

Today's Prelims Topics

Thumri

Context

Classical singer Pandit Chhannulal Mishra, a prominent singer of thumri, has passed away at the age of 91.

About Thumri

- **Nature:** Semi-classical vocal form, emerged in **19th century**, rooted in **North India**.
- **Origin:** Originated in **Lucknow** under Nawab **Wajid Ali Shah** (Awadh).
 - It spread to Banaras after fall of Awadh (1856).
- **Meaning:** Derived from Hindi word *thumakna* (graceful walking/dancing movement).
- **Themes:** Love, longing, devotion (Radha–Krishna, separation, cajoling, complaint).
- **Language:** Mainly in **Awadhi, Braj Bhasha, Hindi, Urdu**.
- **Musical Features:**
 - Flexible structure, lighter ragas (Kafi, Khamaj, Bhairavi, Piloo, Yaman, Desh).
 - Rhythms: **Dadra (6 beats), Keherva (8 beats)**.
 - Rich in ornamentation (*meend, murki, gamak, khatka*).
 - Emphasis on **bhava** (emotive expression).
- **Types:**
 - **Bandish Thumri** – Structured, rhythmic (Punjab style).
 - **Bol-Banav Thumri** – Slow, emotive, improvisational (Banaras, Lucknow).
 - Other variations: Tappa-Thumri, Dadra, Bhakti Thumri, Fusion Thumri.

Source: [The Hindu](#)

UNESCO World Conference on Cultural Policies and Sustainable Development (MONDIACULT)

Context

MONDIACULT 2025 was conducted in Barcelona, Spain.

About MONDIACULT

- **Organizer:** UNESCO (United Nations Educational, Scientific and Cultural Organization).
- **Nature:** A **global intergovernmental conference** on cultural policies and sustainable development.
- **Editions:**
 - **First held: 1982** (Mexico City) – adopted the **Mexico City Declaration on Cultural Policies**.
 - **Second edition: 1998, Stockholm** – called the **Intergovernmental Conference on Cultural Policies for Development**.
 - **Third edition: 2022, Mexico City** – 40 years after the first; declared **culture as a “global public good.”**
 - **Fourth edition: 2025, Barcelona, Spain.**
- **Objectives:**
 - To place **culture at the heart of public policy and international cooperation**.
 - To strengthen **cultural rights** and **cultural diversity**.
 - To align cultural policies with the **UN 2030 Agenda for Sustainable Development**.
 - To reaffirm **international solidarity** for safeguarding heritage, creative industries, and intangible cultural traditions.
- **Key Outcomes of 2025 Conference:**
 - Adoption of **Outcome Document** → roadmap for cultural policies & cooperation.
 - Reaffirmed **Culture as a Global Public Good**.
 - Inclusion of **civil society & youth voices** in cultural policy shaping.

Source: [PIB](#)

New Amnesty Scheme 2025

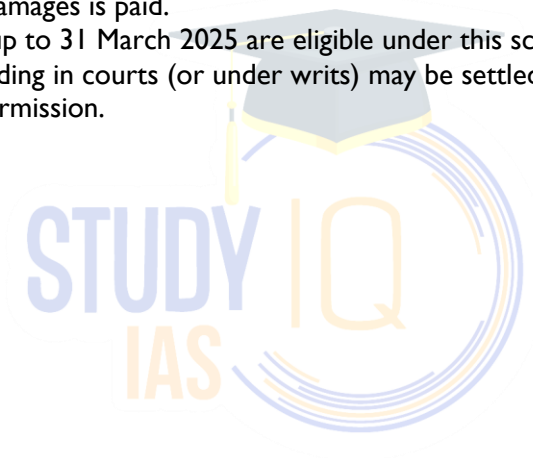
Context

Employees' State Insurance Corporation (ESIC) has issued detailed guidelines for the new Amnesty Scheme 2025.

About New Amnesty Scheme 2025

- It is a **one-time dispute resolution / settlement window** to help employers (and insured persons) resolve pending legal disputes, claims, and litigation under the ESI Act, 1948.
- The scheme runs from **1 October 2025 to 30 September 2026**.
- Its aim is to **reduce litigation**, provide relief to employers, promote compliance, and clear backlog of disputes under the ESI framework.
- **Key Features:**
 - Cases involving damages, interest, and coverage disputes under the ESI Act (Sections 45A / 45AA, Sections 75, 82, 84, 85, 85A, and writs under Article 226)
 - Regional Directors may withdraw cases where contributions and interest have already been paid.
 - Cases filed against insured persons over 5 years ago (where no notices were issued) may also be withdrawn.
 - Cases that involve only damages (penalties) may be withdrawable provided a portion (e.g., 10%) of damages is paid.
 - Disputes filed up to 31 March 2025 are eligible under this scheme.
 - Even cases pending in courts (or under writs) may be settled via out-of-court settlement with court's permission.

