

# WEEKLY NEWS

January 12-18, 2025

## Space Docking Milestone



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## Hydrogen Train Engine



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## HIGHLIGHTS

- Global Cybersecurity Outlook 2025
- Yala Glacier

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# Advocacy for Sovereign AI in India

## ● Why in News?

- ➡ **Call for Sovereign AI:** A former Union Minister for Electronics and IT emphasized the need for India to develop its own **Sovereign AI strategy**, focusing on economic and national security.

## ● What is Sovereign AI?

### ➡ Definition:

Refers to a nation's ability to develop, control, and deploy its own AI technologies and associated data.

Encompasses the operation, deployment, and protection of AI technologies and data through policies and skilled personnel.

## ● Proposed Sovereign AI Strategy for India

### ➡ GovAI + Private AI = Sovereign AI:

#### GovAI:

Focuses on using AI for governance-related applications like public service delivery.

Builds on **Digital Public Infrastructure (DPI)** such as digital payments, insurance, health, education, and skill development platforms.

Leverages vast repositories of consented personal and non-personal data for training AI models.

#### Private AI:

Supports private sector contributions to AI innovation and development.

## ● Significance of Sovereign AI for India

### ➡ Strategic Importance:

Safeguards economic interests and prevents dependency on foreign AI technologies.

Mitigates risks of AI weaponization or denial by competitive nations.

### ➡ Economic Empowerment:

Promotes Indian startups and innovators to compete with global tech giants.

Strengthens India's position in the global AI ecosystem.



## ● **India's Initiatives for Sovereign AI**

### ➡ **IndiaAI Mission (2024):**

Approved by the Union Government to empower AI startups.

Aims to expand access to compute infrastructure.

### ➡ **Private Sector Contributions:**

**Tata Group & NVIDIA:** Collaborating to develop a state-of-the-art AI supercomputer offering **Infrastructure-as-a-Service (IaaS)** and AI platforms.

**Reliance Industries & NVIDIA:** Developing a **foundation large language model (LLM)** tailored for generative AI, trained on diverse Indian languages.

## ● **Way Forward**

➡ **Policy Framework:** Develop robust guidelines for AI governance, deployment, and data protection.

➡ **Infrastructure Investment:** Strengthen compute infrastructure and ensure equitable access for startups and innovators.

➡ **Talent Development:** Foster AI research and skill development programs to build a skilled workforce.

➡ **Collaborations:** Encourage public-private partnerships to drive AI innovation and adoption.

➡ India's **Sovereign AI strategy** aims to position the nation as a leader in the AI domain, securing its economic and strategic interests in an increasingly AI-driven world.



# Right to Access to Justice: Not an Absolute Right

## ● Why in News?

- ➡ The **Supreme Court (SC)** emphasized that the **right to access to justice**, though fundamental, is not absolute.
- ➡ A penalty was imposed on a petitioner for filing **multiple frivolous litigations**, which burden the judicial system.

## ● What is Frivolous Litigation?

- ➡ **Definition:** A lawsuit lacking any arguable basis in law or fact, often intended to harass or delay the judicial process.
- ➡ **Key Cases:**
  - Subrata Roy Sahara vs. Union of India (2014)
  - Dalip Singh vs. State of Uttar Pradesh and Others (2010)
  - K.C. Tharakan vs. State Bank of India & Ors (2023)

## ● Right to Access to Justice

- ➡ **Meaning:** A fundamental principle of the **rule of law**, enabling individuals to seek and obtain remedies for grievances through justice institutions.
- ➡ **SC Judgment:** In Anita Kushwaha vs. Pushap Sudan (2016), the SC declared access to justice as a **Fundamental Right** under:
  - Article 14:** Right to Equality
  - Article 21:** Right to Life and Personal Liberty

## ● Provisions Related to Access to Justice

- ➡ **Constitutional Provisions:**
  - Preamble:** Ensures social, economic, and political justice.
  - Article 39A:** Directive Principles mandate **free legal aid**.
  - Article 32:** Right to Constitutional Remedies.
  - Article 226:** High Court's power to issue writs.



## ● **Provisions Related to Access to Justice**

- ➡ **Public Interest Litigation (PIL):** Liberalized **locus standi** rules, enabling public-spirited individuals or organizations to approach the judiciary.
- ➡ **Alternative Dispute Resolution (ADR):** Provides grievance redressal through less formal mechanisms at lower costs.

## ● **Way Forward**

- ➡ **Judicial Efficiency:** Mechanisms to prevent frivolous litigations and ensure genuine cases receive priority.
- ➡ **Public Awareness:** Educate citizens on legal rights and discourage misuse of judicial resources.
- ➡ **Strengthening ADR:** Promote ADR systems to reduce the burden on courts and ensure quicker resolution of disputes.



# India Achieves Space Docking Milestone

## ● Why in News?

- ➡ India became the **4th country** to achieve space docking, joining the US, Russia, and China.
- ➡ **Space Docking** involves the joining of two fast-moving satellites in orbit.
- ➡ Accomplished through the **Space Docking Experiment (SpaDeX)** using two spacecraft:
  - SDX01 (Chaser)
  - SDX02 (Target)

## ● About SpaDeX Mission

### ➡ Launch Details:

SpaDeX and 24 POEM-4 payloads were launched by ISRO via PSLV-C60 in December 2024.

