.
- Shikhara: The main spire (Shikhara) rises to a height of 155 feet, adorned with a 10-ton stone vessel (Kalash) at the top.
- Intricate Carvings: The temple features the Garbhagriha (sanctum sanctorum), Sabha Mandap (assembly hall), and Nritya Mandap.
- Baan Stambh (Arrow Pillar): A famous pillar on the sea-protection wall indicates a straight line to the South Pole, with no landmass between the temple shore and Antarctica.

### Significance:

- As the first Jyotirlinga, it is a primary center for Shaivism and a focal point of faith for millions of Sanatan Hindus globally.
- The Prime Minister described the temple as a living symbol of the nation's resolve, proving that the ideological and spiritual strength of India cannot be erased by invaders.

## The Bhojshala Complex

### Context:

The Indore Bench of the Madhya Pradesh High Court delivered a historic 242-page verdict declaring the disputed Bhojshala-Kamal Maula Mosque complex in Dhar district a Hindu temple dedicated to Goddess Vagdevi (Saraswati).

### The Bhojshala Complex

### About The Bhojshala Complex:

### What it is?

- The Bhojshala complex is an 11th-century protected historical monument that originally served as a premier center for Sanskrit learning and a temple dedicated to Goddess Vagdevi (Saraswati). Over centuries of regional shifts, parts of the temple structure were utilized to construct the Kamal Maula Mosque, making it a deeply contested religious site.

### Location:

- District: Dhar (historically known as Dhara), Malwa region, Madhya Pradesh, India.
- Geographical Context: Located in the city of Dhar, which served as the capital of the famous Paramara dynasty.

### History:

- The Foundation (1000–1055 A.D.): Founded by Raja Bhoja, the most celebrated monarch of the Paramara dynasty. Being a great patron of arts and literature, he established this grand college (shala) to attract scholars and students from across India.
- Successor Contributions: The center was expanded and maintained by immediate successors like Udayaditya and Naravarman, and later patronized by King Arjunavarma Deva (early 13th century).
- Islamic Conversion: In the 14th century, during the rule of the Malwa Sultanate, the site was converted into a mosque. It became associated with the tomb of the Sufi saint Shaikh Kamal Maula, giving rise to its dual identity.
- Modern Administration: It was designated a protected monument under the Ancient Monuments Preservation Act in March 1904. Under a 2003 ASI circular, a compromise arrangement permitted Hindus to perform puja on Tuesdays and Basant Panchami, while Muslims were allowed to offer namaz on Fridays.

### Architectural Features:

- Temple Pillars and Layout: The monument features a large open courtyard surrounded by side colonnades and a prayer hall. The delicately carved pillars and decorated ceilings used throughout the mosque display definitive Hindu temple motifs and structures.
- Sarpabandha Inscriptions: The site uniquely preserves two Sarpabandha (serpentine chart) pillar inscriptions.
- One contains the Sanskrit alphabet along with noun and verb terminations, while the second charts personal terminations for the ten tenses and moods of Sanskrit grammar.
- Prakrit Odes: Stone slabs engraved with two distinct odes to the Kurma-Avatara (the crocodile/tortoise incarnation of Lord Vishnu) written in Prakrit are fixed to the walls.
- Classical Sanskrit Drama: Slabs lining the mihrab contain a theatrical composition written by Royal Tutor Madana (disciple of Jain scholar Ashadhara) during King Arjunavarma's reign.
- Mutilated Deities: The latest ASI survey recovered 94 sculptures (including images of Ganesha, Vishnu, and Narasimha) and documented chopped-off structural images along the pilasters.

## The Chola Copper Plates

### Context:

During his diplomatic visit to the Netherlands, Prime Minister Narendra Modi and Dutch PM Rob Jetten oversaw the historic repatriation of the Chola-era Anaimangalam copper plates (popularly known as the Leiden copper plates) to India.

### The Chola Copper Plates

### About The Chola Copper Plates:

### What They Are?

- Chola copper plates are official legal, administrative, and royal charters issued by the monarchs of the Chola Empire (9th to 13th centuries CE). Strung together by a massive copper ring and sealed with the royal emblem, these bilingual inscriptions serve as enduring, unalterable state records of land grants, tax exemptions, religious endowments, and royal lineages.

### Origin and Context of the Anaimangalam (Leiden) Plates:

- The Oral Vow (985–1014 CE): The great Chola emperor Raja Raja Chola I orally committed a grant of land and 8,943 kalam of paddy from Anaimangalam village near Nagapattinam to a Buddhist monastery.
- The Javanese Link: The monastery, called the Chulamanivarma Vihara (or Raja Raja Cholan Perumpalli), was built by King Sri Mara Vijayotunga Varman of the Srivijaya Kingdom (modern Java, Indonesia) in honor of his father.

- The Execution: After Raja Raja I's demise, his son Rajendra Chola I executed the physical charter, while subsequent additions were made by Kulottunga Chola I following a diplomatic appeal by two Javanese emissaries.

### Key Features of Chola Copper Plates:

- Bilingual Composition: The charters typically open with an elaborate genealogy of the Chola kings written in Sanskrit (using the Grantha script), followed by the minute operational details of the land grant written in Tamil.
- The Royal Seal (Insignia): The plates are bound by a heavy bronze ring secured with an intricate royal seal. The seal depicts:
- The Tiger (the dynastic emblem of the Cholas) sitting upright.
- Twin Fish (the emblem of the Pandyas) and a Bow (the emblem of the Cheras), positioned alongside the tiger to symbolize Chola suzerainty and military victories over their rivals.
- Sacred and royal motifs including the Parasol (white umbrella), two chamaras (fly-whisks), ceremonial lamps, a swastika, and the name of the issuing king or village.

### Structural Setup: The Leiden collection is split into two distinct parts:

- The Larger Plates: A massive set of 21 large plates containing 5 Sanskrit and 16 Tamil inscriptions issued under Rajendra Chola I.
- The Smaller Plates: A supplementary set of 3 small Tamil plates issued under Kulottunga Chola I, detailing an additional grant of 4,500 kalam of paddy to the Buddhist sangha.
- Meticulous Record-Keeping: The Tamil sections precisely outline boundaries (often demarcated by letting a female elephant walk the perimeter), tax immunities (pariharas), water rights, and the duties of local assemblies (Sabha or Ur).

### Important Historical Chola Copper Plates:

- The Anaimangalam (Leiden) Plates: Documenting a Saivite Chola king building and funding a Buddhist vihara for an Indonesian ally, highlighting maritime diplomacy and religious pluralism.
- The Karandai Copper Plates: Issued by Rajendra Chola I, consisting of a massive set of 57 plates that record the history of his military expeditions and land grants to over a thousand Brahmins.
- The Tiruvalangadu Plates: A set of 31 plates that provide a detailed description of Rajendra Chola I's military conquests, including his famous expedition to the Ganges river.
- The Anbil Plates: Issued by Sundara Chola (957–970 CE), offering invaluable genealogical details of the early Chola rulers and state officials.

## Shaheed Veer Gundadhur

### Context:

Union Home Minister inaugurated the Shaheed Veer Gundadhur Seva Dera Jan Suvidha Kendra in Bastar, Chhattisgarh.

### Shaheed Veer Gundadhur

### AboutShaheed Veer Gundadhur:

### Who He Was?

- Veer Shaheed Gundadhur was a legendary tribal revolutionary leader from the Bastar region who led the historic Bhumkal Rebellion of 1910 against the oppressive British colonial empire.
- Revered as a symbol of tribal sovereignty, identity, and resistance, his military tactics and grassroots mobilization shook the foundations of colonial administration in central India.

### Early Days:

- Origins: Born in Netanar village (located in the dense forest stretches of Bastar, Chhattisgarh), he belonged to the Dhurwa tribal community.
- Original Name: Locally, he was known as Baga Dhurva during his youth.

### Background:

- He grew up as an ordinary tribal youth, entirely disconnected from formal schools or the outside world.
- Despite lacking formal education, his hunting skills, knowledge of local geography, and natural leadership earned him deep respect.
- The title "Gundadhur" was notably recorded by the British to describe his formidable rebel status.

### His Contribution to the Freedom Movement:

- The Bhumkal Movement (1910): Gundadhur laid the foundation for the historic Bhumkal (meaning earthquake or earth-rebellion) movement to protest the British exploitation of local resources, severe forest reservation policies, and colonial overreach.
- The Secret Messenger System: To mobilize tribal communities secretly under the nose of King Rudrapratap (who worked under British oversight), Gundadhur distributed specific local symbols from house to house as a call to rebellion:
- Red Chilies: Signifying urgent revolutionary action.
- Clay Bows and Arrows: Symbolizing preparation for armed resistance.
- Mango Branches: Representing solidarity to protect tribal identity.
- Guerilla Strategy: At just 35 years of age, Gundadhur orchestrated advanced ambush tactics, forcing British officers and local forces to flee and take refuge in forest caves. The movement effectively halted colonial governance across Bastar for weeks.

### Last Days and Legacy:

- Brutal Suppression: British forces crushed the revolt through harsh military action, executing many tribal leaders at Jagdalpur's Golbazar Chowk.
- Mass Sacrifice: Around 25,000 tribal people are believed to have died during the suppression of the Bhumkal movement.
- Uncaptured Leader: Gundadhur was never captured and disappeared into Bastar's forests, becoming a legendary symbol of resistance.
- Modern Recognition: His legacy survives through tribal folklore, and Chhattisgarh annually presents the Shaheed Gundadhur Award in archery.

## Raja Rammohan Roy

### Context:

Union Home Minister paid tribute to Raja Rammohan Roy on his birth anniversary, honoring his monumental role in modernizing the Bengali language and establishing the Brahmo Samaj to awaken Indian society against deep-seated superstitions and inequalities.

### Raja Rammohan Roy

### About Raja Rammohan Roy:

### Who He Was?

- Raja Rammohan Roy (May 1772 – September 1833) was a peerless scholar, rationalist thinker, and socio-religious reformer celebrated as the Father of Modern India and the Father of the Bengal Renaissance.
- Rabindranath Tagore famously hailed him as a luminous star in the firmament of Indian history and the Inaugurator of the Modern Age in India.

### Early Days:

- Born into an orthodox Bengali Hindu family in Radhanagar, Hooghly district, Bengal Presidency, he received a remarkably diverse classical education.
- He was sent to Patna for higher studies, where he mastered Persian and Arabic, reading the Quran, Arabic translations of Plato and Aristotle, and Sufi mystic poetry. He later studied in Varanasi, immersing himself in the Vedas, the Upanishads, and Hindu philosophy.
- By his teenage years, he had acquired deep fluency in Sanskrit, Bengali, Persian, Arabic, English, and Hindi.

Before dedicating himself fully to socio-religious reforms in 1814, he served in the Revenue Department of the East India Company from 1809 to 1814, working as a personal Diwan to British officers Woodforde and Digby.

## Comprehensive Contributions:

### 1. Social Reforms

- Abolition of Sati: He launched a relentless crusade against the practice of Sati (widow burning), denouncing it through his weekly journal as barbaric and un-Islamic/un-Hindu. His targeted activism gave Lord William Bentinck the legislative backing to officially ban Sati in 1829.
- Women's Rights Advocacy: He strongly opposed polygamy, child marriage, and the degradation of widows, while aggressively campaigning for women's literacy and legal rights to hold property and inherit assets.
- Anti-Caste Crusader: He attacked the rigidities of the Hindu caste system, untouchability, and the use of intoxicants, advocating for universal social equality.

### 2. Religious Reforms & The Brahmo Samaj

- Theology of Monotheism: Attracted to Islamic monotheism and Upanishadic philosophy, he advocated for a single, unitarian God as a corrective to orthodox polytheism and Christian trinitarianism.
- Institutional Frameworks: He established the Atmiya Sabha (1814) to campain against idolatry and meaningless rituals, followed by the Calcutta Unitarian Association (1821).
- Brahmo Samaj (1828): Founded the Brahmo Sabha (later Brahmo Samaj) to practice the worship of an eternal, abstract God. It strictly prohibited priesthood, sacrifices, and idols, focusing instead on prayers, meditation, and the unity of all global religions, acting as the forerunner for all intellectual reform movements in India.

### 3. Educational Upgradation

- Western & Scientific Synthesis: He strongly believed that introducing English-language education and Western sciences was paramount to liberating Indian minds from orthodox dogmas.
- Founding Elite Institutions: He backed David Hare's initiative to establish the Hindu College in 1817, established his own English school in 1822 teaching Voltaire's philosophy, and founded the Vedanta College (1825) to offer blended courses in Indian learning and Western physical sciences.

### 4. Contributions to the Freedom Movement

- While Roy lived prior to the formal political phase of the Indian National Congress, he laid the structural, intellectual, and administrative foundation for the Indian Nationalist Movement:
- Pioneer of Press Freedom: When press censorship was relaxed in 1819, he founded iconic publications including the Brahmanical Magazine (1821), the Bengali weekly Samvad Kaumudi (1821), and the Persian weekly Mirat-ul-Akbar to build a vibrant, politically conscious public sphere.
- Civil Liberties and Rights Advocacy: Greatly inspired by the British constitutional system, he demanded that civil liberties be extended to Indians. He formally protested against the East India Company's oppressive trading monopolies and the high export duties imposed on Indian goods abroad.
- Administrative Indianization: He organized the first public agitations demanding equality between Indian and European workers, the separation of the executive from the judiciary, the fixation of minimum land rents to protect small peasants from oppressive Zamindars, and the Indianization of superior civil services.

## Jharkhand's alleged treasury scam exposes system's vulnerabilities

### Context:

Jharkhand is currently grappling with a significant financial scandal involving the alleged siphoning of approximately 50 crore from state treasuries across multiple districts.


### Jharkhand's alleged treasury scam exposes system's vulnerabilities

### AboutJharkhand's alleged treasury scam exposes system's vulnerabilities:

### What it is?

- The IFMS is a comprehensive computerized platform implemented by the state government to manage public finances. It covers budgeting, bill processing, and treasury operations.
- A key module is the Kuber portal, which is specifically used for the electronic disbursement of funds, including salaries and pensions, directly into the bank accounts of government employees.

### How the System is Being Manipulated?

- Ghost Beneficiaries: Authorized personnel created entries for ghost employees—individuals who had either retired, died, or never existed—to divert salary funds.
- Internal Credential Misuse: The fraud did not involve external hacking; instead, it relied on insiders misusing their legitimate access to the IFMS to authorize illegal withdrawals.
- Account Tampering: Accountants manipulated basic salary figures on the Kuber portal to inflate payments, siphoning the excess into personal or associates' accounts.
- Verification Bypass: Fraudsters exploited the system's reliance on the Drawing and Disbursing Officer's (DDO) certification, knowing that individual entries in bulk bills are rarely scrutinized.
- Data Tampering: Discrepancies have been found between digital records on the portal and physical registers, indicating that records were altered after payments were processed to hide the trail.

### Factors Causing Corruption:

- Lack of Real-Time Audit: Routine analysis often happens months or years after the transaction.
- Example: In Hazaribagh, funds were allegedly diverted for a decade before a routine audit flagged the discrepancy.
- Erosion of Professional Ethics: The collapse of individual integrity among staff who prioritize personal gain over public duty.
- Example: An accountant allegedly routed government funds directly into his wife's bank account.
- Blind Trust in Hierarchy: Over-reliance on the signatures of superior officers without secondary digital verification.
- Example: Treasury officers admitting they only check summary sheets rather than individual account details in bulk submissions.
- Weak IT Control Frameworks: Failure to implement robust flags or alerts for unusual changes in salary data.
- Example: A 2025 CAG report highlighted that IT control failures in the IFMS allowed for excess payments to go unnoticed.
- InadequatePunitive Deterrence: Delayed legal action and lengthy trials create a sense of impunity among low-to-mid-level officials.

### Challenges Associated with the Scam:

- Public Trust Deficit: Such scams undermine the citizen's faith in digital governance and the paperless system.
- Example: Similar to the infamous Fodder Scam, this breach suggests that technological shifts haven't eliminated traditional corruption.
- Investigation Neutrality: Since high-ranking officers are often the certifying authorities (DDOs), internal probes may face conflicts of interest.
- Example: Concerns have been raised about whether an internal department can impartially investigate its own senior leadership.
- Recovering Embezzled Funds: Once money is moved through multiple ghost accounts across state lines, recovery becomes a legal and logistical nightmare.
- Systemic Complexity: The sheer volume of transactions (hundreds of bills per day) makes manual verification humanly impossible without better AI-based sorting.
- Data Integrity: Tampered digital logs make it difficult for forensic investigators to establish a clear chain of evidence for prosecution.

### Way Ahead:

- AI-Driven Anomalies Detection: Implement machine learning algorithms within the Kuber portal to flag any sudden changes in basic pay or suspicious bank account patterns.
- Mandatory Periodic Reconciliation: Ensure a monthly reconciliation between the bank's disbursement data and the department's actual employee strength.
- Strengthening Post-Payment Audits: Transition from routine audits to continuous digital auditing to catch irregularities within days rather than years.
- Accountability of DDOs: Establish a strict legal liability framework for Drawing and Disbursing Officers to ensure they perform due diligence before certification.
- Whistleblower Protection: Encourage an ethical workplace culture where junior staff can report digital tampering by superiors without fear of retribution.

### Conclusion:

The Jharkhand treasury scam serves as a stark reminder that technology is only as ethical as the people who operate it. While digital portals enhance efficiency, they also require robust oversight and a human-in-the-loop verification system to prevent systemic abuse. Restoring integrity to the state's financial framework will require not just software patches, but a renewed commitment to administrative transparency and accountability.

## Sikkim Becoming India's First Paperless Judiciary State

### Context:

Sikkim has been declared India's first fully paperless judiciary state by Justice Surya Kant during a conclave in Gangtok.


### Sikkim Becoming India's First Paperless Judiciary State

### AboutSikkim Becoming India's First Paperless Judiciary State:

### What it is?

- A fully digitized judicial ecosystem where court processes—from filing to case management and judgments—are conducted electronically without physical paperwork.

### Aim:

- To enhance efficiency, transparency, and speed in justice delivery through digital transformation.
- To make judicial services more accessible, inclusive, and citizen-friendly across all regions.

### Key Features:

- E-Filing System: Enables lawyers and litigants to file cases online, eliminating physical submission delays.
- Digital Case Management: Real-time tracking, electronic records, and automated workflows streamline court functioning.
- Paperless Courtrooms: Use of digital documents, e-orders, and virtual hearings reduces dependency on physical files.

### Significance:

- Improved Justice Delivery: Reduces pendency, speeds up case disposal, and enhances transparency in judicial processes.
- Sustainable Governance: Minimizes paper usage, promoting eco-friendly and cost-efficient judicial administration.

## Medical Termination of Pregnancy (MTP) Act

### Context:


The Supreme Court of India observed that the Medical Termination of Pregnancy (MTP) Act needs further amendment to address the rising cases of unwanted pregnancies, especially among minors.

### Medical Termination of Pregnancy (MTP) Act

### AboutMedical Termination of Pregnancy (MTP) Act:

### What it is?

- The MTP Act is a crucial social and healthcare legislation in India that provides a legal framework for the termination of certain pregnancies by registered medical practitioners. It balances the reproductive rights of women with the safety of medical procedures, moving away from the restrictive criminal provisions of the Indian Penal Code.

### Origin:

- Original Act: The Medical Termination of Pregnancy Act was first enacted in 1971 based on the recommendations of the Shantilal Shah Committee.
- Major Overhaul: The Act was significantly updated via the MTP (Amendment) Act, 2021, which came into force to address modern reproductive rights and technological advancements in fetal diagnostics.

### Aim:

- The primary objective of the Act is to expand access to safe and legal abortion services on therapeutic, eugenic, humanitarian, or social grounds.
- It aims to reduce maternal mortality caused by unsafe abortions and ensure the dignity, autonomy, and confidentiality of women seeking termination.

### Key Features (As per 2021 Amendment):

### Upper Gestation Limit:

- Increased from 20 to 24 weeks for special categories of women, including survivors of rape, victims of incest, minors, and differently-abled women.
- The limit remains 20 weeks for general cases.

### Medical Opinion Requirements:

- Up to 20 weeks: Opinion of one registered medical practitioner is required.

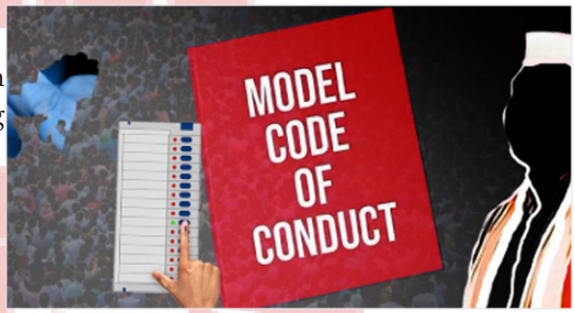
- 20 to 24 weeks: Opinion of two registered medical practitioners is required.
- Exception forFetal Abnormalities: The 24-week upper gestation limit does not apply if a state-level Medical Board diagnoses substantial fetal abnormalities.
- Contraceptive Failure: The ground for termination due to failure of contraceptive device or method has been extended to unmarried women and their partners (previously only married women).
- Confidentiality: Mandatory protection of the woman's identity; particulars can only be revealed to persons authorized by law.
- Medical Boards: Each State and Union Territory is mandated to constitute a Medical Board to decide on terminations beyond 24 weeks in cases of fetal anomalies.

### Significance:

- It recognizes the humanitarian aspect of pregnancy resulting from sexual violence and the social aspect of contraceptive failure.
- By providing a legal route, it discourages the use of quacks or unsafe methods, which are a leading cause of maternal death in India.

## Model Code of Conduct (MCC)

### Context:




Questions have been raised regarding whether Prime Minister on public media violated the Model Code of Conduct (MCC) by using state resources for partisan messaging.

### Model Code of Conduct (MCC)

### AboutModel Code of Conduct (MCC):

### What it is?

- The Model Code of Conduct is a set of guidelines issued by the Election Commission of India (ECI) to regulate the conduct of political parties and candidates during elections.
- It is not a statutory law (passed by Parliament) but a consensus-based document that derives its authority from the EC's constitutional powers under Article 324.

### Origin & History:

- Kerala Beginnings (1960): The concept originated during the Kerala Assembly elections when the state administration drafted a code for political parties.
- Formalization (1968): The ECI formalized and circulated the code nationwide during the 1968-69 general elections.
- The 1979 Evolution: Part VII was added specifically to regulate the Party in Power, ensuring they do not use their official position for an unfair electoral advantage.
- The Seshan Era (1991): Former Chief Election Commissioner T.N. Seshan enforced the MCC with unprecedented strictness, transforming it into a powerful deterrent against electoral malpractice.

### Aim:

- The primary objective of the MCC is to ensure Level Playing Field for all candidates.
- It seeks to prevent the ruling party from misusing state machinery and to ensure that election campaigns are conducted in a peaceful, orderly, and ethical manner without inciting communal or personal animosity.

### Key Features:

- General Conduct: Parties and candidates are prohibited from activities that aggravate existing differences or create mutual hatred between different castes and communities.

### Part VII (Party in Power):

- Official Visits: Ministers shall not combine their official visits with electioneering work.
- Government Machinery: Public resources, including government transport (aircraft, vehicles), and personnel, must not be used for campaign purposes.

- Mass Media: Misuse of publicly funded media (Doordarshan, AIR, etc.) for partisan coverage or highlighting government achievements to influence voters is strictly prohibited.
- Meetings & Processions: Parties must inform local police of the venue and time of any proposed meeting to allow for proper security and traffic arrangements.
- Polling Day: Candidates must cooperate with election officers at polling booths and avoid campaigning within 100 meters of the polling station.
- Publicity: No advertisements at the cost of the public exchequer in newspapers or other media to influence prospects of the ruling party.

### Significance:

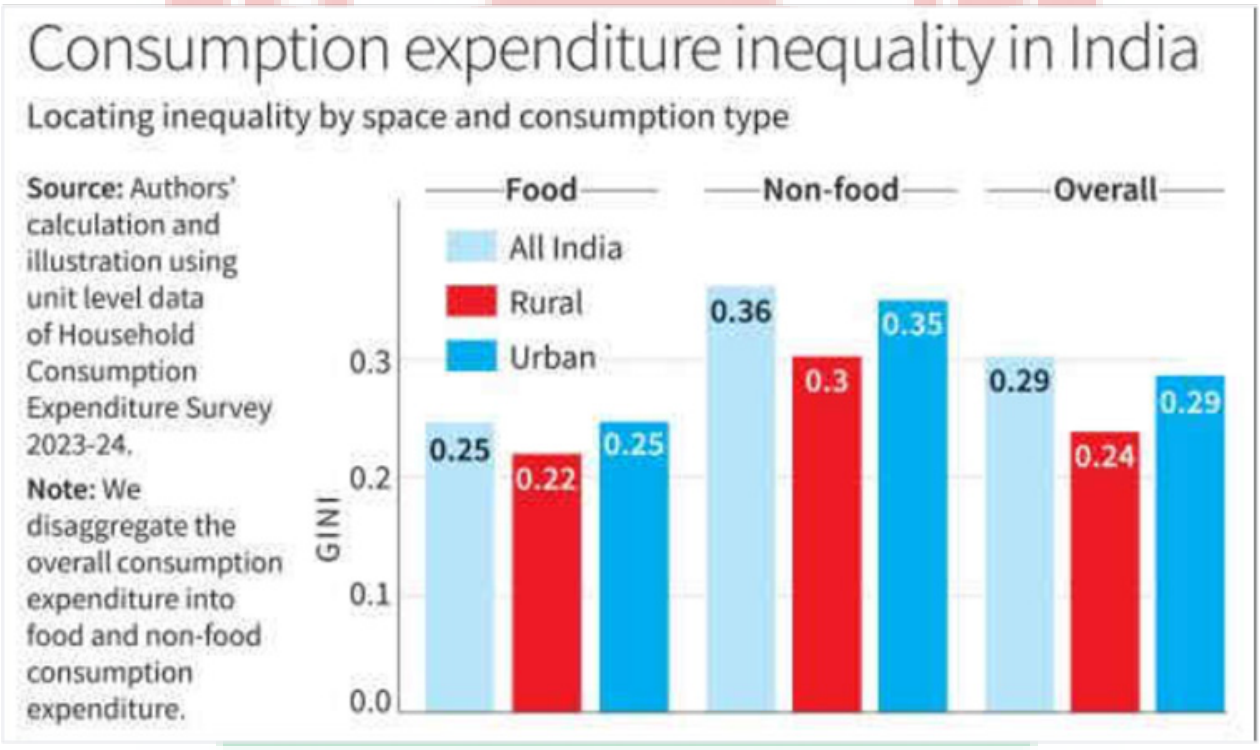
- It ensures that the incumbency factor does not result in an unfair advantage, preserving the sanctity of the one person, one vote principle.
- While it lacks statutory backing, its enforcement through censure and public naming-and-shaming carries significant moral and political weight.

## Understanding Inequality in India's Growth Story

### Context:

Recent policy shifts, such as the implementation of new Labour Codes and the Viksit Bharat-Guarantee for Rozgar and Ajeevika Mission (Gramin) Bill, 2025, have sparked intense debate over rural welfare.

- Concurrently, new analysis of the HCES 2023-24 suggests that consumption inequality remains a significant challenge, contradicting official narratives of a sharp decline.




### Understanding Inequality in India's Growth Story

### AboutUnderstanding Inequality in India's Growth Story:

### What is Inequality?

- Inequality refers to the disparate distribution of resources—specifically income, wealth, or consumption expenditure—across a population. In the Indian context, it is assessed along various axes, including caste, class, gender, and religion, and is often measured using the Gini index, where a higher value represents greater disparity.

### Key Data & Statistics:

- Gini Index Disparity: Recent estimates from the HCES 2023-24 place the consumption Gini index at 0.29, which is higher than the World Bank's estimate of 0.25.

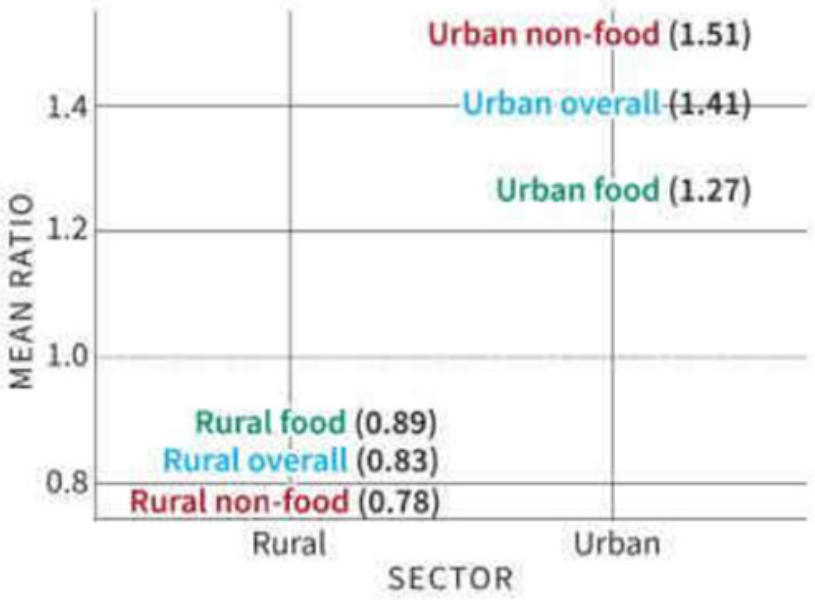
- The Urban-Rural Gap: Average urban non-food monthly per capita expenditure (MPCE) is approximately 1.5 times higher than the all-India average.
- Extreme Decile Ratios: The mean MPCE of the topmost urban decile is nine times that of the bottom-most rural decile.
- Concentrated Spending: In urban India, the top 10% of the population alone accounts for 27% of total non-food expenditure.

**Figure 2:** Urban – rural gap by consumption type

**Source:** Same as figure 1. Respective mean ratio is in parenthesis.

**Note:** Here, mean ratio implies the ratio of sectoral average MPCE to All India MPCE.

For example, mean ratio for urban non-food consumption is calculated as the ratio of average urban non-food MPCE to that of all India (rural and urban combined) average non-food MPCE.




## Reasons for Inequality Rise in Indian Growth:

## Reasons for Inequality Rise in Indian Growth:

- Urban-Centric Growth: Most growth-inducing activities are concentrated in cities, leaving the rural sector behind.
- Example: Urban areas show much higher affluence and higher inequality than rural counterparts due to concentrated non-food spending.
- PersistentAgricultural Distress: While cities boom, the rural agricultural sector continues to struggle, widening the income gap.
- Example: Rural MPCE remains significantly lower than the all-India average compared to urban centers.
- Disproportionate Class Gains: Since the 1980s, urban owners, managers, and professionals have gained the most from economic shifts.
- Example: Between-class inequality has increased as these groups drive the consumption boom while laborers lag.
- Stagnant Informal Sector: Urban informal workers and agricultural laborers have not seen systemic changes to their economic status over the last decade.
- Example: These groups have lagged markedly behind the manager-professional class in per-capita spending.
- Superrich Exclusion in Data: Standard surveys often fail to capture the highest segment of the population, leading to a gross underestimation of true inequality.
- Example: The NSS surveys (HCES) rarely capture the consumption or wealth of the superrich segment.

## Initiatives Taken So Far:

- Viksit Bharat-GRAMIN Act, 2025: Replaces MGNREGA with a new framework for rural employment and livelihoods.
- Pradhan Mantri Garib Kalyan Yojana (PMGKY): Provides food security and welfare support to a large segment of the population, including some in the top deciles.
- New Labour Codes: Aimed at streamlining labor regulations, though they raise concerns about the welfare of informal workers.
- BPL Ration Card System: Continues to provide subsidized food to those identified as living below the poverty line.

### Implications of Inequality on Growth:

- Misleading Policy Foundations: Policies based on the assumption of lower disparity can lead to unintended adverse welfare consequences.
- Example: Using a Gini index of 0.25 vs 0.29 may lead to under-funding essential rural support systems.
- Debt-Led Consumption: A large share of the population relies on borrowing to maintain consumption, which is unsustainable for long-term growth.
- Example: Informal workers often engage in debt-led spending because their actual income gains remain stagnant.
- Weakened Rural Demand: Persistent rural-urban disparities stifle the growth of a broader domestic market.
- Example: Average rural spending is much lower than the all-India average, limiting the reach of the consumption boom.
- Erosion of Social Mobility: Increasing between-class inequality makes it harder for the bottom deciles to move up.
- Example: The gap between urban professionals and agricultural laborers has only widened since the 1980s.
- Ineffective Welfare Targeting: Data issues result in welfare benefits reaching the relatively affluent while missing the most vulnerable.
- Example: One-fourth of the richest 10% in India still benefit from schemes like PMGKY.

### Way Ahead:

- Improve Data Comparability: Address methodological issues in surveys to ensure accurate inequality measurements.
- Focus onClass-Based Disparity: Move beyond inter-personal inequality to analyze gaps between socio-economic groups like caste and class.
- Address the Non-Food Gap: Implement targeted interventions to bridge the massive disparity in non-food monthly per capita expenditure.
- Strengthen Informal Labor Welfare: Ensure the new Labour Codes and GRAMIN Bill provide robust protections for the most vulnerable workers.
- Capture the Superrich: Reform data collection methods to accurately reflect the wealth and consumption of India's top economic tier.

### Conclusion:

India's growth story is marked by a deepening urban-rural divide and concentrated gains within the professional and managerial classes. While official narratives suggest declining disparity, the high Gini index and persistent agricultural distress indicate that inequality remains a structural barrier. True economic progress will require a shift from debt-led consumption to systemic welfare reforms that address class and sectoral gaps.

## Governor's Role in a Hung Assembly

### Context:

Actor-turned-politician Vijay's swearing-in as Tamil Nadu Chief Minister has been delayed as Governor Rajendra Arlekar insisted on proof of majority before an invitation to form the government.

## Governor's Role in a Hung Assembly

### AboutGovernor's Role in a Hung Assembly:

### What it is?

- A hung Assembly occurs when no single political party or pre-poll alliance secures an absolute majority of seats in the state legislature. In such situations, the Governor exercises constitutional discretion to appoint a Chief Minister who, in their judgment, is most likely to command the confidence of the House.

### Constitutional Article:

- Article 164(1): The Constitution of India provides that the Chief Justice shall be appointed by the Governor. While the Governor is generally bound by the advice of the Council of Ministers, in a hung Assembly, this discretionary power becomes central to government formation.

### Aim:

- The primary aim of the Governor's role is to ensure the formation of a stable government that commands the widest possible support in the Legislative Assembly.
- The Governor's task is purely administrative—to see that a government is formed—rather than political.

### Governor's Role & Order of Precedence:

- Based on the norms established by the Sarkaria Commission (1983) and the Punchhi Commission (2007), the Governor should follow a specific order of precedence:
- Pre-poll Alliance: Invite the group of parties that contested the election together and command the largest number of seats.
- Single Largest Party: Invite the single largest party that can demonstrate it has gained the support of others to reach a majority.
- Post-election Coalition: Invite a post-poll alliance where all constituent parties agree to join the government.
- Outside Support: Invite a post-election alliance where some parties join the government and others (including Independents) provide support from the outside.

### Key Procedures:

- Floor Test: The Commission norms emphasize that the issue of majority support must be tested on the floor of the House (Assembly) and not determined by the Governor privately.
- Timeframe: A newly appointed Chief Minister is typically required to seek a vote of confidence within 30 days of taking office.

### Significance:

- Ensures the state does not remain without an executive head when the electoral mandate is fractured.
- Provides a mechanism to verify that the ruling coalition has a legitimate mandate through a formal floor test.

## Why are fathers missing in reproductive health interventions?

### Context:

Scientific analysis highlighted a critical gap in India's RMNCH+A (Reproductive, Maternal, Newborn, Child, and Adolescent Health) strategy: the near-total exclusion of fathers.

### Reproductive Health

### AboutWhy are fathers missing in reproductive health interventions?

### What it is?

- Reproductive Health is a state of complete physical, mental, and social well-being in all matters relating to the reproductive system. It implies that people are

able to have a satisfying and safe sex life, the capability to reproduce, and the freedom to decide if, when, and how often to do so.

## Key Data on Reproductive Health in India (2026)

- Declining Sperm Quality: National studies indicate that only about 25% of Indian men meet normal semen parameters, with average sperm counts dropping from 60 million/ml to 20 million/ml over the last 30 years.
- Rising Male Infertility: Male factors now account for 30%–40% of all infertility cases in urban centers like Kolkata and Pune, often driven by lifestyle-induced conditions like metabolic syndrome and chronic stress.

## Reasons for Missing Father Interventions

- The Genetic Passivity Myth: Historically, science viewed sperm merely as a passive carrier of DNA, assuming a father's lifestyle had no impact on the zygote's development.
- Example: For over a century, the Weismann Barrier theory taught that somatic (body) cells could not transmit environmental information to germ cells.
- Maternal-Centric Policy Design: Reproductive care has traditionally been female-coded because pregnancy and birth occur in the woman's body.
- Example: National programs focus on Antenatal Care (ANC) and institutional deliveries, positioning men as mere observers or financial providers.
- Lack of Preconception Awareness: There is no systematic screening for lifestyle risks (smoking, obesity, toxins) among prospective fathers before they attempt to conceive.
- Example: Most men only seek medical help after 5+ years of marital life, by which time paternal age and health may have already impacted sperm quality.
- Epigenetic Ignorance: The role of microRNAs in sperm—which act as molecular messengers of the father's environment—is a recent discovery and has not yet reached clinical guidelines.
- Example: A 2026 study in Cell Metabolism showed that paternal exercise programs an embryo's metabolism, yet doctors rarely prescribe exercise for prospective fathers.
- Social Taboos and Stigma: Society continues to place the entire burden of fertility on women, leading to silent grief and a lack of help-seeking behavior among men.
- Example: Men represent a fraction of patients at fertility clinics, while women undergo repeated, often unnecessary, cycles of intervention.

## Initiatives Taken So Far:

- RMNCH+A (Adolescent Component): Provides iron and folic acid (IFA) tablets to adolescent boys to prevent anemia.
- Vidyanjali & Community Outreach: Some local health centers use public meetings to encourage fathers to participate in household chores and child nutrition.
- Digital Support (Daddy Cool Campaign): CSR-led initiatives in cities like Lucknow use social media to improve the engagement of fathers in early child development.
- AI in Diagnostics (2026): Newer fertility centers are using AI-powered semen analysis to detect subtle abnormalities in sperm that traditional manual checks miss.

## Challenges Associated:

- Systemic Invisibility: Male infertility remains largely invisible in public health education, leading to under-diagnosis.
- Example: Clinical settings for maternal care are often women-only spaces, making men feel unwelcome or irrelevant.
- Slow-TurnaroundLifestyle Changes: Improving sperm health takes 3–6 months of consistent lifestyle modification, which is harder to sell than quick-fix technologies.
- Example: Men often opt for quick antioxidants rather than the sustained weight loss or smoking cessation required for true epigenetic improvement.
- Environmental Toxins: Growing exposure to endocrine disruptors (pesticides, plastics) is outpacing our ability to screen prospective fathers.
- Fragmented Data: There is a dearth of rigorous, systemic data on how paternal health affects Indian populations, leading to a missed opportunity for policy advocacy.

- Example: Most evidence on paternal programming currently comes from animal models, making policymakers hesitant to apply it to humans.
- Gendered Power Dynamics: Interventions often fail to address male privilege, where men control household resources but take no responsibility for reproductive health.

### Way Ahead:

- Shift to Bi-Parental Framework: Update RMNCH+A to include a Paternal Preconception Package focusing on male lifestyle, diet, and stress.
- Systematic Screening: Introduce mandatory lifestyle risk assessments for men at the time of marriage registration or initial fertility consultations.
- Public Education Campaigns: Launch national awareness drives (like Healthy Father, Healthy Future) to de-stigmatize male infertility and explain the science of epigenetics.
- Standardize Paternal Counseling: Train grassroots health workers (ASHAs) to counsel both parents on how environmental exposures (like smoking) affect child robustness.
- Invest in Secure-by-Design Diagnostics: Expand the use of AI and home-based sperm testing kits to make reproductive health monitoring accessible and private for men.

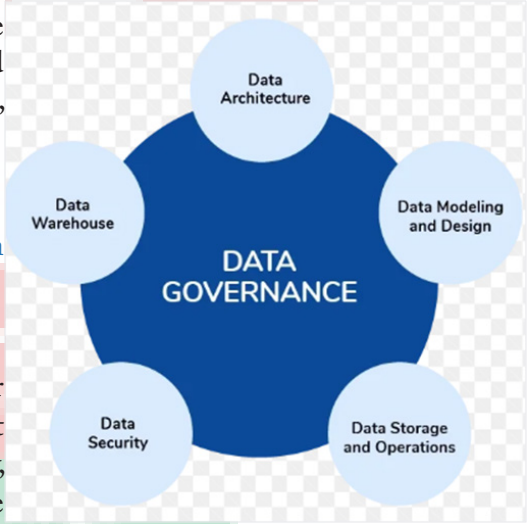
### Conclusion:

For decades, fathers have been the missing link in India's reproductive health narrative, viewed only as providers rather than biological participants. Emerging science proves that a father's health is a low-cost, high-impact lever for improving the physical robustness of the next generation. To ensure the biological quality of survival, India must pivot from a mother-centric model to an inclusive, bi-parental understanding of health.

## Crisis of Data Governance and Data Standardisation in India

### Context:

A recent analysis highlighted major gaps in India's data governance ecosystem, emphasizing that fragmented and non-standardised government databases are causing policy inefficiencies, fiscal leakages, and poor interoperability across ministries.




### Data Governance and Data

### AboutCrisis of Data Governance and Data Standardisation in India:

### What it is?

- Data governance in India refers to the institutional framework for collecting, managing, and sharing government data. The current crisis stems from fragmentation and lack of interoperability, where different Ministries define basic attributes (like time periods and regions) inconsistently, making it nearly impossible to integrate datasets for a holistic view of governance.

### Key Data/Facts on India Data Governance:

- Fiscal Leakages: Inefficient data management and duplicate entries inflate government spending by 4%–7% annually.
- Global Ranking Gaps: In the Global Innovation Index 2024, India had missing data for two indicators and outdated figures for eight others.
- Economic Potential: Improving public and private sector data sharing could add up to 2.5% to India's GDP, according to OECD estimates.
- Welfare Cleanup: Deleting ineligible beneficiaries (e.g., 17.1 million from PM-KISAN) has the potential to save the exchequer hundreds of billions of rupees.

### Current India Data Governance and Standardisation:

- Lack of Interoperability: Ministries operate in data silos with no shared standards for common indicators.

- Example: A NITI Aayog vision document notes that even basic regional definitions are inconsistent across different government departments.
- Abundance without Usability: India generates massive volumes of data, but the lack of grammar makes it hard to use for policy.
- Example: MPs are forced to ask basic questions about school toilets because the data is not available in a standardized, machine-readable format.
- Fragmented Health Tracking: Critical disease data is captured across multiple, disconnected systems.
- Example: Childhood TB cases are recorded separately in the HMIS, surveillance networks, and immunization registries, leading to double-counting.
- Outdated Methodologies: Many government datasets rely on figures that are over a year old, affecting international indices.
- Example: The Global Innovation Index 2024 results were skewed because India provided outdated data for 10 key indicators.
- InefficientWelfare Delivery: Databases often list the same individual multiple times due to a lack of a unified schema.
- Example: Bogus LPG connections and fake ration cards have led to estimated annual losses of 210 billion and 100 billion respectively.

## Initiatives Taken So Far:

- National Data Governance Framework Policy (NDGFP): The primary policy aimed at transforming the data ecosystem and ensuring non-personal data is accessible for research.
- India Data Management Office (IDMO): A proposed central body under NDGFP to enforce common rules, standards, and protocols across all Ministries.
- National Data and Analytics Platform (NDAP): A NITI Aayog initiative designed to make government datasets user-friendly, interoperable, and easy to analyze.
- Data Governance Quality Index (DGQI): A tool used to assess the data readiness and governance quality of various administrative Ministries and Departments.

## Implications of Poor Data Governance:

- Fiscal Waste: The government continues to pay benefits to ineligible or ghost beneficiaries.
- Example: Removing 35 million bogus LPG connections was necessary to stop a massive drain on the subsidy budget.
- Uncertain Decision-Making: Policymakers often disregard conflicting data in favor of anecdotes or political expediency.
- Example: Conflicting TB estimates from different registries leave health officials unsure of the actual disease burden.
- Stifled Innovation: Startups and researchers lose out when high-quality, standardized public data is unavailable.
- Example: The OECD notes that poor data sharing deprives the economy of a potential 1.5% GDP boost.
- Perception Costs: Missing or outdated data harms India's image as a modern, tech-driven economy on the global stage.
- Example: India's rank in global indices often suffers not due to poor performance, but due to missing data.
- Accountability Gaps: Parliamentarians cannot perform effective oversight without real-time, district-level figures.
- Example: A large share of questions in the 17th Lok Sabha sought basic facts that should have been on an open dashboard.

## Way Ahead:

- Empower the IDMO: Grant the India Data Management Office binding authority to audit compliance and resolve inter-ministerial methodological disputes.
- National Statistical Standards Manual: Create a unified manual to harmonize definitions nationwide with global frameworks like the UN System of National Accounts.
- Scale Data.gov.in: Transform the open data platform into a centralized, schema-consistent repository for real-time district-level data.

- Institutionalize Accountability: Tie NITI Aayog's DGQI scores to annual performance reviews and incentives for Ministry officials.
- Mandatory Standardized Uploads: Require all Ministries to upload datasets in standardized, interoperable formats on a regular schedule.

### Conclusion:

Data standardization is not merely a technical exercise; it is the grammar of governance essential for India's $5 trillion economy goal. Addressing the fragmentation of the data ecosystem will prevent fiscal leakages, enhance global standing, and empower democratic accountability. By committing to unified standards and a strong stewardship model, India can make its data truly fit for the future.

## The Justice Aravind Kumar Committee

### Context:

Chief Justice of India Surya Kant has constituted a high-powered 'Judicial Infrastructure Advisory Committee' headed by Supreme Court Justice Aravind Kumar.

### The Justice Aravind Kumar Committee

### About The Justice Aravind Kumar Committee:

### What it is?

- The Judicial Infrastructure Advisory Committee is a high-level expert panel formed to overhaul the physical and digital landscape of the Indian judiciary.
- It comprises senior judges from the Supreme Court and various High Courts, along with top administrative and technical officials.

### Established By: Supreme Court of India

### Aim:

- The primary aim of the committee is to address chronic infrastructural gaps in the Indian court system by creating a comprehensive roadmap for the 21st century.
- It seeks to ensure substantial financial backing from the Government of India to transform courts into modern, tech-enabled, and litigant-friendly spaces.

### Key Features

- Chairperson: Justice Aravind Kumar (Supreme Court).
- Seven Focus Areas: The committee will identify systemic constraints, improve facilities for lawyers/litigants, and implement cutting-edge technology to accelerate case disposal.
- Digital Transformation: A core focus is on the e-courts initiative, aimed at bridging the digital divide through robust virtual and hybrid hearing infrastructure.

- Modern Court Complexes: Designing and overseeing the construction of new court buildings that are accessible, sustainable, and technologically advanced.
- Economic Coordination: The panel must submit its findings and specific funding requirements to PM-EAC.

### Significance:

- The proposed allocation of 40,000– 50,000 crore represents one of the largest ever single-project investments in judicial infrastructure in India's history.
- By improving physical facilities and implementing faster technology, the committee directly addresses the primary bottlenecks that lead to case delays and a high backlog of cases.

## Committee on Empowerment of Women

### Context:

Lok Sabha Speaker Om Birla officially reconstituted the Parliamentary Committee on Empowerment of Women for the year 2026–27.

- Senior Lok Sabha MP Daggubati Purandeswari has been appointed as the Chairperson of the panel.

### Committee on Empowerment of Women

### AboutCommittee on Empowerment of Women:

### What it is?

- The Committee on Empowerment of Women is a prestigious Joint Parliamentary Committee (JPC) in the Indian Parliament. It operates as an institutional mechanism to review policies, assess welfare initiatives, and ensure gender equality across central laws and union territories.
- Establishment: The committee was constituted for the first time on April 29, 1997, during the 11th Lok Sabha.

### Composition & Tenure:

- Lok Sabha: 18 members nominated by the Speaker.
- Rajya Sabha: 10 members nominated by the Chairman of the Rajya Sabha.
- Tenure: The term of the committee does not exceed one year. It is reconstituted annually.
- Working Principle: Members are expected to rise above party lines and function as a cohesive cross-party unit dedicated to women's advancement.

### Key Functions:

- Reviewing National Commission Reports: Considers the statutory reports submitted by the National Commission for Women (NCW) and recommends legislative or executive actions to the Union Government.
- Evaluating Gender Equality: Examines the systemic measures taken by the Centre to secure equality, status, and dignity for women in all spheres of public and private life.
- Monitoring Education & Representation: Assesses welfare measures aimed at providing comprehensive education and ensuring adequate representation of women in legislative bodies, public services, and other fields.
- Welfare Program Appraisals: Evaluates the execution, last-mile delivery, and overall impact of centrally sponsored women's welfare and safety schemes.
- Action-Taken Monitoring: Reviews and reports on the actual implementations or gaps in measures previously proposed by the committee to the Union Government and Union Territory administrations.
- Special Remits: Examines specific gender-related matters referred to it dynamically by either the Lok Sabha Speaker or the Rajya Sabha Chairman.

### Significance:

- The panel bridges the gap between political intent and actual execution, holding ministries accountable for gender-specific budget allocations and safety outcomes.

- By synthesizing ground realities, its recommendations often lay the groundwork for major policy overhauls, such as Gender Responsive Budgeting and addressing the challenges faced by women in emerging tech-driven economies.

## Ordinance in India

### Context:

President of India has promulgated the Supreme Court (Number of Judges) Amendment Ordinance, 2026, to increase the sanctioned strength of Supreme Court judges from 33 to 37 (excluding the Chief Justice of India).

### Ordinance in India

### AboutOrdinance in India:

### What is an Ordinance?

- An Ordinance is a temporary law enacted by the Executive head of the country (the President) or a state (the Governor) when the legislature is not in session. It possesses the same legal force, power, and consequences as a regular Act passed by Parliament, allowing the government to take immediate legislative action during emergencies.

### Constitutional Articles:

- Union Level (President): Article 123 of the Indian Constitution empowers the President to promulgate Ordinances during parliamentary recess.
- State Level (Governor): Article 213 empowers the Governor of a state to issue similar Ordinances when the state legislature is not in session.

### Necessary Conditions for Promulgation:

### The Executive cannot issue Ordinances at will; the Constitution mandates specific pre-conditions:

1. Legislative Recess: The President can only act when both Houses of Parliament (Lok Sabha and Rajya Sabha) are not in session, or when either of the two Houses is prorogued.
2. Immediate Necessity: The President must be satisfied that circumstances exist which render it absolutely necessary to take immediate action.
3. Union Cabinet Advice: The President does not act independently; an Ordinance is issued only upon the formal recommendation and approval of the Union Cabinet.

### Key Features of the Ordinance Power:

- Equal Footing: An Ordinance has the exact same force, effect, and legal validity as an Act of Parliament.
- Subject Matter Parity: Parliament's legislative limitations apply to Ordinances too. The President can only issue an Ordinance on subjects where Parliament has the power to make laws (Union List and Concurrent List).
- Retrospective Effect: An Ordinance can be applied retrospectively, meaning it can come into force from a backdate. It can also amend or repeal an existing Act of Parliament or even another Ordinance.

### Limitations of Ordinance-Making Power:

- Strict Expiry Window: An Ordinance is strictly temporary. It must be laid before both Houses of Parliament once they reassemble. It automatically ceases to operate 6 weeks from the reassembly of Parliament, unless approved sooner.
- Maximum Lifespan: Since the maximum gap allowed between two sessions of Parliament is 6 months, the maximum possible lifespan of an Ordinance without parliamentary approval is 6 months and 6 weeks.
- Disapproval & Withdrawal: It will immediately cease to operate if both Houses pass resolutions disapproving it before the 6-week period ends. Additionally, the President can withdraw an Ordinance at any time.
- No Constitutional Amendments: An Ordinance cannot be used to amend the Constitution of India.

# President's Rule

## Context:

Thousands of Kuki-Zo tribal members took to the streets in Manipur's Churachandpur and Kangpokpi districts, demanding the re-imposition of President's Rule in the state.

## President's Rule

## AboutPresident's Rule:

## What it is?

- President's Rule, officially known as the Failure ofConstitutional Machinery in a State, refers to the suspension of an elected state government and the imposition of direct Union government administration. Under this mechanism, the state's executive authority shifts entirely to the Governor (who acts on behalf of the President of India), and the state's legislative powers are transferred to the Parliament.

## Constitutional Articles:

- Article 356: Establishes that if the President, on receipt of a report from the Governor of a state or otherwise, is satisfied that a situation has arisen in which the government of the state cannot be carried on in accordance with the provisions of the Constitution, the President may issue a proclamation of emergency.
- Article 355: Imposes a duty on the Union government to protect every state against external aggression and internal disturbance, ensuring that the state government functions constitutionally.
- Article 365: States that if a provincial government fails to comply with or give effect to any operational directions issued by the Union executive, it is deemed a valid ground for the President to hold that the state's constitutional machinery has failed.

## Conditions to Impose President's Rule:

- Following the landmark Supreme Court ruling in the S.R. Bommai case (1994), President's Rule can only be introduced under specific, justifiable conditions:
- Administrative Collapse/Insurgency: When the provincial government completely fails to maintain law and order, leading to widespread ethnic violence, internal disturbances, or armed rebellion.
- Hung Assembly: When no political party or coalition is able to secure a working majority to form a government after a general election.
- Loss of Majority: When a Chief Minister loses a vote of confidence on the floor of the House and no alternative alignment can form a stable ministry.
- Defiance of Central Directives: Systematic disregard for binding constitutional mandates issued by the Union cabinet under Articles 256, 257, or 365.
- Anti-Constitutional Governance: When the ruling party deliberately acts against constitutional foundations, such as violating secularism or sabotaging democratic institutions.

## Key Features:

- Executive Takeover: The President dismisses the state council of ministers headed by the Chief Minister. The Governor assumes executive governance, assisted by the Chief Secretary or advisors appointed by the Centre.
- Legislative Shifts: The State Legislative Assembly is either dissolved or kept in a state of suspended animation. Parliament takes over the duty of passing the state budget and enacting local laws.
- Presidential Acts: Laws passed by Parliament for the state during this emergency period are known as President's Acts and remain valid even after the proclamation is revoked.
- Ordinance Framework: If Parliament is not in session, the President can directly issue administrative ordinances for the state under Article 123.
- Approval Timelines: The proclamation must be approved by both Houses of Parliament within two months of its issuance. Once approved, it lasts for six months and can be extended up to a maximum of three years (subject to parliamentary approval every six months).

