

# NEXT IAS THE CRUX

May Issue;  
2025

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CMD, NEXT IAS & MADE EASY Group



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Compilation of UPSC relevant news from 1<sup>st</sup> May to 31<sup>st</sup> May 2025

# Contents



## Cover Story

Operation Sindoor.....	6
Air Defence Systems .....	8
Psychological Warfare .....	11
Drone Warfare.....	12



## Feature Articles

70 <sup>th</sup> Anniversary of Bandung Conference.....	14
India's Arctic Engagement.....	16
Presidential Reference under Article 143 .....	18
Unemployment at 5.1%, Women Labour Force Rises: PLFS Data .....	20
India's Trade Deficit Widens to \$8.65 Billion .....	22
Urban Flooding.....	23
India Becomes the World's 4th Largest Economy.....	24
India's Record Cargo Movement on Inland Waterways.....	25
Human Development Report 2025: UNDP .....	27
Supreme Court Flags Bitcoin Trading as a Way for Hawala.....	29
Fourth Global Bleaching Event .....	30
Monsoon in India .....	31
Birth Rates in Delhi, Kerala, and T.N. Declining at Twice the Rate of National Average .....	33

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# Contents | In-Shorts

THE CRUX

May Issue, 2025

## POLITY & GOVERNANCE

Supreme Court Ruling 'Sharia Court' .....	34
Cabinet Approves Caste Enumeration in Upcoming Census .....	34
SC Mandates 3-Year Practice to Appear in Judicial Services Examinations.....	35
Right To Digital Access .....	36
SC Upholds Courts' Power to Modify Arbitral Awards.....	36
Election Commission Internet (ECINET) App .....	37
One year Extension of CBI Director .....	37
Rules for Obtaining Voter ID in India .....	38
SC Rules on Rohingya Refugees .....	38
Sutlej-Yamuna Link (SYL) Canal .....	39
CJI Forwards 'In-House' Panel Probe Report To President.....	39
Sikkim's 50th Statehood Day .....	40
Appointment of UPSC Chairman.....	41
Govt School Enrolment Drops in 23 States .....	41
SMILE Scheme .....	42
Gyan Post .....	42
e-Zero FIR Initiative.....	43
GeM Celebrates 8th Incorporation Day .....	43
Mizoram: India's First Fully Literate State.....	44

## INTERNATIONAL RELATIONS

Pakistan Shuts Airspace, Snaps Trade Relations with India .....	45
India-France Agreement on Rafale-M Jets .....	45
OPEC and OPEC+ .....	46
India to move UNSC 1267 to Declare TRF a Terror Group .....	46
Israel Cabinet Approves Plan for Gaza.....	46
Organisation of Islamic Cooperation.....	47
IMF Loan to Pakistan .....	47
Colombia Joins Belt and Road Initiative .....	48

## ECONOMY

Rare Earth Magnets .....	49
Futures & Options .....	49
Net FDI Slumps 96% in FY25 to \$353 mn .....	49
Algeria Joins New Development Bank.....	50
Revised ECF of the RBI .....	50
India's Outward remittances Decreases under Liberalised Remittance Scheme .....	51
Pumped Storage Hydropower .....	52
NITI Aayog Releases Report on "Designing a Policy for Medium Enterprises".....	52
Report on "Enhancing Competitiveness of MSMEs in India".....	53
RoDTEP Scheme .....	54
World Bank: India's Extreme Poverty Drops to 2.3% .....	54
Green Municipal Bond (GMB).....	54
Insufficient Support for Deep Tech Start-ups in India: Study.....	55
High Temperatures and Mango Production.....	56
Fair and Remunerative Price of Sugarcane .....	56
Domestic Institutional Investors Upstage FPIs.....	56
India Poised to Become the Capital of MICE Tourism .....	57

FTA Signed Between UK-India .....	57
New Definitions to Curb Predatory Pricing.....	58
Most Favoured Nation.....	59
Account Aggregators.....	59
World's First Commercial-scale e-methanol Plant Opens in Denmark.....	60
Cabinet Approves Semicon. Unit in U.P. ....	61
Vizhinjam International Seaport .....	61
India's Northeast-Kolkata Link via Myanmar.....	62
India's Farm Trade and Impact of FTAs.....	63