Launch site: Sriharikota space center.

### ➡ Mission Objectives:

**Develop & Demonstrate Technology:** Autonomous rendezvous and docking using SDX01 and SDX02.

### **Post-Docking Activities:**

Evaluate controllability of docked spacecraft.

Maintain stability and maneuverability.

Demonstrate **power transfer** between docked spacecraft.

**Extend Satellite Life:** Enable target spacecraft servicing and refueling.

### ➡ Mission Life: Up to 2 years post-docking operations.

### ➡ Indigenous Technologies Used:

**Inter-Satellite Communication Link (ISL):** For autonomous communication.

**GNSS-Based RODP Processor:** Determines relative position and velocity.

Other technologies: Docking mechanisms, sensor suites, and autonomous strategies.



## ● **Significance of SpaDeX Mission**

- ➡ **India's Space Ambitions:** Supports future missions like **sample return from the Moon** and building the **Bharatiya Antariksh Station (BAS)**.
- ➡ **Satellite Servicing & Maintenance:** Enables **servicing and refueling** of satellites to extend operational life.
- ➡ **Support for Complex Space Missions:** Facilitates missions requiring **multiple rocket launches** for common objectives.
- ➡ **Other Applications:** Advances in-space robotics. Contributions to **natural resource monitoring** and vegetation studies.

## ● **Way Forward**

- ➡ Focus on further enhancing indigenous technologies for future space exploration.
- ➡ Leverage advancements in docking for developing India's space station and interplanetary missions.
- ➡ Expand international collaboration for satellite servicing and space robotics.



# Environment Protection (End-of-Life Vehicles) Rules, 2025

## ● Why in News?

- ➡ **Notification Issued:** Ministry of Environment, Forest & Climate Change notified the **Environment Protection (End-of-Life Vehicles) Rules, 2025** under the Environmental Protection Act, 1986.
- ➡ **Effective Date:** The rules will come into force from **1st April 2025**.

## ● Key Highlights

### ➡ Definition of End-of-Life Vehicles (EoLV)

Vehicles no longer validly registered or deemed unfit by Automated Fitness Centres.  
Includes vehicles whose registrations have been canceled.

### ➡ Applicability

Applicable to:

Producers.

Registered owners of vehicles.

Registered Vehicle Scrapping Facilities (RVSF).

Automated Testing Stations involved in vehicle testing, handling, and scrapping of EoLV.

### ➡ Exceptions

Rules do not apply to:

**Waste batteries** under Battery Waste Management Rules, 2022.

**Plastic packaging** under Plastic Waste Management Rules, 2016.

**Waste tyres and used oil** under Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016.

**E-waste** under E-Waste (Management) Rules, 2022.



## ● **Key Highlights**

### ➡ **Responsibilities**

#### **Producers:**

Must fulfill **Extended Producer Responsibility (EPR)**.

EPR can be met by purchasing EPR certificates issued for scrapping by RVSFs.

Certificates are issued by the **Central Pollution Control Board (CPCB)** via a centralized online portal.

#### **Registered Owners and Bulk Consumers:**

Must deposit EoLVs at designated sales outlets, collection centers, or RVSFs within **180 days**.

### ➡ **Implementation Mechanism**

#### **Implementation Committee:**

Constituted by the **Central Government**.

Chaired by the **CPCB Chairman**.

Responsible for overseeing effective rule implementation.

## ● **Way Forward**

➡ **Infrastructure Development:** Establish additional RVSFs and automated testing stations.

➡ **Awareness Campaigns:** Educate vehicle owners and bulk consumers about their responsibilities under the rules.

➡ **Technology Integration:** Streamline the online portal for seamless EPR certificate generation and tracking.

➡ **Monitoring Mechanisms:** Strengthen oversight mechanisms to ensure compliance.

➡ **Incentives:** Provide incentives to vehicle owners for scrapping their unfit vehicles responsibly.

➡ The **EoLV Rules, 2025**, aim to ensure sustainable vehicle disposal, promote recycling, and reduce environmental harm caused by unfit vehicles.



# Resilience of Tropical Flora During Deccan Volcanism

## ● Why in News?

- ➡ A study by the **Birbal Sahni Institute of Palaeosciences (BSIP)** reveals that tropical flora exhibited resilience during Deccan Volcanism on the Indian Plate.

## ● Key Findings

### ➡ Higher Resilience to Climatic Stresses:

Tropical flora showed significant resilience to the environmental impacts of Deccan Volcanism.

Toxic greenhouse gases released during volcanism contributed to the **Cretaceous-Paleogene (K-Pg) mass extinction** due to rising global temperatures.

### ➡ K-Pg Mass Extinction:

One of the **Phanerozoic Big Five** mass extinctions.

Marked the end of the Cretaceous and the beginning of the Tertiary period (~66 million years ago).

Devastated terrestrial fauna, including dinosaurs.

- ➡ **Relevance:** Highlights the capacity of tropical rainforests to recover under favorable climatic conditions if left undisturbed.

## ● About Deccan Volcanism

### ➡ Timeframe:

Occurred around **66 million years ago**, continuing for several hundred thousand years.

Spanned periods before and after the K-Pg boundary.

### ➡ Deccan Traps:

Produced Earth's longest **lava mega-flows** (basalt lava), extending over **1500 km**.