### Limitations:

- Judicial Review: The invocation of Article 356 is completely open to judicial review. The High Court or Supreme Court can strike down the proclamation if it is found to be based on mala fide (bad faith) or irrelevant grounds.
- Burden of Proof: The Union government bears the absolute burden of producing the material evidence (such as the Governor's official report) that justified the breakdown of the state's constitutional machinery.
- High Court Immunity: The President cannot suspend or assume any of the constitutional powers, jurisdictions, or functions vested in the concerned State High Court. The independence of the state judiciary remains fully intact.
- The Floor Test Mandate: The assessment of whether a state ministry has lost its majority must be tested exclusively on the floor of the Legislative Assembly, not through the private opinion of the Governor.
- Rigid Extension Bars: Beyond one year, President's Rule can only be extended if a National Emergency is in operation or if the Election Commission certifies that holding state elections is unfeasible due to severe ground disturbances.

## The Privilege Notice

### Context:

Congress Chief Whip in the Rajya Sabha moved a formal privilege notice against Union Education Minister Dharmendra Pradhan.

### The Privilege Notice

### About The Privilege Notice:

### What it is?

- A Privilege Notice is a specific institutional mechanism available to Members of Parliament (MPs) to raise a question of privilege when they believe an individual, minister, or organization has breached the defined rights, immunities, and privileges of the House, its committees, or its members. If an individual disregards or insults these core protections, it is treated as a Breach of Privilege or Contempt of the House.

### Aim:

- The fundamental aim of a privilege notice is to protect the freedom, authority, dignity, and autonomy of Parliament from external interference, misrepresentation, or derogatory attacks.
- It acts as a shield to ensure that parliamentarians can execute their legislative duties—and that parliamentary committees can function as mini-Parliaments—without fear, favor, or institutional denigration.

### How it Works?

- Submission: An MP gives a written notice to the presiding officer (the Rajya Sabha Chairman under Rule 187 or the Lok Sabha Speaker under Rule 222).
- First-Tier Scrutiny: The presiding officer examines the notice to see if it carries a prima facie (at first sight) case of breach of privilege.
- Referral orFloor Verdict: The presiding officer can either rule on the matter directly from the Chair or, more commonly, refer the question to the Committee on Privileges for an in-depth investigation.
- Trial & Report: The committee functions like a quasi-judicial body—examining documents, summoning the accused, and recording evidence—before tabling a final recommendation report.
- House Decision: The House debates the report and votes on the penalty, which can range from a formal warning or reprimand to suspension or imprisonment for extreme contempt.

### Key Features:

- Constitutional Backing: Grounded firmly in Article 105 (for Parliament and its members) and Article 194 (for State Legislatures) of the Constitution of India.

### Dual Nature: Privileges are split into two groups:

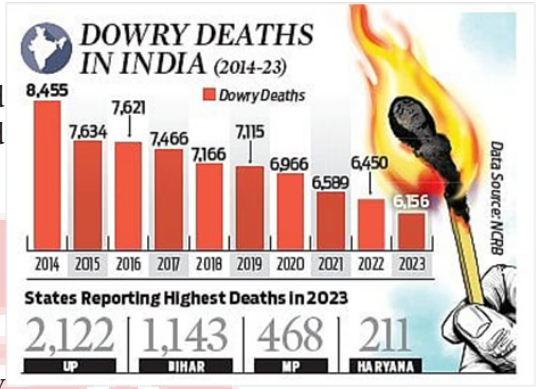
- Individual Privileges: Such as freedom of speech in Parliament and immunity from civil arrest 40 days before and after a legislative session.

- Collective Privileges: Such as the right of the House to publish its own records, exclude strangers, regulate its internal code, and punish both members and outsiders for contempt.
- Committee Structure: The Rajya Sabha Privileges Committee consists of 10 members, while the Lok Sabha panel comprises 15 members, both nominated proportionally to represent cross-party bench strengths.
- Statutory Codification Gap: Interestingly, India has never codified its parliamentary privileges into a single statutory law. Parliament continues to rely on British House of Commons precedents, conventions, and evolving case laws to define what constitutes a breach.

## Dowry Death Cases in India

### Context:

Recent dowry death cases from Uttar Pradesh, Madhya Pradesh, and Delhi have once again highlighted the persistence of dowry-related violence in India despite decades of legal reforms.




### Dowry Death Cases in India

### AboutDowry Death Cases in India:

### What it is?

- Dowry death refers to the death of a married woman caused by cruelty, harassment, violence, or unnatural circumstances linked to dowry demands by the husband or his relatives.
- In India, dowry death is specifically recognized as a criminal offence under Section 80 of the Bharatiya Nyaya Sanhita (earlier Section 304B of IPC) along with provisions under the Dowry Prohibition Act, 1961.

### Key Findings:

- Persistent High Numbers: India recorded 6,156 dowry deaths in 2023, despite a decline from 8,455 cases reported in 2014.
- State Concentration: Uttar Pradesh recorded the highest number of dowry deaths (2,122 cases), followed by Bihar with 1,143 cases.
- Domestic Violence Link: A 2023 study found that nearly three out of five women filing domestic violence complaints also reported dowry harassment.
- Rising Dowry Harassment Cases: Cases registered under the Dowry Prohibition Act increased by 14% in 2023, reaching 15,489 cases nationwide.

### Implications:

- Dowry-related crimes reflect deep-rooted patriarchal attitudes, commodification of marriage, and structural discrimination against women.
- Despite strict laws, weak enforcement, delayed justice, and social normalization of dowry practices continue to sustain the problem.
- Continuous dowry harassment contributes to domestic violence, suicides, emotional trauma, and declining social security for women.

## Section 124A (Sedition Law)

### Context:

The Supreme Court clarified its landmark 2022 freeze on the colonial-era sedition law, allowing lower courts to resume pending trials and appeals under Section 124A of the IPC if the accused consents.

## Section 124A (Sedition Law)

### AboutSection 124A (Sedition Law):

### What It Is?

- Section 124A of the now-repealed Indian Penal Code (IPC) is a highly controversial penal provision that criminalizes sedition.
- It was not part of the original 1860 IPC drafted by Lord Macaulay; instead, it was introduced in 1870 via an amendment drafted by Sir James Fitzjames Stephen.
- Historically, the British Raj deployed this draconian text as an asymmetric political tool to silence Indian freedom fighters, famously targeting leaders like Bal Gangadhar Tilak and Mahatma Gandhi.

### Key Features of Section 124A

- The Legal Ambit: It penalizes any action—whether through spoken or written words, signs, visible representations, or electronic means—that brings or attempts to bring hatred, contempt, or disaffection toward the Government established by law in India.
- Severe Classifications: It is classified as a cognizable, non-bailable, and non-compoundable offense.
- Draconian Sanctions: Carries a maximum penalty of imprisonment for life, to which a fine may be added, or a prison term stretching up to three years.
- Collateral Liabilities: Individuals charged under Section 124A are barred from holding government jobs, must surrender their passports, and are required to produce themselves before local courts whenever summoned.

### Current Status and Legal Trajectory:

- The May 2022 Absolute Freeze: In S.G. Vombatkere v. Union of India (2022), a three-judge Supreme Court bench put Section 124A into complete abeyance. The court ordered all pending trials, appeals, and fresh FIRs across India to be frozen, acknowledging the law's rampant institutional misuse.
- The May 2026 Modification: In Kamran v. State of Madhya Pradesh, a bench headed by the Chief Justice modified the strict freeze. The court clarified that if a jailed or convicted individual has no objection to proceeding with their appeal or trial—often to secure an immediate acquittal or closure—lower courts face no legal impediment to deciding the case on its merits.

### The New Regime: BNS and Section 124A

- With the structural repeal of the IPC, the old Sedition law has been repackaged into modern criminal jurisprudence:
- The New Anchor: Section 124A of the IPC has been replaced by Section 152 of the Bharatiya Nyaya Sanhita (BNS).
- Nomenclature Shift: The BNS completely drops the word sedition, renaming the offense to Acts endangering sovereignty, unity, and integrity of India.
- Expanded Ambit: It targets anyone who knowingly excites or attempts to excite secession, armed rebellion, separatist activities, or subversive activities through spoken words, signs, or financial means.
- Enhanced Punishment: The alternative prison term has been bumped up from a three-year baseline to a strict minimum of seven years or life imprisonment, making it structurally tougher than its colonial predecessor.

## The Chief Minister and Powers

### Context:

Following a prolonged leadership tussle, Karnataka Chief Minister Siddaramaiah resigned from his position.

### The Chief Minister and Powers

### AboutThe Chief Minister and Powers:

### What It Is?

- In the scheme of parliamentary government provided by the Constitution, the Governor is the nominal executive authority (de jure head) of a state, whereas the Chief Minister is the real executive authority (de facto head).

- Positioned as the head of the state government, the Chief Minister acts as the chief advisor to the Governor, the leader of the Council of Ministers, and the foremost representative of the state's political and administrative framework.

## Key Constitutional Provisions:

- Article 163: Mandates that there shall be a Council of Ministers with the Chief Minister at the head to aid and advise the Governor in the exercise of their functions, except in matters requiring gubernatorial discretion.
- Article 164: Stipulates that the Chief Minister shall be appointed by the Governor, and other ministers shall be appointed on the Chief Minister's advice. It also notes that the Council of Ministers is collectively responsible to the State Legislative Assembly.
- Article 167: Defines the duties of the Chief Minister regarding the furnishing of information to the Governor concerning administrative decisions and legislative proposals of the state.

## Powers and Functions of the Chief Minister:

- The Chief Minister holds wide-ranging authority across various branches of state administration:

### 1. In Relation to the Council of Ministers:

- Recommends individuals to the Governor for appointment as ministers.
- Allocates, shuffles, and reallocates portfolios among the ministers.
- Presides over cabinet meetings and directly guides, directs, and controls their activities and decisions.

### 2. In Relation to the Governor:

- Serves as the principal channel of communication between the Governor and the Council of Ministers.
- Advises the Governor regarding the appointment of important officials, such as the Advocate General, Chairman of the State Public Service Commission, and State Election Commissioners.

### 3. In Relation to the State Legislature and State at Large:

- Advises the Governor regarding the summoning, proroguing, and dissolution of the State Legislative Assembly.
- Announces major government policies on the floor of the House.
- Functions as the chief spokesperson of the state government and the dynamic leader of the ruling party.

## Procedure for Resignation:

- Submission of Resignation: To resign, the Chief Minister must formally submit a handwritten letter of resignation directly to the Governor of the State.
- Dissolution of Council: Under the principle of collective responsibility, the resignation of the Chief Minister automatically dissolves the entire incumbent Council of Ministers. The CM's exit collapses the full executive team, though the Governor typically requests the outgoing CM to continue as a caretaker until a successor is officially sworn in.

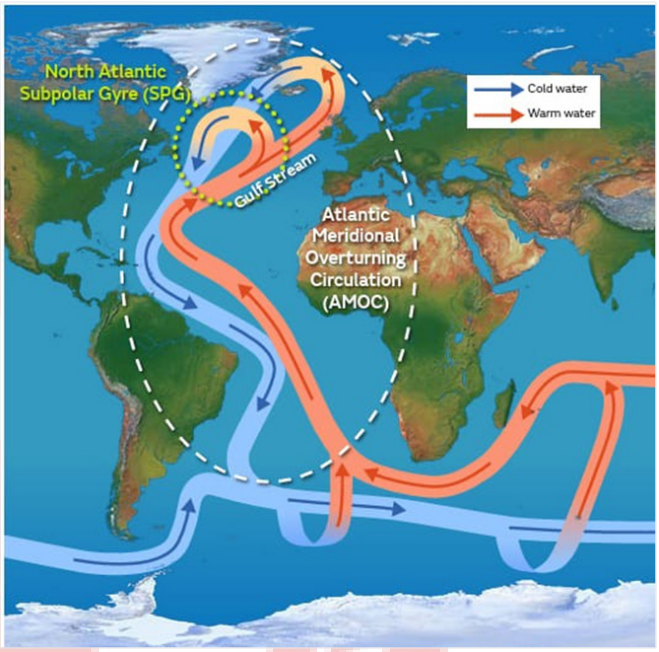
## Next Chief Minister Selection Process:

- Party High Command & CLP Meeting: The ruling party or majority coalition calls an emergency meeting of its Legislative Party (CLP) to formally deliberate, vote, and elect a new leader.
- Staking the Claim: The newly elected leader submits the CLP resolution to the Governor, formally staking a claim to form the next government.
- Gubernatorial Invitation: The Governor invites the leader to take the oath of office. If the majority support is explicitly clear, the leader is sworn in as the Chief Minister.
- Proving Majority: If the Governor determines that a floor test is required due to fluid political alliances, the newly appointed Chief Minister is given a strict, time-bound window to prove their majority by winning a Vote of Confidence on the floor of the Legislative Assembly.

# The Atlantic Meridional Overturning Circulation (AMOC)

## Context:

New research indicates the Atlantic Meridional Overturning Circulation (AMOC) could weaken by up to 59% by 2100, far more severely than previous estimates of 15%.




## The Atlantic Meridional Overturning Circulation (AMOC)

## About The Atlantic Meridional Overturning Circulation (AMOC):

### What it is?

- The Atlantic Meridional Overturning Circulation (AMOC) is a vast system of ocean currents that acts as a massive, invisible conveyor belt for the planet. It is a critical component of Earth's climate system, responsible for moving heat and regulating temperatures across the globe.
- Located in: As the name suggests, this system is primarily located in the Atlantic Ocean, spanning from the tropical regions to the freezing Arctic waters near Greenland.

### How it Forms?

### The circulation is driven by differences in water temperature and salt levels (density):

- Surface Flow: Warm, salty water from the tropics flows north toward Greenland.
- Cooling and Sinking: As it reaches the Arctic, the water cools, becomes denser, and sinks several kilometers into the deep ocean.
- Deep Flow: This cold water drifts back south as a deep-water current.
- Rising: Eventually, the water rises back to the surface to warm up and restart the thousand-year loop.

### Key Functions:

- Heat Distribution: It moves vast amounts of heat across the globe, which is the primary reason Europe enjoys a relatively mild climate.
- Rainfall Regulation: It heavily influences global rainfall patterns in Africa, the Americas, and Asia.
- Carbon Sequestration: By sinking surface water into the deep ocean, it helps transport carbon and nutrients through the marine ecosystem.

### Implications of Slowdown:

- A collapse would trigger extreme sea-level rise in North America and severe weather disruptions worldwide.
- For the Indian subcontinent, a weakened AMOC pulls the tropical rain belt southward, away from India, resulting in shorter wet seasons and longer dry spells.
- The interconnectivity between the Atlantic and Pacific means a sluggish AMOC traps heat in the southern hemisphere, making El Niño events more extreme and unpredictable.

# Andhi

## Context:

Earlier this week, powerful pre-monsoon thunderstorms (locally known as Andhi) tore through Uttar Pradesh, claiming over 100 lives, with Prayagraj, Mirzapur, and Bhadohi being the worst-hit districts.

## Andhi

## AboutAndhi:

### What it is?

- Andhi is the meteorological term for intense, convective dust storms or thunderstorms that occur predominantly during the pre-monsoon season in Northern India. These severe atmospheric disturbances are characterized by a sudden drop in temperature, blinding dust clouds, torrential rain, violent lightning strikes, and destructive gusty winds.
- Primary Zone: The Indo-Gangetic Plains of Northern India, particularly stretching across Uttar Pradesh, Rajasthan, Haryana, Delhi, and Punjab.

### How it Forms?

- Intense Surface Heating: Extremely high summer temperatures exceeding 45°C created a severe low-pressure zone over the land, causing the surface air to rapidly heat up and expand.
- Moisture Influx: Strong southeasterly winds pumped high levels of humidity from the Bay of Bengal across Uttar Pradesh, making the rising air highly volatile and moisture-laden.
- Upper-Atmosphere Instability: Active Western Disturbances (eastward-moving, extra-tropical storm systems originating over the Mediterranean/Caspian Sea) introduced a layer of cool, dry air in the upper troposphere.
- Convective Updrafts: The dramatic contrast between the blistering, moist air at the ground and the cool, dry air aloft created severe atmospheric instability. This acted as a classic trigger, forcing the warm air to shoot upward violently, condensing rapidly into massive, energy-dense cumulonimbus clouds.

### Key Features:

- Extreme Wind Velocities: While typical Andhi events register wind speeds of 40–60 kmph, the recent event recorded devastating speeds between 100 kmph and 130 kmph.
- Violent Projectiles & Structural Collapse: High wind speeds turn loose objects into hazardous flying projectiles, uproot ancient trees, topple high-tension electricity poles, and cause weak brick walls and billboards to collapse.
- Dispersed and Localized Pockets: Unlike tropical cyclones, which track linearly from the sea to coastlines, these thunderstorms are highly localized, occurring in scattered, multiple pockets simultaneously over a vast landmass.
- Nowcasting Window: These storms develop rapidly, giving meteorologists a very narrow window (usually a few hours) for real-time tracking and issuing specific local alerts (Nowcasts).

# Raipur's Rainwater Revolution

## Context:

Raipur has emerged as a national model for urban water conservation under the Jal Sanchay Jan Bhagidari (JSJB) initiative, creating nearly 32,000 rainwater harvesting and groundwater recharge structures.

## Raipur's Rainwater Revolution

## AboutRaipur's Rainwater Revolution:

### What It Is?

- A large-scale urban groundwater recharge and rainwater harvesting movement implemented in Raipur under the Jal Sanchay Jan Bhagidari (JSJB) initiative.

### Aim:

- To improve groundwater recharge and reduce urban water stress caused by rapid urbanisation and excessive groundwater extraction.
- To transform Raipur into a climate-resilient Sponge City capable of conserving and reusing rainwater efficiently.

### Key Features:

- 32,000 Recharge Structures: Creation of recharge wells, percolation pits, injection wells, recharge shafts, rooftop harvesting systems, and stormwater recharge structures.
- Public–Private Participation: Collaboration among the Raipur Municipal Corporation, CREDAI, institutions, builders, and citizens for widespread adoption of rainwater harvesting.
- Innovative Technologies: Use of permeable Eco Blocks, tractor-mounted auger drilling, multilayer filtration systems, and slotted recharge pipes.
- HighRecharge Capacity: Recharge wells can replenish up to 3 lakh litres annually, while injection wells can recharge up to 15 lakh litres per year.
- Policy Reforms: Developers are encouraged to reserve at least 1% of project areas for water harvesting and green spaces, alongside regular maintenance mechanisms.
- Integrated Water Management: Includes pond interlinking, Kharun River Eco Bloc projects, and treated wastewater reuse for industrial purposes.

### Significance:

- Urban Water Security: Reduces groundwater depletion, minimizes rainwater runoff, and improves long-term water availability in rapidly growing cities.
- Climate Resilience Model: Provides a scalable framework for addressing urban flooding, groundwater stress, and climate-induced water challenges.

Chapter-
4

# ENVIRONMENT

## Agricultural Engineering: Making Indian Farming Future-Ready

### Context:

Agricultural engineering is emerging as the critical driver for Indian farming to transition from traditional methods to a future-ready, sustainable ecosystem.

### Agricultural Engineering: Making Indian Farming Future-Ready

### AboutAgricultural Engineering: Making Indian Farming Future-Ready

### What it is?

- Agricultural engineering is the application of scientific principles and technological designs to improve farming efficiency. It spans the entire agricultural lifecycle—from soil preparation and water management to post-harvest processing and value addition—to ensure a resilient food system.

### Key Data and Statistics:

- Post-Harvest Loss Reduction: Engineering solutions like cold chains can cut wastage by up to 75%, addressing losses of 58%–15.88% (CIPHET).
- Precision Farming Efficiency: Technologies (VRT, data-driven pest control) improve fertilizer efficiency by 12–15% and reduce pesticide use by ~20% (ICAR, Economic Survey 2024-25).
- Water & Energy Savings: Micro-irrigation achieves 85–90% efficiency (vs 30–50% traditional), saving 5% water and 30.5% electricity (PMKSY data).
- Mechanization Gains: Farm mechanization (~47% level) boosts productivity by 12–15%, reduces costs by ~20%, and cuts sowing labour by 60–70% (NITI Aayog, CIAE).

### Understanding Agricultural Engineering in Modern Farming:

- Precision Equipment: The use of specialized machinery ensures tasks are performed with high accuracy and minimal manual effort.
- E.g.: Laser land levelers create a flat surface for uniform water distribution, and seed drills ensure seeds are planted at the exact depth required for optimal growth.
- AdvancedWater Management: Engineering enables the efficient use of every drop of water, which is vital for survival in drought-prone areas.
- E.g.: Drip irrigation and automated sprinklers deliver water directly to the roots, preventing evaporation and runoff.
- Soil and Land Maintenance: Engineering systems contribute to the long-term health of the farmland by preventing degradation.
- E.g.: Terracing and bunding systems are engineered to control soil erosion on hilly terrains, maintaining the productive topsoil.
- Post-Harvest Engineering: This stage focuses on maintaining produce quality and extending shelf life after the crop leaves the field.
- E.g.: Cold storage facilities and automated grading techniques ensure fruits and vegetables reach the market in prime condition, fetching higher prices for farmers.
- Smart Data Integration: Contemporary tools allow farmers to monitor their fields remotely and make informed decisions based on real-time data.

- E.g.: Agricultural drones equipped with multispectral cameras help identify pest infestations or nutrient deficiencies before they spread across the entire crop.

## Agricultural Modernization Opportunities

- System Connectivity: Engineering bridges the gap between separate pockets of knowledge, such as linking high-quality seeds with precision irrigation.
- E.g.: Creating integrated supply chains where a combine harvester's output is directly linked to a solar-powered drying unit for immediate processing.
- Economic Viability: Better efficiency and higher quality produce lead to increased income and access to global markets.
- E.g.: Farmers using precision seeders can produce standardized crops that meet the strict quality requirements of international exporters.
- Climate Resilience: Specialized structures protect crops from the volatile impacts of climate change, such as temperature spikes.
- E.g.: Polyhouses and climate-controlled greenhouses allow for the year-round cultivation of high-value crops regardless of external weather conditions.
- Resource Recycling: Innovations in engineering allow for the reuse of agricultural waste into high-value byproducts.
- E.g.: Rainwater harvesting systems and greywater recycling units turn waste or runoff into a primary resource for irrigation during lean seasons.

## Challenges Associated:

- Prohibitive Initial Costs: The high price of modern machinery often puts future-ready technology out of reach for the average farmer.
- E.g.: Small-scale farmers in states like Bihar may struggle to afford a 10 lakh combine harvester without significant financial support.
- Small and Fragmented Landholdings: Large-scale engineering solutions are often difficult to implement on the small plots typical of Indian agriculture.
- E.g.: Using large GPS-controlled tractors is inefficient on plots smaller than one acre, which make up a massive portion of Indian farms.
- The Knowledge-Action Gap: There is a persistent disconnect between technical innovation in labs and the practical difficulties faced by farmers.
- E.g.: A sophisticated moisture sensor may be available, but a farmer might lack the technical training to calibrate it or interpret its digital output.
- Infrastructure Deficiencies: High productivity can be wasted if the surrounding infrastructure does not support modern engineering.
- E.g.: In many parts of Uttar Pradesh, even if a farmer uses automated cooling, a lack of reliable rural electricity can lead to the spoilage of the stored produce.

## The Way Forward:

- Incentivize Smart Tech: Increase the adoption of solar-powered farm equipment and robotic technologies to reduce dependence on fossil fuels and manual labour.
- Equipment Rental Models: Establish custom hiring centers in every village so small-scale farmers can rent high-tech machinery on an hourly basis.
- Integrated Education: Shift agricultural curriculum to produce professionals who are skilled in both technical engineering and field-level problem solving.
- Policy Support for Inclusivity: Design government schemes that specifically target smallholders for subsidies on smart irrigation and precision tools.
- Strengthen Post-Harvest Chains: Focus investment on building a network of drying, grading, and processing units at the village level to turn raw produce into value-added goods.

## Conclusion:

Agricultural engineering is the essential catalyst for transforming Indian farming into a sustainable and data-driven

industry. By bridging technical innovation with inclusive rental models, it ensures that even small-scale farmers can survive and thrive in a volatile climate. Ultimately, this field is not just about machines; it is about building a coordinated system that feeds a growing nation efficiently and profitably.

## Ecocide: War and Environment

### Context:

Nations including Lebanon and Iran have recently accused Israel of committing ecocide during military operations, highlighting the severe ecological devastation caused by modern warfare.

### Ecocide: War and Environment

### AboutEcocide: War and Environment

### What is Ecocide?

- Ecocide refers to the most extreme forms of environmental destruction caused by human action, characterized by unlawful or wanton acts committed with the knowledge that they will likely cause severe, widespread, or long-term damage to the environment.

### Key Data and History:

- Origin: The term was coined in 1970 by Prof. Arthur W. Galston to describe the massive devastation caused by the use of Agent Orange during the Vietnam War.
- First Codification: Vietnam became the first country to codify ecocide in its domestic law in 1990 following its experience with wartime herbicides.
- Global Adoption: Several nations, including Russia, Ukraine, Chile, France, and Belgium, have already incorporated ecocide or equivalent terms into their national legal systems.
- Proposed Definition: In 2021, an expert panel for Stop Ecocide International proposed a standardized definition to aid its inclusion in the Rome Statute.

### How Ecocide Differs from CurrentInternational Law?

- Shift in Focus: Existing laws are anthropocentric, placing humans at the center of harm; ecocide is eco-centric, treating the environment as a separate entity worthy of protection.
- Recognition of Victimhood: While current laws view environmental damage as collateral to human suffering, ecocide recognizes the environment itself as the victim.
- Nature of the Act: It addresses wanton acts where there is a substantial likelihood of severe damage, moving beyond just intentional disproportionate attacks.
- Beyond Tort Principles: Traditional international law treats cross-border harm (like poisoning a river) as a civil-style tort; ecocide seeks to establish criminal liability.
- Peacetime Application: Advocates argue that a standalone crime of ecocide would apply during both war and peace, whereas current ICC environmental provisions are limited to war crimes.

### Where Current Laws Fall Short?

- Limited Scope: Under the Rome Statute, environmental damage is only a crime if it is disproportionate and occurs during an active war.
- Example: Massive industrial pollution or ecological destruction during peacetime currently lacks an international criminal pathway.
- Jurisdictional Hurdles: The ICC can only prosecute states that are parties to the Rome Statute unless there is a UN Security Council referral.
- Example: Allegations in Iran and Lebanon are complicated because neither state is a party to the ICC.
- Lack of Criminalization: Most international bodies only recognize ecocide as a concept without creating enforceable criminal penalties.
- Example: The International Union for Conservation of Nature (IUCN) recognized the crime in 2025 but cannot enforce it.
- Requirement of Human Impact: Current laws often require proof that environmental damage directly caused human death or displacement to be prosecutable.

- High Evidentiary Thresholds: Proving intent to cause widespread environmental harm is exceptionally difficult under existing war crime definitions.

### The Enforcement Challenge:

- Requirement for Supermajorities: Amending the Rome Statute to include ecocide requires a two-thirds majority vote from all member states.
- Lack of Precedent: To date, no direct international prosecution has ever been launched specifically for environmental destruction caused by war.
- UniversalJurisdiction Risks: While European courts have gained some power to prosecute environmental crimes committed abroad, implementing this globally remains a challenge.
- Moral vs. Legal Force: Without the cooperation of major global powers, international law often functions only as a moral guardrail rather than a deterrent.
- Political Resistance: Powerful nations often resist new international laws that could subject their military or industrial actions to outside criminal scrutiny.

### Way Forward:

- Council of Europe Model: Use the 2025 European Convention on the Protection of the Environment as a blueprint for other regional and international treaties.
- Domestic Codification: Encourage more countries to follow Belgium and Chile in passing domestic ecocide laws to build global legal momentum.
- Rome Statute Amendment: Continue diplomatic pressure at the Assembly of States Parties to formally introduce ecocide as the fifth international crime.
- Clearer Definitions: Refine the legal parameters of long-term and severe damage to ensure the law is practical and enforceable in court.
- Non-Anthropocentric Jurisprudence: Support the International Court of Justice in developing new legal principles that recognize the environment's intrinsic rights.

### Conclusion:

The push to recognize ecocide represents a vital shift toward holding human actors accountable for the permanent scarring of our planet. While current international laws remain limited by their narrow focus on human harm, the growing body of domestic legislation offers a glimmer of hope for future enforcement. Ultimately, making ecocide an international crime would provide a necessary legal guardrail to protect global ecologies from the wanton destruction of modern conflict.

## Kavu Nurseries

### Context:

The Kerala State Biodiversity Board has launched a pilot programme to restore sacred groves (kavus) across selected districts.

### Kavu Nurseries

### AboutKavu Nurseries:

### What it is?

- Kavu nurseries are specialized plant nurseries developed to propagate native, endemic, and threatened plant species found in sacred groves (kavus).
- They serve as biodiversity regeneration hubs to restore degraded grove ecosystems.
- Aim: To regenerate sacred grove ecosystems by cultivating and reintroducing native plant species.

### Key Features:

- Propagation of Native Species: Cultivation of over 100 indigenous and threatened plant species specific to sacred groves.
- Support for Restoration: Provides saplings (≈3,000 planned) for replantation in degraded kavus.

- Invasive Species Management: Helps replace invasive flora with ecologically suitable native vegetation.
- Community-Based Implementation: Managed with local Biodiversity Management Committees ensuring participatory conservation.

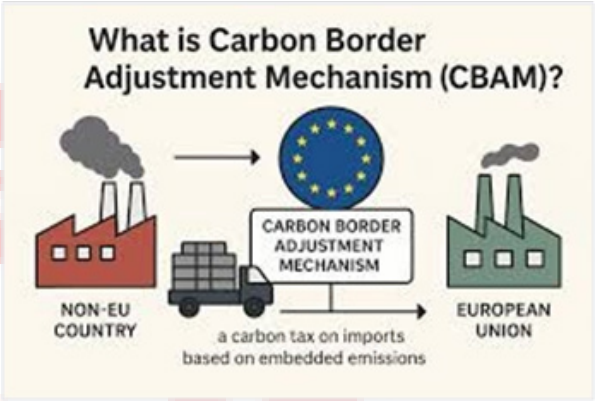
### Significance:

- Biodiversity Conservation: Protects rare, endemic, and medicinal plant species unique to sacred groves.
- Ecosystem Restoration: Enhances soil fertility, water conservation, and micro-climate stability.
- Cultural-Ecological Link: Revives traditional conservation practices rooted in local belief systems.

## CBAM and India: Turning Carbon Border Taxes into a Strategic Opportunity

### Context:

With the European Union's Carbon Border Adjustment Mechanism (CBAM) entering full force on January 1, 2026, India is exploring strategic responses, including a potential India Border Adjustment Mechanism (IBAM).




### CBAM and India: Turning Carbon Border Taxes into a Strategic Opportunity

### AboutCBAM and India: Turning Carbon Border Taxes into a Strategic Opportunity:

### What is CBAM?

- The Carbon Border Adjustment Mechanism (CBAM) is a policy tool introduced by the European Union to equalize the carbon price paid by European manufacturers with that of imported goods. It aims to prevent carbon leakage—where production shifts to countries with lower environmental standards—by taxing the embedded carbon emissions of specific energy-intensive products entering the EU market.

### Key Features of CBAM:

- Targeted Sectors: Initially applies to the most carbon-intensive imports: Steel, Aluminum, Cement, Fertilizers, Electricity, and Hydrogen.
- Phased Implementation: It operates alongside the phasing out of free allowances for EU producers (2026–2034) to ensure a gradual transition for domestic and foreign firms.
- Article 9 Deduction: Importers can reduce their CBAM liability by providing evidence of a carbon price already paid in the country of origin.
- Verification Standards: Requires strict MRV (Measurable, Reportable, and Verifiable) standards for embedded emissions, often requiring independent third-party audits.
- Certificate System: Importers must purchase CBAM certificates, the price of which is linked to the weekly average auction price of EU Emissions Trading System (ETS) allowances.

### How it Works?

- When an Indian exporter sends a cargo of steel to the EU, the importer must declare the carbon emitted during its production.
- If the EU carbon price is €100 and no carbon tax was paid in India, the importer pays the full €100 at the border.
- However, if India imposes a domestic carbon tax of 4,000 (approx. €45) per tonne, the importer only pays the remaining €55 to the EU.

### Opportunities for India:

1. Retention ofFiscal Revenue: By implementing IBAM, India can collect the carbon tax that would otherwise go to Europe.

Example: If the EU expects 500 crore in carbon levies from Indian steel, an IBAM ensures that this 500 crore stays in the Indian exchequer.

1. Financing Green Technology: Revenue collected through domestic carbon pricing can be ring-fenced to modernize industries.

Example: Using IBAM funds to subsidize the transition of traditional blast furnaces to Green Hydrogen-based steelmaking.

1. Strengthening the CCTS: CBAM provides the necessary push to mature India's Carbon Credit Trading Scheme (CCTS) into a globally recognized compliance market.

Example: Indian power plants trading carbon certificates under CCTS can now use those certificates as proof of carbon price paid to reduce EU border charges.

1. Strategic Diplomatic Leverage: The India-EU FTA's Annex 14-A allows India to negotiate technical dialogues on carbon price recognition.

Example: India can use these dialogues to ensure that rupee-denominated carbon credits are converted at fair exchange rates against the Euro.

1. Competitive Advantage for Low-Carbon Producers: Efficient Indian firms can gain market share over dirtier global competitors.

Example: An Indian aluminum plant using 100% renewable energy would face near-zero CBAM charges, making its products cheaper in Europe than coal-reliant competitors.

## Challenges Associated:

1. DecarbonizationSubsidies Gap: European firms receive massive state aid that Indian firms lack.

Example: A German steel plant might receive a €2 billion subsidy for green transition, while an Indian firm must fund its transition through higher operational costs.

1. Compliance Costs for MSMEs: Small exporters may find the cost of carbon auditing prohibitive.

Example: A small Ludhiana-based fastener manufacturer may spend more on certified carbon auditors than the actual carbon tax itself.

1. Threat toExport Competitiveness: If India fails to implement an offset mechanism, its exports could become significantly more expensive.

Example: High CBAM charges could make Indian cement uncompetitive against North African producers who might have shorter shipping routes or different trade deals.

1. Technological Sovereignty: Being forced to align with EU carbon standards makes India a rule-taker.

Example: India might be forced to adopt EU-specified carbon accounting software and methodologies, even if they don't suit the local industrial context.

1. Data Sensitivity: Sharing detailed industrial emission data with foreign entities can raise national security concerns.

Example: Providing granular data on energy consumption in large-scale strategic aluminum plants to EU auditors could expose industrial vulnerabilities.

## Way Ahead:

- IBAM the CBAM: Formally introduce an India Border Adjustment Mechanism to capture carbon revenue at the point of export.
- Transparency in Fund Usage: Create a transparent, audited fund dedicated to green projects like scrap-based steelmaking and low-carbon electricity.
- Mutual Recognition Agreements: Use the FTA framework to ensure the EU officially recognizes Indian CCTS certificates under CBAM Article 9.
- Capacity Building for MSMEs: The government should provide digital tools and subsidized auditing services to help smaller exporters calculate their carbon footprint.
- Global Advocacy: India should lead a coalition of developing nations to demand that carbon border revenues be returned to the country of origin to support the Just Transition.

## Conclusion:

India must treat CBAM not as an external threat, but as a lever to internalize its carbon pricing and keep its carbon money at home. By implementing a proactive IBAM and leveraging the FTA's technical dialogues, India can finance its own green revolution on its own terms. Ultimately, the goal is to ensure that Indian exporters are not double-taxed while maintaining India's sovereignty in the global green transition.

# Prosopis juliflora

## Context:

Kandla (Deendayal) Port in Gujarat is launching a pilot project to convert Prosopis juliflora, an invasive weed, into bio-methanol to produce clean maritime fuel.

Prosopis juliflora

## AboutProsopis juliflora:

### What it is?

- Prosopis juliflora is a hardy, deciduous, thorny shrub or small tree belonging to the Fabaceae family. While originally introduced to combat desertification and provide fuelwood, it has since become one of the most aggressive invasive alien species in arid and semi-arid regions of India.

### Origin:

- Native Range: Mexico, South America, and the Caribbean.
- Introduction to India: It was introduced by the British in the late 19th century (specifically in 1877) to the arid regions of Rajasthan and Gujarat to provide green cover and fuel in desert landscapes.

### Habitat:

- It thrives in arid andsemi-arid environments with low rainfall and poor soil quality.
- It is highly salt-tolerant, making it common in coastal areas, salt pans (like the Rann of Kutch), and degraded pasture lands.
- In Gujarat, it has taken over large stretches of the Banni grasslands and areas surrounding the Kandla port.

### Key Characteristics:

- Rapid Spread: It produces a massive quantity of seeds that are dispersed by livestock (cattle and goats) through their droppings.
- Deep Root System: Its roots can penetrate up to 50 meters deep to reach groundwater, allowing it to survive extreme droughts.
- Allelopathy: The plant releases chemicals into the soil that inhibit the growth of other nearby plants, effectively crowding out native vegetation.
- Thorns: It possesses sharp, sturdy thorns that protect it from overgrazing.

### Implications:

### Negative Impacts:

- Ecological Loss: It destroys biodiversity by replacing indigenous grasses and trees, which reduces the fodder available for local livestock.

- Water Depletion: Its deep-reaching roots significantly deplete groundwater levels in already water-stressed regions.
- Land Degradation: It turns fertile pastures into impenetrable green deserts where nothing else can grow.

### Positive Economic Potential:

- Bio-Energy Feedstock: As seen in the Kandla project, it is an excellent source of biomass for conversion into syngas and bio-methanol due to its high calorific value.
- Livelihood: Collecting the shrub for industrial use provides income for local communities.
- Fuelwood &Charcoal: It has historically been a primary source of cheap fuel and high-quality charcoal for rural households.

## The International Big Cat Alliance (IBCA) Summit, 2026

### Context:

Union Environment Minister launched the official website and logo for the 1st International Big Cat Alliance (IBCA) Summit 2026 in New Delhi.

### The International Big Cat Alliance (IBCA) Summit, 2026

### About The International Big Cat Alliance (IBCA) Summit, 2026:

### What is IBCA?

- The IBCA is a first-of-its-kind inter-governmentalinternational organisation and multi-agency coalition. It serves as a global platform uniting 95 big cat range countries, conservation partners, scientific organisations, and business groups to address conservation challenges through cooperation and knowledge sharing.
- Launched In: April 9, 2023.
- Headquarters: The IBCA Secretariat is headquartered in India.

### Aim:

- The primary objective of IBCA is to halt the decline in big cat populations and reverse current trends.
- It aims to facilitate synergy among stakeholders, consolidate successful conservation practices into a centralized repository, and provide financial and technical support to resource-lacking range countries.
- Species Covered: The alliance is dedicated to the conservation of seven big cats: Tiger, Lion, Leopard, Snow Leopard, Cheetah, Jaguar, and Puma

### Key Functions:

- Centralized Repository: Consolidating successful conservation expertise and benchmarking good practices (like India's Project Tiger) for replication elsewhere.
- Capacity Building: Providing systematic and institutionalized delivery of implementation measures and training for range countries.
- Policy Advocacy & Finance: Strengthening transboundary cooperation and creating suitable financing arrangements to apply fundamental tenets of conservation on the ground.
- Scientific Research & Innovation: Utilizing advanced technological capabilities and field craft to address the unique ecological requirements of big cats.
- Technical Support: Bridging the resource gap in countries that lack the infrastructure or expertise to secure their native big cat populations.
- Sustainable Livelihoods: Promoting a landscape-based approach that aligns conservation with local livelihood security and climate resilience.

### Significance:

- Establishes India as a leading voice in global wildlife diplomacy, sharing its successful models like Project Tiger and Project Cheetah with the world.
- The 2026 Summit will adopt the first-ever global declaration on big cat conservation, articulating shared priorities for transboundary protection.

# Methane Alert and Response System (MARS)

## Context:

The UN expanded its Methane Alert and Response System (MARS) to include the coal and waste sectors.

- This decision follows satellite data identifying an Indian landfill (Kanjurmarg) among the world's three largest methane emitters, alongside sites in Chile.

## Methane Alert and Response System (MARS)

## AboutMethane Alert and Response System (MARS):

## What it is?

- MARS is the first global satellite-based system that monitors methane super-emitters and connects that data to rapid mitigation efforts. It is a component of the International Methane Emissions Observatory (IMEO) under the UN Environment Programme (UNEP).
- Launched In: The system was announced at COP27 and officially launched in January 2023.
- Aim: The primary goal is to identify and quantify major methane emission events, notify relevant governments and companies, and track the progress of their mitigation actions to slow global heating.

## How it Works?

## The system operates through a four-step lifecycle:

1. Detection and Attribution: MARS scans data from over 35 satellites to identify large methane plumes. High-resolution imagery then attributes these plumes to specific facilities and operators.
2. Notification and Engagement: The IMEO team directly alerts governments and companies about large emissions within their jurisdiction.
3. Mitigation Action: Stakeholders are responsible for responding to the leaks. MARS partners provide technical assistance as needed.
4. Tracking and Verification: IMEO continues to monitor the site to ensure the leak is addressed and publishes data publicly on the Eye on Methane platform.

## Key Features:

- Sector Expansion: Originally focused on oil and gas, the system now covers coal mines and waste facilities.
- AI Integration: MARS uses custom machine learning models to analyze thousands of satellite images in minutes.
- Transparency Policy: All detection data is made public 30 to 45 days after an event to ensure accountability while allowing time for industry response.
- Global Databases: It includes tools like the Coal Methane Database, covering over half of the world's metallurgical coal production.
- Quantification Metrics: Uses the Persistency-Weighted Flux (PWF) method to distinguish between short-term leaks and chronic, long-term emitters.

## Significance:

- Methane is over 80 times more powerful than CO2 over a 20-year period. Rapidly plugging leaks is the fastest brake on global warming.
- The IEA estimates that plugging methane leaks could return 200 billion cubic meters of gas to global markets annually.

# Managing Coexistence in Human-Animal Conflict Zones

## Context:

Severe human-wildlife conflict (HWC) has been reported across India, with Karnataka recording 53 human deaths in the 2025-26 fiscal year and Madhya Pradesh witnessing a crisis with 28 tiger deaths in the first five months of 2026.

## Managing Coexistence in Human-Animal Conflict Zones

## AboutManaging Coexistence in Human-Animal Conflict Zones:

### What is Human-Animal Conflict?

- Human-wildlife conflict refers to negative interactions between humans and wild animals that result in undesirable consequences for both. This includes the loss of human life, livestock predation, and crop damage on one side, and retaliatory killings, habitat destruction, and accidental wildlife deaths on the other.

### Key Data/Stats on Human-Animal Conflicts

- Human Toll: Approximately 500 people are killed annually in India due to encounters with elephants alone, primarily in Odisha, West Bengal, and Assam.
- Wildlife Mortality: India loses about 100 elephants annually to non-natural causes such as electrocution, train collisions, and poaching.
- Tiger Crisis: In 2025, India recorded 166 tiger deaths, the highest annual figure since 1973, often linked to territorial disputes and boundary conflicts.
- Economic Impact: Around 500,000 families are affected by crop-raiding annually, frequently pushing marginal farmers into deep debt.

### Reasons for Rise in Human-Animal Conflict

- Habitat Fragmentation: Large-scale developmental projects like highways and mines break continuous forests into small patches, forcing animals to cross human settlements.
- Example: The expansion of linear infrastructure in the Western Ghats has disrupted traditional elephant corridors.
- Agricultural Expansion: As farms push into forest edges, wildlife adapts by moving into agricultural landscapes for easier food access.
- Example: Leopards in Maharashtra have adapted to living in sugarcane fields near human habitations.
- Climate Variability: Rising temperatures and droughts reduce natural food and water availability, driving animals toward villages.
- Example: Scarcity of fodder in Jharkhand forces elephants to migrate into croplands during summer months.
- Ecological Imbalance: The spread of invasive species and wildfires reduces natural forage, making crop-raiding an adaptive survival response.
- Example: Invasive weeds in Bandipur have suppressed native grasses, forcing herbivores into nearby farmlands.
- Behavioral Shifts: Fear-based deterrence measures often make animals more aggressive or prone to accidents.
- Example: Anti-Depredation Squads in Assam have been linked to a 200-300% increase in accidental elephant deaths due to panic.

### Initiatives Taken So Far:

- Project Tiger & Elephant Division: The merger of these initiatives in 2023-24 aimed to streamline resources for protecting keystone species and their habitats.
- AI-Based Monitoring: Implementation of AI-enabled alert systems in regions like the Coimbatore Forest Division to prevent train-related elephant casualties.
- Regional Action Plans (RAP): The Ministry of Environment has initiated landscape-level planning to address HEC across the Southern and North-Eastern regions.
- Solar Fencing and Trenches: Installation of physical barriers like hanging solar fences and steel wire ropes in conflict-prone zones.

- Anti-Depredation Squads (ADS): Specialized local teams trained to mitigate conflicts and prevent retaliatory killings by communities.

### Challenges in Managing HWC Zones:

- Delayed Compensation: Compensation mechanisms often suffer from complex documentation and slow processing times.
- Example: Marginalized communities in remote Chhattisgarh struggle to access the funds needed to recover from crop losses.
- Technological Limitations: Early-warning systems often fail in areas with poor network connectivity or high maintenance requirements.
- Example: GPS-collaring of elephants is effective but difficult to scale across vast, fragmented landscapes.
- Unsystematic Responses: Lack of formal training can turn organized squads into aggressive mobs, escalating the danger for both parties.
- Example: In some instances in West Bengal, disorganized chasing has led to elephants charging back into crowds.
- Habitat Quality Degradation: Simply protecting an area is insufficient if invasive species continue to destroy the quality of the natural prey base.
- Example: The spread of Lantana camara in several tiger reserves has significantly reduced the carrying capacity for herbivores.
- Social Hostility: Repeated losses without adequate support erode community tolerance, leading to illegal traps or poisoning.
- Example: Poisoning incidents in Odisha are often a direct result of unaddressed livestock predation.

### Way Ahead:

- Landscape-Level Connectivity: Legally protect and restore wildlife corridors to ensure safe passage for wide-ranging mammals.
- Community-Based Management: Involve local communities as active partners in conservation, sharing tourism revenues and benefits.
- Predictable &Rapid Compensation: Digitise and simplify the claims process to ensure victims receive financial support within a week of the incident.
- Habitat Restoration: Focus on removing invasive species and Restoring degraded grasslands to improve natural fodder availability.
- Smart Infrastructure: Mandatory inclusion of eco-bridges and underpasses in all new linear infrastructure projects passing through forest areas.

### Conclusion:

Human-wildlife conflict is an inevitable predictable outcome of our current land-use patterns and resource consumption. The goal must shift from total elimination of conflict to scientific, socially just, and ecologically sustainable management. Through proactive habitat restoration and community participation, coexistence is not only a conservation necessity but a prerequisite for human safety.

## The Global Forest Goals Report 2026

### Context:

A new United Nations assessment titled Global Forest Goals Report 2026 warned that rising demand for fuelwood and charcoal has emerged as a major driver of global forest degradation, particularly in Africa and parts of Asia.

WOOD REMOVALS (MILLION M³)

| | INDUSTRIAL ROUNDWOOD | | WOODFUEL | | TOTAL | |
|---|---|---|---|---|---|---|
| REGION | 2015 | 2024 | 2015 | 2024 | 2015 | 2024 |
| Africa | 75 | 79 | 679 | 742 | 754 | 821 |
| Asia | 401 | 481 | 735 | 683 | 1 136 | 1 163 |
| Europe | 580 | 591 | 168 | 173 | 748 | 764 |
| North and Central America | 517 | 451 | 136 | 154 | 652 | 605 |
| Oceania | 64 | 64 | 10 | 10 | 74 | 74 |
| South America | 218 | 290 | 172 | 188 | 389 | 478 |
| **WORLD** | **1 853** | **1 956** | **1 900** | **1 949** | **3 754** | **3 905** |

Source: FAO (2026). FAOSTAT: Forestry production and trade

## The Global Forest Goals Report 2026

### About The Global Forest Goals Report 2026:

### What it is?

- The Global Forest Goals Report 2026 is a UN assessment report prepared by the UN Department of Economic and Social Affairs (UNDESA) and the UN Forum on Forests Secretariat.

### Key Findings in the Report:

- Global Forest Decline: Forest cover declined from 4.18 billion hectares (2015) to 4.14 billion hectares (2025), with a net annual loss of 4.12 million hectares.
- Primary Forest Loss: The world lost nearly 16 million hectares of primary forests between 2015–2025, with South America recording the largest decline.
- Fuelwood as a Major Driver: Growing demand for fuelwood and charcoal emerged as a major cause of forest degradation, especially in sub-Saharan Africa and parts of Asia.
- Agricultural Expansion: Conversion of forests into agricultural land remained the largest global driver of deforestation.
- Climate Pressures Intensifying: Droughts, heatwaves, wildfires, pests, and diseases are accelerating forest degradation worldwide.
- Restoration Gap: Although 91 countries pledged to restore 190 million hectares of forests, only 44 million hectares had been restored by 2025.
- Asia's Progress: Asia recorded the highest restoration performance, restoring over 31 million hectares (42.2% of pledged area).

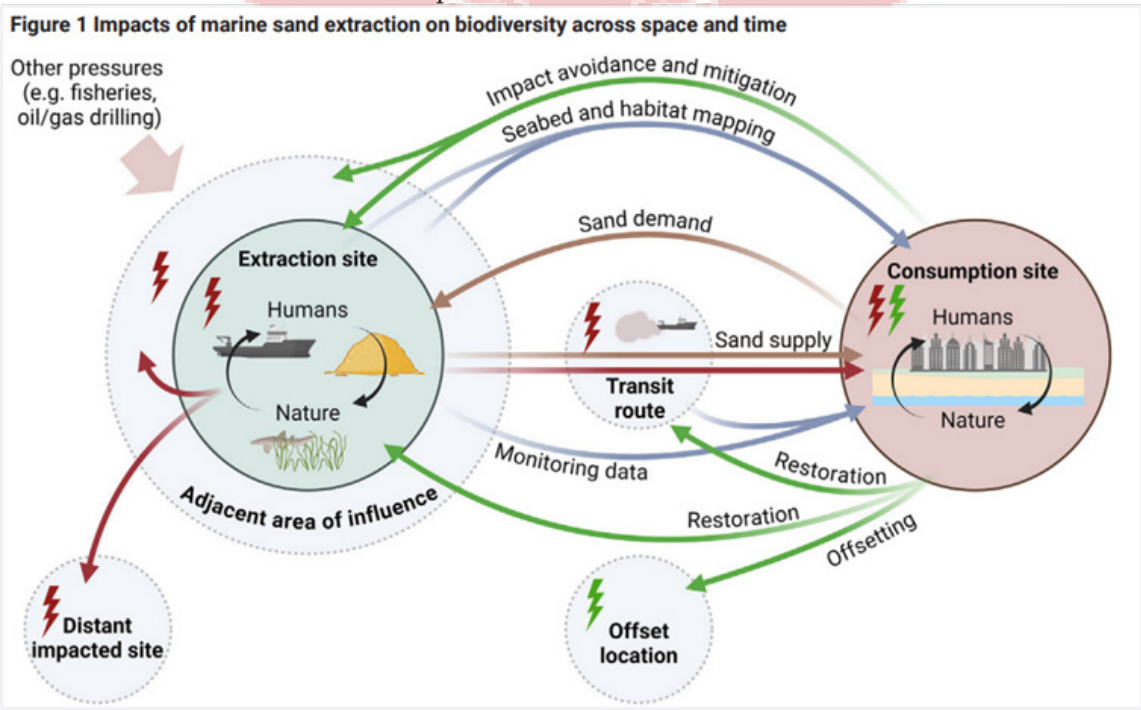
### Implications:

- Climate Change Risks: Forest degradation weakens carbon sinks, intensifying global warming and biodiversity loss.
- Energy Poverty Link: Dependence on fuelwood highlights the connection between poverty, lack of clean energy access, and environmental degradation.
- Threat to Biodiversity: Declining primary forests threaten endemic species, ecosystem services, and ecological balance.
- Need for Sustainable Supply Chains: The report stresses deforestation-free supply chains and stronger forest governance systems.

## Sand and Sustainability: An Essential Resource for Nature and Development Report

### Context:

The United Nations Environment Programme (UNEP) released a landmark report titled Sand and Sustainability: An Essential Resource for Nature and Development.



## Sand and Sustainability

### AboutSand and Sustainability: An Essential Resource for Nature and Development Report:

### What is Sand Mining?

- Sand mining is the extraction of sand from various sources, including riverbeds, beaches, and the seabed, primarily for use in construction, land reclamation, and manufacturing. The report emphasizes that sand is the most extracted solid material on Earth, second only to water in terms of global consumption.

### Key Data/Stats on Sand Mining:

- Surging Demand: Global consumption reached 50 billion tonnes annually in 2020, up from 9.6 billion tonnes in 1970, with an average annual growth rate of 3.2%.
- Urban Expansion: The average built-up area per person globally grew from 43 sq. meters in 1975 to 63 sq. meters in 2025.
- Economic Value: The global sand market was valued at $569.4 billion in 2024 and continues to grow alongside infrastructure booms.
- Livelihood Impact: Approximately 2.3 billion people depend on small-scale fisheries that are directly supported by healthy sandy ecosystems.

### Reasons for Rising Sand Mining:

- Rapid Urbanization: Over 45% of the world now lives in cities, driving the need for concrete, glass, and roads.
- Example: Massive land reclamation projects in Manila Bay and the Maldives require millions of cubic meters of dredged sand.
- Infrastructure Development: National Mega Projects and global connectivity hubs demand vast quantities of aggregates.
- Example: India's Pradhan Mantri Awas Yojana and highway expansions put constant pressure on local riverbed resources.
- Population Growth: A global population of 8.2 billion (2025) necessitates more housing, hospitals, and schools.
- Example: The need for built-up space in Developing Nations has doubled the share of urban dwellers since 1950.
- Climate Adaptation: Ironically, sand is being used to build sea walls and raise islands to protect against the very sea-level rise that mining exacerbates.
- Example: The Gulhifalhu project in the Maldives dredged 24.5 million cubic meters of sand to create climate-resilient living space.
- Technological Demand: Silicon-based industries (semiconductors, solar panels) rely on high-purity sand.
- Example: The expansion of Global Data Centers and solar farms is increasing the niche demand for specific industrial-grade sand.