## ENVIRONMENT

CCU Testbeds .....	64
Tsarap Chu Conservation Reserve .....	64
Sagarmatha Sambaad .....	64
Environment.....	64
Operation Olivia.....	65
Global Environment Facility .....	66
Euthalia Malaccana .....	66
Winning Ideas under 'Ideas4LIFE' Initiative .....	66
Global Forest Watch .....	66
India's Lion Population Risen by 32%.....	67
Moringa.....	68
India's First Wolf Sanctuary: Mahuadanr .....	68
Musk Deer .....	69
Green Hydrogen Production.....	69
Draft GEI target Rules.....	70
'Revive Our Ocean' Initiative.....	70
Pangolin.....	71
First Geothermal Production in Arunachal .....	71
CAQM Unveils 19-point Plan .....	72
IEA's Global Methane Tracker .....	73
Geotubing.....	73
Cross River Gorilla, Tapanuli Orangutan among 25 Most Endangered Primates: Report.....	74
New Rules for Access and Benefit Sharing of Biodiversity .....	74
Chlorpyrifos .....	75

## GEOGRAPHY

Palmyra .....	76
Tiexian Reef (Sandy Cay Reef).....	76
Western Disturbance .....	76
Chenab River .....	77
Yala Glacier .....	77
New Caledonia .....	77
Bharat Forecasting System Launched.....	78
Iran Slams Renaming Persian Gulf .....	78
Kangchenjunga Mountain.....	79
Magnetic Flip-Flop.....	79
Kilauea Volcano .....	80

## INTERNAL SECURITY

DRDOs Advances Hypersonic Propulsion.....	81
National Security Advisory Board .....	81
Military Expenditure Report By SIPRI.....	82
Igla-S Missiles.....	82
Civil Defence Drills.....	82
IMDEX Asia 2025 .....	82

INS Arnala.....	83
Territorial Army (TA).....	83
BrahMos Missile.....	83
Bhargavastra .....	84
IB Chief Gets One-year Extension in Service.....	84
AMCA Fighter Jet Execution Model .....	84
Autonomous Warfare in Operation Sindoor.....	85
USA's Golden Dome Project.....	86

## SCIENCE & TECHNOLOGY

Kuiper Internet .....	87
Shiv Shakti Point .....	87
Cloud-Seeding Trials Across NCR.....	87
Dravyaratnakara Nighantu and Dravyanamakara Nighantu .....	88
Breakthrough in Making 2D Metals.....	88
Samudrayaan.....	89
Lupex Mission.....	92
Shingles Vaccine.....	90
NASA's Grail Mission .....	90
125 Years of Kodaikanal Solar Observatory .....	90
India Awarded with Certificate of Elimination of Trachoma.....	91
Metre Convention.....	91
Tianwen-2 Mission .....	91

## SOCIETY

58th Jnanpith Award.....	92
Corporate Social Responsibility.....	92
Sugar Boards in Schools .....	92

## CULTURE & HISTORY

Muziris Heritage Project.....	94
50 Years of End of the Vietnam War .....	94
Jagadguru Basaveshwara .....	95
Thrissur Pooram .....	95
Vikramaditya I Dated Inscription Found in Davangere .....	96
Lakkundi Temples.....	96
Gundaram inscriptions in Telangana .....	97
Piprahwa Relics .....	97
Ahilyabai Holkar.....	97
Buddha Purnima.....	98
Nalanda University.....	98
Agamas .....	98
Gond and Madhubani Art .....	99

## MISCELLANEOUS

Padma Awards .....	100
Major Dhyan Chand Khel Ratna Award .....	100
Pulitzer Prize 2025 .....	100
World Food Prize 2025.....	101
International Booker Prize 2025.....	101
Jayant Narlikar.....	101
World Anti-Doping Agency (WADA) .....	102
Mt. Makalu .....	102

Data Recap..... 103

Test Yourself..... 104



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# OPERATION SINDOOR










The Indian Armed Forces launched 'OPERATION SINDOOR', hitting terrorist infrastructure in Pakistan and Pakistan-occupied Jammu and Kashmir from where terrorist attacks against India have been planned and directed.

## About

- Touted as the Indian military's biggest and deepest strike yet, 'Operation Sindoor' marks the first full-scale **tri-service operation** since the **1971 war**.
- The name Operation Sindoor is a symbolic tribute to the Pahalgam victims, avenging those killed for their faith while their sindoor-wearing wives were spared.
- The strategic operation targeted and destroyed **Jaish-e-Mohammed, Lashkar-e-Taiba, and Hizbul Mujahideen** training bases, with India deploying some of its most advanced weaponry.
  - ◆ At the heart of the operation were **SCALP cruise missiles** and **HAMMER precision-guided munitions**, both launched from India's frontline **Rafale fighter jets**.
  - ◆ Also, **loitering munitions**, or **kamikaze drones**, provided **real-time surveillance** and executed **precise strikes** on high-value, mobile targets as they emerged.
  - ◆ The Indian Air Force also launched around 15 BrahMos supersonic missiles in precision strikes on 11 key Pakistani airbases.
  - ◆ The attacks crippled critical infrastructure, severely impacting Pakistan's air defence and strike capabilities.