Source: [PIB](#)



Govt. revokes approval for I I animal-derived biostimulants

Context

The **Union Agriculture Ministry** has **withdrawn approval** for **I I biostimulants** that were derived from **animal sources** (e.g., chicken feathers, pig tissue, bovine hide, cod scales).

What are Biostimulants?

- Substances or microorganisms (or both) that stimulate natural plant processes to enhance:
 - Nutrient uptake
 - Crop yield
 - Quality of produce
 - Stress tolerance (heat, drought, salinity, etc.)
- **Difference from Fertilisers/Pesticides:**
 - They **do not supply nutrients directly** like fertilisers.
 - They **do not kill pests** like pesticides.
 - Instead, they **boost the plant's physiological efficiency**.
- **Forms:** Sprays, coatings, seed treatments.
- **Examples:** Seaweed extracts, humic substances, protein hydrolysates, microbial inoculants.
- **Regulation of Biostimulants in India:**
 - **Earlier status:** Operated in a **grey area**, with no clear law.
 - **Now regulated under: Fertiliser Control Order (FCO), 1985** (amended in 2021).
 - **Key rules (2021 Amendment):**
 - Biostimulants brought under a **regulatory framework**.
 - Manufacturers must **register** products with the government.
 - Safety & efficacy data, heavy metal analysis, and bio-efficacy trials required.
 - Misbranding & spurious claims prohibited.
 - Labels must carry **composition, claims, dosage, and precautions**.

Source: [Indian express](#)

Flying Rivers

Context

New analysis by Amazon Conservation's Monitoring of the Andean Amazon Project (MAAP) warns that Amazon deforestation is disrupting "flying rivers".

More in News

- ~17% of forest is already lost (mainly to cattle ranching & soybean farming).
- Scientists warned if **deforestation > 20–25% + global warming > 2°C**, the Amazon may irreversibly shift into savanna.

About Flying Rivers

- They are invisible streams of water vapor created by the Amazon rainforest, where trees absorb water through their roots and release it back into the atmosphere through transpiration.
- The term was coined in **2006** by Brazilian scientist **Carlos Nobre** and colleagues.
- **Process:**
 - Moist air from the **Atlantic Ocean** enters South America via trade winds.
 - The **Amazon rainforest acts like a pump** → Trees absorb water through roots, release it as water vapor via **transpiration**.
 - This recycled vapor forms streams of humid air (flying rivers), carrying moisture westward thousands of kilometers → sustaining rainfall in Peru, Bolivia, Andes.
- **Significance:**
 - Supply up to **50% of rainfall in the western Amazon**.
 - Support **agriculture, hydroelectric power, Indigenous livelihoods**.
 - Stabilize regional and even global weather.

Source: [New Indian Express](#)

Payments Regulatory Board

Context

RBI constitutes a 6-member Payments Regulatory Board.

About Payment Regulatory Board

- Established under the **Payment and Settlement Systems Act, 2007**.
It is the **highest decision-making body for regulation and supervision of payment systems** in India.
- It **replaces** the earlier **Board for Regulation and Supervision of Payment and Settlement Systems (BPSS)**, which was also housed within RBI.
- **Composition (Section 3 of PSS Act, 2007):**
 - **Governor of RBI** → *Ex-officio Chairperson*.
 - **Deputy Governor of RBI (in-charge of Payment and Settlement Systems)** → *Ex-officio member*.
 - **One officer of RBI**, nominated by the Central Board of RBI → *Ex-officio member*.
 - **Three members nominated by the Central Government**, who are experts in:
 - Payment systems, Information technology, Cybersecurity, Law.
- **Tenure:** 4 years, *non-renewable*, Members can resign with **6 weeks' notice**.
- **Disqualification:** Age >70 years.
 - Insolvency.
 - Criminal conviction (imprisonment ≥180 days).
 - Holding political office (MPs/MLAs).
- **Functioning:**
 - **Principal Legal Adviser of RBI** → permanent invitee.
 - RBI can also invite experts (permanent or ad hoc) to meetings.
 - **Meetings:** At least **twice a year**.
 - **Quorum:** Minimum 3 members, including Chairperson (or Deputy Governor in absence) and one Govt.-nominated member.
 - **Decision-making:** By **majority vote** of members present.
 - Chairperson (or Deputy Governor in absence) has a **casting vote** in case of tie

Payment and Settlement Systems Act, 2007

- **Enacted in:** 2007; came into effect in **August 2008**.
- **Objective:** To regulate and supervise **payment systems in India** and designate the **Reserve Bank of India (RBI)** as the authority for this purpose.