### Impacts on the Ecology:

- Riverine Degradation: Excessive mining lowers riverbeds (bed degradation), leading to bank collapse and destabilized infrastructure.
- Example: Deepening river channels in the Chambal River has altered the natural flow, making downstream areas more prone to sudden floods.
- Groundwater Depletion: Sand acts as a sponge for rivers; removing it causes the water table to drop.
- Example: Nearby wells and hand pumps in Rural India frequently go dry after intensive sand extraction operations.
- Biodiversity Loss: Dredging destroys benthic (bottom-dwelling) habitats, killing fish, crustaceans, and microorganisms.
- Example: Half of all global dredging companies operate within Marine Protected Areas, causing irreversible damage to coral reefs.
- Saline Water Intrusion: Stripping coastal sand allow seawater to seep into freshwater aquifers.
- Example: In Coastal Philippines, local drinking water has become salty and unfit for consumption due to beach sand mining.

- Health Risks: Exposure to silica dust and stagnant water in mining pits creates severe health hazards.
- Example: Workers in fracking and mining face high risks of Silicosis, while unreclaimed pits become breeding grounds for Malaria.

### Initiatives Taken

### Global Level:

- UNEP 10-Point Action Plan: Focuses on setting global standards for sand extraction and promoting Circular Economy alternatives.
- Marine Sand Watch: A digital platform to monitor large-scale dredging vessels in the world's oceans using AIS data.

### India Level:

- Sustainable Sand Mining Management Guidelines (2016): Mandates the preparation of District Survey Reports (DSR) to assess replenishment before mining.
- Enforcement & Monitoring Guidelines (2020): Introduces remote sensing and IT-enabled tracking (like QR-coded transit passes) to curb illegal mining.
- National Green Tribunal (NGT) Bans: Active judicial intervention to halt mining in rivers without valid Environmental Clearances (EC).

### Recommendations and Way Ahead

- Strategic Resource Status: Governments must officially recognize sand as a Strategic Resource rather than an unlimited commodity.
- Promoting Manufactured Sand (M-Sand): Incentivize the use of crushed rock and recycled construction waste as a substitute for river sand.
- Strengthening Governance: Implement mandatory Cumulative Impact Assessments (CIA) for all large-scale dredging projects.
- No-Go Zones: Legally ban sand extraction in sensitive ecosystems, including Marine Protected Areas (MPAs) and critical river reaches.
- Transboundary Cooperation: Establish international protocols for managing sand resources in shared river basins and international waters.

### Conclusion:

The 2026 UNEP report is a siren call that the global economy's foundation is built on a finite resource we are depleting at an impossible rate. We must shift from extract-and-use to a circular approach where recycled material and M-Sand become the new standard. Failing to balance development with the preservation of alive sand will lead to a collapse of the very ecosystems that protect us from climate change.

## The Asiatic Lions

### Context:

Union Environment of India inaugurated the 'Lion' Species Spotlight Programme at Sasan Gir, Gujarat.

### The Asiatic Lions

### AboutThe Asiatic Lions:

### What it is?

- The Asiatic Lion (Panthera leo persica) is a majestic subspecies of lion and is the only wild population of lions found outside of Africa. It is a keystone species of the dry deciduous forests and open grassy scrublands of the Saurashtra region.

### Habitat & Distribution:

- Current Abode: Gir National Park and Wildlife Sanctuary in Gujarat is the only natural habitat of the Asiatic lion in the world.

- Range Expansion: Due to successful conservation, the population has expanded into the Greater Gir Landscape, covering several districts including Amreli, Bhavnagar, and Somnath.
- New Dispersal Site: The Barda Wildlife Sanctuary is being developed as a second home for the natural dispersal of lions to safeguard the species against localized threats like disease.

### Current Status:

- Population Growth: According to the 16th Lion Population Estimation (May 2025), the count has risen to 891 individuals, representing a 32% increase since 2020.

### Legal Protection:

- Wildlife (Protection) Act, 1972: Schedule-I (Highest protection).
- CITES: Appendix-I.
- IUCN Red List: Listed as Vulnerable
- Conservation Initiatives: 'Project Lion' (launched in 2020) focuses on landscape-based conservation, habitat restoration, and building ecological resilience.

### Key Characteristics of Asiatic Lions:

- Physical Size: Slightly smaller than African lions; males weigh 160–190 kg, and females weigh 110–120 kg.
- Belly Fold: The most distinctive feature is a longitudinal fold of skin running along the belly, which is rare in African lions.
- Mane: Males have a shorter, moderate mane compared to African lions, leaving their ears visible.
- Social Structure: They live in smaller prides; interestingly, male Asiatic lions are less social than their African counterparts and often associate with females only for mating or large kills.
- Coloration: Their fur ranges from ruddy-tawny to sandy or buff-grey, often with a silvery sheen.

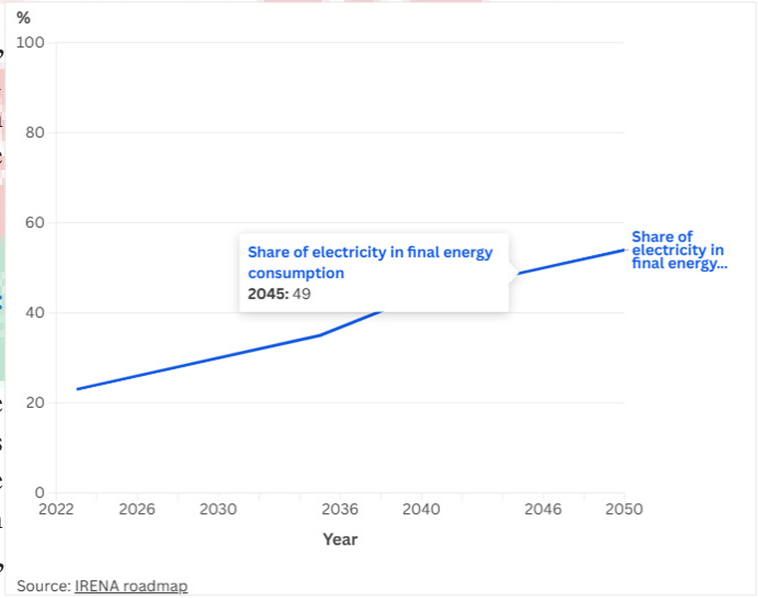
### Significance:

- The Asiatic lion is a symbol of India's courage and natural heritage, often referred to as the Pride of Gujarat.
- As apex predators, they regulate herbivore populations, maintaining the health of the dry deciduous forest ecosystem.

## Electrification emerges as COP31 priority

### Context:

At the Copenhagen Climate Ministers' Meeting, Türkiye's Environment Minister and COP31 President-Designate Murat Kurum called for an aggressive global acceleration in economy-wide electrification to aggressively replace fossil fuels.




### Electrification emerges as COP31 priority

### AboutElectrification emerges as COP31 priority:

### What is COP31?

- COP31 refers to the 31st Conference of the Parties to the United Nations Framework Convention on Climate Change (UNFCCC), scheduled to take place, in the Mediterranean resort city of Antalya, Türkiye.

### Importance of Electrification as a COP31 Priority:

- BreakingFossil Fuel Volatility: Deep structural electrification acts as a powerful shield against highly volatile fossil fuel markets and geopolitical supply shocks, such as the global oil and gas crisis linked to the active U.S.-Israel-Iran conflict.
- Targeting the 35 by 35 Metric: The International Renewable Energy Agency (IRENA) dictates that the

share of electricity in final energy consumption must scale up from its current global baseline of 20% to at least 35% by 2035 to keep the 1.5°C climate warming limit viable.

- Decarbonizing Hard-to-Abate Demands: Electrification shifts focus beyond clean power generation to target direct consumption end-users, forcing sectors like transport (via electric vehicles) and buildings (via electric heat pumps) to cease burning fossil fuels.
- Achieving Multi-Presidency Stability: Driven as a core pillar under the Troika approach (linking the presidencies of Brazil, Azerbaijan, and Türkiye), electrification ensures long-term predictability and policy continuity for global implementation across climate summits.
- Enhancing UniversalEnergy Justice: Expanding domestic electricity grids facilitates a global conversation aimed at deploying highly scalable, modern energy technologies (like electric cookers) to vulnerable populations, advancing clean cooking alongside economic competitiveness.

## Challenges to Global Electrification:

- Severe Infrastructure Funding Deficits: Transitioning energy systems requires doubling global annual investment into power grids from $0.5 trillion in 2025 to $1 trillion every single year until 2035.
- Absence of Universal Multilateral Consensus: Achieving a binding, collectively endorsed UN commitment on electrification across all 193 nations faces friction, threatening to downgrade the ambition into a voluntary coalition of the willing.
- Grid Capacity and Flexibility Constraints: Mass deployment of intermittent renewable energy requires massive capital deployment into electricity battery storage and demand flexibility to prevent wide-scale grid failure.
- Climate Finance Diversion: Developed countries are actively squeezing their environmental funding capabilities; for instance, the UK recently halved its Green Climate Fund contribution to divert capital toward national security.
- Socio-Economic Inequities: Developing and small-island nations cannot scale charging networks or electrical building conversions without targeted international aid or progressive taxes on fossil fuel company windfalls.

## Initiatives Taken So Far Around the World:

- The Australia-EU Electrification Strategic Alliance: The European Union and Australia have established a unified, high-level global initiative to coordinate supply chains and policy incentives aimed at accelerating energy system transitions.
- The IRENA 1.5°C Global Transformation Roadmap: The publication of an aggressive institutional framework setting precise, measurable benchmarks for electricity consumption (35% by 2035 and over 50% by 2050).
- European Strategic Material Reshoring: Active collaborations have been initiated to extract critical battery materials from Eastern European corridors (such as Ukraine) to anchor independent regional supply chains for energy storage production.

## Way Forward:

- Codify the 35% Target in the Antalya Decision: Push for formal, collective text endorsement during November's negotiations to give the electrification target the same legal weight as the COP28 renewables tripling goal.
- Establish Sovereign Wealth Transition Funds: Mandate developed nations to impose windfall profit taxes on fossil fuel conglomerates, redirecting those funds specifically into global grid modernization.
- Expand the Reach of Pacific Pre-COP Dialogues: Utilize the upcoming pre-COP meeting in Fiji and Tuvalu to integrate indigenous knowledge and coastal resilience demands directly into the clean-cooking electrification framework.
- Enforce Cross-Border Tech-Transfer Mandates: Streamline international patent waivers for electric heat pumps and long-duration battery storage to make future clean systems immediately accessible to low-income economies.
- SynchronizeRegional Cross-Border Grids: Build and link high-voltage direct current (HVDC) continental grids to allow seamless, borderless sharing of localized renewable energy surpluses.

### Conclusion:

The elevation of economy-wide electrification to a core COP31 priority marks a realistic shift from abstract emission targets to concrete energy system transformations. Navigating the severe $1 trillion annual grid funding gap amidst tense geopolitical conflicts will test the unique Turkish-Australian dual-leadership model. However, successfully executing this structural pivot remains the single most effective blueprint to achieve long-term global energy security and arrest climate change.

## Government releases first national report on the Nagoya Protocol

### Context:

The Union Ministry of Environment, Forest and Climate Change (MoEFCC) published insights from India's First National Report on the Nagoya Protocol on Access and Benefit Sharing (ABS).

### Government releases first national report on the Nagoya Protocol

### AboutGovernment releases first national report on the Nagoya Protocol:

### What It Is?

- The Nagoya Protocol is a landmark supplementary international treaty to the Convention on Biological Diversity (CBD) that was adopted globally in 1992. Officially titled the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization, it creates a transparent, legally binding framework to ensure that physical biological materials or Digital Sequence Information (DSI) are accessed and used fairly.

### Key Features of the Nagoya Protocol:

- The international treaty governs global biological resource exchanges through three core functional pillars:
- Prior Informed Consent (PIC): Researchers or companies must obtain approval from the concerned national authority before accessing biological resources.
- Mutually Agreed Terms (MAT): A formal agreement defines resource usage terms, responsibilities, and benefit-sharing arrangements between users and provider countries.
- Fair Benefit-Sharing: Profits from biological resources—through royalties, fees, research, or technology transfer—must benefit local communities and conservers.
- ABS Clearing-House Mechanism: A global online platform tracks permits and issues compliance certificates to prevent illegal use and biopiracy.
- Protection ofTraditional Knowledge: Safeguards indigenous knowledge, cultural practices, and community rights linked to biological resources.

### Key Findings of India's First National Report:

- Massive Scale of Legal Approvals: Between November 1, 2017, and December 31, 2025, India granted a total of 12,830 approvals under the ABS framework. Of these, the central National Biodiversity Authority (NBA) issued 5,913 approvals, while State Biodiversity Boards (SBBs) and UT Biodiversity Councils issued 6,917.
- Dominating Global Compliance Metrics: India has emerged as a clear global leader in biodiversity traceability, publishing 3,556 Internationally Recognized Certificates of Compliance (IRCCs) via the global clearing-house. This single-handedly accounts for 60.24% of all certificates issued worldwide.
- Substantial Revenue Realization and Disbursal: The implementation of the ABS mechanism enabled the NBA to realize a total of 216.31 crore. Out of this collection, 139.69 crore has been successfully disbursed down to benefit claimers, local communities, and field conservers to support habitat restoration.
- Robust Three-Tier Institutional Grid: The report highlights India's vast community-based governance network. This includes the NBA at the apex, SBBs in all states, and more than 2,76,653 local Biodiversity Management Committees (BMCs) set up by elected local bodies to manage regional resources.

- Vast Structural Training Footprint: To back its decentralized system, India conducted 3,724 dedicated workshops and capacity-building initiatives, training a total of 2,56,393 local functionaries, scientists, and community leaders during the reporting window.

## Successful Domestic Case Studies Highlighted:

- The Dengue Treatment Resource (Madhya Pradesh): Sun Pharmaceutical Industries Ltd. paid an upfront fee of 4,50,000 to access the medicinal plant Cocculus hirsutus from the forests of Chhindwara. In 2020, 95% of this money ( 4,27,500) was transferred directly to the M.P. Minor Forest Produce Federation for conservation and local welfare work.
- TheBioethanol Agricultural Project (Uttar Pradesh): Indian Oil Corporation Limited paid an upfront benefit-sharing fee of 18,60,000 to access local agricultural residues in Aligarh for bioethanol research. From this, 17,67,000 was disbursed straight to the Uttar Pradesh State Biodiversity Board.

## Key Challenges in Implementation:

- Tracing Biological Supply Chains: Biological resources often pass through local traders and brokers, making it difficult to identify the original source community.
- Example: Medicinal herbs bought from wholesale markets may not be traceable back to the village that conserved them.
- Complex Documentation Delays: Differences between domestic ABS agreements and international formats create administrative and verification bottlenecks.
- Example: Officials often manually extract data from lengthy contracts to generate global compliance certificates.
- Low Awareness andLanguage Barriers: Technical legal terms of the Nagoya Protocol are difficult for many rural communities to understand.
- Example: Lack of regional-language ABS documents limits village councils' participation in negotiations.
- No Unified Public Repository: India lacks a centralized digital platform containing all ABS agreements and benefit-sharing records.
- Example: Researchers and state agencies struggle to access historical ABS data for policy or monitoring purposes.

## Way Ahead:

- End-to-EndDigital ABS Portal: Develop a fully automated online platform to manage applications, approvals, and certificate issuance efficiently.
- Standardized Valuation Systems: Create scientific methods to determine fair pricing of biological resources and prevent underpayment to local communities.
- Regional Language Translation: Translate ABS rules, SOPs, and agreement templates into local languages to improve grassroots participation.
- Digital Tracking for Traders: Mandate brokers and traders to maintain digital transaction records to preserve traceability of biological resources.
- Clear DSI Guidelines: Establish strong rules for Digital Sequence Information (DSI) to ensure fair benefit-sharing from online genetic data usage.

## Conclusion:

India's First National Report on the Nagoya Protocol showcases the country's global leadership in turning biodiversity protection into a practical model for local economic empowerment. By funneling crores in benefit-sharing revenues directly back to local communities through its massive network of over 2.76 lakh local management committees, India has proven that conservation and commercial innovation can grow together.

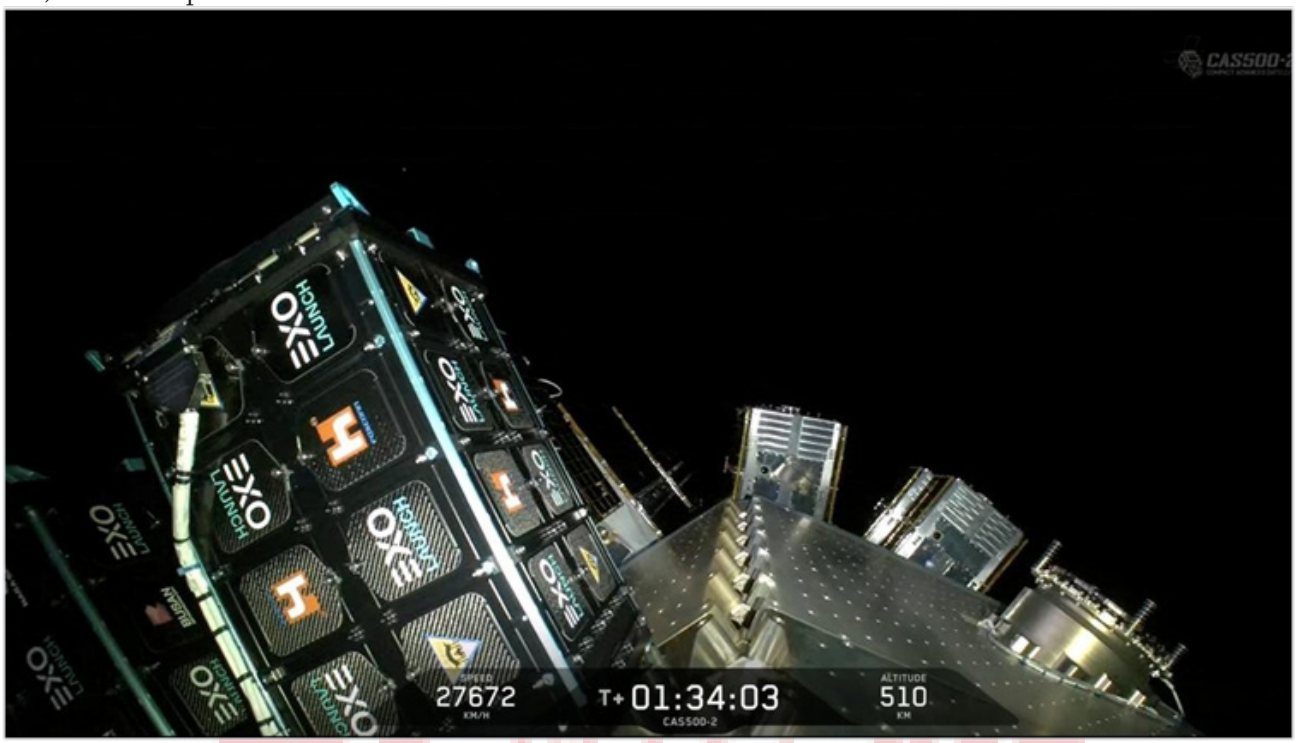
Chapter-
5

# SCIENCE & TECHNOLOGY

## Mission Drishti by GalaxEye

### Context:

Bengaluru-based space startup GalaxEye successfully launched 'Mission Drishti', the world's first OptoSAR satellite, aboard a SpaceX Falcon 9 rocket.




### Mission Drishti by GalaxEye

### AboutMission Drishti by GalaxEye:

### What it is?

- Mission Drishti is a cutting-edge, dual-use Earth observation satellite. It is uniquely recognized as the world's first OptoSAR satellite, meaning it integrates two different types of sensors—optical and radar—onto a single operational platform to provide high-clarity, analysis-ready data.

### Organization:

- Developer: GalaxEye (a Bengaluru-based space-tech startup).
- Support: Facilitated by IN-SPACe (Indian National Space Promotion and Authorization Center).

### Launch Details:

- Launch Vehicle: SpaceX Falcon 9.
- Launch Site: Vandenberg, California, USA.
- Orbit: Sun-synchronous Low Earth Orbit (LEO) at an altitude of approximately 500 km.
- Aim: The mission aims to overcome the limitations of traditional Earth observation by providing all-weather, day-and-night imaging. By combining optical and radar data, it seeks to provide decision-grade clarity for global stakeholders in sectors ranging from national security to environmental monitoring.

### Key Features:

- OptoSAR Technology: The first satellite globally to combine Electro-Optical (EO) sensors with Synthetic Aperture Radar (SAR). SAR can see through clouds and darkness, while EO provides intuitive visual detail.

- Mass & Size: At 190 kg, it is India's largest privately developed Earth observation satellite.
- Resolution: Offers a spatial resolution of 1.2 – 3.6 meters, the highest among Indian private players.
- Spectral Bands: Operates across multiple bands including X-Band (SAR), PAN, RGB, NIR, Coastal Blue, and Red Edge.
- Revisit Frequency: The satellite is designed to revisit the same spot every 4 days, ensuring high-frequency monitoring.
- Fused Data Output: It delivers inherently aligned, fused imagery that is analysis-ready, reducing the need for complex post-processing by the user.

### Significance:

- It addresses the cloud-cover limitation of standard optical satellites, making it invaluable for tropical regions like India.
- As a dual-use satellite, it supports critical applications in defense, maritime monitoring, disaster management, and infrastructure planning.

## Cell Broadcast System (CBS)

### Context:

Minister of Communications launched the indigenous Cell Broadcast System (CBS) to revolutionize India's disaster management.


### Cell Broadcast System (CBS)

### AboutCell Broadcast System (CBS):

### What it is?

- The Cell Broadcast System is a cutting-edge mobile communication technology designed to send un-queued, emergency messages to all mobile devices within a specific geographical area Unlike traditional SMS, it is a one-to-many service that functions independently of network traffic congestion.

### Developed By: Centre for Development of Telematics (C-DOT)

### Aim:

- The primary objective is to shift India's disaster management from a reactive to a proactive
- It aims to ensure that life-saving information reaches millions of citizens in near real-time, specifically during flash floods, gas leaks, earthquakes, or other public safety emergencies.

### How it Works?

- CBS sends messages from a central platform to designated cell towers (Base Transceiver Stations). These towers then broadcast the message to every mobile handset within their signal radius.
- No Queuing: Unlike SMS, which is sent individually and can get stuck in network traffic, CBS messages reach all users at the same time.
- Network Independent: It works even if the recipient's phone number is unknown to the sender, as long as the phone is connected to the targeted cell tower.

### Key Features:

- Precise Geo-Targeting: Alerts can be disseminated at the level of individual cell towers, clusters, or entire states and regions.
- Multilingual Alerts: Supports various regional languages to ensure the message is understood by the local population.
- Priority Notifications: Alerts appear as a pop-up on the screen, bypassing other apps, and are accompanied by a distinct loud siren tone.

- Read-Aloud Capability: On supported handsets, the system can read the message text aloud to assist those with visual impairments.
- Scalability: While it can target a single neighborhood, it can also scale to cover the entire nation instantly.
- Indigenous Technology: A globally benchmarked solution designed and manufactured entirely within India.

### Significance

- Provides critical lead time for protective action, significantly reducing potential casualties during sudden disasters.
- Strengthens the national security framework by providing a direct, official channel for government-to-citizen communication.

## Hantavirus Outbreak

### Context:


Three passengers have died and three others have fallen ill following a suspected hantavirus outbreak on a Netherlands-based cruise ship in the Atlantic Ocean.

### Hantavirus Outbreak

### AboutHantavirus Outbreak:

### What it is?

- Hantavirus belongs to a family of viruses that cause severe and often fatal respiratory or renal (kidney) diseases in humans. It is primarily known for causing two major clinical syndromes: Hantavirus Pulmonary Syndrome (HPS) and Hemorrhagic Fever with Renal Syndrome (HFRS).

### Origin:

- The name is derived from the Hantan River area in South Korea, where the virus was first identified by researchers in the 1970s. While found worldwide, specific strains are localized to different hemispheres.

### Vector & Spread:

- Primary Vector: Rodents, such as deer mice, cotton rats, and rice rats.

### Mode of Transmission:

- Airborne (Aerosolization): Most common. People breathe in the virus when dried rodent droppings, urine, or saliva are stirred up (e.g., during sweeping).
- Direct Contact: Touching contaminated materials and then touching the mouth or nose.
- Bites: Rare transmission via a rodent bite.
- Human-to-Human: Extremely rare; only documented in specific South American strains (e.g., Andes virus).

### Symptoms:

### The incubation period is typically 1 to 8 weeks. Symptoms manifest in two phases:

- Early Phase: Fever, fatigue, and muscle aches (especially in thighs, hips, and back). Some experience headaches, dizziness, and abdominal issues like vomiting or diarrhea.
- Late Phase (HPS): Occurs 4 to 10 days later. Includes coughing, severe shortness of breath, and tightness in the chest as the lungs fill with fluid.
- Renal Symptoms (HFRS): Includes blurred vision, flushing of the face, low blood pressure, and acute kidney failure.

### Key Features:

- High Fatality Rate: HPS has a mortality rate of approximately 38% to 40%, making it much deadlier than the common flu.
- Geographic Variation: HPS is more common in the Americas (Western Hemisphere), while HFRS is more prevalent in Europe and Asia (Eastern Hemisphere).
- Stability: The virus can remain infectious in the environment for several days depending on temperature and sunlight.

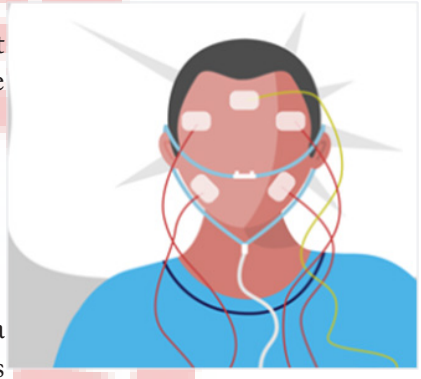
### Treatment:

- No Specific Cure: There are no specific antivirals or vaccines approved for hantavirus.
- Supportive Care: Treatment focuses on intensive care management.
- Respiratory Support: Use of ventilators or oxygen therapy for HPS.
- Fluid Management: Careful monitoring of hydration to prevent fluid overload in the lungs or kidneys.
- Early Intervention: Survival rates improve significantly if the patient is diagnosed and moved to an Intensive Care Unit (ICU) early.

## The Apnoea Test

### Context:

The Supreme Court of India has agreed to examine a medical plea alleging that the apnoea test, used as a primary assessment for brain death in Kerala, may be medically inconclusive and potentially dangerous.



### The Apnoea Test

### About The Apnoea Test:

### What it is?

- The apnoea test is a mandatory clinical procedure used to determine if a patient is brain-dead (death by neurologic criteria). It specifically checks if the brainstem—the part of the brain that controls automatic functions like breathing—is still functioning.

### Aim:

- The primary goal is to see if the body can trigger a breath on its own when carbon dioxide (CO2) levels in the blood rise to a specific high point.
- If the patient does not attempt to breathe even when CO2 is very high, it indicates that the brainstem has permanently lost its function.

### Key Features:

- The Challenge: Doctors temporarily stop the ventilator (the breathing machine) to let CO2 build up in the patient's body. High CO2 acts as a natural alarm that tells a healthy brain to take a breath.
- Pre-Oxygenation: Before starting, the patient is given 100% oxygen for 10 minutes to ensure they have enough reserve oxygen while they aren't being actively ventilated.
- The Threshold: Doctors look for a specific CO2 level (usually ≥ 60 mmHg) and an acidic blood pH (below 7.30). At this stage, a living brain must trigger a gasp or chest movement.
- Visual Check: Medical staff watch the chest and abdomen closely for any sign of a spontaneous breath. If no movement is seen once the CO2 target is hit, the test is positive for brain death.
- Safety Stops: The test is immediately stopped if the patient's blood pressure drops too low or if oxygen levels in the blood fall below 85%.

### Implications:

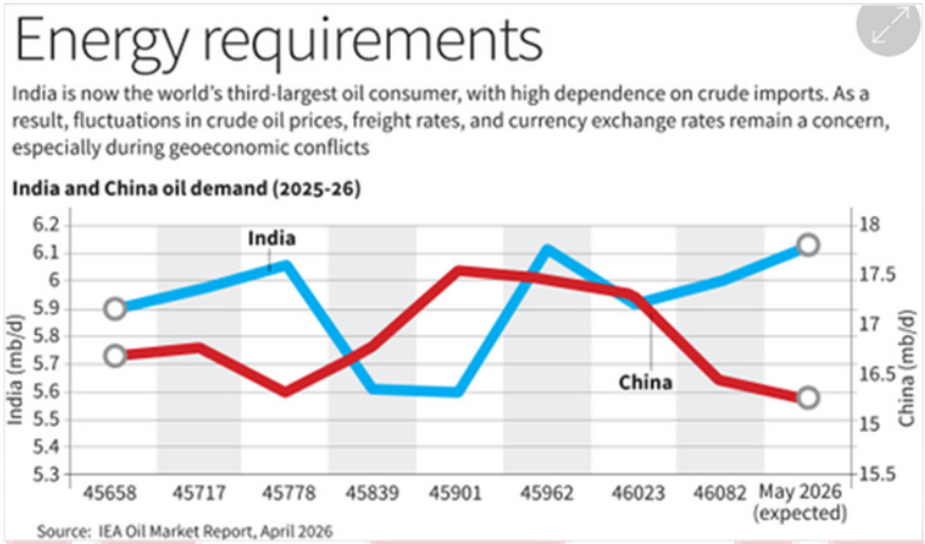
- Organ Donation Prerequisite: A positive apnoea test confirms absence of brainstem function, legally enabling organ retrieval.
- Conclusive Evidence: It is treated as a critical test to establish irreversible coma and certify brain death.
- Potential Harm: Ventilator withdrawal increases $CO_2$ and acidosis, which may further damage already compromised brain tissue.

# India's Energy Security Amid Conflicts

## Context:

The ongoing conflict in West Asia has highlighted India's extreme vulnerability to geopolitical shocks, with Brent crude prices hitting $109.03 per barrel.

- This volatility is projected to slow India's economic growth from 7.4% in FY26 to 6.5% in FY27 while nearly doubling inflation due to energy supply chain disruptions.




## India's Energy Security Amid Conflicts

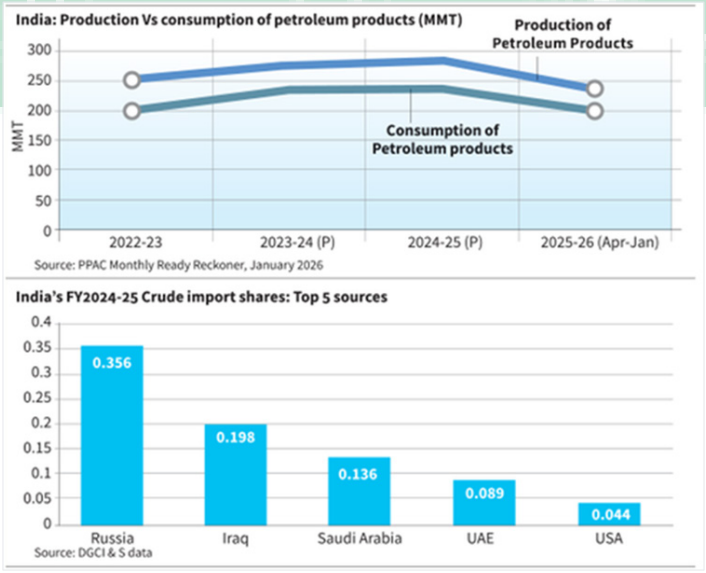
## AboutIndia's Energy Security Amid Conflicts:

## What is Energy Security?

- Energy security is no longer defined simply by purchasing fuel at the lowest price; it now encompasses resilience, diversification, and theprotection of macroeconomic stability. It involves a country's ability to maintain a steady supply of energy resources at an affordable price while being capable of withstanding sudden geopolitical or economic shocks.

## Key Data & Statistics on India's Energy Security:

- Import Dependency: India currently imports over 85% of its crude oil needs, with dependency reaching 89.4% in FY2024-25.
- Chokepoint Vulnerability: Approximately 45% of India's crude imports transit through the Strait of Hormuz, a critical global chokepoint.
- Rising Consumption: India is the world's third-largest oil consumer, with demand projected to reach 5.99 million barrels per day (mb/d) by 2026.
- Supply Shift: Russia has become India's largest supplier, accounting for 36% of imports in FY2024-25, up from just 2% prior to 2022.



## Data & Statistics on India's Energy Security

### Current Status of Indian Energy Security:

- High Tactical Flexibility: India has successfully diversified its import basket to include Russia, Iraq, Saudi Arabia, the UAE, and the U.S..
- Example: India shifted from 2% Russian oil imports to 36% in just two years to leverage discounted prices during the Ukraine conflict.
- Persistent Structural Risks: Domestic crude production remains low, with only 28.7 million metric tons produced in FY2024-25 against soaring demand.
- Example: This low output forces continued reliance on international markets, making the economy sensitive to currency and freight rate fluctuations.
- New Transition Vulnerabilities: The shift to green energy (EVs and solar) is creating a new dependency on critical minerals like lithium and cobalt.
- Example: India currently processes less than 5% of its 2035 battery-grade mineral requirements, relying on China for processed rare earths.

### Conflicts DisruptingGlobal Energy Security

- Russia-Ukraine War: This conflict exposed the dangers of pipeline-based energy dependence, particularly for gas supplies.
- Example: Europe was forced to slash its reliance on Russian gas from 45% to 12% by 2025, prioritizing security over cost.
- West Asia Conflict: Demonstrated the fragility of sea-based transportation and the strategic power of maritime chokepoints.
- Example: Tensions in the Strait of Hormuz, which carries 25% of the world's oil, rapidly transmit price shocks across global markets.
- Maritime Threats in 2026: Heightened tensions in Gulf sea lanes have necessitated military intervention to protect commercial energy assets.
- Example: Indian LPG carriers required naval escorts under Operation Sankalp to secure 97,000 metric tonnes of cargo.
- Fragmented Global Markets: Major powers are adapting by aggressive stockpiling and locking in long-term contracts.
- Example: Japan has stockpiled 470 million barrels of oil, enough to cover 254 days of national consumption.

### Implications of Energy Security Due to Conflicts:

- Macroeconomic Instability: High oil prices directly fuel domestic inflation and slow industrial growth.
- Example: India's inflation is projected to rise from 2.3% to 4.4% in FY27 due to current energy disruptions.
- Strategic Chokepoint Risks: Reliance on specific geographic routes can paralyze supply chains during regional escalations.
- Example: With 45% of imports passing through the Strait of Hormuz, any closure there would be real and immediate for India.
- Shift in Bargaining Power: Spare capacity in Gulf nations allows exporters to regain pricing power as global demand fluctuates.
- Example: Middle Eastern demand is falling, but their role as swing producers remains vital for high-import nations like India.
- Resource Weaponization: Conflict-driven shifts in mineral processing networks could hinder the global green transition.
- Example: China's control over 91% of rare-earth production poses a long-term risk to India's solar and battery goals.

### Way Ahead:

- Increase Strategic Reserves: Expand larger national oil and gas stockpiles to provide a buffer against short-term supply cuts.
- Enhance Maritime Resilience: Strengthen naval protection for sea lanes and chokepoints to ensure uninterrupted transit.

- Reduce Oil Intensity: Accelerate the transition in the transport sector to lower the overall demand for imported crude.
- SecureCritical Mineral Chains: Develop domestic processing capabilities for lithium and rare earths to avoid new dependencies.
- Leverage Optionality: Maintain a diverse import basket to switch suppliers quickly based on geopolitical developments.

### Conclusion:

While India has shown agility in navigating recent energy shocks through tactical supplier shifts, long-term security remains elusive due to 89% import dependency. The path forward requires moving beyond optionality to structural resilience through strategic reserves and domestic mineral processing. Ultimately, India must lower the economic cost of future crises by reducing its overall oil intensity and securing maritime trade routes.

## India–EU Joint Initiative to Strengthen EV Battery Recycling

### Context:

India and the European Union launched a €15.2 million joint initiative under the Trade and Technology Council (TTC) to boost EV battery recycling.


### India–EU Joint Initiative to Strengthen EV Battery Recycling

### AboutIndia–EU Joint Initiative to Strengthen EV Battery Recycling:

### What it is?

- A collaborative research and innovation programme under the India–EU Trade and Technology Council (TTC) to develop advanced EV battery recycling technologies.

### Aim:

- To secure critical raw materials like lithium, cobalt, and graphite through efficient recycling systems.
- To promote circular economy practices and strengthen India–EU green technology cooperation.

### Key Features:

- Funding Support: Joint funding of €15.2 million (~ 169 crore) via EU's Horizon Europe and India's Ministry of Heavy Industries.
- Advanced Technologies: Focus on high-efficiency material recovery and pilot-scale demonstration of innovative recycling processes.
- Pilot Line in India: Establishment of a joint India–EU pilot facility for real-world testing and industrial deployment.
- Inclusive Ecosystem: Emphasis on safe, digitalized collection systems and integration of informal sector logistics.

### Significance:

- Resource Security: Reduces dependence on imports of critical minerals essential for EVs and clean energy.

- Green Transition: Strengthens sustainable supply chains and supports climate commitments through circular economy practices.

## Germanium-Free Drone Imaging Tech

### Context:

In a significant boost to defense self-reliance, the Hyderabad-based startup EonSpacelabs has unveiled India's first germanium-free thermal imaging payload for drones.

### Germanium-Free Drone Imaging Tech

### AboutGermanium-Free Drone Imaging Tech:

### What it is?

- It is an indigenous electro-optical and infrared (EO/IR) imaging system that replaces traditional germanium-based lenses with a domestic alternative. Traditionally, military-grade thermal cameras rely on germanium to transmit heat radiation; however, this new system utilizes chalcogenide glass to achieve similar performance without the rare mineral.
- Developed By: The technology was developed by EonSpacelabs, a defense-tech startup based in Hyderabad, India.

### Aim:

- The primary goal is to achieve strategic autonomy by reducing India's dependence on China, which dominates the global germanium supply.
- By developing a germanium-free alternative, India aims to secure its defense supply chain against geopolitical tensions and export restrictions.

### How it Works?

- Material Shift: The system replaces germanium lenses with chalcogenide glass, a specialized material that allows infrared radiation to pass through effectively.
- Infrared Transmission: Unlike standard glass that blocks infrared light, chalcogenide glass functions in the long-wave infrared (LWIR) spectrum, allowing the camera to detect heat signatures.
- Edge AI Processing: The system uses onboard Edge AI capabilities to process imaging data locally on the drone, enabling real-time detection and autonomous tracking of targets.

### Key Features:

- Detection Range: Capable of detecting humans from up to 2 km and vehicles from up to 8 km away.
- Optical zoom: Equipped with 40x optical zoom for high-precision surveillance.
- Weight & Portability: The payload is lightweight (ranging from 800g to 2.2 kg), making it compatible with compact drones, aerostats, and eVTOL platforms.
- Environmental Resilience: Engineered to operate in extreme temperatures ranging from -20°C to +55°C, suitable for both Himalayan and desert terrains.
- Integrated Tracking: Features gimbal integration and Edge AI-enabled tracking for stable, high-altitude ISR missions.

### Significance:

- Protects India's defense sector from Chinese export controls on germanium, which have recently caused sharp price increases and supply disruptions.
- Directly aligns with India's push for defense self-reliance, ensuring that critical surveillance components are manufactured domestically.

# AI-Enabled Monsoon Forecasting Platforms

## Context:


Union Minister launched two path-breaking AI-enabled weather forecasting products developed by the Ministry of Earth Sciences.

- These systems are designed to provide hyper-local, impact-based monsoon forecasts to support 16 states and over 3,000 sub-districts.

## AI-Enabled Monsoon Forecasting Platforms

## AboutAI-Enabled Monsoon Forecasting Platforms:

## What it is?

- These are advanced, data-driven forecasting systems that leverage Artificial Intelligence (AI) and Machine Learning (ML) to provide granular, probabilistic weather information.
- They shift India's meteorological services from conventional broad-scale predictions to site-specific, impact-based decision support forecasting.

## Organizations Involved:

## The systems were developed through a high-level scientific collaboration between:

- India Meteorological Department (IMD)
- Indian Institute of Tropical Meteorology (IITM), Pune
- National Centre for Medium Range Weather Forecasting (NCMRWF)
- Aim: To deliver high-precision, hyper-local weather information up to 10 days in advance (and extended range up to 4 weeks), enabling farmers and administrators to make informed, real-time decisions to minimize climate-related risks.

## The Two New Systems & Their Features:

### 1. AI-enabled Forecast of Monsoon Advance:

- Granularity: Provides probabilistic forecasts at the block-level (sub-district level) for the first time in India.
- Coverage: Currently covers 3,196 blocks across 15 states and 1 Union Territory, primarily in the rainfed monsoon core zone.
- Predictive Window: Offers weekly probabilistic updates on monsoon progression up to 4 weeks in advance.
- Mechanism: Blends nearly a century of IMD's meteorological data with global weather models and AI analysis to track the monsoon itinerary from its onset in Kerala.
- Agricultural Integration: Feeds directly into the Ministry of Agriculture's advisory pipeline to help farmers time sowing and irrigation precisely.

### 2. High Spatial Resolution Rainfall Forecast (UP Pilot)

- System Name: Derived from the Mithuna weather model.
- Resolution: Provides an unprecedented 1-km spatial resolution rainfall forecast (downscaled from the standard 12.5-km resolution).
- Predictive Window: Valid for 10 days in advance.
- Data Integration: Utilizes a dense network of Automatic Weather Stations (AWS), Doppler Weather Radars, and satellite datasets specifically optimized for Uttar Pradesh as a pilot service.
- Targeted Use: Specifically designed for precision in urban planning, water resource management, and disaster mitigation in densely populated regions.

## Significance:

- Transitioning from district-level to block-level allows farmers to manage crops based on the specific rainfall expected in their village, reducing losses due to erratic monsoon patterns.
- As an essential part of India's everyday governance, these AI systems can significantly reduce the fiscal drain caused by extreme weather events and crop failures.

# Under-the-Skin Immunotherapy for Lung Cancer

## Context:

Swiss pharmaceutical company Roche launched India's first under-the-skin (subcutaneous) immunotherapy drug, Tecentriq SC (atezolizumab), for lung cancer treatment.

## Under-the-Skin Immunotherapy for Lung Cancer

## AboutUnder-the-Skin Immunotherapy for Lung Cancer:

### What it is?

- Under-the-skin immunotherapy refers to a cancer treatment method where immunotherapy drugs are administered through a subcutaneous injection rather than traditional intravenous (IV) infusion.
- Roche's Tecentriq SC (atezolizumab) is India's first approved subcutaneous immunotherapy for:
- Adjuvant Non-Small Cell Lung Cancer (NSCLC)
- Metastatic NSCLC
- Aim: To provide faster, more patient-friendly, and less invasive cancer treatment while maintaining the same safety and effectiveness as conventional IV immunotherapy.

### Key Features:

- Rapid Administration: Treatment can be delivered in nearly 7 minutes compared to long IV infusion sessions lasting several hours.
- Improved Patient Comfort: Reduces repeated hospital stay, treatment fatigue, and physical discomfort associated with intravenous chemotherapy or immunotherapy.
- Efficient Healthcare Delivery: One hospital unit can treat multiple patients in the time previously required for one IV treatment, improving healthcare resource utilization.

### Significance:

- Patient-Centric Cancer Care: Helps reduce mental, physical, and logistical burdens for cancer patients and caregivers, especially those traveling long distances for treatment.
- StrengtheningOncology Infrastructure: Faster administration reduces pressure on tertiary hospitals and supports efficient cancer care delivery amid rising lung cancer cases in India.

# Polyendocrine Metabolic Ovarian Syndrome (PMOS)

## Context:

Medical experts, including those from AIIMS Delhi, highlighted a landmark global shift in medical terminology where Polycystic Ovary Syndrome (PCOS) is being renamed to Polyendocrine Metabolic Ovarian Syndrome (PMOS).

## Polyendocrine Metabolic Ovarian Syndrome

## AboutPolyendocrine Metabolic Ovarian Syndrome (PMOS):

### What was PCOS?

- Polycystic Ovary Syndrome (PCOS) was traditionally understood as a reproductive disorder characterized by irregular periods, excess androgens (masculine hormones), and the appearance of cysts on the ovaries.
- However, the term was medically inaccurate as the cysts are actually arrested follicles (immature eggs that failed to mature and release) rather than true pathological cysts.

### What is PMOS?

- PMOS is the updated medical term that identifies the condition as a multisystemic disorder. It acknowledges that the syndrome involves the endocrine (hormonal), metabolic (energy processing), reproductive, and psychological systems of the body.

### Causes for PMOS:

### While the exact cause is complex, it is generally attributed to a combination of:

- Insulin Resistance: The body's cells don't respond normally to insulin, causing blood sugar levels to rise and the body to produce more insulin, which in turn triggers excess androgen production.
- Hormonal Imbalance: Elevated levels of androgens and Luteinizing Hormone (LH) disrupt the normal ovulation cycle.
- Genetics: A strong hereditary link, particularly significant in the Indian population.
- Low-grade Inflammation: Research suggests women with this condition have a type of low-grade inflammation that stimulates polycystic ovaries to produce androgens.

### Symptoms and Impacts:

| Category | Manifestations & Impacts |
|---|---|
| Reproductive | Irregular or absent periods, infertility, pregnancy complications, and an increased risk of endometrial cancer. |
| Metabolic | Weight gain (obesity), Type 2 diabetes, hypertension (high blood pressure), and fatty liver disease (MASLD). |
| Dermatological | Severe acne, thinning of scalp hair (alopecia), and hirsutism (excessive facial or body hair). |
| Psychological | Increased rates of anxiety, depression, eating disorders, and poor quality of life due to physical symptoms. |

### Difference Between PCOS and PMOS:

| Basis | PCOS (Polycystic Ovary Syndrome) | PMOS (Polyendocrine Metabolic Ovary Syndrome) |
|---|---|---|
| Focus | Mainly focused on ovaries and reproductive symptoms | Focuses on endocrine and metabolic dysfunction across the body |
| Terminology | Cystic term may be misleading | Metabolic and Polyendocrine better reflect root causes |
| Disease Nature | Viewed largely as a gynecological disorder | Recognized as a systemic metabolic condition |

| | | |
|---|---|---|
| Clinical Approach | Treatment often centered on fertility and menstruation | Includes early screening for diabetes, obesity, and heart disease |
| Patient Clarity | Confusing for patients without ovarian cysts | Gives clearer understanding of hormonal and metabolic involvement |

## The Ebola Outbreak

### Context:

The World Health Organization (WHO) officially declared the ongoing Ebola outbreak in the Democratic Republic of Congo (DRC) and Uganda a Public Health Emergency of International Concern (PHEIC).

### The Ebola Outbreak

### About The Ebola Outbreak:

### What it is?

- The 2026 outbreak is an epidemic of Bundibugyo Virus Disease (BVD), a severe, often fatal hemorrhagic illness caused by the Bundibugyo virus (Orthoebolavirus bundibugyoense).
- It marks the 17th Ebola outbreak in the DRC but stands out as an extraordinary threat because it is driven by a strain for which the international community possesses zero stockpiled pharmaceutical defenses.

### Origin:

- Natural Reservoir: Fruit bats of the Pteropodidae family are the presumed natural hosts of the virus.
- Animal Spillover: The virus transitions to humans through direct contact with the blood, organs, or bodily fluids of infected wild animals found sick or dead in the rainforest (such as non-human primates, porcupines, and fruit bats).

### Region Affected:

- Democratic Republic of Congo (DRC): Deeply concentrated in the northeastern Ituri Province (including Bunia, Rwampara, and Mongbwalu health zones), with cases also tracked to the capital, Kinshasa.
- Uganda: Active cross-border transmission has brought laboratory-confirmed cases directly into the capital city of Kampala.

### Symptoms:

- Incubation Period: Spans anywhere from 2 to 21 days after exposure.
- Early Manifestations: Abrupt onset of high fever, extreme fatigue, muscle pain, intense headache, and severe sore throat.
- Advanced Stages: Followed rapidly by vomiting, profuse diarrhea, abdominal pain, a distinct body rash, and impaired kidney and liver functions.
- Neurological &Hemorrhagic Impact: Can attack the central nervous system causing severe confusion, irritability, and aggression. While internal and external bleeding (hemorrhaging) is a defining feature, it usually occurs later in the disease cycle.

### Transmission:

- Direct Human-to-Human Contact: Spreads via direct contact (through broken skin or mucous membranes) with the blood, secretions, or bodily fluids (feces, vomit) of an infected person.
- Asymptomatic Barrier: Individuals are not infectious during the incubation period; they can only transmit the virus after visible symptoms develop.
- Nosocomial (Healthcare) Amplification: The outbreak poses an extreme risk to medical personnel. At least four healthcare workers died within days in Ituri, highlighting severe gaps in localized Infection Prevention and Control (IPC).
- Fomites & Burials: Shaking hands or handling contaminated objects (bedding, clothing) spreads the

pathogen. Traditional burial ceremonies involving direct physical contact with the deceased remain a major vector for super-spreader events.

## The SMILE Mission

### Context:

The European Space Agency (ESA) and the Chinese Academy of Sciences (CAS) successfully launched their first-ever fully joint space mission, the Solar wind Magnetosphere Ionosphere Link Explorer (SMILE).

### The SMILE Mission

### AboutThe SMILE Mission:

### What it is?

- SMILE is a pioneering, multi-wavelength space exploration mission designed to observe the global interaction between Earth's protective magnetic shield (the magnetosphere) and the highly charged plasma streamed by the Sun (the solar wind). It marks a unique scientific bridge, merging European rocket tech and imaging sensors with Chinese engineering.
- Organizations Involved: The European Space Agency (ESA) and the Chinese Academy of Sciences (CAS).

### Aim:

- The fundamental objective of SMILE is to capture the first-everglobal X-ray and ultraviolet images of Earth's magnetic shield in active battle against solar winds.
- It looks to map how our magnetosphere instinctively deforms, reacts, and self-corrects against severe solar flares and Coronal Mass Ejections (CMEs), unlocking the mysteries of the solar-terrestrial physics that make life on Earth possible.

### Key Features:

- Deep-Space Positioning: The 2,600 kg satellite is set to enter a highly elliptical orbit, positioning itself approximately 1.21 lakh kilometers above Earth's North Pole. This vantage point allows it to observe the outer edge of the magnetosphere continuously for long intervals.
- The Four Core Payloads: The mission carries 70 kg of highly specialized scientific instruments split between remote sensing and in situ (on-site) measurement devices:
- Soft X-ray Imager (SXI): Developed by ESA; captures the faint X-ray emissions generated when solar wind ions collide with Earth's neutral atmosphere, visualizing the boundaries of the magnetosphere.
- Ultraviolet Aurora Imager (UVI): Developed by China; focuses on the polar regions to image the entire expanse of the northern auroral oval at high spatial resolution.
- Light Ion Analyser (LIA): Developed by China; measures the velocity, density, and temperature of the surrounding solar wind ions passing directly over the satellite.
- Magnetometer (MAG): Developed by China; quantifies the strength and direction of the local magnetic field to track systemic magnetic anomalies in real time.
- Mission Shelf-Life: Formally scheduled for a baseline operation window of three years.

### Significance:

- SMILE marks a major leap in space weather forecasting by providing a complete, large-scale view of solar wind interactions instead of localized observations.
- It strengthens protection for critical infrastructure such as power grids, satellites, GPS systems, aviation networks, and astronauts by improving early warnings of solar storms.

# Sweden joins India's Shukrayaan Mission

## Context:

During Prime Minister official visit to Sweden, the Indian Space Research Organisation (ISRO) and the Swedish National Space Agency signed a MoU formalizing Sweden's participation in India's upcoming Venus Orbiter Mission.

## Sweden joins India's Shukrayaan Mission

## AboutSweden joins India's Shukrayaan Mission:

## What is Shukrayaan?

- Officially named the Venus Orbiter Mission (VOM), Shukrayaan (meaning Venus Craft) is India's first dedicated planetary exploration mission targeting Venus. Approved by the Union Cabinet with a budget of 1,236 crore, the spacecraft will carry 19 scientific payloads.
- Target Launch Date: March 29, 2028, aboard ISRO's heavy-lift LVM-3 rocket.
- Mission Profile: A 112-day journey culminating in Venus orbit insertion on July 19, 2028, where it will utilize innovative aerobraking techniques to achieve its final scientific orbit.

## Aim:

- The overarching mission aims to conduct a comprehensive global survey of Venus—a planet that evolved into a scorching, toxic greenhouse world despite sharing a similar size and origin to Earth.
- Shukrayaan will map the planet's volcanic surface, look for active hotspots, sound its subsurface layers, monitor cloud dynamics, and investigate whether Venus once possessed liquid water.

## Key Features of the Collaboration:

- Integrated Plasma Package: Sweden's contribution is a highly specialized instrument named the Venusian Neutrals Analyser (VNA).
- The VISWAS Component: The VNA will be integrated into a larger, comprehensive sensory payload named VISWAS (Venus Ionospheric and Solar Wind particle AnalySer).
- International Synergy: Sweden joins other top-tier global space entities—such as Russia (providing the VIRAL instrument) and Germany (collaborating on the RAVI experiment)—positioning ISRO as a trusted leader in deep-space exploration.

## Specific Role of Sweden:

- The Swedish-built VNA instrument will explicitly observe Energetic Neutral Atoms (ENAs) and plasma boundaries around Venus.
- It will study how the high-energy charged particles of solar winds interact with the Venusian ionosphere.
- The vital data gathered by Sweden's instrument will help scientists decipher atmospheric escape processes—the mechanisms by which solar winds strip away atmospheric particles over time—yielding crucial insights into planetary climate evolution.

# The Environmental Control and Life Support System (ECLSS)

## Context:

ISRO's advanced development of the Environmental Control and Life Support System (ECLSS) for the Gaganyaan mission has been highlighted, detailing how the system artificially replicates Earth's sea-level conditions to sustain Indian astronauts in a 400 km low Earth orbit.

## The Environmental Control and Life Support System (ECLSS)

## AboutThe Environmental Control and Life Support System (ECLSS):

## What It Is?

- The ECLSS is a complex, mission-critical network of thermal, chemical, and mechanical engineering systems designed to replicate Earth's biosphere inside a spacecraft.

- For short-term missions like Gaganyaan, it operates as an open-loop configuration where all necessary human supplies are carried from Earth and metabolic waste is safely stabilized and stored for post-mission disposal.
- Developed By: Indian Space Research Organisation (ISRO).