## LOITERING MUNITIONS, DRONES, SCALP

### HOW INDIA TARGETED PAK TERROR INFRA

<p>Most challenging was to take down JeM headquarters in Bahawalpur, 100 km from border</p> 	<p>To strike at this depth and in face of an activated air defence cover is a great concern for Pakistan</p> 	<p>Some strikes involved Rafale jets that used long-range SCALP missiles</p> 	<p><b>SUICIDE DRONES</b></p> <ul style="list-style-type: none"> <li>Gulpur Camp, Kotli, 30 km from LoC</li> <li>Mehmoona Joya Camp, Sialkot, 12 km from border</li> </ul>
<p>It is a heavily protected terror camp located close to major Pakistani military bases</p> 	<p>Barnala Camp, Bhimber, 9 km from LoC, struck by rotary wing UAV that dropped several munitions</p> 	<p>LeT HQ at Muridke - 25 km from border - also likely faced SCALP strike</p> 	<p>Sawai Nala Camp, Muzaffarabad, 30 km from LoC in Tangdhar sector</p> 
<p>Guided bombs, including Hammer munitions, took down terror infra close to border: Sarjal Camp, Sialkot, about 6 km from border, and Abas Camp, about 13 km from LoC</p> 	<p>5 terror camps hit in PoK tasked to Army</p> 		

## Achievements of Operation Sindoor:

- **Terror Camps Neutralized:** India dismantled nine major terror launchpads in Pakistan and Pakistan-occupied Jammu and Kashmir (PoJK), eliminating over 100 militants from Lashkar-e-Taiba (LeT), Jaish-e-Mohammed (JeM), and Hizbul Mujahideen (HM).
- **Deep Cross-Border Strikes:** Indian forces executed precision strikes deep into Pakistani territory, including Punjab and Bahawalpur, signaling an expanded area of retaliation.
- **Pakistani Air Defense Exposed:** Indian Air Force (IAF) Rafale jets used SCALP (Système de Croisière Autonome à Longue Portée) and Highly Agile Modular Munition Extended Range (HAMMER) missiles to bypass and jam Chinese-made air defense systems.

- **Assertive Global Messaging:** India demonstrated its ability to act independently in national interest, sending a clear message that terror infrastructure will not be tolerated.
- **International Backing Gained:** For the first time, multiple global powers supported India's response, marking a shift in global perception and diplomatic alignment.
- **Pakistan Sought De-escalation:** The intensity of the BrahMos strikes compelled Pakistan to abandon plans for further retaliation. In response to the severe damage, Pakistan urgently requested a DGMO-level meeting to propose a pause in hostilities and seek an understanding with India.

## India's New Security Doctrine

- PM Modi emphasized that while India is peace-loving, it would now follow a path of "peace through strength."
- **Decisive retaliation on India's terms:** India will take strict action at every place from where the roots of terrorism emerge.
- **No tolerance for nuclear blackmail:** The doctrine dismisses the long-standing strategy of Pakistan's "nuclear shield" as a deterrent against Indian action.
  - ◆ India signaled that it can and will respond even under the shadow of nuclear threats, relying on precision weaponry and credible deterrence.
- **No distinction between terrorists and their sponsors:** India will not differentiate between the government sponsoring terrorism and the masterminds of terrorism.

## Significance of Operation Sindoor:

- **Moral and Strategic Messaging:** Operation Sindoor embodied a security approach rooted in Dharma and national pride, combining tradition with strategic deterrence.
- **Controlled and Calibrated Response:** The strikes targeted terrorist infrastructure only, showcasing military precision while avoiding escalation with Pakistani forces.
- **Psychological and Narrative Impact:** India countered disinformation and projected strength with compassion, reclaiming control of the public narrative.
- **Demonstration of War-Ready Forces:** The operation highlighted India's ability to conduct swift, coordinated, and precise cross-border strikes.
- **Adapting to Modern Warfare:** India showcased integration of cyber defense, real-time intelligence, and precision weapons for hybrid warfare readiness.
- **Deterrence and Diplomatic Signaling:** The operation warned adversaries that nuclear threats won't deter India's right to retaliate against state-sponsored terrorism.