Formed during India's northward migration over the **Reunion hotspot**, which remains active (last erupted in 2007).

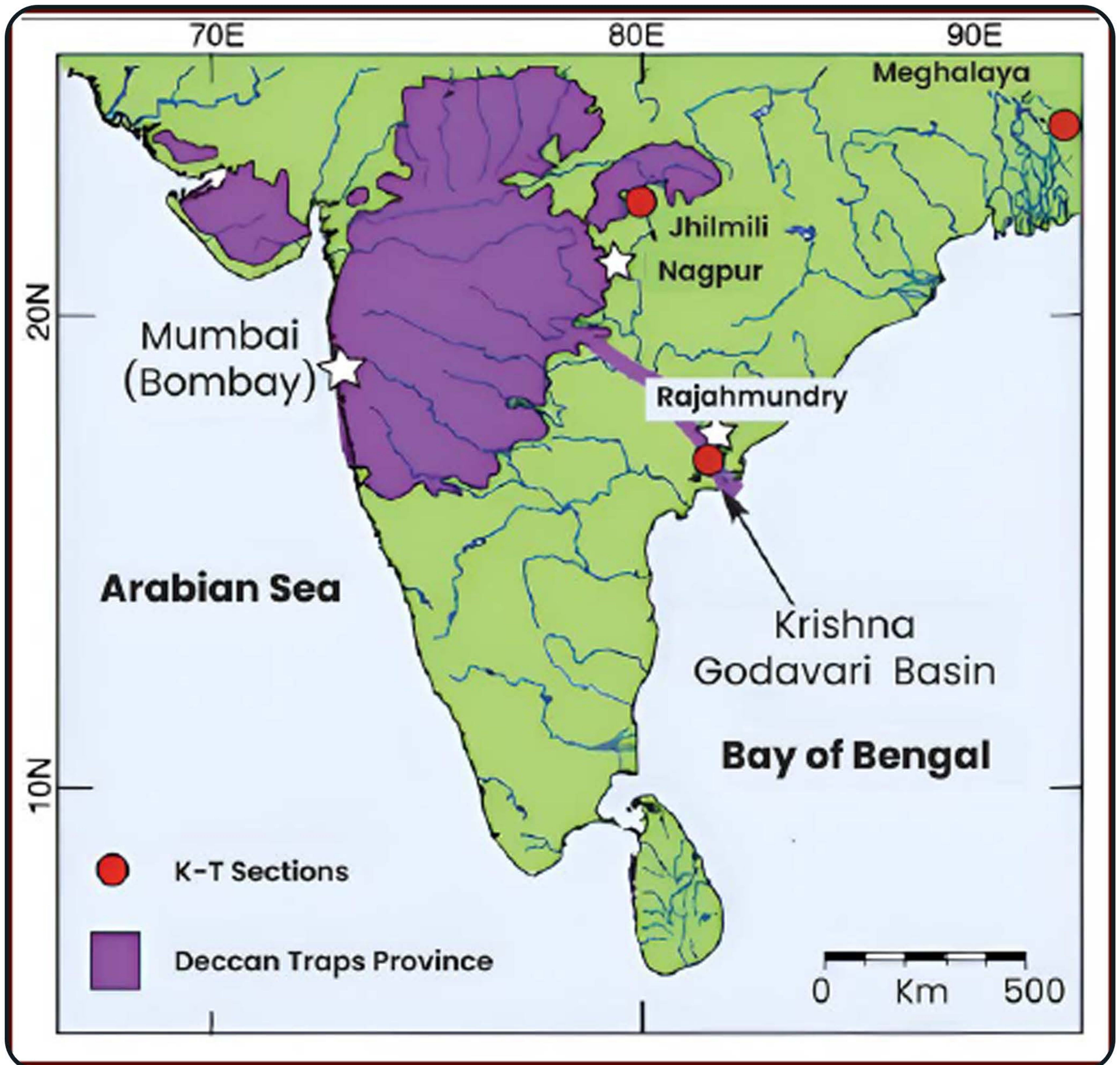
Covers **500,000 km<sup>2</sup>** of the west-central Indian subcontinent.

- ➡ **Soil Formation:** Weathering of basalt lava resulted in **Black/Regur soil**, highly fertile for agriculture.



### ● **Way Forward**

- ➡ Promote conservation of tropical rainforests to leverage their natural resilience.
- ➡ Conduct further studies to understand the role of volcanic events in shaping present-day ecosystems.
- ➡ Encourage awareness of how climatic changes affect biodiversity and environmental recovery.





# National Turmeric Board

## ● Why in News?

- ➡ **Establishment:** Union Minister for Commerce and Industry launched the National Turmeric Board (NTB) in October 2023.
- ➡ **Objective:** Strengthen India's dominance in the global turmeric industry through focused efforts on production, exports, and farmer welfare.