### Aim:

- The central aim of the ECLSS is to ensure the physiological safety, cognitive health, and comfort of the crew while protecting delicate onboard electronics.
- It accomplishes this by continuously regulating the cabin's air composition, atmospheric pressure, temperature, moisture levels, and waste disposal in a harsh microgravity vacuum.

### Key Features:

- Air Revitalization System (ARS): Supplies oxygen continuously from onboard tanks while lithium hydroxide canisters remove carbon dioxide and activated charcoal filters eliminate harmful gases and odors.
- Forced Atmospheric Circulation: Internal cabin fans maintain constant airflow in microgravity, preventing dangerous buildup of carbon dioxide or oxygen pockets around astronauts.
- Pressure Control System: Maintains Earth-like cabin pressure using sensors and control valves to balance oxygen and nitrogen safely for the crew.
- Temperature andHumidity Regulation: Controls cabin temperature and humidity while removing body heat and excess moisture to prevent equipment damage and microbial growth.
- Microgravity Water & Waste Management: Uses pressurized systems for drinking water and suction-based mechanisms to safely collect and chemically treat human waste in zero gravity.
- Spherical Fire Suppression: Employs special smoke detectors and water-mist extinguishers to control spherical fires and remove toxic smoke particles in microgravity.

### Significance:

- The ECLSS is among the most critical systems of the Indian Space Research Organisation's Gaganyaan mission, enabling safe human survival in space.
- It strengthens India's self-reliance in human spaceflight technologies such as air recycling, thermal control, and microgravity life-support engineering.

## AI Agents

### Context:

At its annual Google I/O 2026 developer conference, Google introduced major AI advancements—including the Gemini 3.5 Flash model, the Gemini Omni physical world model, and its new Gemini Spark personal AI agent.

# AI Agents

## AboutAI Agents:

### What It Is?

- An AI agent is an advanced software system that leverages underlying Large Language Models (LLMs) as its central cognitive processor to pursue specific goals and complete complex, multi-step workflows autonomously.
- Unlike traditional static software or basic chatbots, AI agents do not just answer queries; they show independent reasoning, planning, memory management, and proactivity, allowing them to make decisions and execute digital transactions on behalf of users.

### How It Works?

### An AI agent operates by combining an underlying AI model with a specialized architectural framework:

- The Brain (LLM Core): Parses natural language, processes multimodal inputs (text, voice, video, code), and drives decision-making.
- Persona: Establishes a highly defined role, communication style, and behavioral constraints tailored to the task at hand.
- Memory Systems: Outfitted with structural memory layers, including short-term (for maintaining immediate conversation context), long-term (for historical logs), episodic (for past interactions), and consensus (for data shared across multiple agents).
- Tools Integration: Connects to external APIs, databases, software applications, and web search engines, teaching the agent how to actively read, edit, or control external digital systems.

### Key Features:

- Reasoning & Observation: Constantly observes its environment through computer vision or data feeds, using logic to draw inferences and adapt to changing contexts.
- Autonomous Planning: Deconstructs a broad user objective into sequential steps, anticipates potential obstacles, and self-corrects mid-workflow.
- Collaborating & Self-Refining: Coordinates fluidly with humans or other digital agents while continuously evaluating its own performance to fix software bugs and optimize future outputs.

### Types of AI Agents:

| Categorization | Agent Type | Core Operational Mechanics |
|---|---|---|
| By User Interaction | Surface Agents | User-triggered, conversational tools built to directly assist humans with immediate queries or tasks (e.g., customer support, medical Q&A). |
| | Background Agents | Event-driven workflow engines that operate behind the scenes with minimal to no human interaction to automate routine data pipelines. |
| By Structural Count | Single-Agent Systems | Standalone units running on a single foundation model, ideal for highly contained, well-defined digital operations. |
| | Multi-Agent Systems | Networks of specialized agents, potentially running on different base models, that collaborate or compete to solve highly complex, enterprise-level problems. |

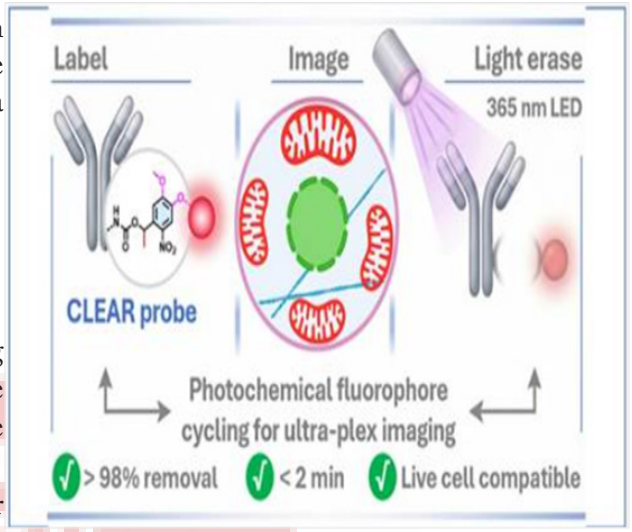
### Applications:

- Personal Digital Management: AI assistants integrate with apps like Gmail, Docs, and Drive to manage schedules, organize files, and perform multi-app tasks.
- AdvancedCyber Defense: AI systems can scan large codebases, detect software vulnerabilities, and generate security patches automatically.
- No-Code Engineering: Multi-agent AI platforms can write, test, and deploy software systems directly from text instructions.
- Physics-Driven Media Simulation: Advanced AI models can understand motion and physics to edit videos, modify characters, and create interactive virtual environments.

# CLEAR Technology

## Context:

Researchers in India have developed a groundbreaking protein imaging platform called CLEAR, which allows multiple proteins to be mapped within a single biological sample using a single fluorescent marker.




## CLEAR Technology

## AboutCLEAR Technology:

### What It Is?

- A novel, highly multiplexed spatial protein imaging platform that allows a vast number of proteins to be visualized and mapped within the same cells or tissue sections.
- Full Form: Cleavable Light-Erased Antibody Reporter (CLEAR).
- Developed By: The Jawaharlal Nehru Centre for Advanced Scientific Research (JNCASR), an autonomous institute under the Ministry of Science and Technology.

### Aim:

- The primary aim of CLEAR technology is to overcome the structural limits of conventional imaging, which struggle to map multiple proteins simultaneously within a single specimen while preserving their spatial organization.
- It aims to provide high-resolution, high-plex protein maps to decode complex cellular behavior in diseases like cancer and neurological disorders.

### How It Works?

- Traditional multiplex imaging is limited because different proteins require distinct colored fluorescent tags, and microscopes can only distinguish a few colors at once. CLEAR bypasses this using a cyclic erase and rewrite process:

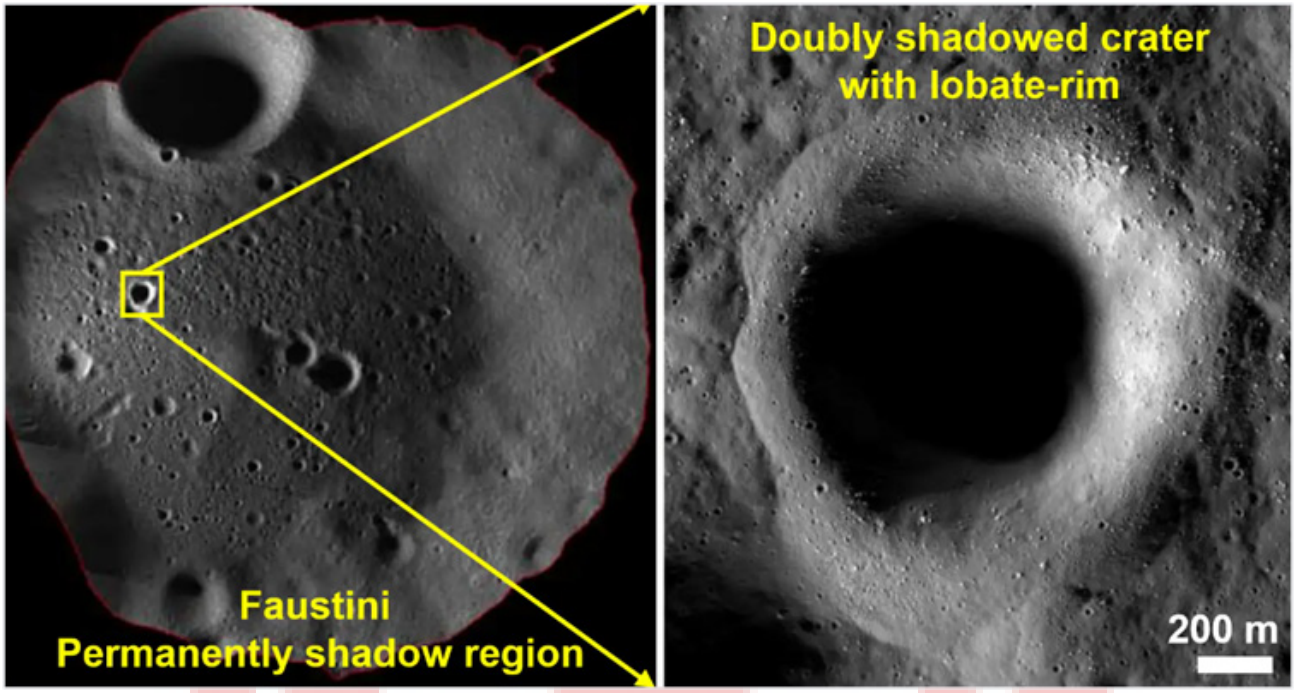
1. Targeted Labeling: Scientists introduce specialized CLEAR probes (antibodies attached to a fluorescent tag via a light-sensitive chemical link) to label a specific set of proteins in a tissue sample.
2. First Image Capture: The sample is imaged under a microscope within a standard spectral window.
3. Photolytic Erasing: Instead of using harsh chemicals that destroy the tissue, the sample is exposed to a gentle pulse of 365 nm LED light. This light neatly cleaves the chemical bond, releasing and washing away the fluorescent signal—effectively turning the sample into a blank chalkboard.
4. Cyclic Rewriting: A new set of proteins is then introduced and imaged using the exact same spectral window. This cycle can be repeated multiple times to generate an incredibly detailed, layered molecular map of the specimen.

### Key Features:

- High-Plex Multiplexing: Enables the visualization of a massive library of distinct proteins within a single sample, far exceeding the limits of traditional color-coded microscopic methods.
- Live-Cell Compatibility: Unlike older multiplexing methods that rely on harsh, stripping chemicals or heat to remove fluorescence, CLEAR's gentle light-erasing pulse preserves delicate biological samples, making it fully compatible with live cells.
- High Spatial Resolution: Captures the precise spatial organization and physical positioning of proteins within tissue microenvironments, which is vital for understanding cell-to-cell communication.
- Speed and Cost Efficiency: By utilizing a single fluorescent channel repeatedly, it eliminates the need for complex, multi-laser imaging setups and drastically speeds up workflow timelines.

# The Chandrayaan-2 Dual Frequency Synthetic Aperture Radar (DFSAR)

## Context:




Scientists from the Physical Research Laboratory (PRL), Ahmedabad, used observations from Chandrayaan-2's Dual Frequency Synthetic Aperture Radar (DFSAR) to discover evidence of subsurface water-ice in the Moon's South Polar Region.

## The Chandrayaan-2

## About The Chandrayaan-2 Dual Frequency Synthetic Aperture Radar (DFSAR):

### What It Is?

- The Dual Frequency Synthetic Aperture Radar (DFSAR) is a state-of-the-art microwave imaging instrument operating onboard the active Chandrayaan-2 lunar orbiter. It holds the technological distinction of being the first fully polarimetric Synthetic Aperture Radar (SAR) ever deployed to study the lunar surface.

### Aim:

- The primary objective of DFSAR is to map and investigate the lunar topography, surface roughness, and subsurface material composition.
- It specifically aims to explore permanently shadowed regions (PSRs) and doubly shadowed craters at the poles to identify, quantify, and map volatiles like water-ice, which are crucial for long-term human survival and fuel production on the Moon.

### How It Works?

- Unlike optical cameras that need visible light, DFSAR maps the Moon by emitting its own microwave signals and listening to the echoes that bounce back:
- Signal Penetration: The radar transmits structured L-band and S-band microwave radio frequencies. These long wavelengths pass directly through top-layer surface dust to interact with hidden, subsurface materials.
- Volumetric Reflection: When the waves hit pocketed subsurface ice, they bounce around internally (volumetric scattering). This changes the wave properties before reflecting back to the orbiter.
- Polarimetric Profiling: The instrument measures two critical properties of the returned echo: the Circular Polarization Ratio (CPR) and the Degree of Polarization (DOP). DOP measures how much of the reflected signal retains its original polarization state after the collision.
- Signature Separation: Rocky terrains can easily mimic ice by scattering signals wildly. DFSAR isolates genuine water-ice by filtering for regions where a high CPR (CPR > 1) matches an ultra-low DOP (DOP < 0.13), providing a highly refined blueprint for mapping subterranean volatiles.

### Key Features:

- Dual-Frequency Versatility: Operates across both L-band and S-band frequencies, allowing for varying depths of subsurface penetration and high-resolution imaging capability.
- FullyPolarimetric Matrix: Collects complete polarimetric radar returns simultaneously, giving scientists a clear look at the physical geometry and orientation of subsurface targets.
- Non-Line-of-Sight Imaging: Functions entirely independently of solar illumination, enabling it to look inside dark craters that have been frozen in darkness for billions of years.
- High-Contrast Resolution Mapping: Capable of generating detailed, high-contrast radar maps to distinguish fine differences between fine lunar soil (regolith), jagged boulders, and embedded ice blocks.

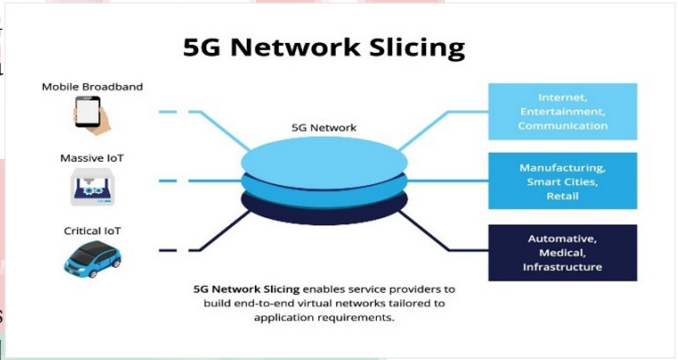
### Recent Discoveries Made:

- Subsurface Polar Ice Substream: Successfully confirmed the potential presence of subsurface water-ice beneath the floors of four distinct doubly shadowed craters in the lunar South Polar Region.
- The Faustini Crater Discovery: Identified strong, concrete evidence of subsurface ice inside a small, 1.1 km diameter doubly shadowed crater (F2) located within the larger Faustini crater matrix (87.39OS, 82.31 OE)
- Lobate-Rim Morphological Confirmation: Discovered a distinct, flow-like lobate-rim morphology around the 1.1 km crater. This structural feature suggests that the original meteor impact cracked through a solid sheet of subsurface ice, melting and shifting the rim into a unique lobed pattern during the impact.
- Extreme Cold Preservation Proof: Mapped these ice signatures to interior crater pockets where temperatures remain pinned around an ultra-cold 25K (~ -248°C), proving that these doubly shadowed zones act as ideal deep-freezers for preserving volatile resources over long geological timescales.

## 5G Network Slicing

### Context:

Bharti Airtel's launch of India's first consumer-focused 5G network slicing plan, called 'Priority Postpaid,' has ignited a fresh regulatory debate over net neutrality.




### 5G Network Slicing

### About5G Network Slicing:

### What It Is?

- 5G Network Slicing is an architecture that allows a telecom operator to divide a single physical standalone 5G network into multiple, isolated virtual networks (or slices).
- Each slice acts as an independent end-to-end network customized to meet the specific quality-of-service (QoS) requirements of a particular application, service, or user group.

### How It Works?

- Instead of all users competing for the same pool of raw bandwidth (the standard practice in broadband networks), network slicing uses Software-Defined Networking (SDN) and Network Functions Virtualization (NFV) to manipulate cloud-native infrastructure.
- When a network experiences high traffic (e.g., inside a crowded stadium), the operator's software dynamically allocates dedicated lanes of bandwidth, latency, and processing power to specific slices.
- A user assigned to a premium slice bypasses the shared congestion lane, retaining consistent connectivity while standard users face speed drops.

## Key Features:

- Virtual Isolation: Even though multiple slices share the same physical cell towers and fiber backhaul, they are digitally isolated. A surge in traffic on one slice does not crash or degrade the performance of another.
- Dynamic Resource Allocation: Slices are not rigid; software can dynamically scale bandwidth and adjust latencies up or down in real-time based on immediate environmental demands.
- Application & Content Agnosticism: The virtual slice treats all data packets identically. It does not look at what app or website a subscriber is using (e.g., Netflix vs. YouTube); rather, it ensures the entire connection remains stable.
- Customizable Parameters: Operators can configure individual slices for entirely different use cases:
- Slice A: Optimized for ultra-low latency (essential for automated factories or surgical robotics).
- Slice B: Optimized for massive machine data (IoT sensors).
- Slice C: Optimized for consistent, high-throughput consumer broadband (Airtel's Priority Postpaid).

## Significance:

- Network slicing allows telecom operators to offer dedicated, congestion-free 5G services to premium users, helping increase postpaid subscriptions and boost revenue.
- While telecom firms argue slices treat all content equally, critics fear premium users may receive better network quality during congestion, potentially creating a digital divide between high-paying and regular users.

Chapter-
6

# ECONOMY

## India Ranks 3rd Globally in Installed Renewable Energy Capacity

### Context:

India has emerged as the world's 3rd largest country in installed renewable energy capacity, reflecting rapid growth in solar and wind power generation.

- A recent Morgan Stanley report highlighted that India's renewable energy transition is accelerating, though dependence on imported upstream solar components remains a challenge.

### India Ranks 3rd Globally in Installed Renewable Energy Capacity

### AboutIndia Ranks 3rd Globally in Installed Renewable Energy Capacity:

### What it is?

- India has emerged as the third-largest country globally in terms of installed renewable energy capacity, driven mainly by rapid growth in solar and wind energy infrastructure.

### Key Features:

- Renewable Capacity Growth: India's non-fossil fuel energy capacity crossed 262.7 GW, accounting for over 50% of total installed power capacity.
- Solar Manufacturing Expansion: Domestic solar module manufacturing capacity increased from 38 GW (2024) to 74 GW (2025), while solar cell capacity rose from 9 GW to 25 GW.
- Dependence on Imports: Despite progress, India still imports a large share of upstream components like wafers and polysilicon, with 60–80% sourced from China.
- Energy Transition Focus: Solar and wind energy constitute the majority of new renewable energy additions in India.

### Significance:

- Energy Security: Expanding renewable capacity reduces dependence on imported fossil fuels and enhances strategic energy resilience.
- Climate Commitments: Supports India's Net Zero targets and commitments under the Paris Climate Agreement by accelerating clean energy adoption.

## Capital Flight

### Context:

The Indian rupee plunged to a record low of 95.80 against the US dollar, driven by a combination of high crude oil prices (averaging $106 per barrel) and significant capital outflows.

## Capital Flight

### AboutCapital Flight:

### What it is?

- Capital Flight refers to the rapid and large-scale outflow of financial assets and capital from a country. This typically occurs when investors—both domestic and foreign—lose confidence in the local economy due to geopolitical instability, unfavorable policy changes, or the prospect of better returns (higher interest rates) in safer haven economies like the US or UK.

### How it Works (The Mechanics)?

- Risk Perception: Investors perceive heightened risk (e.g., the 2026 Persian Gulf hostilities) and sell local assets (stocks, bonds).
- Currency Exchange: To move their money out, they must sell the local currency (Rupee) and buy a global reserve currency (Dollar).
- Depreciation: The massive selling pressure on the Rupee causes its value to drop sharply relative to the Dollar.
- The Taper Tantrum Effect: Even the expectation of higher interest rates abroad can trigger flight before the rates actually move, as investors price in future gains elsewhere.

### Impacts on the Economy:

- Rupee Depreciation: The currency crossing the 95 per dollar mark increases the cost of all imports, leading to imported inflation.
- Forex Reserve Depletion: The RBI has had to spend nearly $38 billion to stabilize the currency, bringing reserves down to $690.69 billion.
- Market Volatility: Foreign Institutional Investors (FIIs) became net sellers, offloading over 1,959 crore in a single day in May 2026, causing a slump in domestic equity markets.
- Cost of Living: Higher fuel (LPG/Petrol) and fertilizer costs are straining household budgets and increasing the government's subsidy burden.

### Measures to Counter Capital Flight:

- Monetary Intervention: The RBI utilizes Spot Market sales and Currency Swaps to provide immediate dollar liquidity and anchor the Rupee.
- Fiscal Nudges (Gold Duties): The government hiked import duties on gold and silver from 6% to 15% to discourage non-essential dollar outflows.
- Moral Suasion: PM Modi's appeal for Domestic-First tourism and reduced gold consumption serves as a behavioral nudge to conserve foreign exchange.
- Regulatory Tightening: Capping open positions for banks and restricting activity in the Non-Deliverable Forward (NDF) market to curtail speculative attacks on the Rupee.

## Productivity, Not Just Growth: India's Path to Viksit Bharat 2047

### Context:

The Economic Survey 2025-26 and recent economic assessments have shifted the policy focus from mere aggregate GDP expansion to structural productivity growth as India targets its Viksit Bharat 2047 vision.

### Productivity, Not Just Growth

### AboutProductivity, Not Just Growth: India's Path to Viksit Bharat 2047:

### What is Productivity?

- In macroeconomics, productivity—specifically Total Factor Productivity (TFP)—measures the efficiency with which capital and labor inputs are combined to generate economic output. Unlike simple growth driven by adding more factories or workers (factor accumulation), TFP increases reflect technological innovation, better institutional frameworks, streamlined regulations, and more efficient resource allocation.

## Key Data/Stats on Productivity & Growth:

- Growth Driven More by Inputs than Productivity: India's output per worker grew by 4.71% annually (1990–2023), but Total Factor Productivity (TFP) contributed only 1.19 percentage points, showing growth is still heavily dependent on labour and capital accumulation.
- Strong Macroeconomic Momentum: India's GDP growth rose from 6.5% in FY25 to an estimated 7.4% in FY26, while fiscal deficit sharply narrowed from 9.2% (FY21) to 4.8% (FY25), reflecting macroeconomic stability.
- Manufacturing Faces a "Missing Middle" Problem: Nearly 99% of manufacturing units are micro-enterprises, while mid-sized firms account for less than 1%, limiting scale, exports, and productivity gains.
- Persistent Agricultural Labour Trap: Around 55.8% of the rural workforce remains stuck in low-productivity agriculture, whereas manufacturing absorbs only 22.6%, slowing structural transformation.
- Zombie Firms Distort Credit Allocation: Less than 10% of firms classified as "zombie firms" consume nearly 20–25% of corporate debt, crowding out productive investment and innovation-driven enterprises.

## Importance of Productivity in the Path toViksit Bharat 2047:

- Bridging the Disconnect Between Growth and Jobs: Sustained TFP growth ensures that industrial expansion generates high-quality, formal employment instead of jobless growth.
- Example: Transitioning structural labor away from low-productivity agriculture into automated manufacturing prevents academic inflation and professional frustration.
- Unlocking Stuck Capital (EliminatingZombie Firms): Enabling the exit of economically unviable firms frees up trapped financial assets for dynamic, innovative industries.
- Example: Facilitating a clean exit for distressed, bank-dependent zombie firms prevents them from crowding out credit for highly productive startups.
- Deepening Manufacturing Depth: Boosting factory-floor efficiency turns passive assembly lines into value-adding industrial ecosystems.
- Example: Moving beyond superficial smartphone assembly to high-end component manufacturing allows India to deeply integrate into Global Value Chains (GVCs).
- Sustaining Long-TermNon-Inflationary Growth: High TFP allows an economy to scale up production without triggering wage-price spirals or imported inflation.
- Example: Lowering domestic logistics and transactional costs keeps core manufacturing competitive even when global energy inputs fluctuate.
- Enhancing Human Capital and Eliminating Skill Mismatches: Investing in practical worker output directly counters structural labor imbalances.
- Example: Re-skilling the youth in key industrial states like Uttar Pradesh or Bihar shifts workers from public safety nets to high-yield factory floors.

## Initiatives Taken So Far to Raise Productivity:

- Insolvency and Bankruptcy Code (IBC): Created an institutional exit mechanism to dissolve unviable companies and quickly reallocate distressed corporate assets to productive buyers.
- Production Linked Incentive (PLI) Schemes: Deployed across 14 key sectors to scale up domestic manufacturing depth, incentivize cutting-edge technology, and build global champions.
- National Logistics Policy (NLP) & PM GatiShakti: Integrated infrastructure planning to lower domestic logistics costs from double digits toward a globally competitive benchmark.
- Revamped Distribution Sector Scheme (RDSS): Introduced performance-linked financial assistance for state discoms, successfully cutting aggregate technical and commercial losses.

## Challenges to Raising Productivity:

- Persistent Factor Accumulation Dependence: India's investment cycle remains heavily reliant on capital deepening rather than long-term productivity improvements.
- Example: Massive public infrastructure spending boosts short-term GDP figures but leaves core TFP growth stagnant.
- Strict Institutional andFinancial Frictions: Legacy regulatory, land, and labor market rigidities prevent fluid resource reallocation.

- Example: Outdated labor laws often disincentivize small manufacturing units from scaling up, trapping them in low-yield micro-structures.
- The Bank-Financed "Zombification" Trap: The nature of credit delivery often artificially prolongs corporate distress instead of resolving it.
- Example: Bank-financed firms are statistically more prone to prolonged distress and relapse, absorbing credit that equity markets would reallocate.
- Pervasive IndustrialSkill Mismatches: The education system produces a large volume of graduates without the specific technical skills required by high-tech industries.
- Example: Surveys indicate that less than half of modern engineering graduates possess the practical coding or analytical skills required by modern firms.
- Regional Industrial Disparities: Industrial assets and productivity gains are heavily concentrated in a few coastal and advanced states.
- Example: While states like Tamil Nadu and Karnataka lead in industrial job creation, highly populous regions remain dependent on agricultural remittances.

### Way Ahead:

- Streamlining Regulatory Exit Frameworks: Strengthen the IBC and voluntary liquidation protocols to speed up the dissolution of zombie firms, ensuring capital isn't locked in non-performing assets.
- Developing DeepEquity Financing Ecosystems: Incentivize equity-based funding models over standard bank debt for mid-sized enterprises, reducing the long-term risk of corporate zombification.
- Overhauling Vocational Human Capital: Align higher education curricula with the dynamic demands of the global market, prioritizing deep apprenticeship models over theoretical degrees.
- Decentralizing Local Industrial Hubs: Empower tier-2 and tier-3 cities with targeted infrastructure funding to distribute high-productivity manufacturing clusters beyond a few coastal zones.
- Boosting Productive Corporate R&D: Reform patent-to-product commercialization channels, encouraging private firms to invest in indigenous tech breakthroughs rather than simple technology adaptation.

### Conclusion:

India's strong post-pandemic growth has created a resilient macroeconomic foundation, but navigating the final leap to Viksit Bharat 2047 requires an urgent focus on internal efficiency. Capital deepening and public infrastructure spending have run their initial course; the next phase of development belongs entirely to structural agility and Total Factor Productivity.

## Rajasthan Gets Its First Semiconductor Plant

### Context:

Rajasthan entered India's strategic semiconductor sector with the inauguration of its first Semiconductor ATMP/OSAT facility at Bhiwadi.


### Rajasthan Gets Its First Semiconductor Plant

### AboutRajasthan Gets Its First Semiconductor Plant:

### What it is?

- It is India's first SME-led Semiconductor ATMP/OSAT (Assembly, Testing, Marking and Packaging / Outsourced Semiconductor Assembly and Test) facility established by Sahasra Semiconductors Pvt. Ltd.
- The project forms part of India's broader semiconductor ecosystem under initiatives like the India Semiconductor Mission (ISM), Make in India, and Atmanirbhar Bharat.
- Located In: Bhiwadi, Rajasthan (near the Delhi-NCR region), within the Electronics Manufacturing Cluster (EMC) at Salarpur, Khushkhera.
- Aim: To strengthen India's domestic semiconductor manufacturing and packaging ecosystem while reducing dependence on imports for strategic electronic components.

### Key Features:

- ATMP/OSAT Facility: The plant focuses on semiconductor packaging for products such as Micro SD cards, flash storage devices, LED driver ICs, eSIMs, and RFID products.
- Advanced Infrastructure: Equipped with Class 10K and 100K cleanrooms and developed with an investment exceeding 150 crore under the SPECS scheme.
- High Production Capacity: Currently capable of packaging 60 million semiconductor units annually, with plans to scale up to 400–600 million units over the next 2–3 years.

### Significance:

- Strengthens India's strategic autonomy in electronics and semiconductors amid global supply-chain disruptions and geopolitical competition.
- Promotes high-tech manufacturing, exports, skill development, and industrial growth in Rajasthan and the NCR manufacturing corridor.

## Decentralized Bioenergy Systems

### Context:

Amid prolonged disruptions in global energy corridors, India's Ministry of New and Renewable Energy (MNRE) prioritized the deployment of decentralized bioenergy architectures.

### Decentralized Bioenergy Systems

### AboutDecentralized Bioenergy Systems:

### What is Bioenergy?

- Bioenergy is a form of renewable energy derived from biological sources, known as biomass, which includes agricultural residues, organic municipal solid waste, animal manure, sewage sludge, and food waste. Through advanced thermal, chemical, and biological conversion pathways, this raw organic material is processed into versatile energy carriers such as solid pellets, liquid biofuels, or gaseous fuels (biogas and syngas).

### Types of Bioenergy Conversion Systems

- To achieve maximum fuel efficiency, decentralized plants split waste management into two core scientific pathways based on the moisture profile of the feedstock:

### 1. Gasification (Thermal Pathway forDry Waste)

- The Feedstock: Designed for dry organic matter like paddy straw, cotton stalks, coconut husks, and woody biomass.
- The Process: Inside a closed gasifier, the dry matter undergoes a multi-stage thermochemical breakdown (drying, pyrolysis, partial oxidation, and reduction) at extreme temperatures of 800–1,000°C with a strictly limited oxygen supply.
- The Output: Yields Syngas (Synthesis Gas)—a versatile mixture of carbon monoxide and hydrogen—alongside Biochar, a carbon-dense byproduct utilized to restore soil fertility and lock away carbon emissions.

### 2. Anaerobic Digestion (Biological Pathway for Wet Waste)

- The Feedstock: Optimized for high-moisture waste streams like municipal kitchen waste, dairy manure, industrial effluents, and urban sewage sludge.
- The Process: Specialized strains of anaerobic microorganisms break down the complex organic polymers inside a sealed biodigester in the total absence of molecular oxygen.
- The Output: Yields Biogas (predominantly methane and carbon dioxide), which can be scrubbed into 90%+ pure Compressed Biogas (CBG), alongside a nutrient-rich liquid digestate that acts as an excellent organic fertilizer.

## Significance of Decentralized Bioenergy Systems:

- StrengtheningSovereign Energy Security: Local bioenergy hubs directly insulate micro-industries and regional economies from volatile international oil politics.
- Example: Converting local paddy straw into fuel allows rural MSMEs to replace expensive imported coal or diesel with cheap, local bio-link inputs.
- Dismantling the Rural Air Pollution Crisis: Providing a commercial market for agricultural residue eliminates the economic incentives behind seasonal stubble burning.
- Example: Processing crop residue in Punjab and Haryana via regional gasifiers substantially lowers winter smog levels across the National Capital Region (NCR).
- Circular Agricultural Economy Integration: The byproducts of bio-conversion return vital micronutrients back to depleted topsoils.
- Example: Returning nitrogen-rich anaerobic digestate to local farms cuts down farmer dependence on subsidized chemical urea by providing a free organic alternative.
- Optimized Urban Waste Management: Localized biodigesters stop wet organic garbage from piling up in overflowing city landfills.
- Example: Installing anaerobic units inside mega-canteens and vegetable markets eliminates urban methane emissions and groundwater contamination at the source.
- UnlockingNew Carbon Monetization Channels: The production of biochar and green methane opens up alternative financial streams through global carbon credits.
- Example: Rural cooperative plants can sell verified carbon offset certificates to multinational corporations, adding a secondary profit layer to the facility.

## Challenges Associated with Decentralized Architecture:

- Extreme Seasonal Feedstock Fluctuations: Biomass generation is highly cyclical, leading to supply shortfalls during non-harvest months.
- Example: Gasifiers often face operational shutdowns during monsoon seasons due to a lack of dry, properly stored crop residue inputs.
- High Chemical Inconsistency of Inputs: Variations in moisture, ash density, and silica content across different crops damage sensitive mechanical components.
- Example: Bidding out mixed agricultural waste with high silica content leads to rapid tar accumulation and equipment corrosion, escalating maintenance costs.
- TheSource Segregation Bottleneck: The absence of disciplined waste separation at the household level cripples biological digestion efficiency.
- Example: Mixing plastic or toxic heavy metals into urban kitchen waste kills the sensitive microbial cultures inside anaerobic digesters, stalling gas production.
- Prohibitive Last-Mile Logistics Costs: Because raw biomass is bulky and has low energy density, transporting it un-pelletized quickly erodes profit margins.
- Example: Moving loose paddy straw over distances exceeding 25 kilometers makes the final generated biogas economically unviable compared to fossil fuels.
- Severe InstitutionalCapital Evasion: Commercial banks remain hesitant to extend long-term credit lines to decentralized bioenergy projects due to perceived biological and supply risks.
- Example: Startups looking to establish small-scale gasifiers frequently face exorbitant borrowing rates because they lack traditional collateral structures.

## Way Ahead:

- Mandating Structural Source Segregation: Enforce strict, tech-enabled municipal penalties for non-segregated urban waste to ensure clean organic input for anaerobic digesters.
- Establishing Regional Biomass Storage Banks: Build a network of centralized, weatherproof storage silos within agricultural clusters to dry, pelletize, and guarantee a steady year-round supply of feedstock.
- Standardizing Biomass Off-Take Agreements: Formulate mandatory long-term purchase mandates forcing state oil and gas marketing companies to buy local CBG at fixed, remunerative tariffs.
- Deepening Credit Guaranteesvia NABARD: Launch a dedicated federal credit-guarantee fund through NABARD to de-risk bioenergy lending, driving down borrowing costs for rural entrepreneurs.

- Upgrading Syngas to Green Hydrogen: Incentivize the deployment of downstream catalyst membranes to refine basic syngas into ultra-pure green hydrogen, powering India's heavy transport future.

### Conclusion:

India's path to absolute energy independence cannot be paved exclusively by heavy imports of solar components or volatile fossil fuels. The country's true strategic reserve lies hidden within its vast agricultural and municipal waste streams, waiting for scalable technological unlocking.

## India Export Target


### Context:

Union Commerce and Industry Minister announced India's target of achieving $1 trillion exports in 2026 and $2 trillion exports within the next five years.

### India Export Target

### AboutIndia Export Target:

### What it is?

- The India Export Target is a national export expansion strategy aimed at transforming India into a globally competitive manufacturing and services hub through export-led growth, domestic industrial strengthening, and import substitution.

### Target:

- $1 trillion exports in 2026.
- $2 trillion exports within the next five years.
- Current exports have already reached nearly $863 billion, around 5% higher than the previous year despite global economic disruptions.

### Key Features:

- Free Trade Agreements (FTAs) Expansion: India is pursuing FTAs with nearly 38 developed countries to secure preferential market access and lower import duties for Indian goods globally.
- Focus on Import Substitution & Swadeshi: The government has urged industries to identify heavily imported products and expand domestic manufacturing capacity to reduce foreign dependence.
- Export-Oriented Manufacturing Push: Emphasis is being placed on improving quality standards, productivity, packaging, value addition, and scaling MSMEs to make Indian products globally competitive.

### Significance:

- Higher exports and reduced import dependence improve foreign exchange stability, industrial resilience, and economic sovereignty.
- Export-oriented manufacturing can generate large-scale jobs, boost MSMEs, encourage startups, and deepen India's integration into global value chains.

## India IPO and Key IPO Terms


### Context:

India's primary market recorded a historic milestone as a record 108 companies raised approximately 1.76 trillion in public listings over the preceding fiscal year.

### India IPO and Key IPO Terms

### AboutIndia IPO and Key IPO Terms:

### What is an IPO?

- An Initial Public Offering (IPO) is a regulated financial mechanism through which an unlisted company offers its shares to the general public for the very first time.
- Governed strictly by the SEBI (Issue of Capital and Disclosure Requirements) Regulations, 2018, an IPO

allows a private corporation to transition into a publicly traded entity, listing its securities on national stock exchanges like the NSE and BSE to unlock liquidity, capital expansion, and institutional price discovery.

## Decoding KeyIPO Terms:

- To navigate a public issue effectively, an investor must evaluate five operational stages: Capital Flow, Regulatory Filing, Investor Classes, Pricing Mechanics, and Post-Listing Controls.

### 1. The Capital Flow Structure

- Fresh Issue: The creation and sale of brand-new shares by the issuing company. The proceeds flow directly into the company's bank account and are used for corporate growth strategies, such as setting up manufacturing lines, debt repayment, or R&D.
- Offer for Sale (OFS): A monetization event where existing promoters, early-stage venture capitalists, or private equity backers sell their existing shares to the public. No money goes to the company; the entire financial payout flows directly into the pockets of the selling shareholders.
- Pre-IPO Placement: A selective fundraising round conducted privately with institutional investors, family offices, or high-net-worth individuals before the public issue is officially launched. It helps anchor early valuations and solidifies the balance sheet.

### 2. Regulatory & Documentation Framework

- Draft Red Herring Prospectus (DRHP): The primary, exhaustive disclosure document filed with SEBI before launching an IPO. It maps out the company's business model, balance sheet, risk factors, legal litigations, operational debt, and the specific objects of the issue.
- Confidential Filing: A regulatory route that permits new-age startups and highly competitive tech firms to submit their draft papers to SEBI privately. It allows companies to receive regulatory corrections without exposing sensitive financial metrics or future strategies to competitors until the issue is finalized.
- Indian Depository Receipt (IDR): A financial instrument that allows foreign companies to raise capital from Indian retail and institutional investors by listing receipts backed by their foreign underlying shares on Indian bourses.

### 3. Categorizing the Bidders

- Qualified Institutional Buyers (QIBs): Highly sophisticated, financially robust entities such as mutual funds, foreign portfolio investors (FPIs), insurance companies, and commercial banks. They drive institutional price discovery due to their deep research capabilities.
- Anchor Investors: Elite QIBs who commit to buying large, bulk blocks of shares at least one day before the IPO officially opens to the general public. Their participation acts as a high-value trust signal for retail buyers.
- Non-Institutional Investors (NIIs) / HNIs: Wealthy individual investors, corporate houses, and family trusts who bid for a total value exceeding  2 lakh. This segment frequently utilizes heavy financial leverage to maximize their allotment odds.

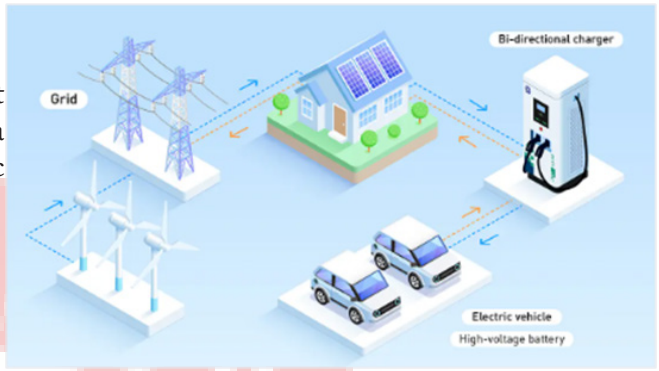
### 4. Pricing and Demand Mechanics

- Book Building: A dynamic price-discovery process where the company provides a flexible price band (e.g.,  90 to  95) instead of a fixed price. Investors bid within this window, and the final cut-off price is determined based on aggregate demand curves.
- Lot Size: The standardized, mandatory minimum number of shares that an investor is required to bid for in a single application slot.
- Oversubscription: A market scenario where the aggregate investor demand vastly outstrips the number of shares on offer. For instance, a 39x oversubscription means investors applied for 39 times more shares than the company intended to distribute.
- Grey Market Premium (GMP): An unofficial, unregulated, and speculative premium at which an IPO's shares are traded informally before they are officially listed on the stock exchange. It represents real-time retail sentiment but is highly volatile and prone to operator-driven manipulation.

### 5. Post-Listing Metrics

- Market Capitalization: The total aggregate valuation of a public company post-listing. It is derived by multiplying the final exchange listing share price by the total number of outstanding corporate shares.
- Lock-in Period: A legally binding duration mandated by SEBI during which specific pre-IPO stakeholders (such as promoters or seed stage VC funds) are prohibited from selling their shares on the open market. This prevents immediate post-listing dumpings and anchors long-term promoter commitment.

## India's EV Ambition Needs A Grid Strategy




### Context:

Amid rising crude oil volatility linked to the ongoing West Asian conflict, energy analysts emphasized the need for a comprehensive power system strategy for India's electric vehicle (EV) transition.

### India's EV Ambition Needs A Grid Strategy

### AboutIndia's EV Ambition Needs A Grid Strategy:

### What is an EV Grid Strategy?

- An EV grid strategy is an integrated framework that aligns an economy's transport electrification goals with its electrical generation, transmission, and distribution capabilities.
- Instead of treating EVs merely as isolated battery-powered units, this model views the fleet as a massive, synchronized mobile power load.

### Key Data/Stats on India's Power and EV Sector:

- The Aggregate Demand Lift: Full electrifying India's approximate 420 million registered vehicles would require an additional 900 TWh to 1,100 TWh of electricity per year.
- The 2047 Halfway Target: Converting a moderate 50% of the fleet by 2047 will demand an extra 500 TWh annually, equivalent to roughly one-third of India's current total electricity generation.
- TheFreight Disproportion: While India's 6.26 million Heavy Goods Vehicles (HGVs) represent barely 2% of the registered national fleet, electrifying them alone would consume 450 TWh to 565 TWh annually due to high energy intensities.
- Current Power Baseline: As of mid-2026, India's total installed power generation capacity stands at 520.51 GW, successfully managing a record peak power demand of 242.49 GW with non-fossil sources making up over 50% of installed capacity.

### India's Rising EV Ambition: Areas of Focus

- Securing Cross-Border Freight Corridors: Transitioning long-haul commercial logistics away from imported diesel toward domestic electricity.
- Example: Electrifying major transport arteries like the Golden Quadrilateral requires mapping massive megawatt-level high-tension connections before electric trucks launch at scale.
- Dismantling the Two-Wheeler Illusion: Reorienting public policy to focus on heavy commercial vehicles rather than relying solely on lightweight commuter bikes.
- Example: Moving focus toward commercial fleets reveals that 309 million electric two-wheelers would consume less than 7% of total projected EV demand.
- Flattening theEvening Peak Load: Shielding domestic municipal grids from sudden spikes in electricity consumption when commuters return home.
- Example: Preventing millions of personal vehicles from plugging into the grid simultaneously at 7:00 PM avoids regional distribution brownouts and tariff spikes.
- Deploying Diversified Clean Baseload Energy: Ensuring that the incremental electricity required to charge EVs comes from a clean, balanced energy mix.
- Example: Relying on a mix of solar, wind, and Micro Modular Nuclear Reactors near major highway charging hubs ensures around-the-clock power without reverting to coal imports.
- Building a Circular EVBattery Economy: Establishing a domestic recycling network to process end-of-life cells.

## Initiatives Taken So Far:

- PM-E-DRIVE Scheme: Introduced as the primary subsidy engine to catalyze the adoption of electric vehicles, with a strong focus on high-impact segments like e-buses and commercial trucks.
- National Electricity Plan (NEP) Upgrades: Transformed the national transmission plan to expand the power grid to 6.48 lakh circuit kilometers by 2032, targeting an investment of 9.15 lakh crore to support renewable integration.
- BIS Interoperable Charging Standards: The Bureau of Indian Standards (BIS) notified a global-first, India-centric Dual Plugin Charging Standard for e-buses, successfully verified at the Ahmedabad Ranip Depot.
- Smart Meter Deployment via RDSS: Installed 4.05 crore smart meters under the Revamped Distribution Sector Scheme, laying the groundwork for digital, real-time consumption monitoring.

## Key Challenges Associated with Grid Integration:

- Financial andStructural Strain on Discoms: Cash-strapped state distribution companies lack the budgeted capital to overhaul regional transformers.
- Example: Fleet operators trying to set up high-tension depot connections face prolonged administrative delays as local utilities struggle to augment their substations.
- TheCoal Displacement Trap: Powering a green vehicle transition using fossil-fuel generation merely shifts the carbon footprint from the tailpipe to the smokestack.
- Example: Generating incremental terawatt-hours primarily from thermal power replaces oil imports from the Gulf with coal imports from Australia and Indonesia.
- Absent Device-Level Smart Standards: Legacy charging infrastructure lacks the software required to talk dynamically with the grid.
- Example: Installing conventional chargers today locks in massive retrofitting costs later when time-of-use tariff signals are mandated nationally.
- Severe InstantaneousDemand Spikes: Unmanaged vehicle hookups risk adding several hundred gigawatts of instantaneous load to urban grids.
- Example: Simultaneous unmanaged charging during high-temperature summer months can trigger severe grid instability and localized equipment failures.
- Regional Disparities in Infrastructure Readiness: Advanced renewable integration and EV adoption remain heavily concentrated in a few states.
- Example: While states like Karnataka lead with a 9.4% EV adoption rate, inland and populous states lag behind, creating an uneven patchwork of grid readiness.

## Way Ahead:

- Mandating Equipment-Level Smart Charging: Pass strict national equipment regulations requiring all future EV chargers to support automated, bidirectional data communication for grid balancing.
- Executing Joint Power-Transport Mapping: Launch an inter-ministerial mapping exercise between the Ministry of Power and the Ministry of Road Transport to pre-install megawatt charging points along Dedicated Freight Corridors.
- EnforcingDynamic Time-of-Use (ToU) Tariffs: Roll out mandatory, variable electricity pricing models that incentivize retail users to charge their vehicles during surplus solar hours.
- Linking RDSS Funds to EV-Readiness: Refurbish the Revamped Distribution Sector Scheme to tie state discom financial assistance directly to their local grid-electrification benchmarks.
- Anchoring Highway Hubs with Pumped Hydro: Build dedicated battery energy storage systems (BESS) and pumped-storage hydro projects alongside highway charging stations to provide firm, weather-independent power.

## Conclusion:

India's clean mobility goals cannot be achieved by focusing on vehicle sales alone; they require a comprehensive strategy for the underlying electrical grid. While the rapid adoption of electric scooters across Indian cities signals a welcome behavioral shift, the real heavy lifting lies in powering the commercial supply chains and freight corridors of a developed nation.

## Increasing India Power Demand

### Context:

India's peak electricity demand touched a record 260.5 GW amid severe heatwave conditions and rising air-conditioner usage across the country.

### Increasing India Power Demand

### AboutIncreasing India Power Demand:

### What it is?

- India's rising power demand refers to the rapid increase in electricity consumption driven by economic growth, urbanization, industrial expansion, rising household appliance usage, and extreme climatic conditions such as heatwaves.

### Key Findings:

- Record Peak Demand: India's peak power demand reached an all-time high of 260.5 GW, surpassing the previous record of 257.4 GW.
- Thermal Power Dominance: Thermal power plants supplied nearly 61.5% of total electricity demand, remaining the backbone of India's power system.
- Renewable Energy Contribution: Solar energy contributed around 22% while wind energy supplied nearly 6.7% of the total electricity demand during peak hours.
- Heatwave-Driven Consumption: Temperatures between 40°C and 47°C across multiple states sharply increased cooling demand, particularly from air conditioners.
- Night-Time Supply Stress: After sunset, when solar generation goes offline, India witnessed night peak demand of 247 GW along with shortages and rising spot electricity prices.

### Implications:

- Pressure on Grid Stability: Continuous peak demand growth increases stress on transmission networks, thermal plants, and distribution infrastructure.
- RenewableIntegration Challenges: Heavy dependence on solar creates evening supply gaps, highlighting the need for energy storage and flexible grid systems.
- Energy Security & Climate Concerns: Higher thermal power dependence raises coal consumption and carbon emissions, complicating India's clean energy transition goals.

## 10. Should the rupee be left to depreciate?

### Context:

The Indian rupee has experienced an unprecedented decline, plunging to an all-time closing low of 96.86 against the U.S. dollar, driven by escalating West Asia conflicts, foreign capital flight, and surging Brent crude oil prices approaching $110 per barrel.

## Should the rupee be left to depreciate?

## AboutShould the rupee be left to depreciate?

### What is Currency Depreciation?

- Currency depreciation is the deliberate or market-driven decrease in the value of a country's currency relative to a foreign benchmark (typically the U.S. dollar) within a floating exchange rate system.
- It occurs due to changing economic fundamentals, interest rate differentials, widening trade deficits, or global speculative market sentiment.

### Key Factual Data and Statistics:

- Record Low Exchange Rate: The rupee touched an all-time intraday low of 96.95/$ before settling at a record closing low of 96.86/$.
- Depreciation Margin: The currency has depreciated by 11.5% year-on-year compared to its May baseline of 84.99/$, representing a 5.5% slide in the current calendar year alone.
- Foreign Exchange Reserve Depletion: India's reserves fell from an all-time peak of $728.5 billion down to $696.99 billion as the central bank aggressively liquidated dollars to defend the local currency.
- Capital Flight Pressures: Foreign Institutional Investors (FIIs) have pulled out an estimated $20.6 billion from Indian equities, severely stressing capital account inflows.

### How the RBI Intervenes toManage the Rupee?

- Active Spot Market Interventions: The RBI directly sells U.S. dollars from its massive foreign exchange reserves into the interbank market to absorb excess rupee liquidity and suppress wild intraday spikes.
- Forward Market Operations: The central bank engages in forward and swap market contracts to manage long-term dollar liquidity expectations without instantly draining physical spot reserves.
- Moral Suasion andImperative Hedging: The RBI issues direct administrative guidance to state-run banks and large corporate importers, strongly advising them to immediately hedge their near-term dollar exposures.
- Monetary Policy Adjustments: In extreme scenarios, the RBI's Monetary Policy Committee (MPC) reviews structural interest rate hikes to widen the yield differential against foreign central banks and lock in domestic capital.
- Collaborative Trade Interventions: The central bank coordinates with the Finance Ministry to enforce immediate macro-economic checks—such as hiking gold and silver import duties to 15%—to drastically reduce non-essential dollar outflows.

### Weak Rupee vs. Falling Rupee:

- The Baseline Definition: A weak rupee describes a structural status where the currency sits at a lower value plateau, whereas a falling rupee is a dynamic process characterized by volatile, consecutive day-on-day losses.
- Export Demand Disconnect: A structurally weak rupee helps make domestic exports cheaper and highly competitive abroad. However, during a falling rupee phase, global buyers actively halt purchases, expecting the currency to drop lower so they can secure cheaper rates later.
- Front-LoadingImport Disruption: When a currency is structurally weak, imports contract as prices stabilize at higher tiers. In contrast, a falling rupee triggers panic buying, forcing domestic industries to front-load oil and commodity imports today out of fear that prices will skyrocket tomorrow.
- Current Account Adjustments: A weak rupee naturally narrows the current account deficit over time through structural trade balancing. A falling rupee inflates the immediate cost of essential imports, widening the deficit and creating a self-perpetuating cycle of structural weakness.
- Domestic Inflationary Shocks: While a weak rupee can be painlessly absorbed by an economy, a falling rupee causes sudden, volatile price shocks in imported essentials like crude oil, fueling domestic retail inflation and squeezing real wages.

### The Role of Capital Flows:

- Speculative Capital Domination: Modern currency values are increasingly determined by speculative foreign institutional flows rather than real-world merchandise trade or consumption demand.

- Interest Rate Asymmetry: Global fund managers exit Indian assets whenever foreign developed central banks signal interest rate hikes, seeking safer, highly remunerative yields back home.
- The Valuation Disconnect: When speculative outflows accelerate, currency movements completely untether from core economic fundamentals, forcing deep economic corrections based purely on foreign investor sentiment.
- AbsorbingTrade Deficits: Under normal conditions, healthy foreign direct investment (FDI) inflows smoothly counter structural trade deficits, keeping the exchange rate steady.
- Liquidity Shocks: When speculative sentiment turns negative, sudden capital flight creates massive dollar shortages in the domestic market, amplifying exchange rate volatility regardless of the country's actual economic growth rate.

### Way Forward:

- Deploy Targeted Dollar-Attraction Schemes: Introduce calibrated, high-yield deposit schemes specifically designed for Non-Resident Indians (NRIs) to bring in fresh, stable, long-term dollar inflows.
- Enforce Strict Non-Essential Import Caps: Maintain and expand targeted fiscal checks, like the current 15% duty on precious metals, to choke off non-essential commercial dollar demand.
- Invoice BilateralTrade in Local Currencies: Expand institutional mechanisms to settle vital trade invoices (such as crude oil imports) directly in local currencies, bypassing the U.S. dollar entirely.
- Establish Strategic Price Thresholds: Use State Bank of India (SBI) and RBI metrics to pinpoint critical depreciation floors beyond which currency falls entirely wipe out the benefits of domestic fuel pricing.
- Deepen Sovereign Bond Market Integrations: Accelerate the inclusion of Indian sovereign bonds into major global indices to lock in stable, non-speculative international capital streams.

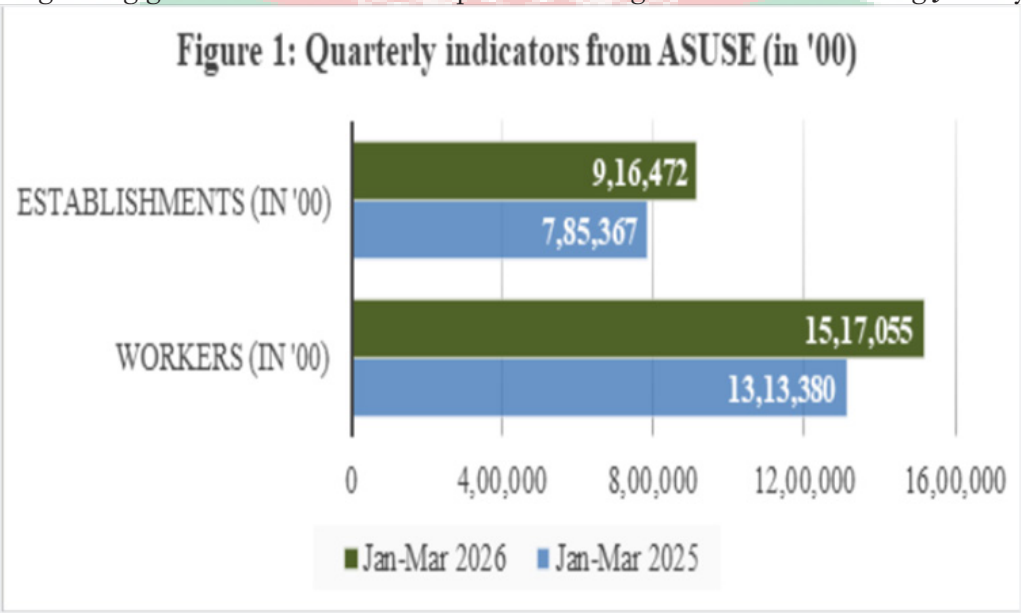
### Conclusion:

Leaving the rupee to freely depreciate under the assumption that it will smoothly find a natural market equilibrium ignores the destructive reality of speculative global finance. In an economy structurally dependent on imported crude oil, an unmanaged currency slide quickly translates into painful retail inflation that severely harms the domestic population. Therefore, a calibrated combination of strategic RBI spot interventions and targeted fiscal checks remains absolutely essential to ensure macroeconomic stability.