Source: [The Hindu](#)

Mutual Legal Assistance Treaty (MLAT)

Context

Centre has formally invoked the Mutual Legal Assistance Treaty (MLAT) with Singapore for the investigation into the death of singer Zubeen Garg.

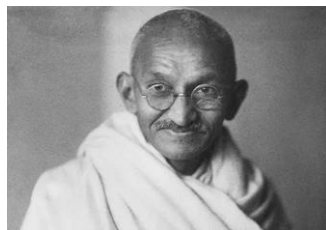
About MLAT

- A **bilateral agreement** between two or more countries for **exchange of information and evidence** in **criminal investigations and proceedings**.
- Enables countries to **seek and provide assistance** in investigating, prosecuting and preventing crimes, including gathering evidence, serving summons/warrants, tracing assets, and extradition-related cooperation.
- **Key Features:**
 - **Scope:** Covers offences such as terrorism, organized crime, drug trafficking, money laundering, cybercrime, corruption, and other serious crimes.
 - **Forms of Assistance:**
 - Identifying and locating persons.
 - Serving legal documents.
 - Obtaining witness statements/testimony.
 - Executing search and seizure.
 - Freezing, confiscating, and repatriating proceeds of crime.
 - Sharing certified documents/evidence.
- **In India: Ministry of Home Affairs (MHA)** is the nodal authority for handling MLAT requests.
 - India has signed MLATs with several countries including **Singapore, USA, UK, France, Russia, UAE, etc.**
 - **Chapter VIII (Sections 108–111)** provides the framework for international cooperation:
 - **Section 108** → Sending a letter of request to a foreign country for evidence / assistance.
 - **Section 109** → Acting on a letter of request received from a foreign country.
 - **Section 110** → Service of summons and judicial documents abroad.
 - **Section 111** → Examination of witnesses / collection of evidence in a foreign country.

Source: [The Hindu](#)

Personality in News

Mahatma Gandhi



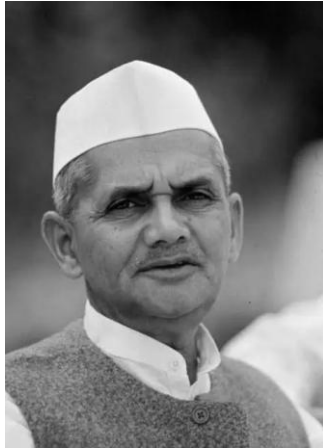
News? 2nd October 2025 marks the 156th birth anniversary of Mahatma Gandhi.

About Him

- **Birth:** 2nd October 1869, Porbandar (Gujarat).
- **Contribution:**
 - **1915:** Returned to India, joined Indian National Congress.
 - **Early Satyagrahas:**
 - Champaran (1917) – Indigo farmers, Bihar.
 - Kheda (1918) – Peasant tax relief, Gujarat.
 - Ahmedabad Mill Strike (1918).
 - **Major Movements:**
 - **Non-Cooperation Movement (1920–22):** Boycott of schools, law courts, foreign goods. Withdrawn after Chauri Chaura incident.
 - **Civil Disobedience Movement (1930–34):** Salt March (Dandi, 1930). Mass refusal to obey unjust laws.
 - **Quit India Movement (1942):** “Do or Die” call, demanded end of British rule during WWII.
 - **Philosophy:** Non-violence (Ahimsa), Truth (Satya), Trusteeship, Sarvodaya (welfare of all), Gram Swaraj (village self-rule).
 - **Founded:** Sabarmati Ashram (Gujarat), Satyagraha Ashram (South Africa).
 - **Key Writings:** *Hind Swaraj* (1909).
- **Honours:**
 - **Titles:** Bapu, *Father of the Nation* (by Subhas Chandra Bose in 1944).

Source: [PIB](#)

Lal Bahadur Shastri



News? The Prime Minister paid tribute to Lal Bahadur Shastri on his birth anniversary.