## ● About the National Turmeric Board (NTB)

- ➡ **Headquarters:** Nizamabad, Telangana, a prominent turmeric-producing region.
- ➡ **Ministry:** Operates under the Ministry of Commerce and Industry.
- ➡ **Type:** An executive body (not statutory).
- ➡ **Key Members:**

Representatives from:

Ministry of AYUSH

Department of Pharmaceuticals

Department of Agriculture & Farmers Welfare

Department of Commerce

**States:** Represented on the Board by rotation.

## ● India's Role in the Global Turmeric Industry

- ➡ **Production & Trade:** Largest producer, consumer, and exporter of turmeric globally.
- ➡ **Global Share:** 70% of production and 62% of trade.
- ➡ **2023-24 Data:** Cultivated on **3.05 lakh hectares**, producing over **10 lakh tonnes**.
- ➡ **Major Producing States:** Maharashtra, Telangana, Karnataka, and Tamil Nadu.
- ➡ **Varieties with GI Tags:**
  - Erode Turmeric** (Tamil Nadu)
  - Lakadong Turmeric** (Meghalaya) – High curcumin content.
  - Kandhamal Haldi** (Odisha).

## ● Targets

- ➡ **Production:** Double production to **20 lakh tonnes** within five years.
- ➡ **Exports:** Achieve \$1 billion USD in turmeric exports by 2030.



## ● **About Turmeric (*Curcuma longa*)**

➡ **Also Known As:** Golden Spice.

**Type:** Perennial, rhizomatous herbaceous plant native to India and Southeast Asia.

**Significance:**

**Health Benefits:** Anti-inflammatory, antioxidant, detoxifying properties, liver protection.

➡ **Growing Conditions:**

**Temperature:** 20°C to 30°C.

**Rainfall:** 1,500 to 2,500 mm annually.

**Soil:** Fertile, well-drained soils rich in organic matter.

**Altitude:** Grows up to 1,500 meters above sea level.

## ● **Focus Areas of the National Turmeric Board**

➡ **Awareness Campaigns:** Promote turmeric's health benefits globally.

➡ **Market Expansion:** Enhance logistics and tap into new international markets.

➡ **Quality Assurance:** Maintain stringent quality and safety standards.

➡ **Farmer Welfare:** Improve the well-being of turmeric farmers across 20 states.

➡ **Research & Development:** Foster innovation in turmeric-based products for global markets.

➡ **Yield Enhancement:** Increase production to boost farmer incomes.

## ● **Way Forward**

➡ **Support Farmers:** Provide technical and financial assistance to ensure sustainability.

➡ **Strengthen Infrastructure:** Build robust supply chains and storage facilities.

➡ **Global Promotion:** Leverage international platforms to showcase India's turmeric varieties.

➡ **Sustainability:** Promote eco-friendly cultivation practices for long-term growth.



# India Develops Powerful Hydrogen Train Engine

## ● Why in News?

- ➡ India develops the **world's most powerful hydrogen train engine** with a capacity of **1,200 horsepower**.
- ➡ First trial run is scheduled on the **Jind-Sonipat route in Haryana**.
- ➡ Only four other countries—**Germany, France, Sweden, and China**—have hydrogen-powered train engines, producing 500–600 horsepower.

## ● About Hydrogen as a Clean Fuel

- ➡ **Definition:** A clean and versatile energy source with the potential to decarbonize **transportation, industry, and power generation**.
- ➡ **Byproduct:** Water is the only byproduct when used in fuel cells, making it eco-friendly.

## ● Types of Hydrogen

- ➡ **Green Hydrogen:** Produced through water electrolysis using renewable energy (e.g., wind, solar) with no harmful byproducts.
- ➡ **Blue Hydrogen:** Produced from natural gas via steam methane reforming, with carbon dioxide as a byproduct.
- ➡ **Grey Hydrogen:** Similar to blue hydrogen but emits significant carbon dioxide during production.
- ➡ **Pink Hydrogen:** Generated through electrolysis powered by nuclear energy.

## ● Advantages of Hydrogen

- ➡ **Abundance:** Contributes **75% of the mass of the universe**.
- ➡ **Clean Energy:** Reduces emissions and promotes sustainability.
- ➡ **Efficiency:** Highly efficient compared to traditional energy sources.

## ● Challenges

- ➡ **Cost:** Hydrogen production is currently expensive.
- ➡ **Storage and Transportation:** Complex and costly.
- ➡ **Safety Concerns:** Highly flammable and requires robust safety measures.



## ● **Key Government Initiatives**

- ➡ **Green Hydrogen Policy (2022):** Aims to make India a global producer and supplier of green hydrogen.
- ➡ **National Green Hydrogen Mission (2023):** Focused on making India a global hub for green hydrogen production and export.
- ➡ **SIGHT Programme:** Provides incentives for manufacturing **electrolysers** and producing green hydrogen.

## ● **Way Forward**

- ➡ Promote investment in hydrogen research and development to reduce production costs.
- ➡ Build robust infrastructure for hydrogen storage and transportation.
- ➡ Focus on international collaborations to position India as a global leader in green hydrogen technology.
- ➡ Enhance public awareness of hydrogen's benefits and safety measures.



# Watershed Development Projects Approved Under PMKSY 2.0

## ● Why in News?

- ⇒ Union Minister approves **56 new watershed development projects** under the **Watershed Development Component (WDC)** of PMKSY 2.0.

## ● About Watershed Development

- ⇒ **Definition:** The management of natural resources within a watershed to conserve water and improve land and vegetation quality.
- ⇒ **Watershed:** A land area that channels rainfall and snowmelt into creeks, streams, and rivers.