## Rise of the Unincorporated Sector in India

### Context:

The National Statistics Office (NSO) released the latest Quarterly Bulletin on Unincorporated Sector Enterprises (QBUSE), showing strong growth in India's unincorporated non-agricultural sector during January–March 2026.



## Rise of the Unincorporated Sector in India

### AboutRise of the Unincorporated Sector in India:

### What it is?

- The unincorporated non-agricultural sector includes small, informal, and unregistered enterprises engaged in manufacturing, trade, and services outside agriculture and construction.

### Key Data & Statistics:

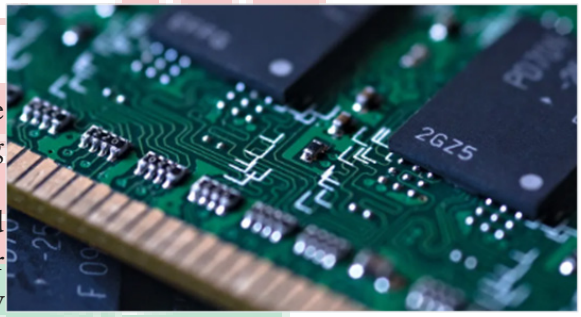
- Record Growth in Establishments: The number of establishments rose to 9.16 crore in Jan–March 2026, registering a 16.69% year-on-year growth.
- Employment Crosses 15 Crore: Employment in the sector increased to 15.17 crore workers, reflecting a 15.51% annual growth.
- Rural India Driving Expansion: Rural establishments recorded a sharp 20.46% growth, while urban areas grew by 12.59%.
- Services SectorLeading Growth: Unincorporated services sector establishments expanded by 24.82%, while employment in services rose by over 31%.
- Women Workforce Participation: Women accounted for nearly 29% of total employment in the sector, indicating rising female workforce participation.
- Digital Adoption Rising: Around 81% of establishments used the internet for business activities and adopted cashless payment systems like UPI and online banking.
- Increasing Formalisation: About 41.37% of enterprises reported some form of official registration, reflecting gradual movement toward formalization.

### Implications:

- The sector remains India's largest source of non-farm employment, especially for rural populations and small entrepreneurs.
- Increasing digital payments and official registrations indicate gradual integration of informal enterprises into the formal economy.
- Rising participation of women and rural enterprises strengthens inclusive growth and grassroots economic resilience.

## Memflation

### Context:



Global semiconductor revenues are projected to surpass the unprecedented $1.3 trillion threshold this year, marking a staggering 64% increase compared to 2025.

- A primary driver of this surge is a phenomenon dubbed memflation, which is triggering massive price hikes for memory chips and disrupting non-AI technology supply chains well into 2028.

### Memflation

### AboutMemflation:

### What It Is?

- Memflation is a term coined by Gartner analysts to describe the rapid, structural price inflation sweeping the semiconductor market, specifically targeting data storage and memory components.
- It represents a significant market distortion where the hyper-growth of AI infrastructure consumes the lion's share of semiconductor fabrication resources, triggering severe shortages and soaring costs for traditional computing hardware.

### Primary Causes of Memflation:

- AI Infrastructure Boom: Rapid spending by hyperscalers and cloud firms on AI infrastructure has diverted memory resources away from traditional computing markets.

- Production Shift by Chipmakers: Companies like Micron Technology are prioritizing high-margin AI GPUs and enterprise memory over consumer components.
- Pre-Emptive Bulk Buying: Fear of tariffs and price hikes pushed firms to stockpile chips in 2025–26, sharply reducing available inventories.

### Key Features of the Semiconductor Surge:

- Sharp Memory Price Rise: DRAM prices may rise by 125%, while NAND flash prices could surge by nearly 243%, according to industry estimates.
- MassiveMarket Expansion: The global semiconductor industry is projected to cross $1.3 trillion this year and approach $1.6 trillion by 2027.
- AI-Led Market Shift: AI demand enabled Nvidia to overtake Samsung Electronics in semiconductor revenues.

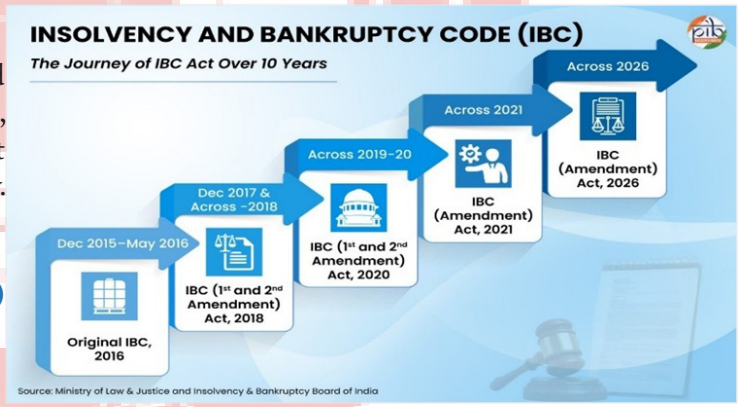
### Impacts of Memflation:

- Delayed Non-AI Tech Upgrades: Rising memory costs are slowing enterprise IT upgrades and delaying deployment of conventional digital infrastructure.
- Supply Chain Disruptions: Semiconductor shortages and logistics bottlenecks have caused widespread shipment delays across global hardware markets.
- Higher Consumer Prices: Laptop, server, and enterprise hardware makers are passing rising semiconductor costs directly to customers.
- Risky Long-Term Contracts: Analysts caution CIOs against locking into expensive multi-year semiconductor supply agreements amid volatile pricing trends.

## The Insolvency and Bankruptcy Code (IBC) completes 10 years

### Context:

The Insolvency and Bankruptcy Code (IBC), enacted in 2016, has completed a decade of operation, establishing itself as a transformative institutional shift for India's credit markets and corporate accountability.




### The Insolvency and Bankruptcy Code

### About The Insolvency and Bankruptcy Code (IBC) completes 10 years:

### What It Is?

- The Insolvency and Bankruptcy Code (IBC) is a single, consolidated legislative framework enacted in 2016 to replace India's older, fragmented, and slow insolvency laws.
- It provides a legally binding, creditor-driven, and time-bound mechanism to resolve insolvency and financial distress for corporate entities, partnership firms, and individuals.

### Key Features of the IBC:

- Integrated Legal Consolidation: Unifies multiple legacy insolvency laws into a single code to streamline processes for corporations, partnerships, and individuals.
- Time-Bound Resolution Window: Mandates a strict timeline for completing the Corporate Insolvency Resolution Process (CIRP) to ensure asset values do not erode.
- Creditor-in-Control Model: Shifts operational control of a defaulting company away from the existing promoters to a creditor-led Committee of Creditors (CoC), fundamentally altering debtor-creditor dynamics.
- Two-Tiered Adjudication Infrastructure: Utilizes the National Company Law Tribunal (NCLT) to handle corporate insolvencies, while the Debt Recovery Tribunal (DRT) manages individuals and partnership firms.
- Institutional Support Ecosystem: Governed by the Insolvency and Bankruptcy Board of India (IBBI), utilizing licensed Insolvency Professionals (IPs) to run distressed assets alongside Information Utilities (IUs) that store verified financial data.

- Clear Priority of Payouts (Waterfall Mechanism): Establishes a transparent, structured ladder for distributing liquidation assets, ensuring secured creditors and workmen receive clear priority over equity shareholders.

## Current Success Metrics of the IBC:

- SubstantialRealization of Locked Capital: The framework has successfully unlocked significant stuck capital, returning frozen funds back into the formal financial system.
- Example: As of March 2026, 1,419 cases yielded final resolution plans, realizing over 4 lakh crore for creditors—representing 95% of their fair value and 167% of liquidation value.
- Significant Reductions in BankingNon-Performing Assets (NPAs): The code's strict rules have helped clean up bank balance sheets, driving non-performing loans down to healthier historical levels.
- Example: The banking sector's gross NPA ratio dropped to a low of 2.1% in September 2025, a massive shift from the peak of nearly 11.8% logged in 2017.
- Powerful Pre-Admission Settlement Deterrent: The threat of losing control over an enterprise forces defaulting debtors to settle their debts before formal court proceedings begin.
- Example: More than 30,000 cases were resolved at the pre-admission stage through withdrawals, settling an estimated 14 lakh crore outside court.
- Post-Resolution Corporate Revival andValue Creation: Restructured companies show significant operational turnaround and value growth under new management.
- Example: Resolved firms saw an 89% jump in sales and a 131% rise in asset turnover, expanding the market value of listed resolved firms from 2.8 lakh crore to 9 lakh crore.

## Key Challenges Facing the IBC Ecosystem:

- Persistent Delays and Blocked Timelines: Despite a statutory emphasis on speed, heavy case volumes often clog up tribunal benches, extending resolutions past original targets.
- Example: While pre-IBC delays spanned up to 8 years, current resolution timelines still average around 2 years, highlighting ongoing structural friction within NCLT benches.
- Erosion of Value inForced Liquidations: When a business cannot be rescued, delays can cause its physical assets to degrade, hurting final recovery values.
- Example: Out of 7,102 closed cases by March 2026, 3,003 entities ended in liquidation, highlighting cases where delays left assets to be sold piecemeal.
- Varying Recovery Outcomes Across Industry Segments: While the average post-IBC recovery rate has risen to over 30%, asset recovery success remains uneven.
- Example: Even with overall improvements, the recovery rate for scheduled commercial banks fluctuated to 36.6% in 2024–25, down from higher initial resolution peaks.
- Overreliance onFormal Systems for Defunct Entities: Benches are frequently burdened with long-dead companies that have no active operations to save.
- Example: Around 42% of cases that reached resolution plans were previously stuck with the legacy BIFR or were already defunct, slowing down the courts.

## Way Forward:

- Expanding NCLT Bench Infrastructure: Increase the number of specialized NCLT benches and fill judicial vacancies promptly to eliminate backlogs and meet the code's strict timelines.
- PromotingPre-Packaged Insolvency Frameworks: Expand out-of-court pre-packaged insolvency options to all corporate categories, encouraging faster, consensual settlements that ease the burden on tribunals.
- Upgrading Digital Tracking via Information Utilities: Enhance data integration across Information Utilities to give lenders instant access to verified default data, cutting down verification times.
- Standardizing Inter-RegulatoryMediation Systems: Create a smooth coordination bridge between the IBBI, the Reserve Bank of India, and the enforcement directorates to resolve competing asset claims cleanly.
- Specializing Training for Insolvency Professionals: Provide advanced industry-specific management training to Insolvency Professionals, enabling them to better preserve complex enterprise value during restructuring.

## Conclusion:

Over the past ten years, the Insolvency and Bankruptcy Code has completely reshaped corporate accountability and

credit discipline across the Indian economy. By moving past slow legacy legal systems, it has successfully recovered over 4 lakh crore for creditors while breathing new life into financially distressed businesses. As India advances toward its long-term goals for economic growth, continuously refining the IBC through smart updates will be essential to sustain entrepreneurship, preserve productive capital, and anchor financial stability.

## The RBI's Kill Switch Facility


### Context:

The Reserve Bank of India (RBI), in its Annual Report, announced that it is exploring the implementation of a universal 'Kill Switch' mechanism alongside a 'Switch On/Switch Off' facility across all digital payment channels.

### The RBI's Kill Switch Facility

### About The RBI's Kill Switch Facility:

### What It Is?

- The 'Kill Switch' is an emergency security protocol designed to immediately freeze all financial operations and fund transfers from a user's bank account or digital wallet. Accompanying this is a 'Switch On/Switch Off' feature that expands card-style security toggles to all electronic payment architectures, including UPI and internet banking.

### Aim:

- The initiative aims to curb real-time cyber financial crime, bolster user confidence in India's massive digital payment ecosystem, and give consumers absolute, instantaneous control over their funds the moment they suspect they are being targeted by fraudsters.

### How It Works?

- If a user realizes they are caught in a scam (such as being coerced during a fake digital arrest video call), they can activate the kill switch directly via their mobile banking app, a designated SMS code, or a toll-free portal.
- Once triggered, the bank's system instantly cuts off all outward transactional capabilities for that user's identity.
- This bypasses the typical administrative delays involved in calling customer service or visiting a branch, locking down the capital before fraudsters can siphon it off into mule accounts.

### Key Features:

- Integrated Emergency Button: The system envisions a prominent, single-tap emergency button seamlessly built into the native mobile banking applications of all lenders.
- Omnichannel Access: Because scams often compromise smartphone access, the facility will support activation through alternative channels like SMS alerts, interactive voice responses (IVR), or internet banking portals.
- Granular Channel Toggling: The 'Switch On/Switch Off' aspect allows users to selectively disable specific transaction modules (e.g., turning off international transactions or UPI entirely while keeping standard ATM withdrawals active) and reactivating them only when needed.
- Universal Architecture: Unlike existing tools that are restricted primarily to debit and credit cards, this framework will cover the entire electronic spectrum, including the Unified Payments Interface (UPI), Immediate Payment Service (IMPS), and National Electronic Funds Transfer (NEFT).

### Significance:

- Preventing Digital Arrest Frauds:Provides victims an immediate way to block fraudulent transactions, helping reduce losses from cyber scams.
- Proactive Fraud Protection: Enables users to act instantly during a scam instead of relying solely on post-fraud complaints and investigations.
- Safer Digital Finance Ecosystem:Strengthens trust in digital payments and protects less tech-savvy users as online transactions continue to grow.

# India Post Payments Bank (IPPB) Launches SHG Savings Account

## Context:

India Post Payments Bank (IPPB) has launched a dedicated Self Help Group (SHG) Savings Account designed to provide a reliable and cost-effective banking solution for women-led groups in rural India.

## India Post Payments Bank (IPPB)

## AboutIndia Post Payments Bank (IPPB) Launches SHG Savings Account:

### What is IPPB?

- IPPB is a 100% Government of India-owned entity operating under the Department of Posts, Ministry of Communications. It is built on the pillars of India Stack, enabling paperless, cashless, and presence-less banking through a network of CBS-integrated smartphones and biometric devices.
- Established In: The bank was officially launched on September 1, 2018.
- Aim: The bank's vision is to build the most accessible, affordable, and trusted banking platform for the common man. Its fundamental mandate is to remove barriers for the unbanked and underbanked populations by reaching the last mile of India.

### Key Functions:

- Massive Rural Reach: Leverages a network of approximately 1,65,000 Post Offices, with roughly 140,000 located in rural areas.
- Extensive Workforce: Utilizes around 3,00,000 postal employees, including Postmen and Gramin Dak Sevaks (GDS), to deliver services.
- Doorstep Banking: Provides banking services directly at the customer's home using digital tools.
- Multilingual Support: Delivers simple banking solutions through intuitive interfaces available in 13 languages.
- Frugal Innovation: Focuses on paperless and digital-first transactions to contribute to a less cash economy and the Digital India vision.

## AboutSHG Savings Account:

### What it is?

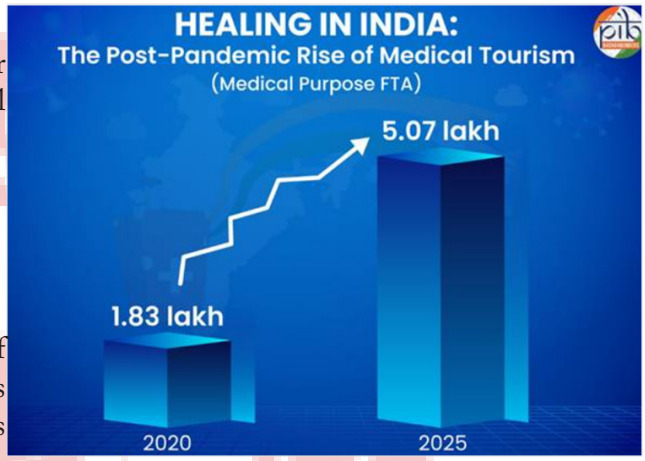
- The SHG Savings Account is a specialized financial product designed specifically for Self Help Groups, which are critical drivers of rural economic transformation.
- Aim: The primary goal is to empower women-led SHGs by integrating them into the formal financial ecosystem. It aligns with national priorities like the National Rural Livelihoods Mission and programs supported by NABARD to drive sustainable economic growth.

### Features:

- Zero Cost: A zero-balance account with no initial deposit requirement and no monthly average balance (MAB) requirement.
- Digital On-boarding: Simplified digital enrollment assisted by the extensive network of Postmen and GDS.
- Balance Limit: Maintains a maximum balance limit of 2,00,000.
- Interest Pay-outs: Provides quarterly interest payouts based on applicable savings rates.
- Free Transactions: Offers nil charges for both cash deposits and withdrawals.
- Free Statements: Includes one free physical account statement per month.
- No Hidden Fees: Features no charges for account closure or QR card issuance.

## Medical and Wellness Tourism in India

### Context:




India is rapidly solidifying its position as a global hub for Medical Value Travel (MVT) by integrating advanced clinical infrastructure with traditional AYUSH systems.

### Medical and Wellness Tourism in India

### AboutMedical and Wellness Tourism in India:

### What it is?

- Medical and Wellness Tourism refers to the practice of traveling to India to seek curative clinical treatments (Medical) or preventive holistic well-being therapies (Wellness).
- While Medical Tourism involves complex surgeries and diagnostics in specialized hospitals, Wellness Tourism focuses on traditional Indian systems like Yoga and Ayurveda to promote mental and spiritual health.

### Key Data & Statistics:

- Market Size: India's medical tourism market is estimated at USD 8.7 billion in 2025, with projections to reach USD 16.2 billion by 2030.
- Patient Arrivals: In 2025, approximately 507,244 foreign nationals arrived in India specifically for medical treatment, constituting 5.5% of total Foreign Tourist Arrivals (FTAs).
- Global Ranking: India ranks 10th among the top 46 medical tourism destinations globally and 12th among the world's top 20 wellness tourism markets.
- Source Markets: Bangladesh is the leading source of medical tourists (3.25 lakh), followed by Iraq, Uzbekistan, and Somalia.

### Potential of India as a Global Hub:

### Medical Tourism Potential:

- Cost Competitiveness: High-quality surgeries in India cost a fraction of those in the West.
- Example: Cardiac or orthopedic procedures in India are 60-80% cheaper than in the US or UK.
- Accredited Infrastructure: India boasts a high density of internationally recognized hospitals.
- Example: Over 1,299 hospitals are NABH accredited, with several holding Joint Commission International (JCI) certification.
- Expert Workforce: India has one of the world's largest pools of English-speaking medical professionals.
- Example: With 1.2 million registered doctors, India meets the WHO-recommended doctor-population ratio.
- No Waiting Periods: Unlike Western public health systems, India offers immediate specialized care.
- Example: International patients can access organ transplants or cancer treatments without the long lead times seen in many developed nations.

## Wellness Tourism Potential:

- Birthplace of Ayurveda/Yoga: India has the original intellectual property of holistic healing.
- Example: The integration of Yoga as a global brand under the theme Yoga for One Earth, One Health attracts seekers of spiritual wellness.
- AYUSH Ecosystem: A dedicated ministry and institutional framework support traditional medicine.
- Example: The presence of specialized AYUSH centers within newly proposed Regional Medical Hubs provides a structured environment for holistic care.
- Preventive Focus: Global demand is shifting from illness to wellness, a domain where India excels.
- Example: International tourists visit Kerala and Rishikesh specifically for Panchakarma and Naturopathy to manage lifestyle diseases.

## Initiatives Taken So Far:

- Heal in India Initiative: A flagship government program to position India as a premier destination for integrated healthcare.
- Dedicated Visas: Introduction of the e-Medical Visa, e-Medical Attendant Visa, and the groundbreaking AYUSH Visa (July 2023) for traditional treatments.
- Regional Medical Hubs: Budget 2026-27 proposed five integrated healthcare complexes housing medical, research, and AYUSH facilities under one umbrella.
- Quality Standardization: Adoption of ISO 22525 for medical wellness services and strengthening NABH accreditation for wellness centers.
- Digital Transformation: Upgrading the MVT Portal as a one-stop-shop for patients to book services, make payments, and access post-operative care.

## Challenges Associated:

- Regional Concentration: MVT services are heavily clustered in South and West India.
- Example: JCI-accredited hospitals are mostly in Delhi, Mumbai, and Bangalore, leaving North-East and Central India underserved.
- Skilled Workforce Gaps: While doctors are available, there is a shortage of specialized paramedical staff.
- Example: A lack of guides and staff trained in foreign languages like Arabic or French can create communication barriers for non-English speaking patients.
- Informal Facilitators: The presence of unorganized medical facilitators can lead to trust issues.
- Example: Patients may be misled by unregistered agents regarding treatment costs or the quality of smaller clinics.
- Insurance Discrepancies: While AYUSH is covered domestically, international insurance portability remains complex.
- Example: Many foreign insurance providers do not yet fully cover traditional Ayurvedic treatments performed in India.
- Perception of Standards: Some international markets still view traditional medicine as alternative rather than evidence-based.
- Example: The need for rigorous scientific research at the WHO Global Traditional Medicine Centre in Jamnagar to validate Ayurvedic outcomes globally.

## Way Ahead:

- Establishment of All India Institutes of Ayurveda: Expanding three new institutes to boost high-end research and clinical education.
- Skill Development Pilot: Upskilling 10,000 guides and training non-medical staff in cross-cultural sensitivities and foreign languages.
- Airport Facilitation: Setting up MVT Concierge and Lounges at major airports to assist international patients through immigration and customs.
- Global Synergy Summits: Continuing international engagement through summits like Global Synergy in AYUSH to build trust among foreign health boards.
- Integration with Incredible India: Promoting Medical Value Travel as a sub-brand to create a formal, regulated, and trusted global healing hub.

### Conclusion:

India's unique combination of high-tech clinical surgery and ancient AYUSH-led wellness makes it a formidable player in the USD 115 billion global Medical Value Travel market. By bridging the gap between curative and preventive care through Regional Hubs and digital facilitation, India is poised to lead the global holistic health revolution. Sustained focus on standardization and skilling will ensure that India becomes the world's most trusted destination for total well-being.

## Project Deepak

### Context:

Project Deepak, one of the oldest and most vital units of the Border Roads Organisation (BRO), celebrated its 66th Raising Day on May 4, 2026, in Shimla.

### Project Deepak:

### AboutProject Deepak:

### What it is?

- Project Deepak is a key executive wing of the Border Roads Organisation (BRO) responsible for the construction and maintenance of strategic roads and infrastructure in the challenging terrains of the Western Himalayas, specifically within Himachal Pradesh.

### Established In:

- Year of Raising: 1961.
- Headquarters: Shimla, Himachal Pradesh.

### Organisation:

- It operates under the Border Roads Organisation (BRO), which is a premier infrastructure construction agency under the Ministry of Defence, Government of India.

### Aim:

- The primary aim of Project Deepak is to ensure year-round connectivity to remote and strategically sensitive border areas.
- It focuses on strengthening national security by maintaining vital lines of communication for the Indian Armed Forces and promoting regional development in high-altitude zones.

### Key Features:

- Area of Responsibility: Spans across the key districts of Himachal Pradesh, including Shimla, Kinnaur, Kullu, and Lahaul-Spiti.
- Strategic Infrastructure: Entrusted with a road network of over 1,100 km, including critical high-altitude and border roads.
- Iconic Projects: Responsible for the historic construction of the Hindustan-Tibet Road and significant stretches of the vital Manali-Leh axis.
- Disaster Management: The project maintains a high state of readiness for humanitarian assistance.

### Significance:

- By maintaining all-weather roads, it ensures that the defence forces remain operationally ready and can be mobilized rapidly to the northern borders.
- These roads serve as the primary lifeline for remote tribal populations in Lahaul-Spiti and Kinnaur, facilitating trade, tourism, and access to essential services.

## School Management Committee (SMC) Guidelines 2026

### Context:

Union Minister for Education launched the School Management Committee (SMC) Guidelines 2026 in New Delhi.

### SMC Size:

Number of members of the committee may be decided based on the enrolment of the children:

| Enrolment Range | Approx. No. of Members |
|---|---|
| **Up to 100 students** | 12-15 members |
| **100-500 students** | 15-20 members |
| **Above 500 students** | 20–25 members |

### Composition of SMC:

Each SMC shall consist of the following members:

| | | |
|---|---|---|
| 1 | **Elected Member from Parents/Guardian** | Chairperson |
| 2 | **Elected Member from Parents/Guardian** | Vice Chairperson |
| 3 | **Parents/Guardian from all grades of children studying in school** | Member |
| 4 | **Elected members of the local authority** | Member |
| 5 | **Teachers from the school** | Member |
| 6 | **Local educationists / Subject Experts / academicians / senior students / alumni of the school / AWW / ASHA / ANM** | Member |
| 7 | **Principal / Head Master / School In-charge** | Member-Secretary |

## School Management Committee (SMC) Guidelines 2026

## AboutSchool Management Committee (SMC) Guidelines 2026:

### What it is?

- The SMC Guidelines 2026 is a comprehensive and unified national framework that delineates the roles and responsibilities of School Management Committees (SMCs). It serves as a consolidated reference for States and Union Territories to harmonize their rules with the national vision for inclusive, participatory, and accountable education.
- Ministry: Department of School Education and Literacy, Ministry of Education.

### Aim:

- The primary aim is to empower local communities to take collective responsibility for their schools, ensuring that every child thrives in a safe, inclusive, and nurturing environment while achieving desired learning outcomes by 2047.

### Key Features:

- Universal Formation: Every school, including secondary schools up to Grade 12, must constitute an SMC within one month of the academic year starting.
- Inclusive Composition: 75% of members must be parents or guardians. The remaining 25% includes local authority members, teachers, local educationists, and frontline workers like ASHA and Anganwadi workers.

- Gender and Social Balance: At least 50% of the SMC members must be women. Proportionate representation must be given to parents from Socio-Economically Disadvantaged Groups (SEDGs) and parents of Children with Special Needs (CwSN).
- Three-Year Development Plan: SMCs are responsible for preparing a three-year School Development Plan (SDP) consisting of three annual sub-plans to guide infrastructure and academic improvements.
- Specialized Sub-Committees: SMCs may be assisted by specialized sub-committees, such as a School Building Committee for infrastructure and an Academic Committee for monitoring learning outcomes.
- Financial Oversight: SMCs monitor the utilization of government grants and are authorized to execute civil works costing up to  30 lakh.
- Safety and Well-being: The committee must actively participate in preparing a School Safety and Security Plan and conduct quarterly safety walks of the premises.
- Monitoring and Social Audit: SMCs are encouraged to conduct social audits at least once an academic year to ensure transparency and accountability.

### Significance:

- It transforms SMCs from mere monitoring bodies into true school community governing institutions, strengthening decentralization.
- The guidelines place schools at the center of societal engagement, supporting academic quality, student welfare, and mental health.

## Lieutenant General NS Raja Subramani (Retd) appointed as Chief of Defence Staff

### Context:

The Government of India has appointed Lieutenant General NS Raja Subramani as the new Chief of Defence Staff (CDS). He will succeed General Anil Chauhan after the latter completes his tenure on 30 May 2026.

### Lieutenant General NS Raja Subramani

### AboutLieutenant General NS Raja Subramani (Retd) appointed as Chief of Defence Staff:

### Who he is?

- Lieutenant General NS Raja Subramani is a retired senior officer of the Indian Army appointed as India's new Chief of Defence Staff (CDS).
- He is currently serving as the Military Adviser in the National Security Council Secretariat (NSCS) since September 2025.

### Career and Service Profile

- Commissioned into the 8th Battalion of the Garhwal Rifles on 14 December 1985.
- Graduate of the National Defence Academy and Indian Military Academy.
- Alumni of the Joint Services Command Staff College, Bracknell (UK) and National Defence College.

### Holds:

- Master's Degree from King's College London
- M.Phil in Defence Studies from University of Madras

### AboutChief of Defence Staff (CDS):

### What is the CDS?

### The Chief of Defence Staff is the highest-ranking military officer in India who acts as:

- Principal Military Adviser to the Defence Minister on tri-services matters
- Permanent Chairman of the Chiefs of Staff Committee (COSC)
- Secretary of the Department of Military Affairs (DMA)
- The CDS promotes jointness, integration and coordination among the Army, Navy and Air Force.

### Establishment of CDS:

- The post of CDS was officially created on 24 December 2019 by the Cabinet Committee on Security (CCS).
- The Department of Military Affairs (DMA) was established on 30 December 2019.
- General Bipin Rawat became India's first CDS on 31 December 2019.

### History Behind the CDS:

- After the Kargil War, the Kargil Review Committee headed by K Subrahmanyam recommended comprehensive reforms in India's defence management system in 1999.
- The Group of Ministers (GoM) in 2001 also recommended creation of the CDS post.
- However, due to lack of political consensus, the reform was delayed for nearly two decades.

### Aim of the CDS:

- Improve coordination among the Army, Navy and Air Force.
- Ensure unified operational planning and procurement.
- Provide single-point military advice to political leadership.

### Key Functions of the CDS System:

- Permanent Chairman of COSC: CDS serves as the Permanent Chairman of the Chiefs of Staff Committee.
- Head ofDepartment of Military Affairs: CDS functions as Secretary of the DMA within the Ministry of Defence.
- Tri-Service Integration: Facilitates integrated planning, operations, logistics and procurement among the three services.
- Theatre Commands: CDS is responsible for progressing towards integrated Theatre Commands for unified warfighting.
- Joint Logistics and Training: Oversees joint logistics nodes, common doctrines and joint military training mechanisms.
- Defence Reforms:Rationalisation of manpower, infrastructure and procurement systems. Encourages joint staffing and promotion policies.
- Indigenous Procurement: Promotes positive indigenisation lists and domestic defence manufacturing.

### Significance of the CDS:

- Strengthens National Security:Provides unified military leadership during modern multidomain warfare.
- Faster Decision-Making:Ensures quicker coordination between political leadership and armed forces.

## Baksa Honey

### Context:

The Agricultural and Processed Food Products Export Development Authority (APEDA) facilitated the first-ever export of 20 Metric Tons of ODOP honey from Assam's Aspirational District, Baksa, to the USA.

### Baksa Honey

### AboutBaksa Honey:

### What it is?

- Baksa honey is a premium, near-organic honey variety produced in the Baksa district of Assam (part of the Bodoland Territorial Region). It has been identified as the signature product of the district under the One District One Product (ODOP) initiative due to its traditional significance and export potential.

### Key Features:

- Natural Purity: Sourced from eco-friendly, pesticide-free environments, it is known for its high quality and near-organic characteristics.
- Floral Diversity: The honey reflects the rich biodiversity of the region, collected from diverse forest and agricultural flora.

- Nutritional Value: It is highly regarded for its rich nutritional profile and medicinal properties, rooted in centuries of traditional use by communities like the Bodo tribes.
- Global Quality Standards: The honey is processed in facilities equipped with APEDA-supported testing laboratories to ensure it meets stringent international food safety requirements.

### Significance:

- This export initiative is expected to deliver nearly 43% higher price realization for local beekeepers compared to local farm-gate prices.
- It strengthens the rural economy in an Aspirational District by providing sustainable income opportunities for indigenous beekeeping communities.
- Highlights the North Eastern Region's potential as a hub for high-value, niche agricultural exports.

### AboutOne District One Product (ODOP):

### What it is?

- The One District One Product (ODOP) initiative is a transformative program aimed at identifying, branding, and promoting a unique product from each district across India. It seeks to turn every district into an export hub by focusing on its traditional or specialized strengths.
- Aim: The primary goal is to strengthen local economies by enhancing the value addition of district-specific products, generating local employment, and connecting small-scale producers directly to national and global markets.

### Key Features:

- Product Identification: Each district selects one product (agricultural, handicraft, or industrial) based on its historical or local prominence (e.g., Baksa Honey, Agra Leather, Bhagalpur Silk).
- Skill Development: Provides training and technical support to local artisans and farmers to improve product quality and design.
- Financial Assistance: Offers support for infrastructure, such as testing labs and processing units, often through schemes like PMFME (PM Formalisation of Micro food processing Enterprises).
- Global Branding: Focuses on marketing and branding to ensure local products gain visibility on e-commerce platforms and international trade fairs.
- Aspirational District Focus: Prioritizes development in historically under-served regions to ensure balanced regional growth across India.

## National Florence Nightingale Awards for 2026

### Context:

The President of India, Smt. Droupadi Murmu, presented the National Florence Nightingale Awards for 2026 to nursing personnel at Rashtrapati Bhavan.

### National Florence Nightingale Awards for 2026

### AboutNational Florence Nightingale Awards for 2026:

### What it is?

- The National Florence Nightingale Award is the highest national honor bestowed upon a nurse in India. It recognizes nursing professionals who have rendered meritorious services to society through their compassion, devotion to duty, and tireless efforts in patient care.
- Established In: The awards were instituted in 1973 by the Ministry of Health and Family Welfare, Government of India.

### Aim:

- The primary aim is to recognize and reward the exemplary service and excellence of nursing personnel, including Registered Nurses, Midwives (ANMs), and Lady Health Visitors, who play a crucial role in delivering quality healthcare, often in challenging circumstances.

### Key Features:

- Annual Recognition: Presented every year on May 12th to coincide with the birth anniversary of Florence Nightingale.
- Diverse Categories: The award is given to nursing personnel working in Central and State Government facilities, as well as Private, Missionary, and Voluntary Organizations.
- Component of the Award: Each award consists of a Certificate of Merit, a Medal, and a Cash Prize (currently 50,000).
- Prestigious Selection: Awardees are selected through a rigorous process that evaluates their impact on community health, innovative practices, and long-term dedication to the profession.

### AboutFlorence Nightingale:

### Who She Was?

- Florence Nightingale (1820–1910) was a British social reformer, statistician, and the founder of modern nursing. Known as The Lady with the Lamp for her habit of making rounds at night to tend to wounded soldiers, she transformed nursing from an untrained job into a highly respected medical profession.

### Early Days:

- Birth: Born on May 12, 1820, in Florence, Italy, into an affluent British family.
- Despite opposition from her family, she believed she had a divine calling to serve the sick and began her nursing training in Germany in 1851.

### Contributions:

- The Crimean War (1853–1856): She led a team of 38 nurses to the military hospital in Scutari. She drastically reduced the death rate by improving sanitation, hygiene, and nutrition.
- Statistical Innovation: A pioneer in data visualization, she developed the Coxcomb or polar area diagram to illustrate that most soldiers died from preventable diseases rather than battle wounds.
- Education: In 1860, she established the Nightingale Training School at St Thomas' Hospital in London, the first secular nursing school in the world.
- Global Reforms: She wrote Notes on Nursing, which served as the cornerstone of the curriculum for nursing schools globally.

## The Common Criteria Development Board (CCDB)

### Context:

India has been nominated as the Chair of the Common Criteria Development Board (CCDB) for a two-year term from April 2026 to April 2028.

## The Common Criteria Development Board (CCDB)

### About The Common Criteria Development Board (CCDB):

### What it is?

- The CCDB is the technical heart of the Common Criteria Recognition Arrangement (CCRA). While other committees handle high-level policy, the CCDB is responsible for the technical management and evolution of the standards used to evaluate the security of Information Technology (IT) products worldwide.
- Parent Body: Operates under the Common Criteria Recognition Arrangement (CCRA), an international treaty for mutual recognition of IT security certificates.
- Indian Nodal Agency: India participates through the Ministry of Electronics and Information Technology (MeitY) and the STQC (Standardisation Testing and Quality Certification) Directorate.
- Current Status: India has been a Certificate Authorizing Nation since 2013 and now serves as the Chair (2026–2028).

### Aim:

- The primary aim of the CCDB is to develop and maintain the Common Criteria (CC) and the Common Methodology for Information Technology Security Evaluation (CEM).
- It ensures that the technical standards for IT security remain robust, consistent, and capable of addressing emerging cyber threats

### Key Functions:

- Technical Management: Manages the international work program for the development of Common Criteria (ISO/IEC 15408) and CEM standards.
- Standardization: Focuses on defining the technical evaluation criteria that determine the security level of global IT products (firewalls, operating systems, smart cards, etc.).
- Portal Management: Maintains the integrity of the Common Criteria Portal, the single source of truth and authoritative global repository for all certified secure IT products.
- Mutual Recognition: Ensures the framework for mutual recognition remains functional, allowing a certificate issued in one member country (like India) to be valid across all 38 member nations without re-testing.
- Technical Working Groups: Coordinates specific technical working groups to address security requirements for new and emerging technologies.

### Significance:

- Assuming the Chairmanship positions India at the forefront of defining how the world evaluates and trusts IT security products.
- The two-year term allows India to influence critical decisions and ensure that global standards adequately address technologies relevant to the Indian ecosystem.

## The IP Catalyst Initiative

### Context:

The Ministry of Electronics and Information Technology (MeitY) launched the IP Catalyst initiative and its dedicated digital platform (cipie.in) during a national conference in New Delhi.

## The IP Catalyst Initiative

### About The IP Catalyst Initiative:

### What it is?

- IP Catalyst is a comprehensive support framework and digital ecosystem designed to manage the entire innovation lifecycle—from the initial research and patent filing stage to technology transfer, commercialization, and final market deployment.
- It acts as a specialized accelerator for intellectual property in the Electronics and IT domains.
- Nodal Ministry: Ministry of Electronics and Information Technology (MeitY).
- Implementing Agency: Centre for Development of Advanced Computing (C-DAC), Pune.

### Aim:

- The primary aim of the initiative is to accelerate the transition of Patent to Product.
- It seeks to ensure that publicly funded R&D does not remain restricted to academic papers but is effectively adopted by the industry, startups, and MSMEs to create indigenous technological

### Key Features:

- Digital Platform (cipie.in): A unified digital portal providing seamless access to technology commercialization services and IP support.

### Financial Assistance:

- Support for IP filing for MeitY-funded and grantee institutions.
- Specific support for International patent filing tailored for startups and MSMEs.
- IP Advisory Services: Provides professional prior-art search and specialized IP advisory to ensure high-quality patent applications.
- Commercialization Support: Includes IP valuation services and technology readiness/maturity assessments to determine market viability.
- Technology Transfer: Facilitates licensing and technology transfer between research institutions and private industry players.
- Collaboration Ecosystem: Creates a bridge for industry–academia–startup partnerships to co-develop products.
- Prototyping & Deployment: Assistance in transforming a lab-scale prototype into a market-ready product for large-scale deployment.

### Significance:

- By simplifying the IP process, it encourages Make in India by ensuring that home-grown electronics and IT innovations are legally protected and commercially viable.
- Startups often struggle with the high costs of international patenting; IP Catalyst removes this financial barrier, allowing Indian startups to compete globally.

## The Roadmap of India-Netherlands Strategic Partnership (2026–2030)

### Context:

Prime Minister of India and Dutch Prime Minister Rob Jetten met at The Hague, and agreed to elevate their bilateral relationship to a Strategic Partnership.

- To execute this, both nations formally adopted the Roadmap of India-Netherlands Strategic Partnership (2026–2030), establishing a focused, five-year framework for time-bound joint initiatives.

### The Roadmap of India-Netherlands Strategic Partnership (2026–2030)

### About The Roadmap of India-Netherlands Strategic Partnership (2026–2030):

### What it is?

- The Roadmap is a comprehensive bilateral blueprint designed to transition India-Netherlands relations into an elite strategic alliance over the next five years. It establishes institutional governance, harmonizes

industrial and research capabilities, and targets critical geopolitical sectors—ranging from green hydrogen and semiconductor supply chains to maritime security in the Indo-Pacific—to drive sustainable economic growth and resilient value chains.

## Key Features of the Roadmap:

### 1. Political Dialogue & Institutional Governance

- Annual Foreign Ministers' Mechanism: Institutes an annual meeting chaired by respective Foreign Ministers to review the roadmap's progress and offer future strategic guidance.
- High-Level Engagements: Maintains regular bilateral visits and meetings between Heads of Government and Cabinet Ministers, including on the sidelines of multilateral forums.

### 2. Economic Cooperation & Supply Chain Resilience

- Joint Trade & Investment Committee (JTIC): Leveraged to expand market access in tech-heavy sectors like telecom, urban development, and electronics.
- Critical Raw Materials (CRM) Value Chain: Establishes a joint strategic partnership on critical mineral exploration, circularity, and ESG standards to diversify global supply chains.
- Fast Track Mechanism: Periodic reviews to streamline foreign direct investments and resolve institutional challenges for businesses and SMEs.

### 3. Water, Agriculture, and Public Health:

- Water Management: Renews the Strategic Partnership on Water until 2027, focusing on the Ganga Basin via the National Mission for Clean Ganga, flood resilience, and deploying the Water as Leverage model for Urban River Management Plans.
- Ag-Tech & Food Security: Operates Centres of Excellence to co-develop climate-resilient agriculture, biotechnology, and Clean Plant Centres, while standardizing digital certificates between the FSSAI and Dutch NVWA.
- One Health & Pharma: Drives collaboration on cross-border infectious diseases, anti-microbial resistance (AMR), and digital health security, backed by a Letter of Intent between ICMR and the Dutch RIVM.

### 4. Emerging Technologies, Innovation, and Space

- Semiconductor Brain Bridge: Establishes a semiconductor research pipeline connecting Dutch universities (Eindhoven, Twente) with six premier Indian institutes (including IISc Bangalore, IIT Bombay, and IIT Madras), supported by global tech majors like ASML, NXP, TATA, and CG Semi.
- Deep Tech Value Chains: Merges the Dutch Semicon Competence Centre with the Indian Semiconductor Mission (ISM) to accelerate breakthroughs in AI, photonics, quantum computing, and cybersecurity.
- Space Applications: Coordinates satellite-based data sharing to combat climate change, track air quality, and address food security.

### 5. Energy Transition, Climate, and Maritime Green Corridors

- Green Shipping Corridors: Introduces an action plan for a Green and Digital Sea Corridor linking Indian domestic green hydrogen production directly to European markets via Dutch ports.
- Circular Economy Alliance: Collaborates on bioenergy and battery storage solutions via the Global Biofuels Alliance and the International Solar Alliance.

### 6. Defence & Security Architecture

- Defence Industrial Roadmap: Solidifies ties between the Society of Indian Defence Manufacturers (SIDM) and the Netherlands Industry for Defence and Security (NIDV) to co-develop military equipment.
- Indo-Pacific &Cyber Dialogue: Connects the Indian Armed Forces to the Indo-Pacific Oceans Initiative (IPOI) through joint naval drills and institutionalizes a Mutual Logistic Support Agreement (MLSA).
- Counter-Terrorism: Coordinates data sharing to counter transnational cybercrime and pushes for the UN's Comprehensive Convention on International Terrorism (CCIT).

### 7. Migration, Mobility, and Culture

- Talent Mobility: Implements the MoU on Mobility and Migration to facilitate the lawful movement of students, academics, and highly skilled tech professionals while curbing irregular migration.

- Cultural Restitution: Institutionalizes a framework to handle requests for the return and restitution of heritage artifacts.

### Key Challenges Associated with the Partnership:

- Regulatory and Standards Disconnect: Rigid EU environmental and phytosanitary barriers frequently choke Indian agricultural and textile exports.
- Example: Indian marine and food shipments face frequent rejections at Rotterdam port due to strict EU maximum residue limits (MRLs) for chemicals.
- Geopolitical Balancing Acts: Differing approaches toward global security conflicts can strain diplomatic alignments.
- Example: The Netherlands' strict alignment with Western geopolitical stances requires India to carefully navigate its strategic autonomy regarding Russia and Iran.
- Technology Transfer and IP Bottlenecks: Commercial protection of cutting-edge lithography and deep-tech intellectual property slows down physical infrastructure setup.
- Example: While the Brain Bridge connects universities, securing actual IP sharing from tech giants like ASML for Indian fabrication plants remains restricted.
- Asymmetric Trade Composition: India's export basket remains dominated by low-value refined petroleum and raw materials, while Dutch imports are high-value machinery.
- Example: This skewed trade value pattern makes India vulnerable to fluctuations in global commodity prices compared to high-margin Dutch tech imports.
- Knowledge Security and Cyber Vulnerabilities: Merging digital health and supercomputing infrastructure increases exposure to transboundary espionage and cyberattacks.
- Example: Jointly building an 8 Exaflop supercomputer or digital health grid demands data protection protocols that satisfy conflicting domestic privacy laws.

### Way Ahead:

- Operationalizing the Green Sea Corridor: Fast-track the development of the Rotterdam-India green maritime lane to ensure tax-free, zero-emission transit for Indian Green Hydrogen exports.
- Harmonizing Electronic Certification: Fully execute the FSSAI-NVWA pact on electronic food safety certification to bypass physical customs hold-ups at Dutch entry points.
- Executing the Defense MLSA: Conclude the Mutual Logistic Support Agreement to allow the Indian Navy access to Dutch naval facilities during Indo-Pacific deployments.
- Scaling the Semicon Brain Bridge: Move the academic partnership quickly from student exchanges to setting up dedicated joint R&D design centers inside the Indian Semiconductor Mission facilities.
- Leveraging theGBA for Biofuels: Use the Global Biofuels Alliance to co-develop municipal waste-to-energy projects in India's tier-2 cities using advanced Dutch circular economy models.

### Conclusion:

The India-Netherlands Strategic Roadmap (2026–2030) marks a paradigm shift that lifts bilateral relations out of a standard commercial box. By anchoring India's manufacturing ambitions to Dutch high-tech mastery in semiconductors and green shipping, both nations have built a highly resilient supply chain independent of global geopolitical shocks.

## The Judges Inquiry Committee

### Context:

The three-member Judges Inquiry Committee submitted its formal investigation report to Lok Sabha Speaker concerning misbehavior allegations against sitting judge Justice Yashwant Varma.

### The Judges Inquiry Committee

### AboutThe Judges Inquiry Committee:

### What it is?

- The Judges Inquiry Committee is a high-level, ad-hoc

statutory judicial tribunal constituted to investigate specific allegations of proved misbehavior or incapacity against a judge of the Supreme Court or a High Court. It serves as an essential, independent fact-finding body that must complete its probe before Parliament can debate or vote on a motion for the removal of a judge.

- Constitutional Anchor: Operates in tandem with Article 124(4) (for Supreme Court judges) and Article 217(1)(b) (for High Court judges) of the Constitution of India.
- Statutory Framework: It is strictly established under Section 3 of the Judges (Inquiry) Act, 1968.
- Composition Mandate: The Act dictates that the committee must comprise exactly three members appointed by the Lok Sabha Speaker or Rajya Sabha Chairman:

1. A sitting Judge of the Supreme Court of India.
2. A sitting Chief Justice of a High Court.
3. An eminent jurist.

- The 2026 Panel: The committee that submitted the recent report was headed by Supreme Court Justice Aravind Kumar, alongside Bombay High Court Chief Justice Shree Chandrashekhar and Senior Advocate B.V. Acharya.
- Aim: The primary aim of the committee is to insulate the judiciary from frivolous political attacks while ensuring accountability for judicial misconduct.

### Key Functions:

- Framing Charges: Explicitly documents and frames the definitive charges of misconduct or physical/mental incapacity against the accused judge.
- Summoning and Examination: Holds the powers of a Civil Court to summon witnesses, demand the production of confidential state or judicial documents, and examine individuals under oath.
- EnforcingPrinciples of Natural Justice: Guarantees the accused judge a fair trial by serving the charges formally, allowing the judge to submit a written defense, and providing the opportunity to cross-examine witnesses via legal counsel.
- Statutory Reporting: Submits a conclusive, evidence-backed report to the presiding officer (Speaker/ Chairman) stating whether the specific charges of misbehavior or incapacity have been proven or not proven.

### Significance:

- ProtectsJudicial Independence: Prevents Parliament from acting against judges unless charges are first verified by an independent panel.
- Checks Executive Power: Ensures judges cannot be removed arbitrarily by the political executive, safeguarding separation of powers.

## The Ayush Anudan Portal

### Context:

Union Minister of India officially launched the Ayush Anudan Portal at Kartavya Bhawan, New Delhi.


- Developed under the aegis of the Ayush Grid initiative, this paperless platform is designed to digitize the end-to-end submission, evaluation, and tracking of funding grants under various Central Sector Schemes of the ministry.

### The Ayush Anudan Portal

### AboutThe Ayush Anudan Portal:

### What it is?

- The Ayush Anudan Portal is a centralized, interactive digital platform designed to manage the distribution

of financial grants within the Ayush sector. It replaces slow, manual, and paper-heavy workflows with a structured, transparent, and user-friendly interface.

- Nodal Ministry: Ministry of Ayush, Government of India.
- Aim: To achieve 100% transparency, operational efficiency, and strict accountability in the grant management process, advancing the Union government's broader mandates for Ease of Doing Business and Ease of Living.

### Key Features:

- NGO Darpan Integration: Seamlessly cross-links with the NITI Aayog's NGO Darpan portal to execute rapid, automated, and error-free background authentication of applicant organizations.
- Scheme-Wise Application Pathways: Categorizes and evaluates funding proposals based on the custom-tailored criteria of individual Central Sector Schemes of the Ministry.
- Real-Time Tracking System: Incorporates an interactive tracking dashboard that permits both government reviewers and institutional applicants to monitor a proposal's approval status live.
- Single-Window Integration: The platform can be securely accessed directly or via the Ministry's overarching single-window application portal, the My Ayush Integrated Services Portal (MAISP).

### Aboutthe Ayush Grid Initiative:

### What it is?

- The Ayush Grid is a comprehensive, nationwide IT infrastructure project designed to serve as the unified digital backbone for the traditionalIndian medicine sector. It dynamically bridges information gaps across all streams of traditional medicine: Ayurveda, Yoga & Naturopathy, Unani, Siddha, Sowa-Rigpa, and Homoeopathy.
- Launched In: Originally conceptualized and initiated by the Ministry of Ayush in 2018 under the umbrella of the Digital India Program.
- Aim: To fully digitalize operations across the Ayush universe, establishing an integrated, secure, and citizen-centric digital ecosystem that links hospitals, labs, data grids, and regulatory offices.

### Key Features:

- ABDM Compliance: Fully aligned with the Ayushman Bharat Digital Mission (ABDM), ensuring traditional health records can securely interoperate with mainstream medical systems.
- Ayush Health Management Information System (AHMIS): A robust, cloud-based framework deployed across clinical establishments to standardize patient documentation and morbidity statistics.
- Comprehensive Multi-Sector Modules: Operates across seven strategic operational streams:
- Healthcare Services: Powering dedicated Tele-medicine portals and apps like Ayush Sanjivani.
- Education & Capacity Building: Customized IT skill training models for practitioners executed alongside C-DAC.
- Research & Drug Regulation: Centralizing scientific case registries and enforcing absolute transparency in medicinal plant administration and licensing.
- Citizen-Facing Portals: Backed by open-access consumer mapping frameworks, including the popular Yoga Locator and specialized Bhuvan spatial tracking applications.

## India-Italy Bilateral Relations

### Context:

Prime Minister of India paid a landmark official visit to Rome, where he and Italian Prime Minister Giorgia Meloni formally elevated bilateral ties to a Special Strategic Partnership.

- The historic summit resulted in a multi-sectoral Joint Declaration, a localized Defense Industrial Roadmap, and an ambitious blueprint to scale bilateral trade to €20 billion by 2029.

# India-Italy Bilateral Relations

## AboutIndia-Italy Bilateral Relations:

### What it is?

- India and Italy share deep civilizational connections dating back to ancient maritime trade routes between the Roman Empire and India's southern coast. In the modern era, relations have transitioned from purely commercial trade into an interdependent, high-tech alliance.

### Key Outcomes of the Joint Declaration:

- Institutional Governance: Elevated relations to a Special Strategic Partnership and established a permanent Foreign Ministers-led mechanism to review and execute the Joint Strategic Action Plan 2025–2029.
- Economic &Critical Minerals Pacts: Set a bilateral trade target of €20 billion by 2029, backed by the newly concluded India-EU Free Trade Agreement. Both nations signed a milestone MoU on Critical Minerals to recover rare materials from electronic waste and mine tailings.
- Connectivity & Infrastructure: Reaffirmed absolute commitment to the India-Middle East-Europe Economic Corridor (IMEC), scheduling the first IMEC Ministerial meeting for later in 2026. Concluded a new MoU on maritime transport to build interconnected port networks.
- INNOVIT India Hub & Advanced Tech: Announced INNOVIT India, a dedicated innovation hub based in India to accelerate startups in AI, quantum computing, fintech, and semiconductors. Italy also signed a Letter of Intent to grant Indian researchers direct access to the Elettra Sincrotrone facility in Trieste.
- Defense Industrial Roadmap: Adopted a joint roadmap to initiate technology co-production for helicopters, naval platforms, marine armaments, and electronic warfare systems, alongside a new Maritime Security Dialogue.
- Security & Financial Intelligence: Concluded an MoU between Italy's Guardia di Finanza and India's Directorate of Enforcement (ED) to freeze terror channels, while establishing a Permanent Task Force on countering the financing of terrorism.
- Migration & Talent Mobility: Finalized a specific Joint Declaration of Intent to streamline the legal mobility of Indian nurses to Italy, while advancing the comprehensive Social Security Agreement (SSA) and launching the "ICI – Italy Calls India" university-to-enterprise talent bridge.
- Trilateral Africa Initiative: Agreed to launch joint trilateral developmental projects in Africa, matching India's Digital Public Infrastructure (DPI) with Italy's Mattei Plan for sustainable agricultural and healthcare access.
- Cultural Preservation: Signed an MoU for Italy's active technical participation in building India's flagship National Maritime Heritage Complex (NMHC) in Lothal, Gujarat, while designating 2027 as the "Year of Culture and Tourism between Italy and India."