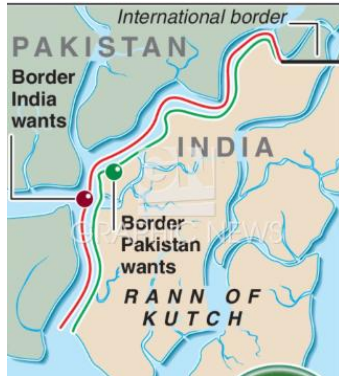
About Him

- **Birth:** 2nd October 1904, Mughalsarai (Uttar Pradesh).
- **Contribution:**
 - **Pre Independence:** Joined Non-Cooperation Movement (1921), later Salt Satyagraha & Quit India Movement.
 - **Post Independence:**
 - **1947–1951:** Parliamentary Secretary in **U.P.** (worked under Govind Ballabh Pant).
 - **1951–1952: Minister of Police & Transport, U.P.** → introduced **first woman conductors** in India.
 - **1952–1956:** Entered Union Cabinet as **Minister of Railways & Transport.**
 - Resigned in **1956** after a train accident in Tamil Nadu (accepted moral responsibility).
 - **1957–1961: Minister of Transport & Communications.**
 - **1961–1963: Minister of Home Affairs** → succeeded Govind Ballabh Pant.
 - **1964:** Became **2nd Prime Minister.**
 - First Indian Prime Minister to **die abroad** while in office on **11 January 1966** at Tashkent, USSR
 - Promoted **White Revolution** (milk production) – supported **Anand/Amul model.**
 - Launched **Green Revolution** – promoted agriculture & self-reliance in food.
 - Gave the slogan “**Jai Jawan, Jai Kisan**” (1965).
 - PM during Indo-Pak War (1965).
 - Signed **Tashkent Agreement (1966)** with Pakistani President Ayub Khan (mediated by USSR).

Source: [PIB](#)

Places in News

Sir Creek



News? Recently, the Defence Minister of India flagged Pakistan's military infrastructure being set up in Sir Creek region.

About Sir Creek

- A 98-km long tidal estuary in the **Rann of Kutch**, lying between **Kutch (Gujarat, India)** and **Sindh (Pakistan)**.
- **Dispute:** Both **India and Pakistan** claim the creek, but disagree on the **maritime boundary**.
 - **Origin:** 1914 agreement between **Sindh (under British India)** and **Ruler of Kutch**.
 - Difference lies in the **interpretation of the boundary line:**
 - **India's claim:** Boundary lies along the **eastern bank** (thus entire creek belongs to India).
 - **Pakistan's claim:** Boundary lies in the **middle of the creek** (thus half belongs to Pakistan).

Source: [Indian Express](#)

Mains Topics

Green Hydrogen and the Global Race

Context

China's growing dominance in the electrolyser market raises global concerns, but it also opens opportunities for India to build a competitive and resilient green hydrogen ecosystem.

Why are Green Hydrogen Technologies Rapidly Advancing?

- **Decarbonization of Industry:** Steel, cement, fertilizers, and chemicals cannot be easily electrified. Hydrogen offers a low-carbon substitute.
- **Falling Renewable Energy Costs:** Cheap solar and wind power has made electrolytic hydrogen more viable.
- **Climate Commitments:** Net-zero pledges by 2050–2070 are pushing governments to support hydrogen as part of their clean energy mix.
- **Technological Progress:** Improvements in electrolyser efficiency, durability, and scalability are bringing down costs.
- **Energy Security:** Countries want to reduce dependence on imported oil and gas, using hydrogen as a domestic energy source.
- **Policy Push:** National hydrogen missions in Europe, US, Japan, China, and India are driving R&D and deployment.

What are Electrolysers?

- **Electrolysers** are devices that use **electricity to split water (H₂O) into hydrogen (H₂) and oxygen (O₂)** through a process called **electrolysis**.
- If the electricity comes from **renewable energy sources** (solar, wind, hydro), the hydrogen produced is called **green hydrogen**.

Electrolysers in Commercial Use

Electrolysers are to hydrogen what solar modules are to solar power - the **core equipment**. Two types that dominate today are:

1. Alkaline Electrolysers (ALK):

- Oldest and most mature technology.
- Relatively cheap and robust.
- Less efficient when powered by variable renewable energy (solar/wind).
- Suited for large-scale continuous production.