## ● Key Highlights of Sanctioned Projects

- ⇒ **Implementing Body:** Department of Land Resources (DoLR), Ministry of Rural Development (MoRD).
- ⇒ **States Covered:** Rajasthan, Madhya Pradesh, Karnataka, Odisha, Tamil Nadu, Assam, Nagaland, Himachal Pradesh, Uttarakhand, and Sikkim.
- ⇒ **Area Coverage:** Approximately **5,000 hectares per project** (smaller in hilly areas).

## ● About Watershed Development Component of PMKSY 2.0

### ⇒ Background:

Integrated Watershed Management Programme (IWMP), a Centrally Sponsored Scheme (CSS), began in **2009-10**.

IWMP merged into PMKSY as the **Watershed Development Component (WDC)** in **2015-16**.

**WDC-PMKSY 2.0:** A continuation of WDC-PMKSY 1.0's success.

### ⇒ Period: 2021–2026.

### ⇒ Target Area: 49.50 lakh hectares.

### ⇒ Aims:

Address land degradation.

Enhance farmers' income.

Improve climate resilience through soil conservation, rainwater harvesting, and pasture development.



## ● **About Pradhan Mantri Krishi Sinchayee Yojana (PMKSY)**

➡ **Launched:** 2015–16.

➡ **Purpose:**

Enhance physical access to water on farms.

Expand cultivable areas under assured irrigation.

➡ **Components:**

**Accelerated Irrigation Benefit Programme (AIBP).**

**Har Khet Ko Pani (HKKP).**

**Per Drop More Crop (PDMC):** Previously a PMKSY component (2016–21), now implemented separately by the Department of Agriculture and Farmers Welfare.

## ● **Way Forward**

➡ Strengthen the integration of WDC-PMKSY 2.0 with other water conservation initiatives.

➡ Enhance community participation in watershed management.

➡ Focus on monitoring project implementation and outcomes.

➡ Promote the use of advanced technologies for soil and water conservation.





# India's First Private Satellite Constellation: Firefly by Pixxel

## ● Why in News?

- ➡ **Pixxel**, an Indian private space-tech company, successfully launched the first three satellites of its **Firefly Hyperspectral Imaging (HSI) constellation** aboard SpaceX's Transporter-12 mission.
- ➡ Launch site: **Vandenberg Space Force Base, California.**

## ● Government's Decision

- ➡ **Flagship Project:** Firefly is Pixxel's pioneering satellite constellation for high-resolution hyperspectral imaging.
- ➡ **Cutting-edge Technology:** Features six of the **highest-resolution commercial hyperspectral satellites** to date.

## ● Hyperspectral Imaging (HSI) Satellites

### ➡ Unique Imaging Capability:

Analyze a wide spectrum of light instead of only primary colors (RGB).

Provide detailed information, e.g., distinguishing tree species and assessing individual tree health in forests.

### ➡ Applications:

Precision agriculture.

Environmental monitoring.

Resource mapping.

## ● Satellite Constellations Overview

- ➡ **Definition:** A network of identical satellites designed to work as a unified system, often interconnected and controlled globally.
- ➡ **Key Example:** **Starlink** with 2,146 active satellites (largest constellation globally).



## ● **Types of Satellite Orbits**

### ➡ **Geostationary Orbit (GEO)**

Altitude: 36,000 km.

Synchronizes with Earth's rotation for fixed-point coverage.

### ➡ **Medium Earth Orbit (MEO)**

Altitude: 5,000-20,000 km.

Used for navigation systems like GPS.

### ➡ **Low Earth Orbit (LEO)**

Altitude: 500-1,200 km.

Supports research, telecommunications, and Earth observation.

## ● **Way Forward**

➡ **Advancing Space-tech:** Promote more private-sector involvement in satellite development and space exploration.

➡ **Data Utilization:** Leverage hyperspectral imaging for addressing global challenges like climate change, precision farming, and disaster management.

➡ **Global Competitiveness:** Strengthen India's position as a leading hub for space technology innovation.



# Tri-Commissioning of INS Surat, INS Nilgiri, and INS Vaghsheer

## ● Why in News?

⇒ Prime Minister commissioned three indigenously developed naval combatants:

INS Surat

INS Nilgiri

INS Vaghsheer

⇒ This marks the **first-ever tri-commissioning** of a destroyer, frigate, and submarine, showcasing India's progress toward naval indigenisation and maritime security.

## ● About the Naval Combatants

⇒ INS Surat:

4th and final ship of the **P15B Guided Missile Destroyer Project**.

⇒ INS Nilgiri:

1st ship of the **P17A Stealth Frigate Project**.

Designed by the **Indian Navy's Warship Design Bureau**.

⇒ INS Vaghsheer:

6th and final submarine of the **P75 Scorpene Project**.

Built by **Mazagon Dock Limited**, Mumbai.

Indigenously constructed submarine of the **Kalvari-class** based on the French Scorpene-class design.

## ● India's Naval Indigenisation Efforts

⇒ Policies Supporting Indigenisation:

**Maritime Capability Perspective Plan (MCP)**: Targets a force of 200 ships by 2027. Aims to transform India from a "buyer's navy" to a "builder's navy."

**Indian Naval Indigenisation Plan (INIP) 2015-2030**: Encourages domestic industries, including **MSMEs**, to participate in ship construction.