### Opportunities for India-Italy Relations:

- Co-developing Advanced Defense Ecosystems: Moving beyond standard arms buyer-seller dynamics toward deep industrial co-production.
- Example: The newly adopted Defense Industrial Roadmap allows Indian private firms to manufacture elite marine armaments and electronic warfare packages locally under "Make in India."
- Securing Critical Minerals via the Circular Economy: Tapping into Italy's advanced recycling tech to extract rare earth minerals domestically.
- Example: The new critical minerals framework focuses on reclaiming rare inputs from urban electronic waste, insulating India's semiconductor sector from foreign raw material blockades.
- Trilateral Tech Deployment in Africa: Jointly exporting digital governance systems to the African continent to counter predatory development models.
- Example: Matching India's low-cost Digital Public Infrastructure (DPI) with Italy's multi-billion euro Mattei Plan allows both nations to co-install secure digital payment grids across East Africa.
- Direct Access to Elite European Synchrotron Labs: Upgrading the material science and quantum computing capabilities of Indian academic researchers.
- Example: The Letter of Intent with the Elettra Sincrotrone center in Trieste grants Indian scientists direct beamline access to study advanced atomic structures for next-generation chips.

- Legal Mobility Corridors for Healthcare Professionals: Creating a safe, structured gateway for skilled Indian workers to enter Europe's labor market.

### Key Challenges Associated with the Alliance:

- Geopolitical Redirection of theIMEC Transit Corridor: The physical infrastructure of the proposed corridor remains highly vulnerable to West Asian proxy conflicts.
- Example: Ongoing maritime security threats near the Strait of Hormuz directly bottleneck the shipping lanes required to connect India's western ports to Italy's Adriatic coast.
- Reconciling Strict EU Regulatory Barriers: Differing domestic standards and non-tariff trade policies can slow down commercial integration despite the India-EU FTA.
- Example: Italy's alignment with EU carbon border adjustments and strict phytosanitary rules can temporarily disrupt Indian textile and agricultural shipments at Italian ports.
- Bureaucratic Overhead inDefense Joint Ventures: Legacy compliance systems within both nations' defense ministries can delay active co-production lines.
- Example: Transitioning from a Joint Declaration of Intent to manufacturing active military helicopter platforms faces prolonged testing, evaluation, and liability-sharing disputes.
- Complexities in Finalizing the Social Security Agreement (SSA): Reconciling conflicting tax structures and pension portability frameworks takes years of negotiation.
- Example: Without a finalized SSA, Indian tech professionals working in Italy face dual taxation on their social security contributions, decreasing short-term talent mobility.
- Data Privacy and AI Governance Disconnects: Merging digital ecosystems exposes both nations to conflicting legal frameworks regarding data sovereignty.
- Example: Scaling the INNOVIT India hub across fintech and AI startups requires aligning India's data localization rules with Europe's stringent General Data Protection Regulation (GDPR).

### Way Ahead:

- Activating the IMEC Ministerial Desk: Convene the first IMEC Ministerial meeting immediately to lock in financial commitments for alternative rail-and-sea routes that bypass active conflict zones.
- Launching the Vadinar-Trieste Green Port Track: Connect India's newly planned maritime clusters directly with Italian ports to establish digital, automated custom clearances under the new maritime transport MoU.
- Fast-tracking the ED-Guardia di Finanza Grid: Operationalize the financial intelligence sharing agreement to rapidly track, map, and freeze complex, transboundary trade-based money laundering channels.
- Setting up Localized Core-Symmetry Defense Clusters: Dedicate a specialized zone inside the Tamil Nadu Defense Industrial Corridor for joint Italian-Indian production of naval electronic warfare components.
- Executing the Nurse-Mobility Pilot Program: Launch the first batch of the localized nurse training framework in late 2026, combining quick-turnaround Italian language courses with AIIMS-certified healthcare training.

### Conclusion:

The elevation of India-Italy ties to a Special Strategic Partnership marks a major step forward in India's broader European foreign policy. By moving past legacy issues and anchoring relations to tangible tech hubs like INNOVIT, high-value critical mineral recycling, and mutual defense co-production, both Rome and New Delhi have created a highly pragmatic alliance.

## Asian Productivity Organization (APO)

### Context:

The Government of India is hosting the 68th Session of the Asian Productivity Organization (APO) Governing Body at Bharat Mandapam in New Delhi.

Asian Productivity Organization

## Asian Productivity Organization (APO)

### AboutAsian Productivity Organization (APO):

### What It Is?

- The Asian Productivity Organization (APO) is a non political, non profit, and non discriminatory intergovernmental organization. It currently comprises 21 member economies from the Asia-Pacific region working together to drive sustainable economic growth.

### Established In: May 11, 1961

### Headquarters: Tokyo, Japan

- Aim: To contribute to the sustainable socioeconomic development of Asia and the Pacific by enhancing productivity through mutual cooperation, knowledge sharing, and innovation-led growth.

### Key Functions:

- The APO operates across five designated roles to translate its mandate into actionable support for member economies:
- Think Tank: Conducts research on productivity data, climate impact, and emerging economic trends to assist member states in formulating data-driven, pro-growth national strategies.
- Catalyst: Promotes bilateral and multilateral engagements to spark institutional reforms, smart initiatives, and a robust innovation ecosystem across sectors.
- Regional Adviser: Offers policy advisory services to governments, mapping out economic performance and outlining frameworks for national development.
- Institution Builder: Strengthens national capacities by training human resources and upgrading the capabilities of National Productivity Organizations (NPOs), small and medium enterprises (SMEs), and public sectors.
- Clearinghouse for Productivity Information: Acts as a central node for gathering and disseminating best practices, technical knowledge, and tools related to productivity enhancement.

### Significance:

- RegionalProductivity Driver: The APO strengthens productivity in Asia-Pacific industries and agriculture through policy support and capacity building.
- Innovation-Led Growth: It helps member countries transition toward competitive, climate-resilient, and innovation-driven economic systems.

## The Bharat Audyogik Vikas Yojna (BHAVYA)

### Context:

The Department for Promotion of Industry and Internal Trade (DPIIT) officially released the operational guidelines for the Bharat Audyogik Vikas Yojna (BHAVYA).

### The Bharat Audyogik Vikas Yojna (BHAVYA)

### AboutThe Bharat Audyogik Vikas Yojna (BHAVYA):

### What It Is?

- BHAVYA is a landmark Central Sector Scheme designed to establish world-class, investment-ready, plug-and-play industrial smart cities across India.
- Nodal Department: Department for Promotion of Industry and Internal Trade (DPIIT), Ministry of Commerce & Industry.
- Project Management Agency (PMA): National Industrial Corridor Development Corporation (NICDC).
- Financial Allocation: Total budget outlay of  33,660 crore.
- Timeline: Six-year implementation window spanning from FY 2026-27 to FY 2031-32.

### Aim:

- The scheme aims to eliminate long-standing entry barriers for global and domestic manufacturers by providing ready-built infrastructure, streamlined regulatory approvals, and multi-modal logistics connectivity.
- It serves as a core infrastructure engine to accelerate Make in India, advance Aatmanirbharta, and build a competitive, manufacturing-led economy.

### Key Features of the BHAVYA Scheme:

- Scale of Deployment: Targets the complete development of 100 industrial parks nationwide. The initial phase will select the first 50 parks via a challenge-based competitive framework among states and union territories.
- Sizable Financial Subsidies: Provides financial assistance of up to 1 crore per acre. Additionally, the scheme funds up to 25% of the cost for external infrastructure to ensure seamless last-mile connection to national freight grids.
- Challenge-Mode Selection Matrix: Avoids arbitrary allocations. Project proposals are scored on objective indices, including site suitability, environmental sustainability, policy facilitation, and existing regional ecosystem strengths.
- Strict Corporate SPV Model: Deployed via Special Purpose Vehicles (SPVs) incorporated under the Companies Act, 2013. The government's fiscal help is routed as equity contributions linked directly to state land transfers and project milestones.
- Comprehensive Multi-Tier Infrastructure Framework: Funding is divided into three functional pillars:
- Core Infrastructure: Internal roads, underground utility corridors (enabling a no-dig environment), smart drainage, and Common Effluent Treatment Plants (CETPs).
- Value-Added Infrastructure: Ready-built factory sheds, built-to-suit manufacturing units, quality-testing laboratories, and advanced logistics warehousing.
- Social Infrastructure: On-site worker housing, healthcare centers, skill-development facilities, and community amenities.

### Guidelines for Implementation of the BHAVYA Scheme:

- The operational manual released by the DPIIT translates the cabinet's broad policy vision into precise, actionable ground rules:
- Strict Land Area Benchmarks: To ensure industrial viability, greenfield and eligible brownfield projects must meet minimum contiguous land targets:
- 100 Acres for standard non-hilly states.
- 25 Acres for hilly terrains, northeastern states, Union Territories, and smaller states.
- Max allowances permit macro-clusters scaling up to 1,000 acres.
- Integration with PM GatiShakti: Mandates that every park layout map must be layered onto the PM GatiShakti National Master Plan GIS platform to optimize multi-modal rail, highway, and port logistics connectivity.
- Private Sector Developer Enablement: Explicitly outlines rules for Public-Private Partnerships (PPP). Private infrastructure firms can co-invest through project-specific SPVs backed by strict transparency safeguards, audit mechanisms, and anti-hoarding accountability clauses.
- Tech-EnabledGovernance Oversight: Introduces satellite and GIS-based digital project monitoring tools. Progress will be audited periodically by a National Level Steering Committee chaired by the Secretary, DPIIT.
- Multi-Scheme Convergence Interlocking: Dictates that the parks must actively leverage existing central and state programs for green energy adoption, rooftop solar grids, and localized MSME cluster incentives.

## The Indian Association for the Cultivation of Science (IACS)

### Context:

Union Minister joined the 150-year celebrations of the Indian Association for the Cultivation of Science (IACS) in Kolkata.

ইন্ডিয়ান অ্যাসোসিয়েশন ফর দ্য কাল্টিভেশন অফ সায়েন্স
Indian Association for the Cultivation of Science
(Deemed to be University under *de novo* category under Section 3 of the University Grants Commission (UGC) Act, 1956; vide Gazette Notification No. F.9-7/2017-U.3 (A) of the Central Government)

## Indian Association for the Cultivation of Science

### About The Indian Association for the Cultivation of Science (IACS):

### What It Is?

- The Indian Association for the Cultivation of Science (IACS) is a premier, historic autonomous research institution and a deemed-to-be university. It holds a unique position in global scientific history as the oldest institute in India and the first research facility in Asia established entirely by Indians for the cultivation of modern science.
- Established In: July 29, 1876.
- Founder: Dr. Mahendralal Sircar, a visionary physician who sought to build local scientific capacity when infrastructure was virtually non-existent in colonial India.

### Aim:

- The original and continuing objective of the IACS is to cultivate science in all its departments through original fundamental research and its varied practical applications to elevate the arts and comforts of life.

### Key Features:

- India's Physics Legacy: Between 1907–1933, V. Raman conducted research here that led to the discovery of the Raman Effect and India's first Nobel Prize in Science in 1930.
- Multi-Disciplinary Research Hub: The institute now leads research in quantum materials, nanotechnology, AI, cancer biology, battery materials, and sustainable energy.
- Solar Technology Pioneer: It developed India's early amorphous silicon solar-cell technology through the indigenous PECVD system.
- RETINA Innovation Hub: The RETINA framework connects laboratory research with startups, industrial applications, and affordable technologies.
- Medical & Environmental Research: Conducts advanced work on muscular dystrophy treatment, biosensors, photodetectors, and toxic waste remediation.
- Scientific Outreach: Promotes scientific temper through outreach programs for students, women, and rural communities.

### Significance of the Institution:

- Asia's First Indigenous Science Institution: IACS proved Indian scientists could conduct world-class research even during colonial rule.
- Foundation of Modern Scientific Research: Before the 20th century, it was India's primary center for advanced physical science research and training.

## Nirbhay Raho Initiative

### Context:

The Ministry of Panchayati Raj successfully conducted a three-day national Training of Trainers (ToT) program in New Delhi.

- The program focused on legal provisions for women's security, marking a major step forward for the Ministry's newly launched 'Nirbhay Raho' initiative.

## Nirbhay Raho Initiative

### AboutNirbhay Raho Initiative:

### What It Is?

- The 'Nirbhay Raho' Initiative is a national gender-responsive governance and grassroots capacity-building program. It is structurally funded and implemented through the Union Government's non-lapsable Nirbhaya Fund, transforming local self-governments into active protective anchors for women.
- Nodal Ministry: Ministry of Panchayati Raj, Government of India.

### Aim:

- The primary aim of the initiative is to eliminate grassroots gender-based discrimination and violence by building inclusive, responsive, and women-friendly Panchayats.
- It seeks to equip local rural leaders with deep legal literacy, survivor-centered focus, and first-responder capabilities to guarantee safety and access to justice across rural India.

### Key Features:

The initiative is built around a comprehensive three-pronged framework designed to address infrastructure, leadership, and cultural mindsets:

1. Nirbhay Netri (Empowering Female Leadership): Focuses entirely on the intensive training, capacity building, and legal awareness of 14.5 lakh Elected Women Representatives (EWRs) to help them confidently handle local security challenges.
2. Nirbhay Chetna (Sensitizing Male Peers): Aimed at sensitizing 17.5 lakh Male Elected Representatives across India, breaking down patriarchal biases, and involving male leaders in local gender-equality and safety campaigns.
3. Nirbhay Drishti (Surveillance Infrastructure): Enhances technology-enabled safety infrastructure by funding the installation of CCTV security cameras at strategic rural locations within Gram Panchayats.

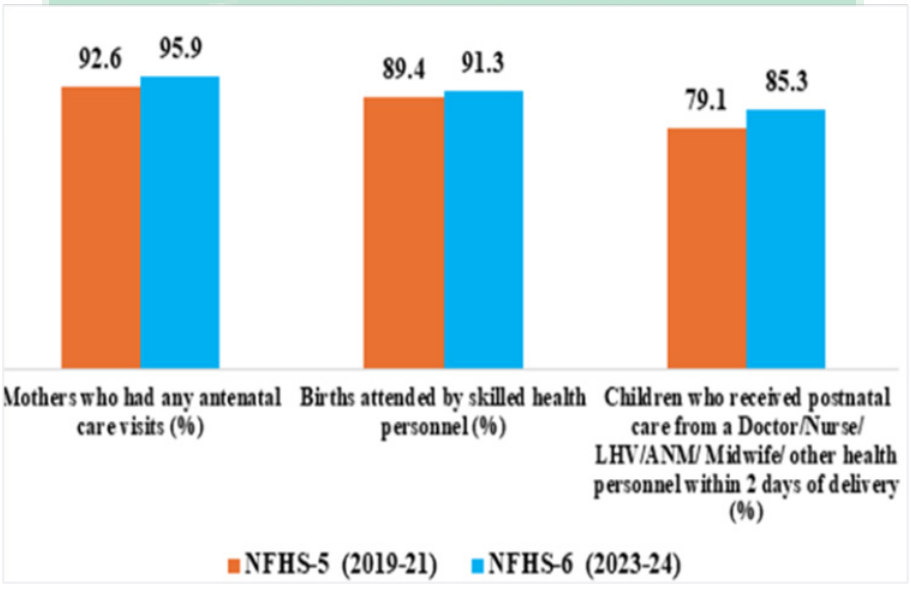
- Massive Scale of Action: Targets a combined national footprint of over 32 lakh elected Panchayat representatives, making it one of the largest rural outreach programs for public safety.
- Comprehensive Curricular Training: Combines core legal training on domestic violence, child marriage, cyber safety, victim compensation, and local referral reporting networks.
- Cascading Model of Scaling: Uses a dynamic Training of Trainers (ToT) approach, where master trainers use practice-oriented simulations, moot courts, and role-plays to pass knowledge down to state, district, and block levels.

## Government Released the National Family Health Survey–6 (NFHS-6)

### Context:

The Ministry of Health and Family Welfare (MoHFW) has released the National Family Health Survey–6 (NFHS-6) report for the 2023–24 period.

- Conducted across 715 districts, the landmark survey highlights India's accelerated progress in maternal-child health, child nutrition, and health insurance penetration.



# NFHS-6

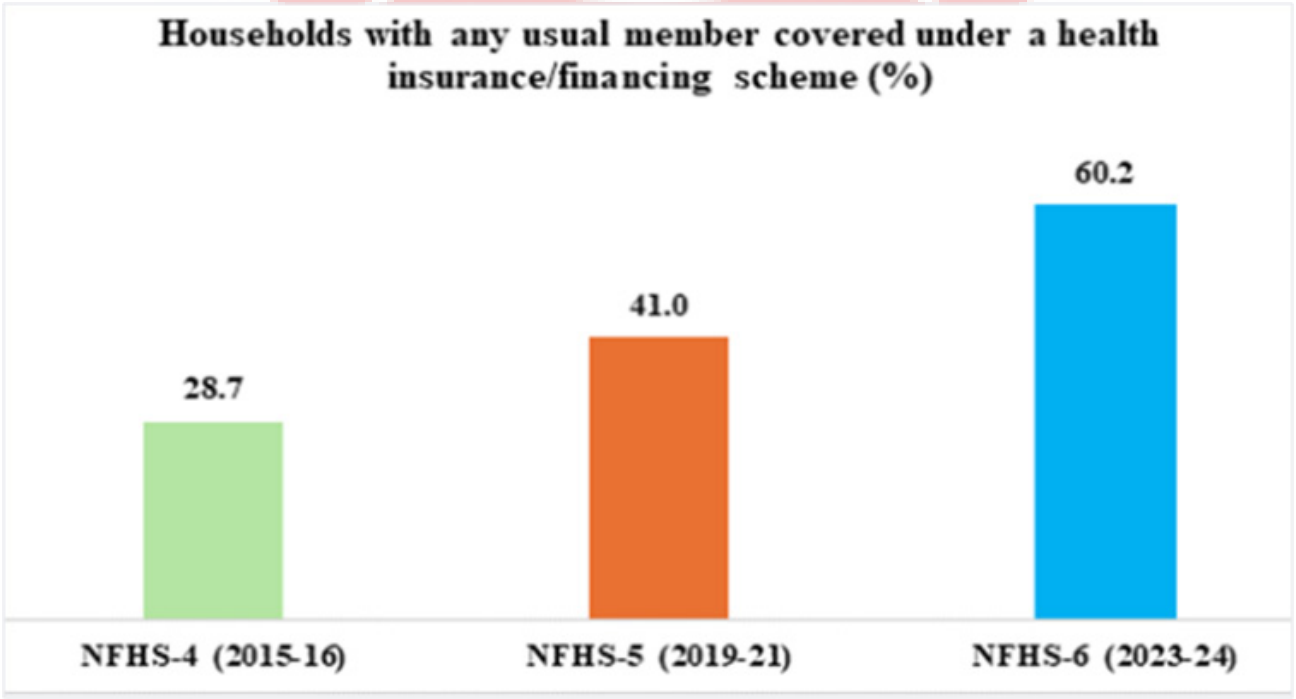
## AboutGovernment Released the National Family Health Survey–6 (NFHS-6):

### What it is?

- The NFHS-6 is a comprehensive, multi-round nationwide survey designed to provide high-quality, district-level data on population dynamics, health, nutrition, and family welfare.
- Coordinated by the International Institute for Population Sciences (IIPS), Mumbai, as the nodal agency, this iteration surveyed nearly 6.79 lakh households. It serves as India's premier data-driven framework for evidence-based policymaking, and monitoring Sustainable Development Goals (SDGs).

### Key Findings in the NFHS-6 Report:

- Surge in Institutional Deliveries: Hospital births rose from 88.6% (NFHS-5) to 90.6%, advancing the nation closer to universal safe childbirth coverage.
- Expanded Antenatal Care (ANC): Overall ANC registration hit 95.9%. Notably, first-trimester care tracking rose from 70% to 76.2%, and women achieving at least four robust ANC checkups increased to 65.2%.
- Stability in Replacement Fertility: India's Total Fertility Rate (TFR) remained steady and stable at 2.0, comfortably below the international replacement threshold of 2.1.
- Substantial Drops in Malnutrition: Long-term child stunting fell from 35.5% to 29.3%, while severe acute wasting decreased significantly from 7.7% to 5.2%.
- Boost inChildhood Immunization: The percentage of fully vaccinated children aged 12–23 months increased from 83.8% to 87.1%.
- Exponential Jump in Rotavirus Coverage: Driven by public health expansions, rotavirus vaccine coverage more than doubled, soaring from 36.4% to 85.4%.
- Public Healthcare Dominance: Over 95.6% of childhood immunizations were administered through public clinics and government hospitals, demonstrating deep public trust.
- Aggressive Increase inMedical Protection: Household health insurance and financial risk protection coverage grew from 41% to 60.2%, anchored by schemes like Ayushman Bharat (PM-JAY).
- Closing the Female Digital Divide: The proportion of Indian women who have ever used the internet grew from 33.3% to 64.3%.
- Rise in C-Section Births: Surgical Caesarean deliveries experienced an uncharacteristically sharp spike nationwide, jumping from 21.5% to 27.2%.



## NFHS-6 Report

### Positives in the NFHS-6 Report:

- Deepening Public Trust in StateHealthcare Infrastructure: A vast majority of citizens now look to the public sector as their primary provider for life-saving interventions, proving the success of regional state-backed medical clinics.
- Example: An overwhelming 95.6% of children received most of their vaccinations directly through public health facilities as their preferred choice.
- MarkedMulti-Sectoral Success in Eradicating Long-Term Child Malnutrition: Convergent inter-ministerial efforts have created a strong, visible downward trend in long-term childhood structural undernutrition.
- Example: Structural long-term undernutrition saw excellent progress, as seen in the substantial 17% reduction in child stunting down to 29.3%.
- Strengthened Financial Protection Against Catastrophic Out-of-Pocket Spending: The rapid expansion of affordable medical care cards has created a stronger financial safety net for vulnerable, low-income families.
- Example: The expansion of programs like Ayushman Bharat helped health insurance coverage scale up from 41.0% to 60.2% at the household level.
- Rapid Onboarding of Women into the Digital and Banking Economy: Targeted state welfare distributions have significantly improved women's economic independence, mobile connectivity, and self-directed personal banking.
- Example: Active financial independence saw massive growth as women utilizing their own functional bank accounts increased to 89.0%.
- Rapid Implementation Acceleration for New-Generation Specialized Vaccines: Enhanced cold-chain logistics and real-time digital tracking applications have enabled the rapid rollout of vital pediatric vaccine doses.
- Example: Targeted optimization under the Universal Immunization Programme helped rotavirus vaccine coverage more than double, soaring to 85.4%.

### Challenges Identified in the NFHS-6 Report:

- Persistent Gaps in Early Infant and Young Child Feeding Practices: Even though initial breastfeeding rates are high, over one-third of infants miss out on essential solid or semi-solid food transitions during their critical growth windows.
- Example: Despite overall nutrition gains, 40.5% of children aged 6–8 months fail to receive vital solid or semi-solid foods alongside breastmilk.
- A Stubborn Core of Unvaccinated or Partially Under-Vaccinated Children: Even with widespread state coverage, institutional gaps leave more than 12% of infants missing out on full, multi-dose immunization schedules.
- Example: While general numbers look positive, 12.9% of children aged 12–23 months still fall short of full immunization parameters.
- The Rapid Spread of UncheckedNon-Communicable Diseases (NCDs): Lifestyle shifts and changing dietary habits are driving a sharp increase in chronic illnesses, creating a complex healthcare burden.
- Example: The report explicitly flags rising non-communicable diseases and lifestyle-related risks as major emerging structural threats.
- The Looming Dual Burden ofOverweight and Obesity Conditions among Adults: India faces an alarming public health contradiction where chronic adult overnutrition is expanding right alongside persistent pockets of childhood undernutrition.
- Example: The survey highlights a worsening dual burden of undernutrition coexisting with a rising trend of overweight and obesity conditions among adults.
- Lagging Progress in Specialized Maternal Micro-Nutrient Supplementation Continuity: While initial checkups are strong, a significant portion of pregnant women do not maintain their daily nutritional intake over the full course of their pregnancies.
- Example: Showing low long-term compliance, only 37.8% of pregnant mothers consistently consumed necessary iron folic acid supplements for the required 180 days.

## Way Forward:

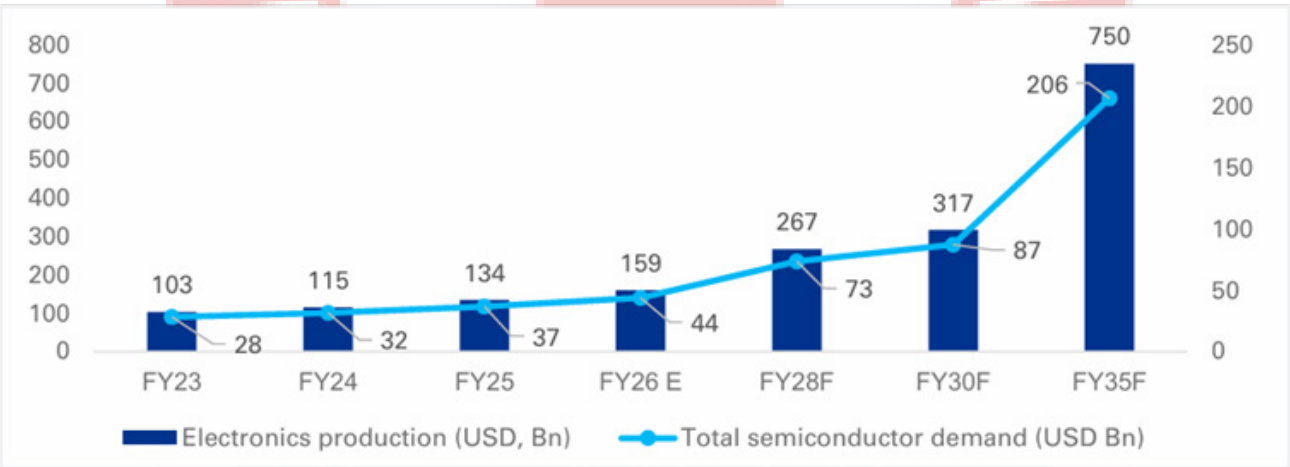
- Deploying AI-Driven LocalMicro-Planning via U-WIN: Fully utilize real-time data from the U-WIN digital dashboard to pinpoint sub-district immunization gaps, helping frontline health workers trace and vaccinate under-immunized children.
- Aggressively Scaling Up Saksham Anganwadi and POSHAN 2.0: Strengthen infant feeding counseling across rural centers, using local community networks to ensure that 100% of children aged 6–8 months smoothly transition to nutritious semi-solid foods.
- Enforcing Comprehensive NCD Screening Protocols via Health & Wellness Centres: Expand primary health clinics into active screening hubs that provide free, routine blood pressure and blood sugar checks to tackle the rise in lifestyle diseases early.
- Launching Targeted Behavioral Change Campaigns for Long-Term Prenatal Care: Use regional media and localized outreach to educate pregnant women on the importance of taking daily iron and folic acid supplements for the full 180-day term.
- IntegratingUniversal Health Insurance Registries across Low-Income Blocks: Automate the onboarding process for Ayushman Bharat PM-JAY at local clinics, ensuring that the remaining 39.8% of uninsured households gain immediate access to financial protection.

## Conclusion:

The National Family Health Survey – 6 highlights India's accelerated progress in safe motherhood, full child immunization, and household health insurance expansion, validating the impact of its major flagship programs. However, emerging challenges—such as low long-term compliance with iron supplements during pregnancy, rising non-communicable diseases, and the growing dual burden of obesity—show that the healthcare system must look beyond basic access.

# The NITI Aayog Releases Future Of India's Semiconductor Industry Roadmap

## Context:



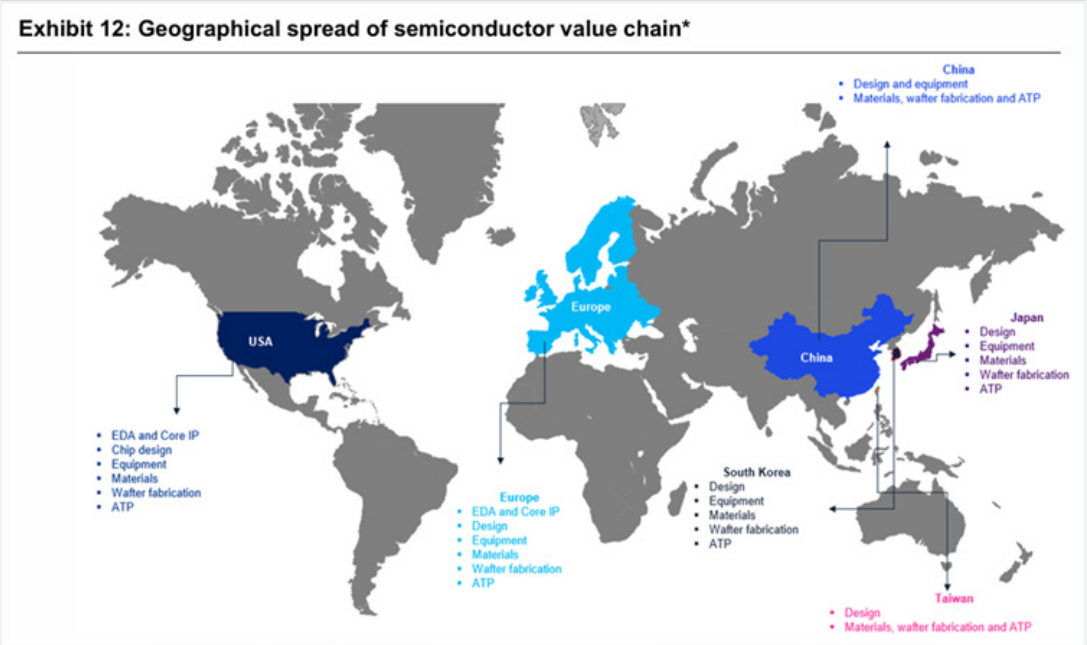

NITI Aayog's Frontier Tech Hub has officially released India's first comprehensive 10-year roadmap titled Future of India's Semiconductor Industry.

## The NITI Aayog Releases Future Of India's Semiconductor Industry Roadmap

## AboutThe NITI Aayog Releases Future Of India's Semiconductor Industry Roadmap:

## What it is?

- The Future of India's Semiconductor Industry report is a forward-looking operational architecture engineered to build a USD 120–150 billion domestic semiconductor value chain by 2035. Rather than chasing the unsustainable global wafer race from behind, the roadmap moves beyond an imitative catch-up model.
- It advocates for a distinct More-than-Moore strategy focused on securing deep manufacturing dominance in mature logic nodes, advanced Outsourced Semiconductor Assembly and Test (OSAT) packaging, and specialized wide-bandgap compound materials.




## NITI Aayog

### Key Findings in the Report:

- Extreme Strategic Vulnerability: India currently faces a critical exposure window, relying on imports to fulfill 90–95% of its total domestic semiconductor consumption.
- Accelerating Demand Trajectory: Driven by rapid expansions in electronics manufacturing, electric vehicles (EVs), and data centers, India's internal chip market is projected to reach USD 200 billion by 2035.
- Massive Financial Exchange Outflow: India's heavy reliance on foreign components has severely strained external reserves, resulting in a cumulative import cost of nearly USD 150 billion between FY17 and FY25.
- EscalatingAnnual Import Costs: If current trends persist, India's annual semiconductor import bill is on a trajectory to expand to USD 240 billion by 2035.
- Formidable Human Capital Base: India already possesses a powerful foundational design footprint, housing 20% of the entire global semiconductor design workforce.
- Huge Growth Capital Investment Target: To anchor world-class fabs, design infrastructure, and advanced packaging ecosystems, India requires an estimated growth capital investment of USD 135–180 billion over the next decade.
- TheGlobal Market Cap Horizon: By successfully expanding its local innovation and production output, India aims to capture 10–13% of the total global semiconductor market share by 2035.
- The Evolution to Ecosystem Deepening: Backed by India Semiconductor Mission (ISM) 2.0, the nation is shifting its policy lens from foundational capacity creation to deep capability scaling across design IPs, R&D, and advanced integration.

### Opportunities for the Semiconductor Industry in India:

- Leveraging a Vast Pre-ExistingPool of Local Design Talent: India can easily pivot from pure backend chip-servicing to creating native, exportable intellectual property by utilizing its massive engineering base.
- Example: The roadmap outlines a clear opportunity to tap India's design workforce—who make up one-fifth of the global total—to create more than 100 breakthrough advanced semiconductor design IPs by 2035.
- Capturing the Accelerated Global Supply Chain Realignment: Geopolitical tensions and the China-plus-one strategy offer India a historic window to position itself as a trusted global value chain alternative.
- Example: Deepening technological partnerships with the US, Japan, and the EU allows India to integrate its local factories directly into Western technology blocs.
- Explosive Offtake Potential from theLocal Automotive and Electric Vehicle Sectors: The rapid transition toward software-defined mobility creates immediate, high-volume domestic demand for specialized vehicle electronics.

- Example: The massive domestic automotive shift creates an ideal local market for domestic compound semiconductor fabs to manufacture SiC and GaN power devices.
- Leapfrogging the Foundry Race via Next-Generation Advanced Packaging: Advanced packaging allows India to bypass expensive sub-2nm node printing while achieving massive system-level performance gains.
- Example: The report targets positioning India as a top-three global destination for advanced OSAT capacity, focusing on chiplets and 3D stacking.
- SecuringTechnological Sovereignty Across Critical Strategic Sectors: Building local chip fabs helps eliminate severe black-box security hardware risks embedded within imported defense machinery.

## Challenges Identified in the Roadmap:

- Prohibitive Front-End Capital Expenditure Barriers: Setting up standard semiconductor fabrication plants requires massive upfront capital investments that yield slow financial returns.
- Example: Constructing a modern analog fab costs over USD 5 billion, while a leading-edge 3nm wafer facility spikes past USD 15 billion, requiring heavy state-backed risk sharing.
- Extremely Long Gestation andRevenue Monetization Cycles: The long timeline required to build factories and optimize manufacturing yields acts as a major barrier for private venture capital.
- Example: Standard commercial fab units require four to five years to commence production, followed by multiple quarters for yield validation before reaching the market.
- Severe Scarcity of Specialized Hardware and R&D Skills: While India has excellent software capabilities, it faces a critical deficit in the specialized engineering skills needed for real cleanroom fabrication.
- Massive Resource Demands Driving Up Local Operating Costs: Operating a semiconductor fab requires an uninterrupted, clean public utility supply that strains local infrastructure.
- Example: Fabs require thousands of gallons of parts-per-billion ultra-pure water alongside highly energy-intensive electricity lines, accounting for 0.3% of global power use.
- EntrenchedGlobal Monopolies Restricting Market Acceptance: International equipment manufacturers maintain deeply entrenched trust networks with existing East Asian foundries, making it hard for new destinations to break in.

## Road Way for India's Semiconductor Industry:

- Activating the National Semiconductor Capital Framework: The central government should commit USD 45–60 billion as anchor public capital over the next ten years to provide credit guarantees and equity support for high-capex greenfield fabs.
- Establishing SpecializedNational Semiconductor Zones (NSZs): Construct dedicated manufacturing hubs equipped with six-nines utility reliability and on-site small modular nuclear reactors to satisfy the intense power and ultra-pure water needs of active fabs.
- Deploying the AI-Enabled Semiconductor Engineering Mission: Launch targeted national programs that combine agentic AI tools with Electronic Design Automation (EDA) software workflows to compress chip design lifecycles and democratize chip architecture skills.
- Enforcing Strict Public Procurement Sourcing Mandates: Create an assured domestic market by mandating phased domestic chip adoption across state-directed railways, public telecom infrastructure, defense programs, and municipal energy grids.
- Forming aDedicated National Fab Academy for Skill Standardization: Build an apex training academy staffed by global industry veterans to quickly generate a standardized pipeline of cleanroom operators, material engineers, and advanced packaging technicians.

## Conclusion:

NITI Aayog's 2035 semiconductor roadmap marks a vital shift from basic capacity creation to deep capability building across India's electronics ecosystem. By focusing on advanced packaging, mature logic nodes, and robust talent development, the strategy expertly plays to India's unique engineering strengths while avoiding unsustainable capital pitfalls.

# India's First SkyCast System

## Context:

Union Minister Dr. Jitendra Singh inaugurated India's first 'SkyCast' System at Indira Gandhi International Airport (IGI), New Delhi.


## India's First SkyCast System

## AboutIndia's First SkyCast System:

### What It Is?

- SkyCast is a next-generation, integrated atmospheric remote sensing system designed for aviation weather monitoring. It brings together multiple real-time measurements of fog, aerosols, turbulence, moisture, and visibility into a single, comprehensive aviation weather intelligence framework.
- Developed By: The system was developed under the Government of India's Mission Mausam initiative by the Ministry of Earth Sciences (MoES).

### Aim:

- The primary objective of SkyCast is to usher India into an era of fog-free, weather-smart aviation.
- It aims to dramatically reduce flight delays, cancellations, and diversions caused by adverse weather conditions while maximizing safety during critical take-off and landing phases.

### Key Features:

- Multi-Sensor Integration: Combines state-of-the-art instruments including a Radar Wind Profiler, SODAR, Microwave Radiometer, Ground-based Fog Aerosol Spectrometer (GFAS), and a CL61 Lidar-based Ceilometer.
- 3-Kilometer Atmospheric Monitoring: The system continuously monitors and maps boundary-layer dynamics, wind speed, wind direction, vertical velocity, and turbulence up to an altitude of nearly 3 km.
- Micro-Level Fog Tracking: Utilizes the GFAS to study droplet sizing and aerosol-fog interactions (crucial for Delhi's pollution-heavy fog) and the Lidar Ceilometer to track the vertical structure and density of fog.
- Short-Window Alerts: Provides precise nowcasting and real-time alerts to aircrews and pilots within a tight 3-hour window.
- Data-Driven Scalability: The vertical profiles of temperature, humidity, and wind will feed directly into advanced forecasting models, AI-enabled decision support systems, and urban pollution management.

### Significance:

- Global Milestone: Deploying this system places India among an elite group of only 19 nations globally possessing such high-tech aviation weather infrastructure.

- Aviation Efficiency & Safety: By giving pilots real-time boundary-layer data during descent, it allows airlines to accurately time landings, saving millions in operational costs caused by sudden diversions.

## India's Maritime Digital Reforms

### Context:

Union Minister launched the Logistics Port Performance Index (LPPI) for FY 2024-25 alongside four major digital governance platforms during the 37th Foundation Day of the Jawaharlal Nehru Port Authority (JNPA).

### India's Maritime Digital Reforms

### AboutIndia's Maritime Digital Reforms:

### What It Is?

- The newly unveiled maritime digital reforms comprise a national performance benchmarking index and four advanced digital application modules developed by the Directorate General of Shipping (DGS). These tools shift India's maritime administration from conventional, paper-based workflows into an integrated, AI-ready, and cloud-governed framework.

### Aim:

- The primary objectives are to optimize port operations, minimize vessel turnaround and container dwell times, eliminate administrative red tape for shipowners, ensure robust safety compliance, and enhance the global welfare tracking of Indian seafarers.

### Core Initiatives Launched:

### 1. Logistics Port Performance Index (LPPI):

- Framework: Developed under the national Sagar Aankalan framework and aligned with the PM Gati Shakti Master Plan.
- Function: Benchmarks ports across three cargo verticals: Dry Bulk, Liquid Bulk, and Container Cargo.
- Metrics: Evaluates real-time performance using operational indicators like vessel turnaround time, berth idle time, pre-berthing waiting time, and ship berth day output. It balances absolute performance with year-on-year improvement metrics.

### 2. 24×7 e-Navik Grievance Redressal Module

- Function: A dedicated global welfare interface for Indian seafarers operating under high-stress conditions far from home.
- Features: Allows seafarers to log grievances from anywhere in the world across multi-channel streams, including the e-Navik portal, WhatsApp, dedicated emails, and international toll-free helplines.

### 3. e-Samudra Ship Registration Module

- Function: A major flagging reform that fully digitizes and streamlines the complex paperwork required to register commercial vessels under the Indian flag.
- Features: Eliminates administrative delays, matching the ease-of-business standards maintained by top global open-registry maritime nations.

### 4. Medical Practitioner Module

- Function: A regulatory digital portal to securely manage, register, and verify medical professionals authorized to issue fitness certificates to maritime crews.
- Features: Acts as a centralized database that mitigates the risk of fraudulent health certifications, ensuring only medically fit personnel board vessels.

### 5. UnifiedShip Recycling Portal (Credit Note Module)

- Function: Operationalizes the government's 70,000-crore maritime development package to boost indigenous shipbuilding.
- Features: Shipowners who recycle their aging vessels at Hong Kong Convention-compliant Indian yards automatically receive a digital credit note worth 40% of the ship's scrap value, which can be directly redeemed against new shipbuilding projects within India.

### Significance:

- The reforms build upon India's massive leap from 44th to 22nd place in the World Bank's Logistics Performance Index (International Shipments category).
- The e-Navik grievance module reinforces India's statutory commitments to the international Maritime Labour Convention (MLC), 2006, boosting India's reputation as a responsible seafaring superpower.

Chapter-
8

# INTERNATIONAL RELATION

## UN Secretary-General Election

### Context:

The election process for the next UN Secretary-General is officially underway, with four candidates recently completing informal, interactive dialogues before the General Assembly.

### UN Secretary-General Election

### AboutUN Secretary-General Election:

### What it is?

- The Secretary-General is defined by the UN Charter as the Chief Administrative Officer of the United Nations. The role was established with the founding of the UN 80 years ago to oversee the Secretariat and act as the organization's face and voice.

### Term of Office:

- While the UN Charter leaves the term discretionary, a strong custom has existed since 1981 where incumbents limit themselves to two five-year terms.
- The next Secretary-General is scheduled to take office on January 1, 2027.
- Qualifications: Candidates are typically high-ranking public figures, such as former heads of state or leaders of major international agencies. For the current cycle, candidates include former President.

### Key Features of the Election:

- Regional Rotation: By custom, the post rotates among five global regions (Africa, Asia, Eastern Europe, Western Europe, and Latin America and the Caribbean). This cycle is the turn of Latin America and the Caribbean.
- Appointment Process: The General Assembly appoints the Secretary-General based on the recommendation of the Security Council.
- P5 Veto Power: Because the appointment requires a Security Council recommendation, the five permanent members (U.S., U.K., France, Russia, and China) hold significant influence and can veto any candidate.
- Straw Polls: Following public dialogues, the Security Council holds closed-door deliberations and straw polls to narrow down the field before making a final recommendation, usually around October.
- Final Confirmation: The General Assembly must confirm the recommended candidate through a simple majority vote.

### Significance:

- The Secretary-General serves as the world's conscience, speaking out on global crises like climate change, inequality, and arms races.
- The mandate includes bringing threats to global peace to the Security Council's attention and appointing personal envoys for mediation.

## International Organisation for Standardisation (ISO)

### Context:

The Bureau of Indian Standards (BIS) organized the 35th Plenary and Working Groups meetings of the ISO subcommittee on 'Space Systems and Operations' (ISO TC 20 / SC 14) in New Delhi.

## International Organisation for Standardisation

### AboutInternational Organisation for Standardisation (ISO):

### What it is?

- The International Organisation for Standardisation (ISO) is an independent, non-governmental international organization that develops and publishes voluntary, consensus-based international standards. It is a global network of national standards bodies, with one member per country (such as BIS for India).
- Established In: February 23, 1947.
- Headquarters: Geneva, Switzerland.

### Aim:

- The primary aim of ISO is to facilitate the international coordination and unification of industrial standards. By providing common specifications for products, services, and systems, it ensures quality, safety, and efficiency, thereby facilitating global trade and innovation.

### Key Functions:

- Developing Standards: ISO experts propose and evaluate new standards across nearly all technical and non-technical sectors, including IT, healthcare, agriculture, and energy.
- Ensuring Interoperability: It creates technical frameworks that allow complex machines and systems from different countries to communicate and work together seamlessly.
- Promoting Safety and Quality: ISO standards (e.g., the ISO 9000 series for quality management) help organizations prove they meet strict quality and safety requirements.
- Facilitating Trade: By harmonizing standards across borders, ISO removes technical barriers to trade, making it easier for companies to enter new markets.
- Consumer Protection: It ensures that products and services used daily meet internationally recognized reliability and quality benchmarks.

### AboutISO TC 20 / SC 14:

- This specific subcommittee is responsible for international standards covering the entire lifecycle of space systems.
- Scope: Standards for design, production, launch, operations, and space-based services.
- Recent Focus: The 2026 meeting in Delhi focused heavily on space sustainability, debris mitigation, and mission safety.
- Participants: 131 delegates from 13 countries attended the Indian plenary, including experts from major space agencies like ISRO, industry leaders, and academia.

# European Central Bank (ECB)

## Context:

The Reserve Bank of India (RBI) and the European Central Bank (ECB) signed a Memorandum of Understanding (MoU) to enhance cooperation in central banking.

## European Central Bank (ECB)

## AboutEuropean Central Bank (ECB):

### What it is?

- The European Central Bank (ECB) is the prime monetary authority of the European Union and the central component of the Eurosystem and the European System of Central Banks (ESCB). It is one of the world's most influential central banks, overseeing a combined balance sheet of approximately €7 trillion.
- Founded in: 1st June 1998, by the under the Maastricht Treaty framework.
- The euro was launched on 1 January 1999.
- Official EU Status: Gained the status of an official EU institution on December 1, 2009, via the Treaty of Lisbon.
- Headquarters: Frankfurt, Germany.

### Aim:

- The primary objective of the ECB is to guarantee and maintain price stability within the Eurozone. It manages the Euro—the single currency of the EU—and works to keep consumer price inflation low and stable to support economic growth and job creation.

### Members:

- The ECB governs the Eurozone, which has expanded from its original 11 members to 21 countries as of 2026.
- Recent Additions: Croatia joined in January 2023, and Bulgaria became the latest member in January 2026.
- Ownership: Its capital stock (€11 billion) is owned by the central banks of all 27 EU member states as shareholders, with shares determined by each nation's population and GDP.

### Key Functions:

- Monetary Policy: The Governing Council defines monetary policy for the Eurozone, including setting key interest rates and monetary objectives.
- Currency Issuance: Holds the exclusive right to authorize the issuance of Euro banknotes; it also approves the volume of Euro coins issued by member states.
- Foreign Exchange Management: Administers the foreign exchange reserves of EU member states and conducts foreign exchange operations.
- Financial Oversight: Operates the T2 (TARGET2) payments system, ensuring the smooth settlement of large-value payments in Euro.
- Policy Enforcement: The Executive Board enforces the decisions of the Governing Council and provides directions to national central banks across the Eurozone.

### Significance of the MoU with RBI:

- The renewed agreement facilitates a structured framework for the regular exchange of information and best practices in central banking.
- Enhanced collaboration between two of the world's major central banks helps in better monitoring global financial sector developments and systemic risks.

# The Kimberley Process

## Context:

India commenced the Kimberley Process (KP) Intersessional Meeting in Mumbai as the Chair for the year.

## The Kimberley Process

### About The Kimberley Process:

### What it is?

- The Kimberley Process (KP) is a multi-stakeholder international initiative involving governments, the diamond industry, and civil society. It is the world's most comprehensive mechanism designed to increase oversight in the diamond industry and eliminate the trade in conflict diamonds.
- Initiative Started: May 2000 in Kimberley, South Africa.
- Formalized: The Kimberley Process Certification Scheme (KPCS) was adopted in November 2002 and launched in January 2003.
- Aim: The primary aim is to prevent conflict diamonds—rough diamonds used by rebel movements to finance wars against legitimate governments—from entering the mainstream market. It ensures that diamond purchases do not fund violence or human rights abuses.
- Current Chair (2026): India (assuming office on January 1, 2026). This is the third time India has held the prestigious Chairship.
- Term: The Chairship is rotated annually among member states.
- India's 2026 Theme: The 3Cs — Credibility, Compliance, and Consumer Confidence.

### Key Functions:

- Market Regulation: Implements strict tracking and certification for all rough diamond exports and imports.
- Monitoring: Working groups conduct periodic review visits to member countries to ensure compliance with minimum requirements.
- Data Transparency: Obliges member states to share accurate statistical data on diamond production and trade to maintain accountability.
- Livelihood Protection: Supports legitimate diamond trade to protect the jobs and incomes of millions of people in producing nations, particularly in Africa.

### About The Kimberley Process Certification Scheme (KPCS):

### What it is?

- The KPCS is the core operational instrument of the Kimberley Process, established pursuant to UN General Assembly Resolution 55/56. It serves as a passport for rough diamonds, providing a guarantee that they are conflict-free.

### Key Features:

- Statutory Certificate: Every shipment of rough diamonds exported across an international border must be transported in a tamper-resistant container and accompanied by a government-validated Kimberley Process Certificate.
- Trade Restrictions: Member states are prohibited from trading rough diamonds with any non-member or any country that does not satisfy the scheme's minimum requirements.
- National Legislation: Each participant must establish national laws and internal controls to prevent conflict diamonds from being smuggled into the legal supply chain.
- Blockchain and Digitalization: Under India's 2026 Chairship, there is a push to modernize the scheme using digital, tamper-proof certificates and blockchain-based traceability to further reduce fraud.

# Facts for Prelims (FFP): Polity

## Context:

Chief Justice of India Surya Kant has constituted a high-powered 'Judicial Infrastructure Advisory Committee' headed by Supreme Court Justice Aravind Kumar.

## The Justice Aravind Kumar Committee

### About The Justice Aravind Kumar Committee:

### What it is?

- The Judicial Infrastructure Advisory Committee is a high-level expert panel formed to overhaul the physical and digital landscape of the Indian judiciary.
- It comprises senior judges from the Supreme Court and various High Courts, along with top administrative and technical officials.

### Established By: Supreme Court of India

### Aim:

- The primary aim of the committee is to address chronic infrastructural gaps in the Indian court system by creating a comprehensive roadmap for the 21st century.
- It seeks to ensure substantial financial backing from the Government of India to transform courts into modern, tech-enabled, and litigant-friendly spaces.

### Key Features

- Chairperson: Justice Aravind Kumar (Supreme Court).
- Seven Focus Areas: The committee will identify systemic constraints, improve facilities for lawyers/litigants, and implement cutting-edge technology to accelerate case disposal.
- Digital Transformation: A core focus is on the e-courts initiative, aimed at bridging the digital divide through robust virtual and hybrid hearing infrastructure.
- Modern Court Complexes: Designing and overseeing the construction of new court buildings that are accessible, sustainable, and technologically advanced.
- Economic Coordination: The panel must submit its findings and specific funding requirements to PM-EAC.

### Significance:

- The proposed allocation of 40,000– 50,000 crore represents one of the largest ever single-project investments in judicial infrastructure in India's history.
- By improving physical facilities and implementing faster technology, the committee directly addresses the primary bottlenecks that lead to case delays and a high backlog of cases.

# Facts for Prelims (FFP): Science and Technology

## Context:


Union Minister launched two path-breaking AI-enabled weather forecasting products developed by the Ministry of Earth Sciences.

- These systems are designed to provide hyper-local, impact-based monsoon forecasts to support 16 states and over 3,000 sub-districts.

## AI-Enabled Monsoon Forecasting Platforms

## AboutAI-Enabled Monsoon Forecasting Platforms:

### What it is?

- These are advanced, data-driven forecasting systems that leverage Artificial Intelligence (AI) and Machine Learning (ML) to provide granular, probabilistic weather information.
- They shift India's meteorological services from conventional broad-scale predictions to site-specific, impact-based decision support forecasting.

### Organizations Involved:

- The systems were developed through a high-level scientific collaboration between:
- India Meteorological Department (IMD)
- Indian Institute of Tropical Meteorology (IITM), Pune
- National Centre for Medium Range Weather Forecasting (NCMRWF)
- Aim: To deliver high-precision, hyper-local weather information up to 10 days in advance (and extended range up to 4 weeks), enabling farmers and administrators to make informed, real-time decisions to minimize climate-related risks.

### The Two New Systems & Their Features:

#### 1. AI-enabled Forecast of Monsoon Advance:

- Granularity: Provides probabilistic forecasts at the block-level (sub-district level) for the first time in India.
- Coverage: Currently covers 3,196 blocks across 15 states and 1 Union Territory, primarily in the rainfed monsoon core zone.
- Predictive Window: Offers weekly probabilistic updates on monsoon progression up to 4 weeks in advance.
- Mechanism: Blends nearly a century of IMD's meteorological data with global weather models and AI analysis to track the monsoon itinerary from its onset in Kerala.
- Agricultural Integration: Feeds directly into the Ministry of Agriculture's advisory pipeline to help farmers time sowing and irrigation precisely.

#### 2. High Spatial Resolution Rainfall Forecast (UP Pilot)

- System Name: Derived from the Mithuna weather model.
- Resolution: Provides an unprecedented 1-km spatial resolution rainfall forecast (downscaled from the standard 12.5-km resolution).
- Predictive Window: Valid for 10 days in advance.
- Data Integration: Utilizes a dense network of Automatic Weather Stations (AWS), Doppler Weather Radars, and satellite datasets specifically optimized for Uttar Pradesh as a pilot service.
- Targeted Use: Specifically designed for precision in urban planning, water resource management, and disaster mitigation in densely populated regions.

### Significance:

- Transitioning from district-level to block-level allows farmers to manage crops based on the specific rainfall expected in their village, reducing losses due to erratic monsoon patterns.
- As an essential part of India's everyday governance, these AI systems can significantly reduce the fiscal drain caused by extreme weather events and crop failures.

# Facts for Prelims (FFP): Art and Culture

## Context:

Prime Minister of India participated in the 'Somnath Amrut Parv' in Gujarat, marking the 75th anniversary of the temple's reconstruction.

## The Somnath Temple

## About The Somnath Temple:

### What it is?

- The Somnath Temple is one of the most sacred pilgrimage sites in India, revered as the first among the twelve Jyotirlinga shrines of Lord Shiva. Known as The Eternal Shrine, it has a legendary history of being destroyed and rebuilt multiple times, symbolizing the immortal spirit and resilience of Indian civilization.

### Location:

- State: Gujarat, India.
- Region: Situated in Prabhas Patan, Veraval, on the western coast of the Saurashtra peninsula.
- Geographical Context: It is located at the confluence of three rivers—Hiran, Kapila, and Saraswati—known as the Triveni Sangam.

### History:

- Ancient Origins: The temple's first structure is believed to have been built in gold by the Moon God (Soma), followed by silver, wood, and stone versions by various deities and kings.
- Invasions and Destruction: The temple was famously attacked and plundered multiple times, most notably by Mahmud of Ghazni in 1024 AD, followed by subsequent destructions by the Delhi Sultanate and Aurangzeb.
- Modern Reconstruction: Following India's independence, the Iron Man of India, Sardar Vallabhbhai Patel, took a solemn resolve to reconstruct the temple.
- Pran Pratishtha (1951): The modern temple was completed and the idol was consecrated on May 11, 1951, by Dr. Rajendra Prasad, the first President of India.