2. Proton Exchange Membrane (PEM) Electrolysers:

- Newer and more efficient technology.
- Can handle fluctuating renewable loads.
- Produces higher purity hydrogen.
- Expensive due to reliance on precious metals (platinum, iridium).

How Did China Capture the Global Solar PV Modules Market?

China's dominance in solar PV emerged from a combination of **policy, scale, and supply chain control**:

- **Heavy State Subsidies:** Direct financial support for solar companies.
- **Control over Raw Materials:** Stronghold over polysilicon and rare earths.
- **Integrated Supply Chains:** From mining to manufacturing, all under one ecosystem.
- **Aggressive Scaling Up:** Rapid rollout of manufacturing plants.
- **Cheaper Labour and Infrastructure Support:** Lower costs compared to Europe/US.

This led to China accounting for **over 80% of global solar module manufacturing**, making it the undisputed leader.

China's Position

- By **2024**, China became the **world's largest hydrogen producer**:
 - **36.5 million tonnes** annual production (all hydrogen).
 - **1,20,000 tonnes of green hydrogen** – nearly **50% of global output**.
- **Electrolysers:** China controls **~85% of global manufacturing capacity of ALK electrolysers**.

Why China May Struggle to Replicate its Solar Success with Electrolysers

- **Critical Mineral Dependence:**
 - ALK electrolysers depend on nickel and steel (available in China).
 - PEM electrolysers need platinum, iridium, titanium - **mostly imported**.
- **Integration Complexity:** Hydrogen systems vary by end-use (purity, storage, transport). Competing only on price is not enough.
- **National Security Concerns:** Unlike solar, hydrogen is seen as **strategic** by many countries. Imports from China may face restrictions.
- **Diversified Global Push:** EU, US, India, Japan, and Gulf countries have their own hydrogen missions to ensure domestic manufacturing.
- **Technological Edge Elsewhere:** Western firms lead in PEM and Solid Oxide Electrolysers (SOE), where China lags.

Thus, China may dominate **ALK electrolysers**, but achieving solar-like monopoly in the hydrogen sector will be harder. **This creates an opportunity for India in this sector.**

India's Approach to Green Hydrogen

Policy Initiatives

- **National Green Hydrogen Mission (2023):**
 - Outlay of ₹19,744 crore.
 - Targets **5 MMT annual green hydrogen production by 2030**.
 - Incentives for domestic electrolyser manufacturing.
- **PLI Schemes & R&D Support:** Encouragement for companies to set up electrolyser plants.
- **Domestic Manufacturing Push:** Incentives for electrolyser manufacturing under **Strategic Interventions for Green Hydrogen Transition (SIGHT)** programme.
 - Reliance, Adani, Greenko, and L&T entering electrolyser production.
- **Hydrogen Hubs:** Gujarat, Rajasthan, Tamil Nadu emerging as key centres.
- **International Collaborations:** Partnerships with EU, Japan, and Gulf countries.

Challenges for India

- **High Cost of Electrolysers:** India currently imports most equipment.
- **Technology Gap:** Indigenous PEM and advanced electrolyser manufacturing is limited.
- **Critical Minerals Dependence:** No domestic reserves of iridium, platinum, etc.
- **Infrastructure Gaps:** Lack of storage, transport pipelines, and refuelling networks.
- **Financial Risks:** Huge upfront investments required, uncertain demand in early years.
- **Competition from China:** Chinese low-cost ALK electrolysers could undercut Indian industry.

Opportunities for India

- **Abundant Renewable Energy:** India has one of the world's lowest solar/wind tariffs, making hydrogen cost-competitive.
- **Export Potential:** Gulf, Japan, and EU are looking to import clean hydrogen. India can become a supplier.
- **Industrial Demand:** Fertilizer, steel, refineries in India are ready users.
- **Geopolitical Edge:** Trusted partner for West Asia and Europe, unlike China.
- **Innovation Drive:** Startups and public R&D can focus on low-cost electrolyser design.
- **Strategic Minerals Diplomacy:** Ties with Africa, Australia can secure critical minerals.

Way Forward

- **Scale Up Electrolyser Manufacturing:** Support domestic industry through PLI, subsidies, and joint ventures.
- **Secure Critical Minerals:** Build strategic partnerships with mineral-rich countries.
- **R&D Push:** Invest in next-gen technologies like PEM, Solid Oxide, and Anion Exchange Membrane (AEM) electrolyzers.
- **Build Infrastructure:** Develop hydrogen pipelines, storage systems, and port facilities for exports.
- **Create Demand:** Mandate hydrogen blending in refineries and fertilizers.
- **International Cooperation:** Lead alliances like the International Solar Alliance but for hydrogen (India can champion a "Hydrogen Alliance").