## ● **India's Naval Indigenisation Efforts**

### ➡ **Achievements under Make in India:**

Of the **40 naval vessels inducted** in the past decade, **39 were built in Indian shipyards.**

Key examples include:

**INS Vikrant** (aircraft carrier).

**INS Arihant** and **INS Arighat** (nuclear submarines).

### ➡ **R&D Initiatives:**

**Underwater Domain Awareness:** Samudrayaan Project.

Scientific partnerships with **Indian Ocean Rim countries.**

Development of **autonomous systems** for high-risk environments like mine detection.

## ● **Way Forward**

➡ Expand domestic shipbuilding capabilities to meet the MCPP goals.

➡ Strengthen partnerships between the Navy and private industries, including MSMEs.

➡ Focus on advanced R&D to improve underwater domain awareness and autonomous systems.

➡ Increase investment in indigenous technology for self-reliance in maritime defense.



# Global Cybersecurity Outlook 2025

## ● Why in News?

➡ **World Economic Forum (WEF)**, in collaboration with **Accenture**, released the 'Global Cybersecurity Outlook 2025' Report.

➡ Highlights:

**Cybercrime Impact:** Disrupted global economies, costing **\$12.5 billion in 2023**.

**Increasing Cyber Complexity:** Explores evolving cyber threats and implications for organizations and nations.

## ● Factors Driving Cybersecurity Challenges

➡ **Supply Chain Vulnerabilities:** Complex supply chains with limited oversight expose systems to risks. Third-party software flaws enable cyberattack propagation.

➡ **Geopolitical Tensions:** Conflicts spur advanced cyber strategies targeting **critical infrastructure** like energy and telecommunications.

➡ **AI-Driven Threats:** Generative AI facilitates scalable malware deployment. Enables sophisticated multilingual **social engineering** attacks.

➡ **Cyber Skills Gap:** 8% skills gap, with two-thirds of organizations unable to address security needs effectively.

➡ **Convergence of Cybercrime and Organized Crime:** Rise in **cyber-enabled fraud** involves violent organized crime groups, amplifying cybercrime's impact.

➡ **Climate-Linked Cyber Risks:** Evolving energy systems make **energy grids** more vulnerable.

➡ **Quantum Vulnerabilities:** Potential to break **public-key encryption**, jeopardizing digital security.

## ● Recommendations

➡ **Adopt Cyber Resilience as a Collective Responsibility:** Collaboration among governments, industries, and organizations is essential.

➡ **Strategic Investment in Cybersecurity:** Treat cybersecurity as a **core business priority** to counter emerging threats.



## ● **Way Forward**

- ➡ Enhance oversight mechanisms in supply chains to address vulnerabilities.
- ➡ Invest in skill development to bridge the **cybersecurity workforce gap**.
- ➡ Foster innovation to counter AI-driven and quantum-based cyber threats.
- ➡ Strengthen international cooperation to mitigate risks from geopolitical tensions and organized cybercrime.
- ➡ Build robust and climate-resilient energy infrastructure to safeguard critical systems.





# Digital Public Infrastructure (DPI) for Children

## ● Why in News?

- ➡ UNICEF's report '**Global Outlook 2025: Prospects for Children**' explores the transformative potential of **Digital Public Infrastructure (DPI)** in delivering digital public services to children.

## ● What is DPI?

- ➡ DPI is a shared system enabling equitable access to public and private services on a societal scale.
- ➡ **Components:**
  - Technology
  - Markets
  - Governance

## ● Role of DPI in Children's Well-being

- ➡ **Equitable Access to Services:** Digital IDs linked to civil registration systems provide lifelong access to essential services.
- ➡ **Education:** Platforms like India's **DIKSHA** bridge gaps in digital learning.
- ➡ **Health:** Facilitates **electronic health records**, e.g., Jamaica's **Electronic Immunization Registry** enhanced vaccination rates.
- ➡ **Financial Literacy and Inclusion:** Enables participation in the digital economy for children and their families.
- ➡ **Social Protection Systems:** Supports targeted delivery of benefits and improves data sharing for better child-focused services.

## ● Challenges

- ➡ **Digital Inequality:** Only 43.6% of Indian rural youth (15–24 years) can send emails.
- ➡ **Weak CRVS Systems:** Poor integration with national IDs restricts universal access.
- ➡ **Other Issues:** Lack of data interoperability across systems. Concerns over data protection, security, and surveillance.



## ● **Recommendations**

- ➡ **Digitize CRVS Systems:** Make them a foundation for digital IDs.
- ➡ **Ensure Data Exchange:** Seamless, safe, and secure sharing between health, education, and social services.
- ➡ **Promote Digital Literacy:** Foster financial inclusion for children and their families.
- ➡ **Child-Centric Design:** Include children's perspectives when creating digital infrastructure.

## ● **Way Forward**

- ➡ Strengthen connectivity and bridge digital inequality.
- ➡ Develop robust data governance policies to safeguard privacy and ensure ethical use.
- ➡ Expand access to DPI in rural and underserved areas to maximize its benefits for children.



# RBI Moves to Boost Cross-Border Transactions in Rupee

## ● Why in News?

- ➡ **RBI Initiates Steps:** Aiming to promote cross-border transactions in **Indian Rupee (INR)** by reviewing and updating existing **FEMA 1999** regulations.
- ➡ **Goal:** Facilitating the **internationalization of the Rupee** and increasing its use in global trade.