### Architectural Features:

- Māru-Gurjara Style: The current temple is built in the Māru-Gurjara style (Chaulukya style) of Hindu temple architecture.
- Shikhara: The main spire (Shikhara) rises to a height of 155 feet, adorned with a 10-ton stone vessel (Kalash) at the top.
- Intricate Carvings: The temple features the Garbhagriha (sanctum sanctorum), Sabha Mandap (assembly hall), and Nritya Mandap.
- Baan Stambh (Arrow Pillar): A famous pillar on the sea-protection wall indicates a straight line to the South Pole, with no landmass between the temple shore and Antarctica.

### Significance:

- As the first Jyotirlinga, it is a primary center for Shaivism and a focal point of faith for millions of Sanatan Hindus globally.
- The Prime Minister described the temple as a living symbol of the nation's resolve, proving that the ideological and spiritual strength of India cannot be erased by invaders.

# Mapping

## Context:


The newly formed artificial island Wyspa Jana Zabawy-Wróblewskiego in Poland emerged as a central focus of European conservation.

## Wyspa Jana Zabawy-Wróblewskiego Island

### AboutWyspa Jana Zabawy-Wróblewskiego Island:

### What it is?

- Wyspa Jana Zabawy-Wróblewskiego (formerly known informally as Brysna) is a man-made island covering approximately 123 to 180 hectares.
- It was constructed as a sustainable solution for disposing of sediment during a massive maritime deepening project. Unlike most artificial islands, it is strictly off-limits to humans, dedicated entirely to wildlife conservation.

### Location:

- Water Body: Situated in the Szczecin Lagoon (Zalew Szczeciński) in the Baltic Sea region.
- Country: Poland, near the town of Świnoujście.
- Proximity: It is one of two islands created during the modernization of the Szczecin–Świnoujście shipping channel.

### Aim:

- The primary goal was to mitigate the environmental impact of industrial dredging by creating a protected sanctuary for rare water birds and fragile wetland ecosystems.
- It aims to provide a safe, undisturbed breeding and resting ground for migratory species away from human development.

### Key Features:

- Engineering Origin: Built using sand and silt removed from the lagoon floor to allow larger cargo ships to reach the Port of Szczecin.
- Dimensions: The island stretches roughly 1.2 kilometers at its widest point and rises about 5 meters above sea level.
- Habitat Diversity: It features a mix of sandy terrain, shallow surrounding waters, an internal lake, and thousands of newly planted trees and bushes.
- Ecological Succession: Scientists are monitoring the island as a blank slate where plants, insects, and birds colonize the land naturally—a process known as ecological succession.
- Naming Dispute: While locals favored the name Brysna (a historic Slavic blend of breeze and dream), authorities officially named it after Jan Zabawa Wróblewski, a hero of the Warsaw Uprising.

### Significance:

- Represents a global benchmark for building with nature, where waste material from shipping projects is converted into high-value ecological assets.
- Already attracting threatened species such as gulls and terns, the island offers a safe haven in a Baltic region heavily impacted by urban expansion.

## India's Strategic Autonomy Challenges

### Context:

The 2026 Iran War, triggered by U.S.-Israeli strikes, has created a major test for India's strategic autonomy.


- With the Strait of Hormuz closed and the Indian Navy's guest ship IRIS Dena sunk by a U.S. submarine, New Delhi faces growing pressure in balancing ties with the U.S., Iran, and Russia.

### India's Strategic Autonomy Challenges

### AboutIndia's Strategic Autonomy Challenges:

### What is Strategic Autonomy?

- Strategic autonomy is India's core foreign policy doctrine that prioritizes independent decision-making

based on national interest, avoiding formal military alliances while maintaining the flexibility to partner with competing global powers.
- It aims to prevent India from becoming a camp follower and ensures it remains a sovereign pole in a multipolar world.

## Data/Stats on Strategic Autonomy:

- Energy Chokepoint: India sources nearly 91% of its LPG from the Gulf; the closure of the Strait of Hormuz led to an immediate 60/cylinder price hike.
- Trade Dominance: Despite tensions, the U.S. remains India's largest trading partner, with bilateral trade exceeding $130 billion in 2025-26.
- Defense Diversification: India issued an RFP for 114 Rafale jets (valued at 3.25 lakh crore) in May 2026 to reduce over-reliance on U.S. and Russian technology.
- Economic Hegemony: The Trump administration's Double Whammy of punitive tariffs and secondary sanctions has forced India to seek a de-risking FTA with the EU.

## Evolution of India's Strategic Autonomy:

### Phase 1: Non-Alignment (1947–1991)

- Moral Leadership: India acted as the voice of the Global South, staying out of Cold War power blocs.
- Issue-Based Stance: Judged international crises (like Suez or Korea) on merit rather than bloc dictates.
- Sovereignty Focus: Fiercely protected the strategic space for a newly independent, developing nation.

### Phase 2: Pragmatic Realism (1991–2014)

- Economic Integration: Shifted toward the West for capital and tech while maintaining a Special & Privileged link with Russia.
- Nuclear Autonomy: Pursued a nuclear program despite global sanctions (1998) to ensure independent security.
- Regional Net-Security: Emerged as a resident power in the Indian Ocean, forging ties with Israel and Iran simultaneously.

### Phase 3: Multi-Alignment (2014–Present)

- Issue-Based Alliances: Engagement in the Quad for the Indo-Pacific while remaining a key player in BRICS and SCO.
- Transactional Hedging: Treating strategic independence as a negotiable asset in a world dictated by power, not norms.
- Vikas Bhi, Virasat Bhi: Linking strategic autonomy to domestic industrial goals like Make in India and energy self-reliance.

## Challenges to Strategic Autonomy:

- U.S. Military & Economic Unilateralism: The Trump administration merges military alliances with trade demands, threatening India's pick and choose policy.
- Example: The U.S. demand to de-dollarize within BRICS or face secondary sanctions limits India's alternative financial options.
- Geopolitical Humiliation in the IOR: The sinking of the IRIS Dena by a U.S. submarine in the Indian Ocean directly challenged India's role as a regional security provider.
- Example: The incident occurred just days after the ship participated in India's International Fleet Review 2026, hurting India's naval image.
- Energy Coercion: Pressure to discontinue Russian oil and forego the Chabahar Port strategic partnership with Iran restricts India's energy and transit options.
- Example: India received only a 30-day waiver for Russian oil in April 2026, leaving its supply chain at the mercy of Washington.
- Hierarchical Western Supply Chains: New Western alliances focus on civilizational identity, potentially relegating the Global South to targets of competition rather than partners.
- Example: Marco Rubio's 2026 Munich Security speech called for a Western supply chain, signaling a new, exclusivist economic order.

- Defense Dependence Traps: While deals with France (Rafale) help diversify, the control of source codes and algorithms remains in foreign hands.
- Example: India will be wedded to France for all future upgrades of the 114 Rafales, potentially undercutting the Make in India aspiration.

### Way Ahead:

- Accelerating Energy Autonomy: Build strategic LPG reserves and shift to green hydrogen to decouple from the volatile Strait of Hormuz.
- Strategic Hedging via EU: Use the India-EU FTA (the Mother of all Deals) as a buffer against U.S. protectionism and unpredictable trade wars.
- Strengthening Operation Sankalp: Increase the Indian Navy's independent escort protocols for energy tankers without joining Western-led maritime coalitions.
- Domestic Tech Sovereignty: Insist on full technology transfer and source-code access in future defense deals to ensure true Self-Reliance.
- Leading the Global South: Use the G20 and BRICS platforms to advocate for a multipolar world order where economic autonomy isn't used as geopolitical leverage.

### Conclusion:

The 2026 Iran War marks a generational test for New Delhi, where the traditional performance of autonomy is no longer enough. In an era of transactional relationships and civilizational tribalism, India must transform its multi-alignment into calculated negotiation. True strategic independence will now depend on whether India can build its own industrial and energy fortress while remaining an indispensable balancer in a world of clashing giants.

## India–UAE Sign Strategic Pacts

### Context:

Prime Minister of India made a landmark diplomatic stopover in Abu Dhabi, holding wide-ranging talks with UAE President Sheikh Mohamed bin Zayed Al Nahyan.

### India–UAE Sign Strategic Pacts

### AboutIndia–UAE Sign Strategic Pacts:

### What it is?

- The bilateral engagement represents an escalation of the India-UAE Comprehensive Strategic Partnership into the realms of critical defense manufacturing, financial system integration, and advanced technology. Rather than relying on simple transactional buyer-seller trade, the pacts solidify an interdependent economic and security corridor between South Asia and the Gulf.

### Key Features of the Signed Pacts:

- Strategic Defence Partnership Framework: Formally institutionalizes defense manufacturing, joint industrial collaboration, and special operations training.
- Energy Infrastructure Expansion: ADNOC and the Indian Strategic Petroleum Reserves Ltd. concluded an accord to enhance the UAE's participation in India's SPR by storing up to 30 million barrels of crude oil.

### $5 Billion Capital Influx:

- Banking: Emirates NBD is deploying $3 billion into India's RBL Bank.
- Infrastructure: The Abu Dhabi Investment Authority (ADIA) is investing $1 billion alongside India's National Investment and Infrastructure Fund (NIIF).
- Finance: The International Holding Company (IHC) is channeling $1 billion into Sammaan Capital.
- 8 Exaflop Super Compute Cluster: A futuristic technology term sheet signed between India's C-DAC and the UAE's G-42 to co-develop an ultra-high-speed supercomputing cluster.

- Shipbuilding and Repair Clusters: Cochin Shipyard Limited partnered with Dubai's Drydocks World to set up an offshore fabrication and ship repair cluster at Vadinar, Gujarat, supported by a maritime skill development center.
- Virtual Trade Corridor (MAITRI): Operationalization of a unified digital framework linking customs and port authorities to reduce transit times and cargo handling costs.

## India-UAE Bilateral History:

- Ancient Foundations: Maritime trade routes across the Arabian Sea have connected the Indus Valley civilization with the regions of the Persian Gulf for millennia.
- Formal Diplomatic Launch (1972): India established diplomatic relations with the UAE in 1972, shortly after the federation was formed in 1971.
- The 2015 Paradigm Shift: PM Modi's historic visit to the UAE in 2015—the first by an Indian PM in 34 years—elevated the dynamic from an expatriate-labor relationship to a high-level strategic partnership.
- Strategic Upgrade (2017): During the Republic Day celebrations in 2017, where Sheikh Mohamed bin Zayed Al Nahyan was the Chief Guest, ties were formally upgraded to a Comprehensive Strategic Partnership.
- TheLandmark CEPA (2022): The signing of the Comprehensive Economic Partnership Agreement (CEPA) dramatically reduced tariffs, driving bilateral trade past $85 billion and making the UAE India's third-largest trading partner.

## Key Challenges to India-UAE Relations:

- The West Asian Geopolitical Crossfire: The volatility of the 2026 Iran War places India's multi-alignment strategy under heavy structural stress.
- Example: PM Modi's explicit condemnation of missile strikes on the UAE complicates India's simultaneous diplomatic balancing act with Tehran.
- Counter-Balancing Alliances: The shifting dynamics of regional defense pacts introduce historic rivalries back into Gulf diplomacy.
- Example: A recent mutual defense accord between Pakistan and Saudi Arabia has driven India and the UAE to deepen their own security ties to prevent regional isolation.
- Maritime Security and Chokepoints: The closure of the Strait of Hormuz directly threatens the physical supply lines that sustain India's economy.
- Example: Despite the UAE's exit from OPEC to boost oil output, India cannot easily import this fuel without safe transit through the contested waters of the Gulf.
- Expatriate Financial Strain: Regional war disruptions directly affect the financial security of the 4.39 million-strong Indian diaspora in the UAE.
- Example: Geopolitical uncertainty in the Gulf triggers reverse migration pressures and impacts the steady flow of over $50 billion in annual remittances back to India.
- Technology Sovereignty Concerns: Partnering on sensitive dual-use technologies like supercomputing requires navigating global regulatory minefields.
- Example: Collaborating with UAE's G-42 on the 8 Exaflop cluster requires strict oversight to ensure sensitive data algorithms do not conflict with Western technology sanctions.

## Way Ahead:

- Securing the Fujairah Energy Link: Fully develop the proposed crude oil storage facilities in Fujairah, UAE, allowing India to bypass the Strait of Hormuz chokepoint by accessing oil directly from the Gulf of Oman coast.
- Joint Naval Escorts: Operationalize the maritime security clause of the new defense framework by launching joint India-UAE naval patrols to secure merchant shipping lanes.
- Local Currency Settlement (LCS): Fully institutionalize rupee-dirham trade settlements to insulate bilateral commerce from U.S. dollar volatility and secondary sanctions.
- Defense Co-Production: Move beyond arms sales to establish joint production lines for drones, cyberdefense hardware, and secure communication systems under "Make in India."
- Expanding the MAITRI Digital Rail: Integrate other BIMSTEC and East African ports into the Virtual Trade Corridor to position the India-UAE axis as the primary logistics engine of the Global South.

### Conclusion:

The 2026 Abu Dhabi visit has successfully transformed India's energy and defense vulnerabilities into an interconnected fortress of strategic cooperation. By anchoring $5 billion in critical capital and expanding petroleum reserves to 30 million barrels, New Delhi has insulated its economy from the immediate shocks of the West Asian conflict.

## UN Forum on Forests

### Context:

The United Nations launched The Global Forest Goals Report 2026 at the opening day of the 21st Session of the UN Forum on Forests (UNFF21) in New York.

### UN Forum on Forests

### AboutUN Forum on Forests:

### What it is?

- The United Nations Forum on Forests (UNFF) is a high-level, intergovernmental policy forum that holds universal membership (comprising all UN Member States).
- It serves as a specialized body dedicated to the management, conservation, and sustainable development of all types of forests while strengthening long-term global political commitment.

### Establishment:

- The UNFF was established in October 2000 by the UN Economic and Social Council (ECOSOC) under Resolution 2000/35.
- It functions as a permanent subsidiary functional commission of ECOSOC and forms the core of the International Arrangement on Forests (IAF).

### Aim:

- The principal aim of the UNFF is to promote the implementation of internationally agreed actions on Sustainable Forest Management (SFM).
- It coordinates global policy to reverse deforestation, enhance the economic, environmental, and social benefits of forests, and mobilize innovative financing to meet the 2030 Agenda for Sustainable Development.

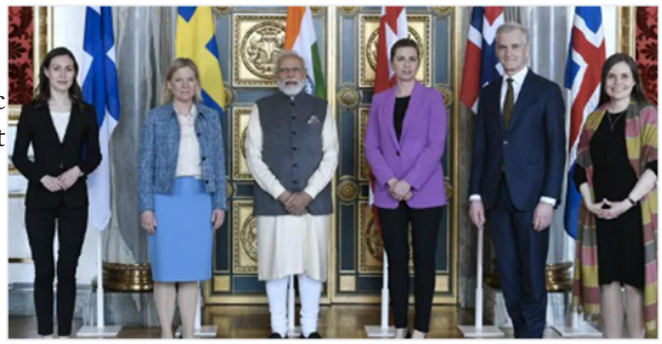
### Key Features:

- The UN Forest Instrument (2007): The first-of-its-kind global framework established to strengthen domestic political actions and foster international cooperation for sustainable forest ecosystems.
- Global Forest Financing Facilitation Network (GFFFN): Launched in 2015 to help developing nations design national forest financing strategies and access funds from multilateral mechanisms like the Global Environment Facility (GEF).
- UN Strategic Plan for Forests 2030: Adopted in 2017, this plan provides a global blueprint containing six Global Forest Goals (GFGs) and 26 associated targets.
- Collaborative Partnership on Forests (CPF): An inter-agency body chaired by the Food and Agriculture Organization (FAO), of which the International Union for Conservation of Nature (IUCN) is a key member, ensuring technical expertise and coordinated action.
- Biennial Cycle Formatting: The forum operates in two-year thematic cycles where even-numbered sessions focus on technical discussions, and odd-numbered sessions focus on high-level policy dialogues and decision-making.

### Significance:

- As the only global platform with universal membership addressing all types of forests holistically, it prevents fragmented governance across isolated climate and biodiversity treaties.
- The forum's current mandates elevate primary forests from simple timber resources to irreplaceable natural infrastructure vital for carbon sinks, biodiversity protection, and global freshwater security.

# 3rd The India-Nordic Summit



## Context:

Prime Minister of India co-chaired the 3rd India-Nordic Summit in Oslo, Norway, alongside the heads of government from Denmark, Norway, Finland, Iceland, and Sweden.

## 3rd The India-Nordic Summit

## About3rd The India-Nordic Summit:

## What it is?

- The India-Nordic Summit is an elite plurilateral diplomatic platform that brings together India and the five Nordic nations (Denmark, Finland, Iceland, Norway, and Sweden).
- Building upon previous iterations in Stockholm (2018) and Copenhagen (2022), this forum aligns India's massive market scale and human talent with the Nordic region's pioneering strengths in clean energy, maritime technologies, and deep-tech innovation.

## Key Outcomes of the 2026 Summit:

- Strategic Upgradation: Formally elevated the plurilateral dynamic into a Green Technology and Innovation Strategic Partnership.
- EFTA and Trade Acceleration: Welcomed the operationalization of the India-EFTA Trade and Economic Partnership Agreement (TEPA)—anchoring a target of $100 billion in investments and 1 million direct jobs in India—alongside progress on the India-EU FTA.
- Geopolitical Backing: The five Nordic nations reiterated their formal support for India's permanent membership in a reformed UN Security Council (UNSC) and backed India's application to the Nuclear Suppliers Group (NSG).
- Space and Deep-Tech Pacts: Highlighted the implementation of the ISRO-Norwegian Space Agency framework agreement and finalized a proposal to integrate a Swedish scientific payload onto India's Venus Orbiter Mission.
- Maritime & Blue Economy Mandates: Initiated dedicated Maritime Security Dialogues with Norway and Denmark to counter Illicit Maritime Activities (IMA) under India's 'MAHASAGAR' vision and the Indo-Pacific Oceans Initiative (IPOI).
- Climate & Industrial Transition: Expanded the LeadIT 2.0 (Leadership Group for Industry Transition) platform by formally welcoming Iceland as its newest Nordic member to help de-carbonize heavy industries.
- AI Governance Framework: Committed to human-centric, open-source AI applications, building on the success of India's AI Impact Summit held in New Delhi in February 2026.
- Future Roadmap: Confirmed that the upcoming 4th India-Nordic Summit will be hosted by Finland.

## Opportunities for India:

- Mastering the Semiconductor and 6G Eco-system: Partnering with Nordic tech leaders gives India direct access to next-generation telecommunications and chip architecture.
- Example: Collaborating with Sweden and Finland on trusted 6G research networks allows India to reduce its reliance on East Asian hardware suppliers.
- Sovereign Capital Infusion via EFTA: The investment mandates under the newly ratified TEPA provide a major boost to domestic manufacturing.
- Example: Channelling the targeted $100 billion EFTA investment directly into the India Semiconductor Mission accelerates local fabrication plant setups.
- Deepening Arctic and Polar Research Tracks: India's observer status on the Arctic Council gains vital technical backing through direct Nordic working groups.
- Example: Conducting joint studies on Arctic ice-melt patterns helps Indian scientists better predict erratic changes in the domestic monsoon grid.
- Scaling Up Greenfield Maritime Infrastructure: Incorporating Nordic ship-recycling and green-propulsion standards elevates India's domestic maritime footprint.
- Example: Adhering to the Hong Kong Convention standards transforms Indian yards like Alang into globally certified, sustainable ship-recycling hubs.

- Aggressive Defense Co-production: Nordic defense firms can leverage India's relaxed investment laws to establish local factories.
- Example: Offering 100% FDI in Indian Defence Industrial Corridors encourages Swedish arms giants to manufacture critical missile components locally under "Make in India."

### Challenges Associated with the Partnership:

- Divergent Geopolitical Positions on Global Conflicts: Differing diplomatic styles regarding active war zones can create structural friction during joint declarations.
- Example: The Nordics' rigid stance on the Ukraine crisis requires India to carefully balance its independent ties with Russia while drafting joint communiqués.
- Strict Regulatory Standards andNon-Tariff Barriers: Rigid European environmental and sustainability metrics frequently bottleneck Indian export models.
- Example: Tough EU carbon border adjustment mechanisms and strict chemical residue regulations can penalize Indian steel and textile shipments entering Nordic ports.
- Protecting Intellectual Property in High-Tech Transfers: Commercial safety concerns regarding dual-use technologies can slow down active joint ventures.
- Example: Securing open-source AI and quantum datasets from Nordic enterprises is often delayed by strict corporate IP protection laws.
- Bulky Logistics andDisrupted Maritime Corridors: Supply lines connecting Northern Europe to the Indo-Pacific remain highly vulnerable to chokepoint blockades.
- Example: Ongoing tensions around the Strait of Hormuz directly disrupt the physical deployment of the proposed India-Middle East-Europe Economic Corridor (IMEC).
- Asymmetric Labor and Talent Mobility Frameworks: The orderly movement of highly skilled Indian tech professionals faces complex domestic immigration limits in Scandinavia.

### Way Ahead:

- Activating the Arctic Satellite Link: Fully utilize Norway's SvalSat ground station to establish a real-time data link for India's upcoming polar-orbiting environmental satellites.
- Launching Green Hydrogen Maritime Corridors: Establish zero-emission shipping lanes between Indian ports and Denmark using advanced Nordic ammonia-fuel cell technologies.
- Fast-tracking theDefense Industrial Roadmap: Set up dedicated Nordic clusters within the Tamil Nadu and Uttar Pradesh defense corridors to co-produce unmanned aerial vehicle (UAV) counter-measures.
- Harmonizing Cross-Border AI Data Governance: Formulate a unified Bipartisan AI Protocol to ensure smooth, secure data-sharing for joint healthcare and climate-modeling algorithms.
- Institutionalizing the EFTA Tracking Desk: Create a fast-track monitoring cell within NITI Aayog to streamline the deployment of the promised $100 billion investment portfolio.

### Conclusion:

The 3rd India-Nordic Summit has effectively transitioned India's relationship with Northern Europe from simple bilateral trade into an advanced, future-ready strategic alliance. By matching India's massive manufacturing scale and digital public infrastructure with the Nordics' unmatched expertise in green technology and deep-space sciences, the summit has created a highly resilient economic corridor.

## The FAO Agricola Medal

### Context:

Prime Minister Narendra Modi was conferred with the prestigious Agricola Medal by the Food and Agriculture Organization (FAO) of the United Nations at its headquarters in Rome, Italy.


## The FAO Agricola Medal

### About The FAO Agricola Medal:

### What It Is?

- The Agricola Medal (named after Agricola, the Latin word for farmer) is the premier, highest institutional accolade bestowed by the Food and Agriculture Organization (FAO) of the United Nations.
- It is awarded directly by the FAO Director-General to exceptional international leaders who have demonstrated visionary statecraft and concrete policy execution in transforming global agrifood systems.
- Institution: The medal was established by the FAO in 1977 as part of its international numismatic award program to honor high-level political figures.
- The Indian Recipients of theAgricola Medal: The only two Indian leaders to officially receive the named Agricola Medal are:

1. Dr. Manmohan Singh in 2008 (for his reforms in modernizing rural agriculture).
2. Narendra Modi in 2026.

### Aim:

- The primary aim of the Agricola Medal is to recognize and incentivize extraordinary global action toward fulfilling UN Sustainable Development Goal 2 (Zero Hunger).
- It honors leaders who dismantle structural poverty, upgrade smallholder farmer livelihoods, enforce robust food safety nets, and champion sustainable, science-driven ecological farming methods.

### Key Features:

- The FAO conferred the 2026 medal on PM Modi based on a comprehensive evaluation of India's structural agrifood achievements over the past decade:
- The World's Largest Food Safety Net: Institutionalization of the Pradhan Mantri Garib Kalyan Anna Yojana (PMGKAY), which successfully provides free foodgrains to 800 million citizens, serving as a global model for crisis-time food security.
- Direct Farmer Income Cushioning: Execution of the PM-KISAN scheme, distributing direct, uninterrupted cash transfers into the bank accounts of over 110 million smallholder farmers via Digital Public Infrastructure (DPI).
- Climate-Resilient Varietal Boom: Driven by Indian agricultural scientists, the country successfully

developed and deployed approximately 3,000 climate-resilient, bio-fortified crop varieties to insulate fields from extreme heat, floods, and droughts.
- Tech-Driven Agrarian Interventions: Integration of drones for precision pesticide spray, AI-based micro-advisory weather networks, and satellite remote-sensing mapping to maximize local farm yields.
- Water Conservation Mandates: Rolling out the 'Per Drop More Crop' framework, heavily scaling up micro-irrigation and sensor-based water management networks across water-stressed agrarian belts.

## Asian Productivity Organization (APO)

### Context:

The Government of India is hosting the 68th Session of the Asian Productivity Organization (APO) Governing Body at Bharat Mandapam in New Delhi.

### Asian Productivity Organization (APO)

### AboutAsian Productivity Organization (APO):

### What It Is?

- The Asian Productivity Organization (APO) is a non political, non profit, and non discriminatory intergovernmental organization. It currently comprises 21 member economies from the Asia-Pacific region working together to drive sustainable economic growth.
- Established In: May 11, 1961
- Headquarters: Tokyo, Japan
- Aim: To contribute to the sustainable socioeconomic development of Asia and the Pacific by enhancing productivity through mutual cooperation, knowledge sharing, and innovation-led growth.

### Key Functions:

- The APO operates across five designated roles to translate its mandate into actionable support for member economies:
- Think Tank: Conducts research on productivity data, climate impact, and emerging economic trends to assist member states in formulating data-driven, pro-growth national strategies.
- Catalyst: Promotes bilateral and multilateral engagements to spark institutional reforms, smart initiatives, and a robust innovation ecosystem across sectors.
- Regional Adviser: Offers policy advisory services to governments, mapping out economic performance and outlining frameworks for national development.
- Institution Builder: Strengthens national capacities by training human resources and upgrading the capabilities of National Productivity Organizations (NPOs), small and medium enterprises (SMEs), and public sectors.
- Clearinghouse for Productivity Information: Acts as a central node for gathering and disseminating best practices, technical knowledge, and tools related to productivity enhancement.

### Significance:

- RegionalProductivity Driver: The APO strengthens productivity in Asia-Pacific industries and agriculture through policy support and capacity building.
- Innovation-Led Growth: It helps member countries transition toward competitive, climate-resilient, and innovation-driven economic systems.

## 11th Review Conference of the Nuclear Non-Proliferation Treaty (NPT)

### Context:

The 11th Review Conference of the Nuclear Non-Proliferation Treaty (NPT) at the UN Headquarters in New York collapsed without reaching a consensus on a final declaration.

### 1th Review Conference of the Nuclear Non-Proliferation Treaty (NPT)

### About 11th Review Conference of the Nuclear Non-Proliferation Treaty (NPT):

### What it is?

- The NPT Review Conference is a high-level plurilateral diplomatic forum held every five years to assess the

implementation, structural health, and modernization of the Treaty on the Non-Proliferation of Nuclear Weapons (NPT).

- Initiated in 1975, these month-long sessions bring together nearly 190 signatory states to review past disarmament pledges, inspect safeguard protocols, and address emerging geopolitical flashpoints threatening the global non-proliferation architecture.

## Key Features of the NPT Treaty:

- The original 1968 treaty operates on a tripartite pillars framework, structurally bridging three distinct global security objectives:
- The Core Grand Bargain: Establishes an asymmetric legal contract between two blocks: Non-Nuclear Weapon States (NNWS) agree never to acquire nuclear warheads, while Nuclear-Weapon States (NWS) pledge to pursue good-faith atomic disarmament.
- The Sovereign Cut-Off Date: Recognizes only five nations as legitimate Nuclear-Weapon States based on whether they manufactured and exploded a nuclear device prior to January 1, 1967: the United States, Russia (formerly the Soviet Union), China, the United Kingdom, and France (the P5).
- The IAEA Safeguards Matrix: Empowers the International Atomic Energy Agency (IAEA) to run strict, mandatory on-site inspections of NNWS facilities, ensuring that civil nuclear fuel and material cycles are never diverted for weaponization.
- Inalienable Right toPeaceful Nuclear Technology: Guarantees all compliant signatories unfettered access to nuclear fuel, materials, and research for civilian applications, including electricity generation, medical diagnostics, and agricultural mutation breeding.
- Indefinite Legal Extension: Originally drafted to run for a 25-year block, the treaty was extended indefinitely in 1995 during the New York Review Conference, making its commitments permanent for all member states.

## Need for a Strong NPT:

- Halting Rapid Vertical Proliferation: A resilient treaty prevents nuclear-armed states from unchecked numerical and qualitative expansions of their existing deployment grids.
- Example: The current collapse of consensus has unleashed a new arms race, with states testing advanced intercontinental nuclear missiles during active diplomatic sessions.
- Preventing Horizontal Tech Leaks: Stronger international regulations ensure that nuclear material does not leak to non-signatory nations or rogue militant networks.
- Example: Maintaining strict export rules prevents black-market syndicates from leaking sensitive uranium enrichment blueprints to high-risk states across unstable regions.
- Enforcing P5 Disarmament Accountability: A functional review framework provides the international community with a forum to hold the five recognized nuclear powers accountable to Article VI of the treaty.
- Example: Without strong institutional checks, the P5 can backtrack on old disarmament pledges, choosing instead to expand their strategic nuclear blankets over neighboring non-nuclear allies.
- Insulating Vital Civilian Infrastructures: Clear, globally respected non-proliferation rules prevent nuclear facilities from becoming targets during conventional wars.
- Example: A binding treaty deters threats of military strikes on live reactors, reducing the risk of a catastrophic radiation disaster across highly populated zones.
- FosteringStrategic Stability in Border Corridors: A strong NPT reduces the risk of miscalculation along tense border flashpoints by lowering the visibility of tactical nuclear weapons.
- Example: Clear verification rules reduce the likelihood of nations deploying hypersonic, dual-capable missiles along contested borders, preventing conventional skirmishes from escalating into an atomic exchange.

## Key Challenges and Structural Bottlenecks:

- The Inherent Asymmetric Enforcement Gap: While the IAEA enforces strict, legally binding monitoring on non-nuclear states, the treaty provides no real timeline or mechanism to compel the P5 to disarm.
- Example: The IAEA can aggressively penalize a non-nuclear state for a single unmonitored centrifuge, yet it has no legal authority to stop nuclear weapon tests by major world powers.
- The Rise of Cryptic andAdvanced Delivery Ecosystems: The development of faster, stealthier delivery systems circumvents traditional non-proliferation verification rules.

- Aggressive Diplomatic Intimidation by the P5: The nuclear-armed powers frequently use heavy-handed diplomacy to block non-nuclear nations from pushing forward new disarmament paths.
- Example: During the 11th Conference, the P5 used coordinated diplomatic pressure to remove explicit timelines for disarmament from successive draft declarations.
- The Non-SignatoryNuclear Reality Paradox: The NPT is structurally weakened because multiple modern nuclear-armed states remain outside its legal architecture.
- Example: The continued exclusion of India, Pakistan, Israel, and North Korea from the treaty's core framework means substantial regional nuclear arsenals operate completely outside NPT review tracking.
- Extended Deterrence Expansion and Proliferation Spills: The P5 are actively expanding their nuclear shields, sharing atomic logistics and moving weapon systems closer to contested fronts.
- Example: The re-deployment of US tactical nuclear warheads to the UK and France's expanded air-atomic umbrella over eight European nations undermine the non-proliferation principles of the treaty.

### Way Ahead:

- Establishing aMandatory P5 Disarmament Timeline: Reform the NPT review process to require the five recognized nuclear states to present concrete, time-bound targets for lowering their active and reserve warhead counts.
- Standardizing Hypersonic Tracking Protocols: Create an independent, UN-led verification framework specifically designed to monitor, audit, and distinguish dual-capable hypersonic delivery vehicles from conventional weapons.
- Institutionalizing the Treaty on the Prohibition of Nuclear Weapons (TPNW): Build formal bridges between the NPT framework and the newer TPNW to stigmatize the retention and modernization of atomic arsenals on the global stage.
- Enforcing a UniversalFissile Material Cut-off Treaty (FMCT): Fast-track negotiations for an international ban on producing highly enriched uranium and plutonium for weapons, systematically capping global proliferation loops.
- Expanding Regional Nuclear-Weapon-Free Zones (NWFZs): Encourage the establishment of new, legally binding NWFZs in volatile regions like West Asia and Northeast Asia to lower the visibility and deployment of atomic warheads.

### Conclusion:

The collapse of consensus at the 11th NPT Review Conference is a stark warning that the global non-proliferation framework is losing its teeth. By failing to agree on a final declaration for 16 years, the international community has allowed the grand bargain of the NPT to tilt sharply in favor of nuclear-armed states that prefer weapon modernization over disarmament.

## The Quad Critical Minerals Initiative Framework

### Context:

On the sidelines of the 11th Quad Foreign Ministers' Meeting in New Delhi, the member nations unveiled the Quad Critical Minerals Initiative Framework alongside a separate bilateral India-US mineral pact.


### The Quad Critical Minerals Initiative Framework

### AboutThe Quad Critical Minerals Initiative Framework:

### What It Is?

- The Quad Critical Minerals Initiative Framework is a multilateral strategic economic and supply-chain insulation pact. It serves as a core pillar of the Quad's evolving transition into a platform for advanced infrastructure development, resource security, and economic coordination across the Indo-Pacific.
- Member Nations: India, the United States, Japan, and Australia.

### Aim:

- The primary objective of the framework is to establish stable, resilient, and highly diversified global supply routes for critical minerals and rare earth elements.

- It directly targets and plugs vulnerabilities caused by the sudden shortfalls and export restrictions imposed by China-dominated supply corridors, ensuring that vital technological and defense manufacturing sectors remain insulated from geopolitical coercion.

### Key Features:

- Massive Capital Mobilization: The framework plans to mobilize nearly $20 billion through public funding, soft loans, and private investments to strengthen critical mineral supply chains.
- Geographic and Ownership Rules: Supported projects must be located within Quad countries and operated by companies based in member nations to ensure strategic control.
- End-to-EndSupply Chain Coverage: It supports the full mineral chain—from mining and processing to refining, manufacturing inputs, and recycling systems.
- Regulatory Harmonization: Quad members will align customs rules, environmental norms, and legal standards to ease cross-border mineral trade and investments.
- E-Waste Circular Economy: The initiative promotes recovery of rare earth elements and strategic metals from e-waste and industrial scrap through advanced recycling methods.
- National Security Safeguards: Member countries will jointly develop export controls and monitoring systems to prevent strategic minerals from reaching hostile actors.

### Significance of the Framework:

- Reducing Dependence on China: The framework aims to diversify global mineral supply chains and reduce vulnerabilities caused by China's dominance in rare earth exports.
- StrengtheningIndia-US Cooperation: It complements initiatives like Pax Silica by combining US financing strength with India's growing mineral processing capacity.
- Securing Future Technologies: Critical minerals are essential for EV batteries, semiconductors, solar panels, and defence systems, making supply security strategically vital.

## The Canada-India Trade and Investment Forum

### Context:

Following a three-day official visit by India's Commerce and Industry Minister to Canada, the two nations issued a joint statement, announcing the launch of the Canada-India Trade and Investment Forum.

### The Canada-India Trade and Investment Forum

### AboutThe Canada-India Trade and Investment Forum:

### What It Is?

- The Canada-India Trade and Investment Forum is a high-level, bilateral institutional platform established to serve as the primary conduit for corporate and economic diplomacy between the two countries.
- Member Nations: India and Canada.
- Aim: The aim of the forum is to deepen economic cooperation across complementary sectors, expand market access, and secure resilient supply chains.

### Key Features:

- Targeted Sectoral Cooperation: Prioritizes high-growth, complementary industrial segments including clean energy, critical minerals, agri-food, advanced manufacturing, digital technologies, and skills development.
- CEPANegotiation Catalyst: Functions as a strategic steering mechanism to advance negotiations for a mutually beneficial Comprehensive Economic Partnership Agreement (CEPA), with a strict shared deadline for conclusion by the end of 2026.
- Unprecedented Diplomatic Scale: Backed by the largest Indian business and ministerial delegation ever sent to any single country, signaling a historic focus on Canadian market integration.
- Multi-Tiered Connectivity Enhancements: Focuses directly on improving cross-border operational frameworks, including business mobility direct commercial trade links, and foundational people-to-people ties.

- Trade Mission Integration: Integrates its baseline operations with the upcoming Team Canada Trade Mission, which will be led by Canada's Minister of International Trade, Maninder Sidhu, to India later this year.
- Long-Term Capital Mobilization: Creates standardized guidelines to encourage steady, high-quality institutional investments in priority sectors while supporting continuous dialogue between innovators and sovereign wealth channels.

### Significance of the Forum:

- Focus on critical minerals and clean-energy technologies helps both countries build resilient supply chains and reduce dependence on dominant global suppliers.
- The forum institutionalizes economic cooperation, ensuring trade, investment, and strategic partnerships continue to grow despite diplomatic challenges.

## The Abraham Accords


### Context:

U.S. President issued a high-stakes directive calling on several Muslim-majority nations—including Saudi Arabia, Qatar, Pakistan, Egypt, Turkey, and Jordan—to simultaneously sign the Abraham Accords.

### The Abraham Accords

### About The Abraham Accords:

### What It Is?

- The Abraham Accords are a series of landmark, U.S.-brokered diplomatic peace and normalization agreements designed to alter West Asian geopolitics by formalizing direct bilateral relations between Israel and Muslim-majority nations.
- Named after the biblical patriarch Abraham—the common ancestor in both Judaism and Islam—the framework shifts regional dynamics from decades of traditional hostility to an open matrix of international collaboration.

### The Signatory Matrix:

- The Broker & Facilitator: The United States.
- The Focal State: Israel.
- The Initial 2020 Signatories: The United Arab Emirates (UAE), Bahrain, and Morocco.
- Subsequent Joinees: Kosovo, Sudan, Somaliland, and Kazakhstan.
- The 2026 Target Additions: Saudi Arabia, Qatar, Pakistan, Turkey, Egypt, and Jordan.

### Aim:

- The strategic architecture of the Accords is designed around three primary goals:
- Regional Stability & Containment: Building a unified, U.S.-backed defensive and intelligence bloc to counter Iran's regional influence and nuclear initiatives.
- Economic & Technological Integration: Unlocking multi-billion dollar trade loops, security cooperation, defense exports, and direct commercial partnerships.
- Bypassing Historical Bottlenecks: Expanding Israel's circle of recognition in the Arab world by separating bilateral economic progress from the long-standing, unresolved issue of Palestinian statehood.

### Key Structural Features:

- Fully Normalized Bilateral Ties: Mandates the opening of embassies, exchange of ambassadors, and establishment of direct commercial flights between Israel and participating nations.
- Defense &Intelligence Interoperability: Enables deep military collaboration, sharing of early-warning radar data, and high-value Israeli defense tech exports to Arab partner states.
- U.S. Diplomatic Incentives: Facilitates secondary strategic sweeteners from Washington for new signatories, mirroring past incentives like advanced weapons sales or unique sovereign recognitions.
- Economic Sachet Frameworks: Fosters shared investments in clean energy, agri-food, tourism, and digital security infrastructure to build interconnected regional financial interests.

# The Sakura Science Programme 2026

## Context:

The Department of School Education & Literacy (DoSEL), Ministry of Education, flagged off a contingent of 56 Indian school students to visit Japan.

## The Sakura Science Programme 2026

## About The Sakura Science Programme 2026:

### What It Is?

- Originally launched as the Japan-Asia Youth Exchange Program in Science, the Sakura Science Programme is an international youth exchange initiative funded and implemented by the Japan Science and Technology Agency (JST). It invites bright young minds to Japan for short-term visits to experience its cutting-edge scientific ecosystem.

### Nations Involved:

- Host Country: Japan
- Participating Cohort (May 2026 Batch): India, Ghana, Nigeria, and South Africa.

### Aim:

- The programme aims to broaden the intellectual horizons of young learners, foster a spirit of scientific exploration, and strengthen bilateral ties by exposing international students to Japan's advanced science, technology, and distinct cultural heritage.

### Key Features:

- Experiential Learning: Students spend a week in Japan engaging in hands-on exposure to advanced laboratories, research institutions, and technology hubs.
- Targeted Selection: In India, the program specifically provides opportunities to meritorious students from government schools who have qualified for the National Means cum Merit Scholarship (NMMS).
- Cultural Exchange: Alongside scientific learning, the itinerary integrates immersive experiences to help students appreciate Japan's history and social fabric.
- Substantial Track Record: Since India's inclusion in 2016, a total of 674 Indian students and 96 supervisors have visited Japan under this framework.

### Significance:

- The initiative directly mirrors the goals of India's National Education Policy (NEP) 2020, which promotes experiential, holistic, and cross-disciplinary learning over rote textbook education.
- By sending under-resourced government school students from 15 different states on an international tour, the program democratizes global exposure and motivates grassroots scientific talent.

# The BRICS Partnership on the New Industrial Revolution (PartNIR)

## Context:


Under India's 2026 BRICS Chairship, the Ministry of MSME successfully convened the 2nd SME Working Group Meeting under the BRICS PartNIR track.

## The BRICS Partnership on the New Industrial Revolution (PartNIR)

## About The BRICS Partnership on the New Industrial Revolution (PartNIR):

### What It Is?

- The BRICS Partnership on the New Industrial

Revolution (PartNIR) is a structured, high-level cooperation framework designed to guide BRICS member nations through the economic and technological shifts of the Fourth Industrial Revolution (Industry 4.0).

- It focuses on unifying industrial capabilities, digital systems, and sustainable practices across the expanded bloc.

### Established In:

- PartNIR was formally established in 2021 to create an institutional mechanism within the BRICS framework.

### Aim:

- The partnership aims to accelerate digital transformation, maximize industrial productivity, ensure technological independence and integrate micro, small, and medium enterprises (MSMEs) into regional and global value chains while driving a transition toward a green, circular economy.

### Key Pillars and Priority Focus Areas:

- The PartNIR track operates across six highly integrated priority themes, each tied to specific strategic outputs:

### 1. SME Digitalization and Technology Access

- Targeted Support: Structuring a dynamic BRICS SME Work Plan that updates support networks and recalculates operational strategies following the addition of new BRICS member states.
- AI Integration: Deploying AI and digital tools as equalizers to help small businesses automate workflows, optimize resources, and secure market intelligence.
- Capacity Building: Developing industry-ready manpower and setting up regional digital B2B platforms to expand market access.

### 2. Sovereign AI for Digital Industrialization

- Technological Autonomy: Mitigating the monopolistic digital infrastructure and pricing control held by large multinational corporations.
- Foundational Models: Co-developing foundational open-source Generative AI models tailored specifically to national languages and distinct cultural frameworks of the BRICS nations.
- Shared Infrastructure: Creating shared computing, data storage, and deep-learning processing facilities specifically optimized for heavy industrial applications.

### 3. Bioindustry andGlobal Supply Chains

- Green Chemistry: Integrating biotechnology with manufacturing to leverage local biomass for the production of green polymers, plastics, pharmaceuticals, and cosmetics.
- Biomapping: Facilitating inter-institutional cooperation for synthetic biology and the biomapping of genetic resources to establish industrial biorefining parks.

### 4. Circular Economy Practices

- Resource Optimization: Building a coordinated framework to scale up eco-design, remanufacturing, industrial recycling, and waste reuse.
- Decarbonization: Actively establishing a dedicated Circular Economy Working Group to map out sustainable consumption models that accelerate green job creation.

### 5. Intelligent Manufacturing and Robotics

- Precision Production: Scaling up the adoption of IoT, robotics, and advanced automation to lower operational costs and elevate manufacturing quality across emerging markets.

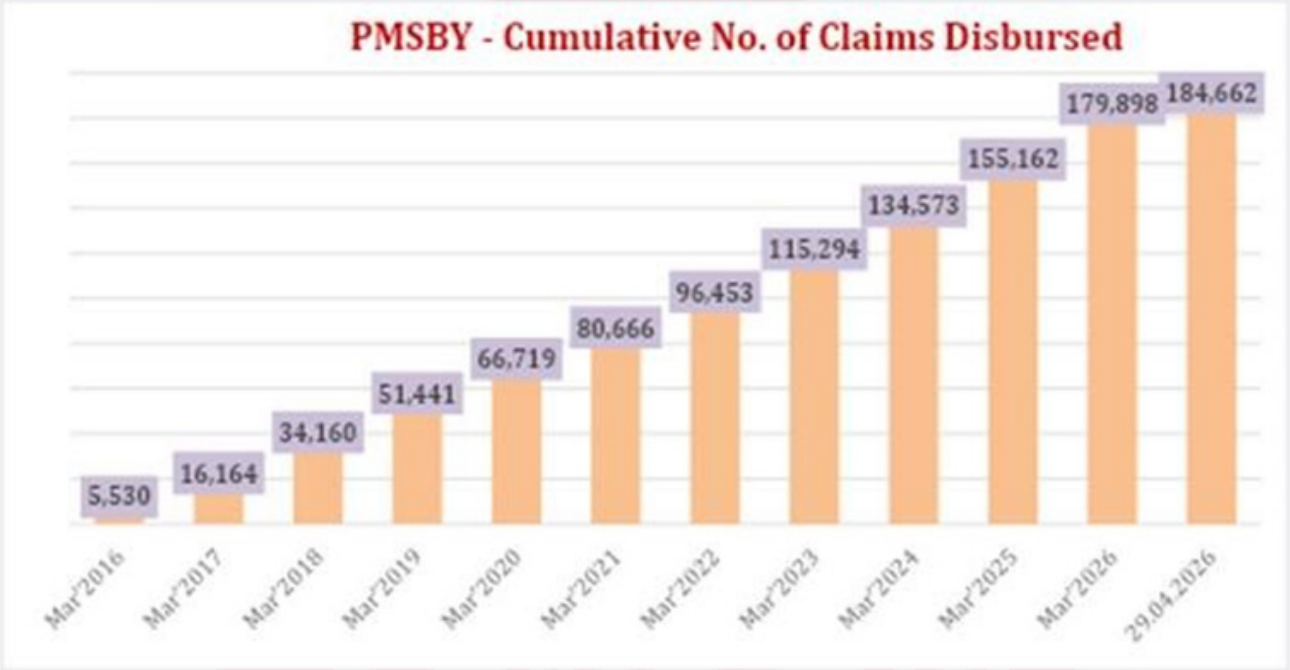
Chapter-
9

# SOCIAL ISSUES

## 11 Years of Jan Suraksha Schemes

### Context:

The three flagship Jan Suraksha Schemes—Pradhan Mantri Jeevan Jyoti Bima Yojana (PMJJBY), Pradhan Mantri Suraksha Bima Yojana (PMSBY), and Atal Pension Yojana (APY)—completed 11 years of providing affordable social security.




### 11 Years of Jan Suraksha Schemes

### About11 Years of Jan Suraksha Schemes:

### What it is?

- The Jan Suraksha Schemes were launched by Prime Minister of India on May 9, 2015, to create a universal social security system for all Indians.
- Aimed primarily at the unorganized sector and vulnerable populations, these schemes provide low-cost life insurance, accidental insurance, and old-age pension support through a seamless, digitized framework.

### About Jan Suraksha Schemes:

#### 1. Pradhan Mantri Jeevan Jyoti Bima Yojana (PMJJBY)

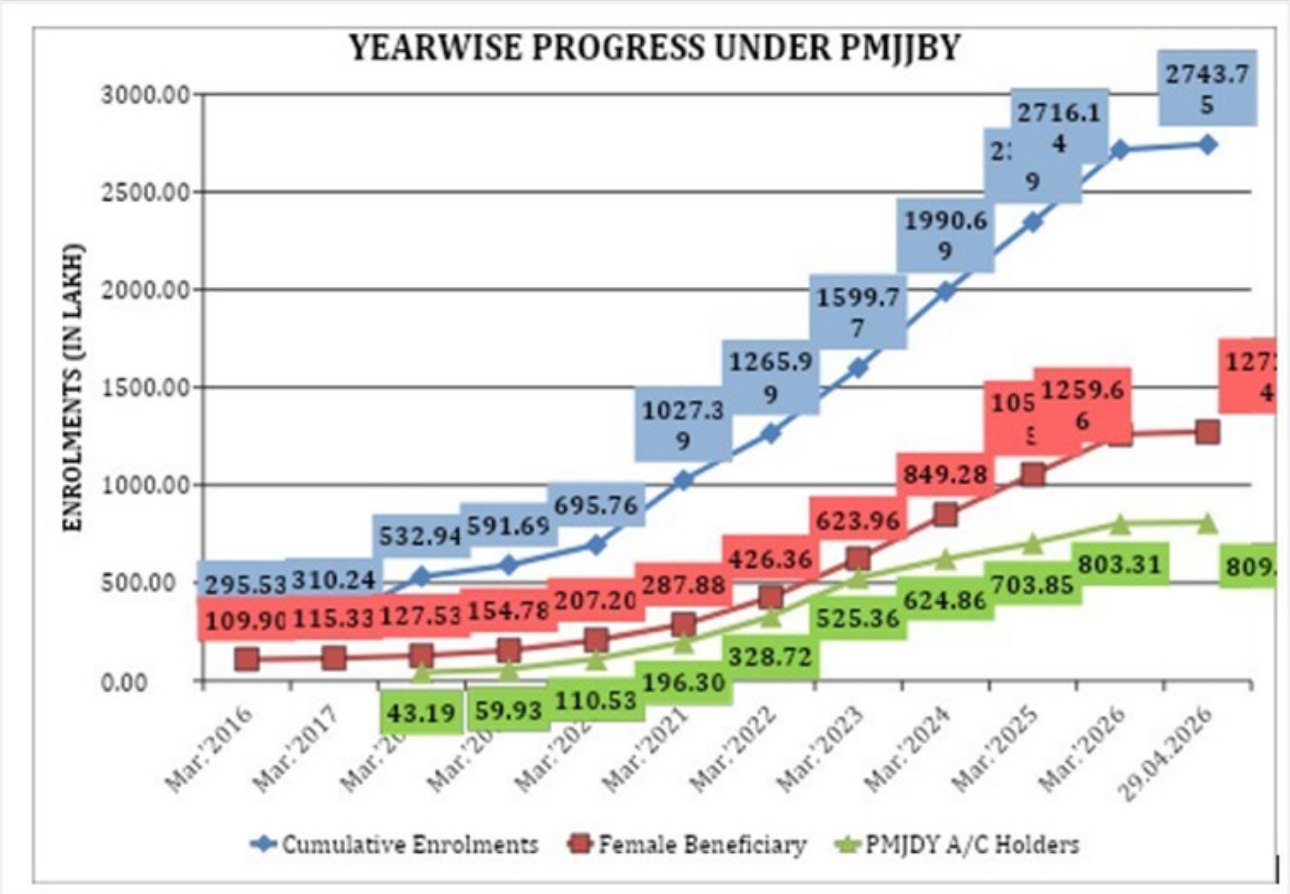
- Nature: A one-year life insurance cover of Rs. 2 lakh for death due to any reason.
- Eligibility: Individual bank/post office account holders in the age group of 18 to 50 years.
- Premium: Highly affordable at Rs. 436 per annum (less than Rs. 2 per day) via auto-debit.

#### 2. Pradhan Mantri Suraksha Bima Yojana (PMSBY):

- Nature: An accidental insurance scheme providing Rs. 2 lakh for accidental death/total disability and Rs. 1 lakh for partial disability.
- Eligibility: Available to account holders in the age group of 18 to 70 years.
- Premium: Extremely low at Rs. 20 per annum (less than Rs. 2 per month).

### 3. Atal Pension Yojana (APY):

- Nature: A guaranteed pension scheme for the unorganized sector, providing a monthly pension of Rs. 1,000 to Rs. 5,000 after age 60.
- Eligibility: Open to bank account holders aged 18 to 40 years who are not income tax payers.
- Benefits: The pension is guaranteed for the subscriber, then the spouse, after which the entire corpus is returned to the nominee.




### Current Stats of Jan Suraksha Schemes:

### Current Stats of Jan Suraksha Schemes:

- MassiveCumulative Enrolment: Over 94.56 crore total enrolments have been achieved across the three schemes, showcasing widespread public trust.
- Example: PMSBY alone has secured over 58.09 crore enrolments, making it one of the largest accidental insurance programs globally.
- Significant Financial Payouts: Substantial claims have been settled, providing a vital safety net for bereaved families during crises.
- Example: PMJJBY has settled claims worth over 21,512.50 crore, supporting over 10.7 lakh families.
- DeepeningGender Inclusivity: The schemes have seen robust participation from women, empowering them with financial autonomy.
- Example: Females constitute approximately 49% of total enrolments under the Atal Pension Yojana.
- Impact on PMJDY Holders: The schemes have successfully integrated the poorest through the Jan Dhan ecosystem.
- Example: Over 19.30 crore PMJDY account holders have been brought under the protective umbrella of PMSBY.
- GrowingPension Footprint: APY has seen steady growth in providing long-term financial resilience for the elderly.
- Example: More than 9.04 crore individuals have enrolled in APY to secure their post-retirement life.

### Challenges Associated:

- Maintaining Persistence: Ensuring that subscribers keep sufficient balances for auto-debits remains a logistical hurdle for banks.

- Example: Premium deductions can fail if account holders do not maintain the required 436 or 20, leading to a lapse in cover.
- Awareness in Remote Areas: While digital penetration is high, deep-rural awareness of claim procedures is still evolving.
- Example: Field functionaries often have to conduct extensive outreach to ensure families know how to file a claim after a subscriber's death.
- Low Literacy Levels: Understanding the technical difference between accidental and natural death insurance can lead to confusion during claim filing.
- Example: Claim rejections in PMSBY sometimes occur when families file for natural deaths under an accidental insurance policy.
- Inflation Impact on Coverage: As living costs rise, the static 2 lakh sum assured may become insufficient for long-term family sustenance.
- Example: The 2 lakh payout, fixed in 2015, provides less purchasing power in 2026, suggesting a need for periodic revisions.
- Unorganized Sector Volatility: Irregular income in the unorganized sector can make fixed monthly contributions to APY difficult for some.

### Way Ahead:

- Enhancing Sum Assured: Periodically reviewing and increasing the sum assured for PMJJBY and PMSBY to align with current economic realities.
- Last-MileDigital Literacy: Utilizing the Jan Suraksha Portal to further simplify claim settlements and provide real-time tracking for beneficiaries.
- Incentivizing Persistence: Developing reward mechanisms for long-term subscribers who maintain uninterrupted auto-debits for over a decade.
- Targeted Outreach: Strengthening the role of Banking Correspondents and ASHAs to promote these schemes in the most remote tribal and Aspirational Districts.
- Integrated Insurance: Exploring a Unified Jan Suraksha product that bundles life, accident, and pension benefits into a single, simple enrollment process.