Source: [The Hindu](#)



The Changing Battlefield and the Indian Armed Forces

Context

Modern warfare has expanded beyond land, sea, and air to cyber, space, and information domains, with AI, drones, and automation reshaping the cost and risks of conflict. Facing a potential two-front challenge from China and Pakistan, India must adapt its armed forces to stay operationally credible.

Changing Nature of Battlefields

- **Technology-driven conflict:** AI-enabled surveillance, autonomous drones, and precision weapons lower the cost of deploying force but raise risks of rapid escalation.
- **Multi-domain operations:** Future wars will begin simultaneously across land, sea, air, cyber, and space, with information warfare shaping narratives.
- **Speed and information dominance:** Decision-making cycles are shortening; whoever can process and act on data faster gains the upper hand.
- **Hybrid warriors:** Future soldiers must combine technical expertise (coding, data analysis) with combat skills to counter cyber, electronic, and narrative threats.
- **Cheaper lethality:** Loitering munitions and low-cost drones mean even small adversaries can inflict significant damage.
- **Fluid frontlines:** Modular, fast-reacting battle groups are replacing large, rigid formations.

How India is Responding

Structural and Organisational Reforms

- **Tri-service integration:** Creation of agencies for cyber, space, and special operations under HQ IDS.
- **Towards theatre commands:** PM Modi has emphasised moving from service silos to integrated commands; review of inter-services command and control rules (2025).
- **New modular formations:** Integrated Battle Groups (IBGs) such as *Rudra* and *Bhairav* combine infantry, artillery, armour, engineers, and surveillance elements for rapid deployment.
- **Amphibious doctrine:** New joint doctrine for amphibious operations integrates maritime, air, and land forces.

Doctrinal and Conceptual Evolution

- **Joint Doctrine of Armed Forces (2017) and Land Warfare Doctrine (2018)** provide the basis for synergy.
- **Ran Samvad (2025)** focused on preparing “hybrid warriors” and future-ready doctrines.

Technological Adaptation

- **Procurement focus:** MQ-9B drones for ISR and precision strike; Rafale-M to strengthen carrier aviation; Pralay ballistic missile trials for theatre fires.
- **AI-enabled systems:** Akashteer command-and-control network integrated with Air Force's IACCS for seamless air defence.
- **Carrier-centred naval posture:** Rafale-M integration and a 15-year roadmap for naval aviation, subsurface, and unmanned systems.

Professional Military Education (PME)

- Joint PME initiatives to train cadres in joint operations and technology-based warfare.

Gaps That Still Exist

- **Slow pace of integration:** Theatre commands not yet operationalised; jointness remains partial.
- **Unproven joint doctrines:** New formations like IBGs remain largely conceptual, without extensive field validation.
- **Technological asymmetry:** India lags behind adversaries like China in AI-enabled warfare, drone swarms, and electronic warfare.

- **Civil-military fusion gaps:** Weak collaboration between armed forces, DRDO, private industry, and academia in rapid prototyping and innovation.
- **Data interoperability issues:** Lack of common standards and secure interfaces across services.
- **Logistical challenges:** Infrastructure for rapid mobilisation, integration of supply chains, and joint logistics remain underdeveloped.

Way Forward

- **Accelerate Theatrisation:** Establish integrated theatre commands in a phased manner with evolving mandates; test and adapt based on outcomes.
- **Civil-Military Fusion:** Embed DRDO, industry, universities, and startups into war-gaming, PME, and trials for rapid innovation.
- **Enhance PME:** Train “technologist-commanders” with expertise in AI, cyber, coding, and information warfare.
- **Data and Interface Standards:** Develop common digital systems for real-time interoperability across the Army, Navy, and Air Force.
- **Invest in Next-gen Tech:** Prioritise drone swarms, hypersonics, directed energy weapons, and space-based ISR in procurement and R&D.
- **Test, Fail, Adapt:** Encourage rapid prototyping and iterative field trials; adopt systems that work, retire outdated ones quickly.
- **Strengthen Industrial Base:** Link defence PSUs and private firms into a feedback loop of manufacturing, testing, and deployment.

Source: [The Hindu](#)