## ● Key Changes in FEMA Regulations

### ➡ NRIs Can Open INR Accounts:

People residing outside India can now open **INR accounts** in authorized banks abroad for settling transactions with residents of India.

These accounts can also be used for **repatriable transactions and foreign investments**.

- ➡ **Settling Transactions Abroad:** Repatriable INR accounts (such as **SNRR** and **SVRA**) can be used to settle transactions with other non-resident individuals outside India.
- ➡ **Indian Exporters' Benefits:** Exporters can open **foreign currency accounts** overseas for settling trade transactions, receiving export proceeds, and making payments for imports.

## ● Internationalization of Rupee

### ➡ Concept:

Promoting the **rupee** for cross-border trade and transactions, starting with **imports and exports**, then expanding to **capital account transactions**.

### ➡ Benefits:

**Greater Financial Independence:** Reduces dependence on foreign currencies.

**Protection from External Shocks:** Helps mitigate external financial risks.

**Efficient Cross-Border Trade:** Facilitates trade and reduces **dollar demand**, thus strengthening the **INR**.

**Reduced Foreign Reserves Requirement:** Decreases the need for foreign reserves to handle external shocks.



## ● **Special Accounts for Cross-Border Transactions**

### ➡ **Special Vostro Rupee Accounts (SVRAs):**

Foreign banks hold these accounts in INR to settle transactions in rupees.

When Indian importers make payments in rupees to foreign traders, the amount is credited to the **Vostro account**, and vice versa.

### ➡ **Special Non-Resident Rupee Accounts (SNRR):**

A **current account** opened by non-residents (individuals or corporations) with business interests in India.

Used for specified transactions in trade, foreign investments, **External Commercial Borrowings**, and more.

## ● **Way Forward**

➡ **Encourage INR in Global Trade:** Expand the use of **INR** in both current and capital account transactions for smoother international business operations.

➡ **Strengthen Financial Infrastructure:** Support the establishment and expansion of **SVRAs** and **SNRR accounts** for smoother international payments in rupees.

➡ **Promote Financial Independence:** Continue to reduce the dependency on foreign currencies and create a more resilient economy capable of handling external economic shocks.

➡ **Monitor and Adapt:** Regularly assess the effectiveness of the new measures and adjust the regulations to ensure the successful internationalization of the Rupee.



# National Broadband Mission (NBM) 2.0 Launched

## ● Why in News?

- ➡ **Launch of NBM 2.0:** The **Ministry of Communications** has unveiled **NBM 2.0** and the **Sanchar Saathi Mobile App** to enhance telecom accessibility, security, and empowerment across India.
- ➡ **Focus:** To accelerate digital infrastructure growth and bridge the digital divide.

## ● About NBM 2.0

### ➡ Built on NBM 1.0:

**NBM 1.0** was launched in 2019 under the **National Digital Communications Policy, 2018**.

Key achievements of NBM 1.0:

Increased **telecom towers** to **8.17 lakh**.

Boosted **broadband subscribers** to **941 million**.

### ➡ Objectives of NBM 2.0:

**Extend Optical Fiber Cable (OFC)** to **2.70 lakh villages** by 2030 (currently ~50,000 villages).

**Provide broadband to 90% of anchor institutions** (e.g., schools, PHCs, Panchayat offices) by 2030.

**Ensure fixed broadband speed of 100 Mbps** as a minimum.

Facilitate **5G rollout** and **prepare for 6G**.

**Leverage Optical Ground Wire (OPGW)** from the power sector to improve connectivity, especially in **disasters, wars, and emergencies**.

## ● Other Initiatives to Enhance Telecom Accessibility

- ➡ **Pradhan Mantri Gramin Digital Saksharta Abhiyan (PMGDISHA):** Aims to **promote digital literacy** in rural areas.
- ➡ **PM-WANI:** Focuses on enhancing **public WiFi hotspots** to provide internet access.
- ➡ **BharatNet Project:** Seeks to connect **all Gram Panchayats** with optical fiber cables.
- ➡ **Telecom Technology Development Fund (TTDF):** Supports the **development of domestic telecom technologies**.



## ● **Way Forward**

- ➡ **Expand Connectivity to Remote Areas:** Focus on extending **OFC connectivity** and ensuring that **anchor institutions** are connected across India.
- ➡ **Boost Telecom Infrastructure:** Roll out **5G** networks and plan for the future development of **6G**.
- ➡ **Enhance Digital Literacy:** Continue to support initiatives like **PMGDISHA** to ensure that the rural population is digitally literate.
- ➡ **Promote Innovation in Telecom:** Encourage the development of indigenous telecom technologies through **TTDF** to strengthen India's self-reliance in this sector.
- ➡ **Strengthen Emergency Connectivity:** Use **OPGW** for disaster-proof communication systems to ensure **continuous connectivity** during critical situations.



# India-Singapore Bilateral Relations

## ● Why in News?

- ➡ Singapore's President visited India to commemorate the **60th anniversary of diplomatic relations**.
- ➡ The Presidents of both nations jointly unveiled a logo to mark the occasion.

## ● India-Singapore Relations

### ➡ Diplomatic Relations

India was among the first nations to recognize Singapore's independence in **1965**.