### Conclusion:

The 11-year journey of the Jan Suraksha schemes marks a structural shift in India's welfare paradigm, moving from traditional subsidies to institutionalized financial security. By providing a safety net to nearly 95 crore people, these schemes have reduced the vulnerability of the poor to life's unpredictable shocks. As India moves toward Viksit Bharat, scaling these initiatives will be central to ensuring that economic growth is inclusive and every citizen is protected.

## SHE-MART initiative

### Context:


The Ministry of Rural Development (MoRD) convened a high-level national consultation in Bhubaneswar, Odisha, to finalize the operational guidelines for the newly launched SHE-MART initiative.

### SHE-MART initiative

### AboutSHE-MART initiative:

### What it is?

- SHE-MART (Self Help Entrepreneurs – Marketing Avenues for Rural Transformation) is a revolutionary socio-economic initiative designed to build women-led rural marketing and supply chain aggregation
- Moving beyond isolated micro-credit models, it transitions women from loan-dependent, subsistence-level earners into formal enterprise and retail owners.
- Announced In: Union Budget 2026–27.
- Nodal Ministry: Ministry of Rural Development (MoRD), implemented via the Deendayal Antyodaya Yojana–National Rural Livelihoods Mission (DAY-NRLM).

### Aim:

- The primary aim is to systematically bridge the critical gap of market access for rural women.
- It transforms the grassroots livelihood architecture by scaling up production, eliminating exploitative middlemen, creating high-visibility regional brands, and supporting the national goal of creating three crore additional Lakhpati Didis by 2029.

### Key Features:

- Community-Owned Stores: Women-led retail stores and aggregation hubs managed by local SHG federations to ensure direct community ownership and governance.
- Targeted SHG Support: Focuses on mature SHGs with stable annual incomes above 1 lakh to scale successful rural enterprises.
- ONDC Integration: Linked with ONDC for commission-free digital selling, enabling nationwide e-commerce access for rural women entrepreneurs.
- India PostLogistics Support: Uses India Post's network for affordable last-mile delivery of rural products to urban markets.
- Diverse Product Ecosystem: Promotes products like organic farm goods, handlooms, handicrafts, processed foods, and wellness items.
- Professional Retail Management: Equipped with digital inventory systems, standardized billing, branding, and packaging support for market competitiveness.

### Significance:

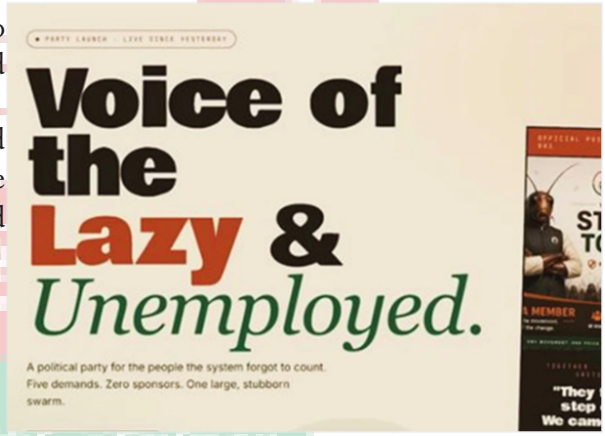
- Women-Led Rural Economy:Shifts rural women from micro-credit dependence to sustainable enterprise ownership and market leadership.
- Boost to Lakhpati Didi Mission:Institutionalizes SHG incomes through collective retail and digital commerce ecosystems.

## Gen Z and Democracy

### Context:

The Central Government used Section 69A of the IT Act to block the website and social media handles of the newly formed Cockroach Janta Party (CJP).

- The satirical online movement, launched by a 30-year-old student after a CJI courtroom remark, gained over 2 crore followers by tapping Gen Z anger over NEET leaks and unemployment.




### Gen Z and Democracy

### AboutGen Z and Democracy:

### What it is?

- Gen Z and Democracy represents the evolving relationship between the youngest voting cohort (born roughly between 1997 and 2012) and established democratic institutions. Unlike previous generations whose political lives began with physical, grassroots mobilization, Gen Z experiences democracy as a digital-first, heavily networked phenomenon.

### Role of Social Media in Strengthening Democracy:

- Instantaneous Democratization of Dissent: Social media allows marginalized youth to bypass elite media gatekeepers and broadcast real-time grievances to a massive audience.
- Low-CostPolitical Mobilization: It eliminates the heavy financial barriers historically required to build a political movement, allowing organic ideas to scale rapidly.
- Rapid Amplification of Governance Failures: Digital platforms serve as a hyper-vigilant civic audit tool, exposing institutional corruption or policy lapses instantly.
- Fostering Decentralized Global Solidarity: Connects localized youth struggles to international human rights standards and successful global resistance models.

- PromotingCreative Political Engagement: Replaces dry, unengaging policy text with creative political satire and visual storytelling, making civic awareness accessible to the masses.

## Need for Integrating Gen Z into Traditional Democracy:

- Preventing Institutional Alienation: If young voters feel traditional voting mechanisms are broken, they will abandon mainstream electoral politics altogether.
- Channeling Satire into Legislative Action: Integrating digital energy into traditional party systems turns short-lived internet trends into lasting, structural policy reforms.
- Mitigating National Security Panic: Formalizing youth dissent within standard democratic frameworks stops state intelligence agencies from mistaking organic satire for foreign interference.
- HarnessingDigital Public Policymaking Capital: Gen Z possesses unmatched skills in public relations, data aggregation, and AI tools that can modernize outdated government communication styles.
- Ensuring Long-Term Democratic Continuity: As older generations age out, the survival of democratic values depends entirely on making constitutional systems relevant to digitally native youth.

## Challenges to Democracy Due to Social Media:

- The Mismatch Between Virtual Tractions and Ground Reality: Massive digital following can create a false sense of political momentum that completely lacks real-world organization.
- Example: The CJP garnered over 2 crore Instagram followers in less than 10 days, yet it possessed zero physical office space or registered ground volunteers.
- Susceptibility to Rapid MassDisinformation Loops: Algorithmic feeds prioritize emotional outrage over verified facts, accelerating the spread of unverified panic.
- Example: Digital echo chambers can weaponize unverified narratives surrounding structural exam leaks, triggering widespread student panic before formal investigations conclude.
- Weaponization by Transnational Influence Operations: Foreign intelligence agencies can easily hijack genuine domestic grievances to covertly fuel polarization.
- Example: State officials raised concerns that the CJP's rapid online rise mirrored cross-border influence operations designed to exploit youth unrest and destabilize the state.
- Triggering Disproportionate State Repression: The speed and scale of viral internet movements often cause governments to overreact with heavy-handed censorship tools.
- Example: The Centre invoked Section 69A emergency powers to block CJP accounts under a confidential framework, bypassing open judicial scrutiny.
- Dehumanization and Polarization of Political Discourse: Internet anonymity and meme culture can reduce complex systemic socio-economic problems into hostile, divisive tribal rhetoric.
- Example: Framing structural unemployment through dehumanizing cockroach vs. parasite online tropes degrades civil political discourse.

## Way Ahead:

- Establishing Institutional Outlets for Satire: Protect political humor, memes, and satire from national security laws, treating digital dissent as a normal part of a healthy democracy.
- Reforming Section 69A IT Act Protocols: Amend the Information Technology Rules to mandate a transparent, public hearing before a website or social media page can be shut down.
- Building MainstreamYouth Advisory Councils: Establish non-partisan youth assemblies within state legislatures to directly capture Gen Z concerns regarding employment and education.
- Deploying AI-Driven Fact-Checking Grids: Partner with social media companies to flag foreign bot networks without silencing genuine domestic political criticism.
- Modernizing Mainstream Political Recruitment: Traditional political parties must overhaul their structures, allowing young digital creators to run for office without relying on dynastic wealth.

## Conclusion:

The sudden rise and ban of the Cockroach Janta Party highlights a growing disconnect between digital-first Gen Z voters and India's traditional democratic structures. When institutions dismiss youth anxieties with outdated labels, social media fills the void by transforming viral satire into an immediate political force.

# Four-Dimensional Grid' Border Security Model

## Context:


Union Home Minister proposed a new Four-Dimensional Grid border security framework during his visit to the Sanchu Border Outpost in Rajasthan along the India-Pakistan border.

## Four-Dimensional Grid' Border Security Model

## AboutFour-Dimensional Grid' Border Security Model:

### What It Is?

- The Four-Dimensional Grid is a proposed integrated border security framework designed to create a coordinated, multi-layered defense mechanism along India's international borders.
- It combines the operational strengths of the Border Security Force (BSF), the Army, local administration, cyber surveillance units, and vigilant border residents into a unified security architecture.

### Aim:

- To establish foolproof border security against infiltration, smuggling, drones, and cross-border terrorism.
- To improve coordination between military, civil administration, and local communities for faster threat detection and response.

### Key Features:

- Integrated Security Coordination:Brings together the BSF, Army, district administration, cyber wings, and border villagers under a common operational framework.
- Anti-Infiltration & Anti-Smuggling Focus:Aims to dismantle infiltration, narcotics, arms smuggling, and reconnaissance drone networks at the grassroots level.
- Technology &Cyber Surveillance: Integrates cyber monitoring, drone tracking, communication systems, and real-time intelligence sharing for rapid response.
- Border Area Development Linkage:Works alongside the Vibrant Villages Programme to improve roads, electricity, telecom connectivity, and livelihoods in border villages to strengthen local security participation.

### Significance:

- Enhances India's border security preparedness through coordinated civil-military-community cooperation.
- Strengthens national security by combining infrastructure development with strategic border surveillance and local participation.

# PM-WANI (Prime Minister's Wi-Fi Access Network Interface)

## Context:


The Department of Telecommunications (DoT) introduced a series of user-friendly reforms under the PM-WANI (Prime Minister's Wi-Fi Access Network Interface) framework.

## PM-WANI

## AboutPM-WANI (Prime Minister's Wi-Fi Access Network Interface):

### What It Is?

- PM-WANI is a distributed, architecture-driven digital public infrastructure framework designed to proliferate broadband internet across India through unlicenced public Wi-Fi networks.
- Approved On: December 9, 2020, by the Union Cabinet.
- Nodal Department: Department of Telecommunications (DoT), Ministry of Communications.

### Aim:

- The primary aim of PM-WANI is to democratize internet access by encouraging small local shops, tea stalls, and neighborhood establishments to become last-mile internet service providers.

### The Core Elements of the PM-WANI Ecosystem:

- The operational architecture of the PM-WANI framework is divided into four distinct components:
- Public Data Office (PDO): The last-mile service delivery node. PDOs buy commercial internet bandwidth from local telecom or internet service providers (TSPs/ISPs) and establish, maintain, and operate PM-WANI-compliant Wi-Fi hotspots for consumers.
- Public Data Office Aggregator (PDOA): Functions as the backend central management layer. PDOAs aggregate various PDOs and provide them with vital technical services, including user authorization, network security coordination, and financial accounting management.
- App Provider: Develops and maintains user-facing mobile applications. These apps handle initial user registration, authenticate potential broadband consumers, and discover and display available PM-WANI compliant Wi-Fi hotspots in the immediate vicinity.
- Central Registry: Maintains the master directory of all certified App Providers, PDOAs, and PDOs to ensure interoperability. This registry is currently managed by the Centre for Development of Telematics (C-DoT).

### Key Structural Features:

- Zero Licensing and Fee Structure: To promote ease of doing business, last-mile PDOs require no license, no registration, and pay zero fees to the DoT.
- Frictionless Aggregator Onboarding: Backend PDOAs are also exempt from licensing requirements. They only need to complete a registration process, which is free of charge and processed within 7 working days of filing an application.
- Open Interoperability: A user authenticated through one approved App Provider can seamlessly access public Wi-Fi broadband across any PDO hotspot in the country without registering multiple times.

### Recent 2026 Upgrades:

- Simplified Laptop Connection viaQR Code: Eliminates the friction of manual log-ins on secondary devices. Users can instantly link their laptops to a secure public network by scanning a dynamic QR code on the landing page using an already authenticated smartphone app.
- Flexible Short-Duration Sachet Plans: Hotspot operators are advised to roll out highly affordable, short-duration validity plans of 15, 30, and 60 minutes. These cater to transient users at transit hubs or markets while boosting operator revenues.
- Standardized Hotspot Identification (SSIDs): Mandates the standard integration of PMWANI branding into network names (SSIDs). This lets citizens easily distinguish authentic, secure public connections from fake or malicious networks.

## Portal for the National e-Governance Service Delivery Assessment (NeSDA), 2025

### Context:

The Department of Administrative Reforms and Public Grievances (DARPG) has officially launched the National e-Governance Service Delivery Assessment (NeSDA) 2025 Portal.

### National e-Governance Service Delivery Assessment (NeSDA)

### AboutPortal for the National e-Governance Service Delivery Assessment (NeSDA), 2025:

### What It Is?

- The National e-Governance Service Delivery Assessment (NeSDA) is a specialized, biennial assessment framework deployed to evaluate digital governance from the citizen's perspective. It is conceptually

customized for the Indian federal structure based on the internationally recognized Online Service Index (OSI) of the United Nations e-Government Survey.

- Nodal Organisation: Department of Administrative Reforms and Public Grievances (DARPG), Ministry of Personnel, Public Grievances and Pensions, Government of India.

## Aim:

- The ultimate aim of the NeSDA 2025 framework is to comprehensively measure the maturity, availability, and delivery success of Government-to-Citizen (G2C) and Government-to-Business (G2B) digital services.

## Key Features & Framework Grid:

- Dual Portal Categorization: Evaluates and separates all government web touchpoints into two functional streams:
- State, UT, City, and Central Ministry Portals (General information landing pages).
- State, UT, City, and Central Ministry Service Portals (Active transaction-handling gateways).
- Expanded Sectoral Coverage: Spans key public sectors, including Finance, Labour & Employment, Education, Local Governance, Social Welfare, Environment, Tourism, Public Grievances, and Transport. The 2025 framework explicitly adds services under the Ministry of Corporate Affairs into the focus matrix.
- ExpandedMandatory Service Thresholds: Proposes the strict assessment of 59 mandatory online services for every single Indian State and UT, along with 43 services across central ministries and departments.
- Multi-Dimensional Assessment Parameters: Maturity is scored across specific qualitative markers:
- Accessibility, Content Availability, and Ease of Use.
- Information Security, Privacy, and End Service Delivery.
- Status and Request Tracking, and Integrated Service Delivery.
- Open Government Data (OGD) and E-Participation.
- Digital Data Ingestion Instrument: The newly launched portal acts as an automated repository, collecting workflow-tracked self-assessments and data points submitted directly by designated central and state nodal officers.
- Cascading Review & Capacity Support: DARPG will manage stakeholder consultations, interactive capacity-building workshops, and real-time portal walkthrough demonstrations to ensure smooth data flows and accurate reporting across all administrative levels.

Chapter-
10

# DEFENCE

## Op Netra 1.0

### Context:

The Indian Army successfully concluded 'Op Netra 1.0,' a four-day high-altitude mega eye camp in Leh, Ladakh, which provided advanced surgical care to 950 patients.


### Op Netra 1.0

### AboutOp Netra 1.0:

### What it is?

- 'Op Netra 1.0' was an Advanced Surgical Eye Camp conducted by the Indian Army.
- It was hosted at the 153 General Hospital in Leh, under the leadership of Director General Armed Forces Medical Services.
- Aim: The primary goal was to provide high-end ophthalmic medical care and humanitarian outreach to citizens in remote, high-altitude regions. It aimed to ensure that geographical barriers do not prevent citizens from accessing essential healthcare services.

### Key Features:

- Wide Outreach: Screened 950 patients from seven districts of Ladakh, including extremely remote areas like Chushul, Hanle, Demchok, and Turtuk.
- Specialized Surgeries: Performed 214 procedures, including 197 complex cataract surgeries and 10 vitreo-retinal interventions.
- Advanced Techniques: Utilized cutting-edge procedures such as Glued Intraocular Lens implantation, Minimally Invasive Glaucoma Surgery (MIGS), and vitrectomy.
- Indigenous Technology: Launched the Op Netra App, which features QR code-based identification and end-to-end digitization of patient records to automate scheduling and enhance safety.
- Inter-Service Cooperation: The Indian Air Force enabled the mission by airlifting advanced medical equipment to the high-altitude setting.

### Significance:

- Successfully restored sight to 15 completely visually impaired patients, significantly impacting their quality of life.
- Contributes to a larger military medical initiative that has completed over 2,500 sight-restoring surgeries across India since November 2025.
- Serves as a landmark example of seamless cooperation between the military and civil administrations in the Union Territory of Ladakh.

## Military Exercise CINBAX-II 2026

### Context:

The Indian Army contingent departed, to participate in CINBAX-II 2026, the second edition of the India-Cambodia bilateral military exercise.

## Military Exercise CINBAX-II 2026:

## AboutMilitary Exercise CINBAX-II 2026:

### What it is?

- CINBAX-II is a bilateral military exercise between the Indian Army and the Royal Cambodian Army. It is conducted under the framework of Chapter VII of the United Nations Mandate, focusing on joint training at the company level for operations in sub-conventional and semi-urban environments.
- Host Nation: Kingdom of Cambodia.
- Location: Techo Sen Phnom Thom Mreas Provincial Royal Cambodian Air Force Training Centre (Camp Basil), Kampong Speu Province.
- Nation involved: India and Cambodia.
- Aim: The primary objective of CINBAX-II is to enhance interoperability, coordination, and operational synergy between the two armies. It aims to align their capabilities with the current dynamics of counter-terrorism operations typically encountered by UN peacekeeping forces.

### Key Features:

- Tactical Drills: Includes practical discussions and tactical exercises focused on counter-terrorism and insurgency.
- Specialized Training: Focuses on modern combat skills, including drone operations, mortar handling, and sniper tactics.
- Semi-Urban Focus: Emphasizes sharing operational experiences gained during combat in semi-urban and sub-conventional environments.
- Validation Exercise: The training culminates in a comprehensive validation exercise to test the joint operational efficiency of the combined forces.
- Cultural Exchange: Facilitates the exchange of best practices and promotes mutual understanding between the defense forces of both nations.

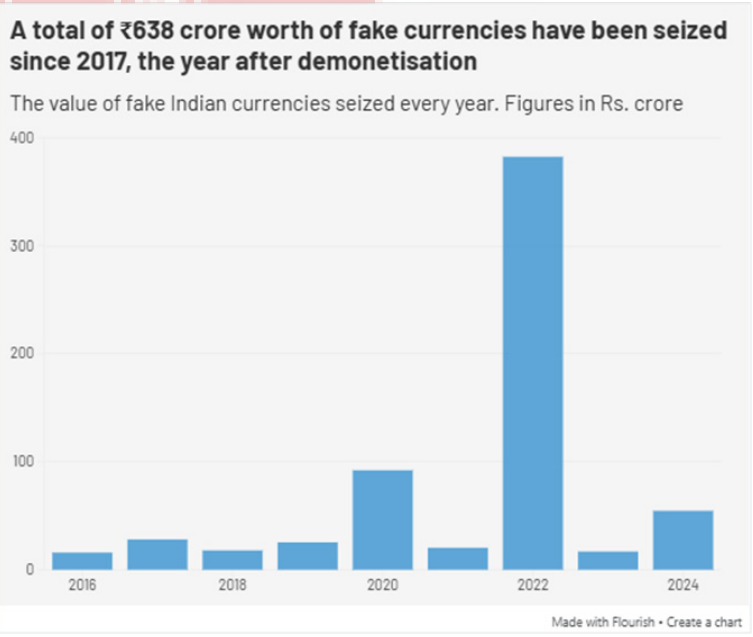
### Significance:

- Reflects the strengthening defense ties and bilateral relations between India and Cambodia.
- Contributes to a mutual understanding of regional security challenges and enhances the collective capacity to handle them.

## The Orange Economy in India

### Context:

Nearly a decade after the 2016 demonetisation, the latest 'Crime in India' report 2024 reveals that fake currency remains a major challenge, with over 54.61 crore in counterfeit notes seized this year.




### Prevalence of Fake Currency in India

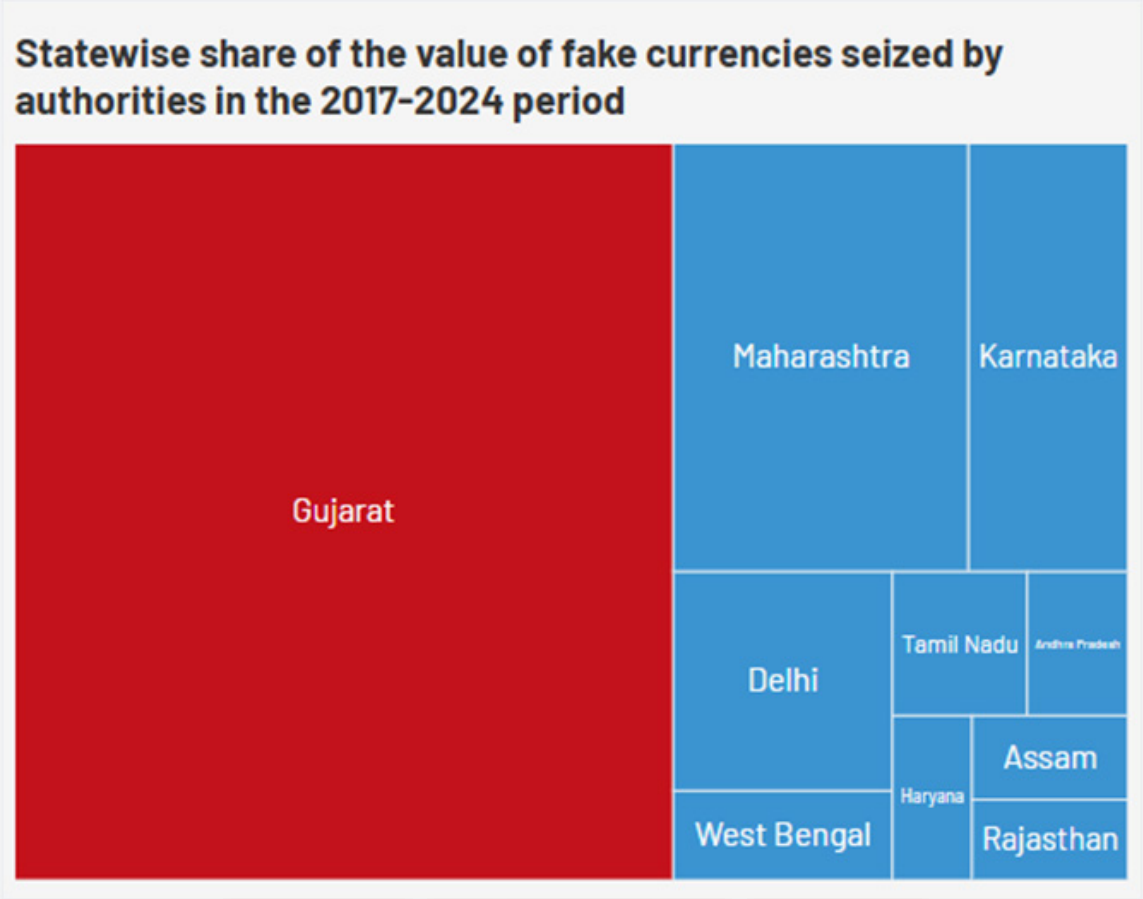
### AboutPrevalence of Fake Currency in India:

### What it is?

- Fake currency, or Counterfeit Indian Currency Notes (CICN), refers to the illegal imitation of legal tender produced without the sanction of the Reserve Bank of India (RBI). These notes are often used to destabilize the economy, fund organized crime, and finance cross-border terrorism by mimicking the security features of genuine banknotes.

## Key Data & Stats on Fake Currency:

- Massive Total Seizures: A total of 638 crore worth of fake currency has been seized since 2017, with 2022 seeing a massive peak of 382.6 crore.
- Denomination Trends: Seizures of new 500 notes in 2024 were four times higher than in 2016, indicating that counterfeiters have successfully replicated the new series.
- Geographic Concentration: Gujarat is the primary hotspot, accounting for 355.72 crore—more than 50% of the country's total seizures between 2017 and 2024.
- Currency in Circulation (CiC): Despite digital pushes, CiC has surged by 137% to 42.12 lakh crore as of May 2026, compared to 17.74 lakh crore in November 2016.




## Factors Leading to Fake Currency in India:

- Replication of Security Features: Advanced printing technologies allow criminals to mimic the complex features of the new Mahatma Gandhi (New) Series.
- Example: New 200 and 500 notes now account for a significant portion of detected counterfeits in the banking system.
- Cross-Border Smuggling: Hostile neighbors and international crime syndicates use porous borders to pump fake notes into the Indian economy.
- Example: High-quality Super Notes are often smuggled through the Three Frontiers and traditional transit routes in the North East.
- High Cash Dependency: Despite the rise of UPI, India remains a cash-intensive economy, providing a large hiding space for fake bills.
- Example: Currency in circulation has more than doubled since demonetisation, reaching 42.12 lakh crore in 2026.
- Sophisticated Distribution Networks: Organized gangs use MSMEs and rural markets where manual verification of notes is less frequent.
- Example: State-wise data shows high seizures in trade hubs like Maharashtra and Karnataka, where high-volume cash transactions are common.

## Implications of Fake Currency:

- Economic Instability: Counterfeit money leads to inflation as it increases the money supply without any corresponding increase in goods or services.
- Example: The injection of 638 crore in fake notes since 2017 devalues the purchasing power of honest citizens.
- Funding Terrorism: Proliferation of fake currency is a known tool for financing proxy wars and domestic insurgency.
- Example: Investigative agencies often link large CICN seizures to terror modules active in border states.
- Loss of Public Trust: Widespread circulation of fakes undermines confidence in the national currency and the formal banking system.
- Example: Detection of 11 lakh fake notes within banks creates panic among common users regarding the authenticity of their savings.
- Fiscal Burden: The government and RBI incur heavy costs in frequently updating security features and detecting/destroying fakes.
- Example: The massive clean-up of 2,000 notes in 2023 was partly driven by the need to mitigate long-term counterfeiting risks.

## Challenges toCounter Fake Currency:

- Technological Race: Counterfeiters quickly adapt to new security measures, such as color-shifting ink and micro-lettering.
- Example: Within a year of the 2016 demonetisation, fake versions of the un-counterfeitable 2,000 note had already appeared.
- Fragmented Enforcement: Coordination between state police, the NCRB, and central agencies like the NIA is often hampered by data silos.
- Example: While Gujarat reports high seizures, other transit states may be under-reporting due to a lack of interoperable monitoring tools.
- Low Awarenessin Rural Areas: A large section of the population cannot distinguish between genuine security threads and high-quality fakes.
- Example: Counterfeiters target rural MSMEs where lack of UV-detection lamps makes the passing of fake 500 notes easier.
- Digital Limitations: While UPI reduces small-value cash use, high-value transactions still rely on physical notes, which are the primary target for fakes.
- Example: The 500 note remains the most counterfeited denomination because it is the workhorse of the Indian cash economy.

## Way Ahead:

- Periodic Security Upgrades: RBI should introduce new security features (like polymer notes or advanced holographic threads) every few years to stay ahead of counterfeiters.
- Strengthen Inter-Agency Coordination: Empower the National Functional Analysis Centre to provide real-time, district-level data to all state police forces.
- Public Awareness Campaigns: Launch massive Know Your Note drives, especially in rural and border areas, using visual aids and mobile apps.
- Incentivize Digital Payments: Further lower transaction costs for MSMEs to reduce the total volume of high-value cash circulating in the market.
- Stricter Judicial Action: Establish fast-track courts for CICN cases to ensure that traffickers and super-distributors face swift and deterrent punishment.

## Conclusion:

The persistent reality of fake currency post-demonetisation highlights that structural changes alone cannot eliminate counterfeiting without continuous technological and enforcement upgrades. With Gujarat emerging as a major seizure hub and cash in circulation at an all-time high, the threat to India's economic sovereignty remains potent. Only a combination of aggressive digitization and robust security standardisation can ensure the integrity of the Indian Rupee in the long term.

# Make in India in the Defense Sector

## Context:

Amid intense disruptions in global energy and military supply chains caused by the escalating West Asian conflict, security analysts released an exhaustive evaluation of the Make in India initiative in defense.

## Make in India in the Defense Sector

## AboutMake in India in the Defense Sector:

### What it is?

- Launched as part of a broader national manufacturing push, Make in India in Defence is a strategic policy framework designed to transform India from a top global arms importer into a self-reliant defense manufacturing hub (Aatmanirbharta).
- Governed by the Defence Acquisition Procedure (DAP), the policy aims to build an independent Military-Industrial Complex (MIC) by cutting import dependencies, standardizing procurement, and integrating domestic private firms into global supply chains.

### Key Data/Stats on India's Defense Sector:

- All-Time HighBudgetary Allocation: The Ministry of Defence was allocated a record-shattering 7.85 lakh crore ($83 billion) for FY2026–27, representing 14.67% of total central government expenditure.
- Domestic Procurement Cushion: Out of the massive 2.19 lakh crore capital outlay, the government has earmarked a record 75% ( 1.39 lakh crore) exclusively for procurement from domestic industries.
- Explosive Export Surge: India's defense exports hit an all-time high of 38,424 crore in FY2025–26, marking a staggering 62.66% year-on-year growth and a 31-fold jump over the past decade.
- The State-Dominant Matrix: Despite sweeping liberalization reforms, Defense Public Sector Undertakings (DPSUs) still control over 70% of total domestic production, creating an un-balanced theatre for private competitors.

### Opportunities and Potential:

- The Drone andAsymmetric Warfare Pivot: The lessons of the 2026 Iran and Ukraine conflicts show that low-cost, scalable technologies dictate modern battlefield outcomes.
- Example: Drones accounted for 71% of recent retaliatory strikes in West Asia, presenting India's tech-heavy private sector with a massive opportunity to manufacture smart, low-cost loitering munitions.
- Rapid Venture Capital Capitalization: Funding for domestic military-tech startups has scaled exponentially, opening up cash reserves for advanced indigenous engineering.
- Example: Capital flowing into defense-tech startups grew 61 times between 2016 and 2025, reaching 1,653 crore in active investment rounds.
- Booming Global Export Corridors: There is a sharp rise in international trust and structural demand for Indian-manufactured weapons systems across Asia, Africa, and the Middle East.
- Example: India secured a historic 3,800 crore export order for BrahMos supersonic missiles to Indonesia, proving its capability to deliver complete elite weapon platforms.
- Defense Industrial Corridors as Logistics Arteries: The creation of specialized manufacturing zones lowers entry barriers and clusters specialized MSMEs together.
- Example: The Uttar Pradesh and Tamil Nadu Defence Corridors have successfully attracted investments worth over 9,145 crore, integrating over 16,000 MSMEs into the supply grid.
- FDI-Driven Global OEM Collaboration: Raising foreign equity limits allows global defense giants to anchor assembly lines locally rather than exporting finished kits.
- Example: Raising the FDI cap to 74% under the automatic route has driven foreign companies to form deep joint ventures with Indian private firms for technology transfers.

### Challenges and Bottlenecks:

- Severe Bureaucratic and Procedural Delays: India's defense acquisition process remains highly over-centralized and layered, causing immense timelines to overshoot.

- Example: A Parliamentary Standing Committee revealed that out of 178 defense projects, the original timelines failed in 119 cases, with delays stretching up to 500%.
- Ambiguous andShifting Qualitative Requirements (QRs): The military frequently alters technical and operational specifications mid-negotiation, stalling assembly line rollouts.
- Example: Ambiguity in the initial QRs for localized component designs leaves manufacturers trapped in prolonged testing loops that delay project approvals for years.
- The Brain Drain andGovernment Compensation Caps: Government-owned institutions struggle to retain top-tier engineering talent due to rigid civil service pay scales.
- Example: Inadequate remuneration packages at state labs cause elite scientists to exit to the private sector or Western firms, stalling breakthrough projects like domestic jet engines.
- An Uneven Field Favoring State Utilities (DPSUs): Private defense manufacturers face structural discrimination regarding contract allocations and clearance protocols.
- Example: DPSUs receive preferential treatment in state orders and advance payments, while private firms face onerous documentation and delayed fiscal clearances.
- Critical ComponentImport Vulnerability: While India excels at assembling structural platforms, it remains dependent on foreign nations for high-value core components.
- Example: India still relies heavily on the U.S., France, and Russia for semiconductor chips, sensors, and actuators, leaving assembly lines vulnerable to sudden maritime supply chain halts.

## Initiatives Taken So Far:

- The Strategic Partnership (SP) Model: Formulated to loop premier Indian private entities with foreign Original Equipment Manufacturers (OEMs) to co-produce major platforms like submarines and fighter jets locally.
- Positive Indigenisation Lists: The Ministry of Defence has released progressive embargo lists containing thousands of military items and subsystems that can only be procured from domestic manufacturers.
- iDEX (Innovations for Defence Excellence): Launched to foster innovation by providing functional grants and incubation support to over 676 startups and individual defense innovators.
- Simplified Export Authorization: The Department of Defence Production streamlined regulatory clearances by introducing an end-to-end online portal and cutting down standard operating procedures for export NOCs.

## Way Ahead:

- Enforcing a Level Playing Field: Reform procurement protocols to ensure private entities compete on identical financial and legal terms with DPSUs, transitioning the state's role strictly to that of a neutral buyer.
- InstitutionalizingFair Compensation for R&D: Benchmark the pay scales of top scientists and developers at DRDO with global private tech standards to attract and retain elite engineering brains.
- Prioritizing Asymmetric Software over Hardware: Divert a significant chunk of the capital budget toward cyberwarfare, AI-driven battle management, and autonomous swarm drone algorithms where Indian software engineers hold an edge.
- Banning Mid-Contract QR Modifications: Freeze the military's Qualitative Requirements once a project moves into the active bidding phase, preventing developmental delays.
- Setting upGlobal Testing Hubs: Build open-access, state-backed testing laboratories and firing ranges within the Defense Industrial Corridors to allow private startups to validate their designs cost-effectively.

## Conclusion:

The geopolitical crossfire of 2026 has proven that military reliance on imported hardware is a profound structural vulnerability. While a historic surge to 38,424 crore in exports highlights India's manufacturing potential, achieving true Atmanirbharta requires dismantling long-standing bureaucratic layers and legacy biases against private enterprise.

# Unmanned Aerial Vehicle Launched Precision Guided Missile (ULPGM)-V3

## Context:


The Defence Research & Development Organisation (DRDO) successfully completed the final deliverable configuration development trials of the Unmanned Aerial Vehicle Launched Precision Guided Missile (ULPGM)-V3 at its test range near Kurnool, Andhra Pradesh.

## Unmanned Aerial Vehicle Launched Precision Guided Missile (ULPGM)-V3

## AboutUnmanned Aerial Vehicle Launched Precision Guided Missile (ULPGM)-V3:

### What It Is?

- The ULPGM-V3 (also known as ULM-ER or Unmanned Launch Munition-Extended Range) is a highly sophisticated, lightweight, fire-and-forget precision-guided missile specifically engineered for drone warfare.
- It allows unmanned aerial platforms to execute high-accuracy surgical strikes against both ground armor and airborne threats without requiring direct human piloting or endangering manned aircraft.
- Nodal Design Laboratory: The ULPGM missile has been developed by Research Centre Imarat, Hyderabad as the nodal lab along with other DRDO laboratories

### Aim:

- The primary aim of the ULPGM-V3 is to equip the Indian Armed Forces with an autonomous, low-cost, yet highly lethal standoff weapon capability.
- It seeks to neutralize high-value assets—such as hostile main battle tanks, reinforced concrete bunkers, and enemy surveillance drones—while operating in communication-denied or heavily jammed electronic warfare environments.

### Key Features:

- Physical Dimensions: Possesses an optimized, lightweight structural design weighing 12.5 kg, making it easily compatible with multiple tactical and high-endurance UAV platforms.
- Extended Range Dynamic: Features a maximum operational strike range extended up to 10 km (with an active engagement reach of 4 km during peak day conditions and 2.5 km at night).
- Advanced Dual-Channel Guidance: Equipped with a high-definition, passive-homing, dual-channel Imaging Infrared (IIR) seeker alongside laser guidance, ensuring seamless all-weather, day-and-night tracking.
- Pinpoint Accuracy: Achieves a Circular Error Probable (CEP) of just 10 cm, meaning the missile consistently strikes within a coffee-cup-sized radius of its designated target.
- Two-Way S-Band Datalink: Features a robust two-way digital communication link that allows real-time target updates, mid-course flight corrections, and in-flight re-targeting.
- Propulsion System: Driven by a advanced dual-thrust solid propellant rocket motor that utilizes low-signature, smokeless fuel to prevent visual detection of the launch drone.
- Modular Warhead Configurations: Features a hot-swappable payload array designed to defeat distinct battlefield assets:
- Anti-Armor / EFP Version: Explosively Formed Penetrator designed to punch through heavy main battle tank armor via top-attack mode.
- PCB (Penetration-Cum-Blast) Version: A bunker-buster load capable of shattering reinforced concrete defenses.
- Pre-Fragmented Version: Engineered with an optimized lethality blast zone for anti-personnel and soft-target interdiction.

### Significance:

- Validates a fully indigenous drone-munition supply chain involving 30+ Indian MSMEs and startups.
- Enables Indian drones to detect and destroy enemy drones, helicopters, and loitering munitions.

## Yard 3039 (Sanghmitra)


### Context:

The Indian Navy achieved a major milestone in indigenous warship construction with the ceremonial launch of Yard 3039 (Sanghmitra), a Next Generation Offshore Patrol Vessel (NGOPV).

### Yard 3039 (Sanghmitra)

### AboutYard 3039 (Sanghmitra):

### What It Is?

- Yard 3039, named Sanghmitra, is an advanced, state-of-the-art Next Generation Offshore Patrol Vessel (NGOPV) designed for the Indian Navy. Derived from India's rich heritage, it is named after the daughter of Emperor Ashoka.
- The ship's unique crest depicts the constellation of Ursa Major alongside a red and white lighthouse, symbolizing structural guidance and vigilance.
- Built By: Garden Reach Shipbuilders & Engineers (GRSE) Ltd, Kolkata, under a concurrent project sharing the construction of 11 NGOPVs with Goa Shipyard Limited (GSL).

### Aim:

- The central aim of the vessel is to provide the Indian Navy with an expanded, versatile platform to execute multi-domain maritime operations.
- It is structurally engineered to protect critical offshore assets, secure maritime zones, and respond dynamically to non-traditional threats across India's vast areas of strategic interest.

### Key Features:

- Dimensions & Displacement: The vessel measures approximately 113 meters in length, 14.6 meters in width, and has a heavy displacement of about 3,000 tonnes.
- Speed &Shallow Draft: Designed with a structural draught requirement of only four meters, allowing it to safely navigate shallow coastal waters while maintaining a maximum sprint speed of 23 knots.
- Long-Range Endurance: Boasts an extensive blue-water range of 8,500 nautical miles at a cruising speed of 14 knots, ensuring prolonged autonomous deployment.
- Multi-Mission Capability: Outfitted with specialized modular spaces to support multi-domain tasks, including maritime interception, Visit, Board, Search, and Seizure (VBSS) operations, mine warfare, and the tactical deployment of special forces.
- Operational Readiness: Equipped to swiftly transition between high-intensity coastal surveillance, anti-piracy patrols, Search and Rescue (SAR) operations, and Humanitarian Assistance and Disaster Relief (HADR) missions.

### Significance:

- The launch of Sanghmitra is a monumental step forward in transforming the Indian Navy from a buyer's navy to a premier, self-sustaining builder's navy.
- As an indigenously designed and manufactured warship, it directly advances the Union Government's flagship visions of Aatmanirbhar Bharat (Self-Reliant India) and the Make in India initiative.

# Multilateral Exercise PRAGATI 2026

## Context:

The multilateral military exercise PRAGATI 2026 officially commenced, at the Umroi Military Station in Meghalaya, bringing together troops from India and 12 friendly regional nations.

## Multilateral Exercise PRAGATI 2026

## AboutMultilateral Exercise PRAGATI 2026:

### What It Is?

- PRAGATI—which stands for Partnership of Regional Armies for Growth and Transformation in theIndian Ocean Region—is a premier, multinational military exercise. It is conducted under the core principles of mutual respect, equality, and shared regional security.

### Host Nation: India (Indian Army)

### Location: Umroi Military Station, Meghalaya

- Participating Nations: 12 friendly foreign countries, including Bhutan, Cambodia, Indonesia, Laos, Malaysia, Maldives, Myanmar, Nepal, Philippines, Seychelles, Sri Lanka, and Vietnam.
- Aim: The exercise aims to create a unified institutional platform for regional armies to exchange battlefield experiences, harmonize tactical doctrines, and establish joint response mechanisms against contemporary non-traditional security threats in the Indian Ocean Region (IOR).

### Key Features:

- Focus Terrain: Operates across a intensive two-week schedule specifically focusing on counter-terrorism and counter-insurgency operations in semi-mountainous and jungle terrain.
- Operational Drills: Features complex joint command planning exercises, tactical-level field drills, and highly coordinated live-fire simulation operations.
- Intelligence Synchronization: Centers on evolving synchronized concepts for the real-time management, analysis, and secure sharing of intelligence in a multinational operational environment.
- Atmanirbhar Bharat Exposition: Includes a dedicated defense-tech showcase where Indian domestic companies display indigenous weaponry, tactical gear, and innovations, highlighting India's expanding defense manufacturing capabilities.

### Significance:

- Exercise PRAGATI 2026 marks a major step forward in India's neighborhood-first diplomacy and its role as a Preferred Security Partner in the Indian Ocean Region.
- By training together, these 13 nations build the practical ability to work seamlessly during real-world crises.

# How safe is India's critical national infrastructure?

## Context:

The rapid digitization of India's critical national infrastructure through the Internet of Things (IoT), AI, and Operational Technology (OT) networks has significantly expanded its vulnerability to remote cyber-disruptions.

## India's critical national infrastructure

## AboutHow safe is India's critical national infrastructure?

### What is Critical Infrastructure?

- Critical National Infrastructure (CNI) refers to the essential assets, physical facilities, digital networks, and

services that form the socio-economic backbone of a country. Any breakdown, compromise, or destruction of these systems would severely impact public safety, cause massive financial loss, or compromise national security.

## Key Data and Statistics:

- Global Infrastructure Attacks Rising: Cyberattacks on critical sectors like energy and transport have surged by over 140% globally, driven largely by state-sponsored threats.
- Weak Compliance Systems: Nearly 60% of PSUs and municipal utilities still rely on basic checklist audits instead of advanced firmware-level security checks.
- IoT Vulnerability Risks: Around one-third of industrial IoT systems remain exposed to legacy credential attacks, threatening core operational technology networks.
- Financial Sector Under Threat: India's banking and digital payment systems face hundreds of thousands of cyber probes and DDoS attacks every day.

## India's Important Critical National Infrastructure Sectors:

- The Power andEnergy Grid Hub: Encompasses national ultra-mega solar parks, thermal power plants, nuclear reactors, load dispatch centers, and the state-to-state high-voltage transmission lines managed by PowerGrid.
- The Strategic Transportation Framework: Comprises automated train control centers (ETCS), modern airport air traffic control (ATC) screens, major container shipping seaports, and highway toll systems.
- The Banking, Financial Services, and Insurance (BFSI) Core: Includes the Reserve Bank of India's digital payment gateways, the National Electronic Funds Transfer (NEFT/RTGS) grids, stock exchanges, and public sector banking servers.
- The Telecom and Information Technology Backbone: Built around undersea fiber-optic cable landing stations, national data centers, cellular switching towers, and the country's satellite communication networks.
- The Public Health, Water, and Strategic Civil Services: Comprises urban drinking water treatment plants, centralized oil and gas distribution pipeline telemetries, major hospitals, and central police governance communication networks.

## Key Challenges Associated with CNI Security:

- The Vulnerability from Convergence of IT, OT, and IoT Layers: Bringing previously isolated industrial SCADA loops into the public internet network creates a larger attack surface for remote hackers.
- Example: Connecting physical machinery to central monitors via internet-facing IoT lines allows malicious actors to breach IT servers and directly manipulate heavy machinery or pipeline valves.
- The Infiltration of Mislabeled Foreign Components: Lower-level government agencies often bypass local manufacturing rules due to loose tender specifications, allowing re-branded foreign equipment to enter sensitive networks.
- Example: GPS-enabled electronic vehicle locks manufactured in China frequently receive fraudulent local packaging labels, exposing India's oil supply routes to foreign remote shut-offs.
- Onerous and Sluggish Certification Timelines: While safety checks run by bodies like the Standardization Testing and Quality Certification (STQC) verify device security, their long operational delays cause critical procurement bottlenecks.
- Example: An enterprise utility provider waiting up to a year for STQC smart camera clearance often continues using unverified, high-risk hardware in the interim.
- The Asymmetric Nature ofModern Cyber Warfare: State-sponsored hacker groups employ hidden trojans and logic bombs inside civilian automation networks to prepare for future conflicts.
- Example: As seen in international fuel storage breaches, adversaries focus their access probes on pipeline pressure sensors to cause physical infrastructure damage from thousands of miles away.

## Initiatives Taken So Far by India:

- Establishment of NCIIPC: The National Critical Information Infrastructure Protection Centre (NCIIPC) was created under Section 70A of the IT Act to serve as the national nodal agency for securing CNI.
- EmpoweringCERT-In: The Indian Computer Emergency Response Team (CERT-In) functions as the national agency for incident response, threat forecasting, and issuing emergency cybersecurity guidelines.

- The Introduction of the Trusted Telecom Portal: Mandates that telecom service providers only procure network equipment from verified "Trusted Sources" to prevent foreign malware from embedding into national 5G networks.
- STQCAdvanced Hardware Verification: The Standardization Testing and Quality Certification (STQC) directorate has launched specialized hardware testing setups to examine imported IoT sensors and surveillance cameras for hidden data-sharing mechanisms.

### Way Ahead:

- Mandating Zero-Trust Architecture across OT Grids: Enforce strict, multi-factor cryptographic authentication standards for every single IoT device communicating within high-voltage power lines or chemical refineries.
- Reforming Low-LevelPSU Procurement Rules: Overhaul public sector procurement guidelines to reject template-based compliance checklists, mandating deep firmware and origin checks for all automation components.
- Accelerating and Scaling STQC Labs: Decentralize the STQC testing architecture by authorizing certified private labs to test IoT and industrial automation sensors, slashing clearance backlogs from months to days.
- Deploying AI-Driven Anomaly Detection Systems: Install local, machine-learning-powered behavioral monitors across water and gas pipelines to spot and block abnormal valve shifts or telemetry data instantly.
- Structuring RegularJoint Cyber Defense Drills: Mandate quarterly, cross-agency cyber defense exercises involving NCIIPC, the armed forces, and private infrastructure operators to keep nationwide incident response teams prepared.

### Conclusion:

As India moves toward becoming a major global economy, protecting its critical national infrastructure must be handled as a core pillar of state sovereignty and national security rather than a basic IT concern. While the convergence of AI, automation, and IoT networks delivers unprecedented delivery efficiency, it cannot be expanded at the cost of exposing foundational national assets to foreign disruption.

## The 16 India–Singapore Defence Policy Dialogue (DPD)

### Context:

India and Singapore held the 16th Defence Policy Dialogue (DPD) in Singapore, reviewing bilateral defence cooperation and exploring collaboration in emerging domains such as cyber security, AI, maritime security, and advanced defence technologies.

### The 16 India–Singapore Defence Policy Dialogue

### AboutThe 16 India–Singapore Defence Policy Dialogue (DPD):

### What It Is?

- The Defence Policy Dialogue (DPD) is the highest institutional mechanism for defence consultations between India and Singapore, providing a platform to review ongoing military cooperation and chart future defence engagements.

### Aim:

- To strengthen the India–Singapore strategic defence partnership through regular policy consultations and military cooperation.
- To expand collaboration in emerging technologies, defence industries, and Indo-Pacific security architecture.

### Key Features:

- Review of Defence Cooperation: Assessed progress in bilateral military exercises, training programmes, capacity-building initiatives, and defence exchanges.
- Defence Industry Collaboration:Explored greater cooperation between Indian and Singaporean defence

industries, including opportunities for joint innovation and technology partnerships.

- Focus onEmerging Domains: Discussed collaboration in cyber security, artificial intelligence, unmanned systems, maritime security, and advanced defence technologies.
- Support for Regional Security Mechanisms: Reaffirmed cooperation through ASEAN-led forums and the ASEAN Defence Ministers' Meeting-Plus (ADMM-Plus) framework.
- Digital Warfare and Technology Cooperation: The Indian delegation visited Singapore Armed Forces' Digital Operations Technology Centre to explore cooperation in digital and intelligence-driven warfare capabilities.

## Significance:

- Reinforces commitment to a free, open, inclusive, and rules-based Indo-Pacific while enhancing regional stability and maritime security.
- Promotes technology-driven defence cooperation in AI, cyber, autonomous systems, and advanced military capabilities critical for future warfare.

# 11 DISASTER

## Addressing India's Electrical Fire Risks

### Context:

A tragic pre-dawn fire in Vivek Vihar, East Delhi, claimed nine lives, with the suspected cause being an air-conditioner blast or short circuit.


### Addressing India's Electrical Fire Risks

### About Addressing India's Electrical Fire Risks:

### What it is?

- Addressing electrical fire risks in India involves a multi-pronged approach to mitigate hazards caused by malfunctioning wiring, overloaded circuits, and substandard electrical components.
- It requires a transition from viewing short circuits as an inevitable accident to treating them as a preventable technical failure manageable through rigorous standards, forensic analysis, and modern protection devices like Arc-Fault Circuit Interrupters (AFCIs).

### Data/Stats on Electrical Fires in India:

- Dominant Cause: Over 80% of fires in Delhi and nearly 75% in Mumbai are attributed to electrical faults, making it the single largest category of urban fires.
- Under-counting: While the NCRB recorded 7,566 fire accidents and 7,435 deaths in 2022, many electrical incidents are buried in a generic other category, masking the true scale of the problem.
- AC Surge: The installed base of Air Conditioners is expected to jump from 93 million in 2024 to 240 million by 2030, placing non-linear loads on circuits never designed for them.
- Infrastructure Shortage: The Fire and Security Association of India reports a staggering 96% shortage in fire infrastructure and a severe lack of fire-forensic engineers across the country.

## Causes for Electrical Fires in India:

- Outdated Wiring vs. Modern Load: Buildings designed for fans and bulbs in the 1980s are now running high-load appliances like 1.5-tonne inverter ACs and EV chargers.
- Example: An old residential circuit in East Delhi may ignite when an AC, geyser, and induction hob are switched on simultaneously.
- Harmonic Distortion: Inverter-driven appliances inject harmonics into the system, which can overheat the neutral wire—a component usually not sized to handle load.
- Example: High inverter density in West Bengal networks has been recorded as exceeding safe current harmonic limits.
- Counterfeit Components: The market is flooded with substandard wires, breakers, and switches that do not meet ISI safety standards.
- Example: Cheap, non-ISI marked wires often have thin copper cores that melt under the high start-up current of an AC.
- Loose and Oxidised Connections: Over time, connections at sockets or breakers loosen, creating hot spots that burn insulation for months before sparking.
- Example: Many high-profile hospital fires, such as the AMRI fire, have been traced back to long-term smoldering in electrical panels.
- Neglected Maintenance: Post-winter, switching on heavy equipment like ACs without proper servicing can cause malfunctions due to dust or moisture accumulation.
- Example: The sudden restoration of power to unused equipment in May often triggers short circuits across Delhi.

## Challenges in Countering Electrical Fires:

- Forensic Capability Deficit: India relies on provisional explanations (catch-all short circuit) rather than root-cause analysis by forensic engineers.
- Example: Without a forensic chain of evidence, manufacturers of faulty appliances are rarely held accountable for fires.
- Absence of Mandatory AFCIs: Arc-Fault Circuit Interrupters, which detect hazardous sparking, are mandatory in the U.S. but essentially absent in Indian residential codes.
- Example: Standard breakers protect against overloads but cannot detect the micro-arcing that causes 4 out of 5 electrical fires.
- Weak Inspection Regimes: Unlike Japan or South Korea, India lacks a mandatory periodic inspection of domestic installations every 4-5 years.
- Example: A 30-year-old house in Mumbai may never have its internal wiring audited until a fire occurs.
- Poor Consumer Awareness: Most homeowners are unaware of non-linear loads or the risks of sharing a single power strip for multiple heavy devices.
- Example: Residents frequently bypass safety norms to add more floor area, further stressing the un-upgraded electrical shafts.
- Insurance Ecosystem Gaps: In the U.S., insurers distribute fire-sensing IoT devices (like Ting) for free to policyholders, a model that does not yet exist in India.
- Example: There is currently no retail certification in India that identifies which smart meters measure dangerous harmonics.

## NDMA Guidelines on Electrical Fire Safety:

- The National Disaster Management Authority (NDMA) emphasizes the following for public and high-rise structures:
- Mandatory Load Audits: Periodic electrical load audits are essential, especially when adding new high-power equipment like ICUs in hospitals.
- Fire-Resistant Installations: Use of flame-retardant wiring and metal conduits for low-voltage circuits as per the National Building Code (NBC).
- Compartmentalisation: Mandating separate, fire-stopped shafts for electric distribution cables to prevent the vertical spread of fire.

- Automatic Detection: Installation of smoke detectors and automatic sprinkler systems in critical areas, linked to a central fire alarm.
- Standardized Response: Regular evacuation drills and the maintenance of a comprehensive Disaster Management Plan at the building level.

## Way Ahead:

- Harmonic Compliance: Tie building approvals for data centers, malls, and EV hubs to IEEE 519-style harmonic and power-quality monitoring.
- Mandatory Periodic Audits: Introduce a Japan-style inspection regime triggered whenever a resident adds a major load like rooftop solar or EV chargers.
- Forensic Chain: Establish a national Forensic Fire Investigation agency to publish detailed root-cause reports for every major incident.
- Prescriptive Codes for AFCIs: Update the National Electrical Code to mandate Arc-Fault Detection Devices in all new residential and high-occupancy buildings.
- Public Awareness: Educate consumers on ISI-marked safety, the danger of flickers/smells, and the necessity of annual AC thermography.

## Conclusion:

India's electrical fire crisis is a predictable side-effect of a 256 GW economy running on a 20th-century wiring backbone. As summers hit record highs, the hum of millions of ACs serves as a warning that technology and infrastructure must evolve together. Moving from a culture of "post-fire AFFIDAVITS" to one of "pre-fire INSPECTIONS" is the only way to prevent the spark from becoming a tragedy.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