Key milestones:

**2005:** Comprehensive Economic Cooperation Agreement (CECA).

**2015:** Relations upgraded to a **Strategic Partnership**.

**2024:** Elevated to a **Comprehensive Strategic Partnership**.

### ➡ Trade Relations

Singapore is India's **6th largest trade partner (2023-24)**, contributing **3.2% of India's total trade**.

Largest trade partner in **ASEAN** (India is a net importer).

### ➡ Multilateral Cooperation

Shared membership in platforms like:

**East Asia Summit**

**Commonwealth**

**IORA (Indian Ocean Rim Association)**

**IONS (Indian Ocean Naval Symposium)**

### ➡ Defence Cooperation

Joint military exercises:

**Exercise Agni Warrior (Army).**

**SIMBEX (Navy).**

### ➡ Indian Diaspora

People of Indian origin constitute **9%** of Singapore's population.

Tamil is recognized as one of the **four official languages** of Singapore.



## ● **Significance of Singapore for India**

- ➡ **Countering China's Influence:** Access to the **Changi Naval Base** aids India in enhancing its maritime strategy and countering China's influence.
- ➡ **Foreign Direct Investment (FDI):** Singapore is the **leading source of FDI** for India, contributing **\$11.77 billion** in FY 2023-24.
- ➡ **Act East Policy:** Acts as a key partner in promoting India's diplomatic and economic engagement with East Asia.
- ➡ **Strategic Location:** Singapore's position at the **crossroads of East-West shipping routes** supports global trade and India's connectivity efforts.

## ● **Way Forward**

- ➡ **Strengthen Economic Ties:** Explore new areas under CECA to deepen trade and investment relations.
- ➡ **Enhance Defence Collaboration:** Conduct advanced joint exercises and develop maritime infrastructure.
- ➡ **Engage Diaspora:** Leverage the Indian community for stronger cultural and economic linkages.
- ➡ **Expand Multilateral Cooperation:** Collaborate on emerging global challenges, including climate change and regional security.



# Yala Glacier in Himalayas Projected to Vanish by 2040s

## ● Why in News?

- ➡ **Yala Glacier Retreat:** The **Yala Glacier** in **Nepal** has retreated by **680 meters** and shrunk by **36%** between **1974** and **2021**.
- ➡ **Climate Change Impact:** Yala is the only glacier in the Himalayas to be included in the **Global Glacier Casualty List (GGCL)**, which underscores the **accelerating impact of climate change** on glaciers.
- ➡ **Cryosphere:** The **cryosphere** refers to the frozen part of Earth, including snow, ice, and frozen ground.

## ● Global Glacier Casualty List (GGCL)

- ➡ **Launched in 2024** by **Rice University, University of Iceland, Iceland Glaciological Society, World Glacier Monitoring Service, and UNESCO**.
- ➡ **Purpose:** The GGCL highlights glaciers that are **disappearing** due to climate change.

## ● About Glacier Retreat

- ➡ **Glacier Retreat:** Refers to glaciers shrinking in size and mass due to **melting, evaporation, and other factors**.
- ➡ **Notable Glacier Losses:**
  - Pico Humboldt Glacier**, Venezuela (**2024**).
  - Sarenne Glacier**, France (**2023**).
  - Dagu Glacier**, China, expected to disappear by **2030**.

## ● Impact of Melting Glaciers/Cryosphere

- ➡ **Ecosystem & Livelihood Disruption:**

Glaciers hold about 70% of the world's **freshwater**, which is essential for both **ecosystems** and **human life**.

Example: **240 million people** in the **Hindu Kush Himalaya** depend on the cryosphere for survival.



## ● **Impact of Melting Glaciers/Cryosphere**

### ➡ **Increased Risk of GLOFs:**

**Glacial Lake Outburst Floods (GLOFs)** are heightened by rapid glacier melting, which can cause **unstable glacial lakes** to breach and result in catastrophic flooding.

### ➡ **Climate Feedback Loop:**

Melting glaciers reduce Earth's **reflectivity (albedo)**, which leads to more heat absorption and **accelerates global warming**.

## ● **Initiatives to Protect the Cryosphere**

### ➡ **Global Initiatives:**

**2025** designated as the **International Year of Glaciers' Preservation**.

**March 21** observed annually as **World Day for Glaciers**.

**Himalayan Adaptation Network** by IUCN.

**Living Himalayas Initiative** by WWF.

### ➡ **India's Initiatives:**

**National Mission for Sustaining the Himalayan Ecosystem**.

**Indian National Centre for Ocean Information Services (INCOIS)**: Monitors glacier-related events and issues **GLOF alerts**.

**Missions to Arctic and Antarctic**: For example, **IndARC (2014)** in the Arctic.

## ● **Way Forward**

➡ **Strengthen Climate Adaptation**: Support global initiatives to protect glaciers and reduce greenhouse gas emissions.

➡ **Enhanced Monitoring**: Improve monitoring systems, like **INCOIS**, for early warning systems on glacier-related events.

➡ **Promote Sustainable Practices**: Encourage local and international efforts to sustain ecosystems that rely on glaciers, particularly in vulnerable regions such as the **Hindu Kush Himalaya**.

➡ **Research and Collaboration**: Increase collaborative research and knowledge-sharing on cryosphere preservation and climate resilience.





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