## EVOLUTION OF INDIA'S MILITARY OPERATIONS: FROM KASHMIR 1947 TO OPERATION SINDOOR

### 1947-48 Indo-Pak War:

- **Operation Gulmarg** refers to Pakistan's covert plan in 1947 to infiltrate Jammu and Kashmir using tribal militias. In response, India launched a military airlift on October 27, 1947, after the Maharaja signed the Instrument of Accession.
  - ◆ The Indian Army landed in Srinagar and pushed back the tribal invaders.
  - ◆ This marked the beginning of the **First Indo-Pak War (1947-48)** and India's first major military deployment after independence.
  - ◆ Fierce battles were fought in areas like Baramulla, Uri, and Naushera.
  - ◆ India managed to secure the Kashmir Valley and key towns, but fighting continued until a **UN-brokered ceasefire in 1949**.
  - ◆ The ceasefire line established then became the **Line of Control (LoC)**. The conflict set the tone for all future India-Pakistan engagements over Kashmir.

### 1965 Indo-Pak War:

- **Operation Riddle** was launched during the **1965 Indo-Pak War**. It countered Pakistan's infiltration under Operation Gibraltar by opening a front toward Lahore and Kasur on September 6.
  - ◆ India's counter-offensive crippled Pakistan's military advances and led to a ceasefire, which was formalized in the Tashkent Agreement.
- **Operation Ablaze**, launched in April 1965, was a pre-emptive troop mobilisation in response to rising tensions in the Rann of Kutch. It demonstrated India's preparedness ahead of the full-scale war.

### 1971 Indo-Pak War:

- **Operation Cactus Lily**, conducted in December 1971, enabled Indian troops to bypass fortified Pakistani positions by airlifting forces over the Meghna River. It played a decisive role in the march toward Dhaka.
- **Operation Trident**, launched on December 4, 1971, was a naval attack on Pakistan's Karachi port. It marked the first use of anti-ship missiles in the region and caused heavy damage to Pakistani naval assets.
- **Operation Python** followed on December 8, 1971, targeting Karachi's remaining fuel reserves and further crippling Pakistan's naval operations.

### 1984 Capture of Siachen Glacier:

- **Operation Meghdoot**, launched in April 1984, was India's preemptive action to occupy the Siachen Glacier. Indian forces airlifted to key peaks before Pakistan could act, securing strategic control that continues today.

### 1999 Kargil War:

- **Operation Vijay**, initiated in May 1999, aimed to reclaim Indian territory occupied by Pakistani soldiers and militants during the Kargil conflict. The operation restored Indian control over key heights in the region.
- **Operation Safed Sagar** was the Indian Air Force's part in the Kargil War. It involved precision airstrikes by Mirage 2000 jets to support ground troops without crossing the Line of Control.

### 2016 Surgical Strike:

- **Background:**
  - ◆ Conducted on September 29, 2016, by Indian Army's Special Forces in response to the Uri terror attack, which killed 19 Indian soldiers.
  - ◆ Targeted terror launchpads across the Line of Control (LoC) in Pakistan-occupied Kashmir (PoK).
- **Strategic Significance**
  - ◆ Marked a paradigm shift from a defensive to a proactive counter-terrorism doctrine.
  - ◆ Sent a clear message that India would respond militarily to cross-border terrorism, especially when state-supported.
  - ◆ Emphasized surgical precision and minimum collateral damage to avoid full-scale war escalation.

### 2019 Balakot Air strike:

- **Operation Bandar**, conducted in 2019 after the Pulwama terror attack, saw the Indian Air Force strike a JeM camp in Balakot, deep inside PoK.
- This was the first cross-LoC airstrike since 1971.
- Strengthened India's strategic signaling and showcased capabilities in intelligence, surveillance, and precision strike.

# AIR DEFENCE SYSTEMS

Recently, India thwarted Pakistani aerial attacks along the western border through its air defence systems and successfully neutralized an air defence system in Lahore, Pakistan.

## About the Air Defence Systems:

- These are critical components of a nation's security infrastructure, designed to **detect, track, and neutralize aerial threats** such as enemy aircraft, missiles, and drones.
- These systems operate through **layered defense mechanisms**, combining radars, missile interceptors, electronic warfare tools, and command centers to safeguard airspace.

## Key Components of Air Defence Systems

### Detection and Surveillance:

- ◆ **Radar Systems:** Air defence begins with high-frequency radar waves that detect incoming threats by bouncing signals off objects in the sky.
- ◆ **Satellite and Infrared Sensors:** Advanced systems use satellite imaging and infrared tracking to identify stealth aircraft and hypersonic missiles.
- **Tracking and Target Identification:** Once a threat is detected, tracking systems analyze its speed, altitude, and trajectory to determine its nature—whether it's a fighter jet, ballistic missile, or drone. Command centers assess the threat level and decide on the appropriate response.

### Engagement and Neutralization:

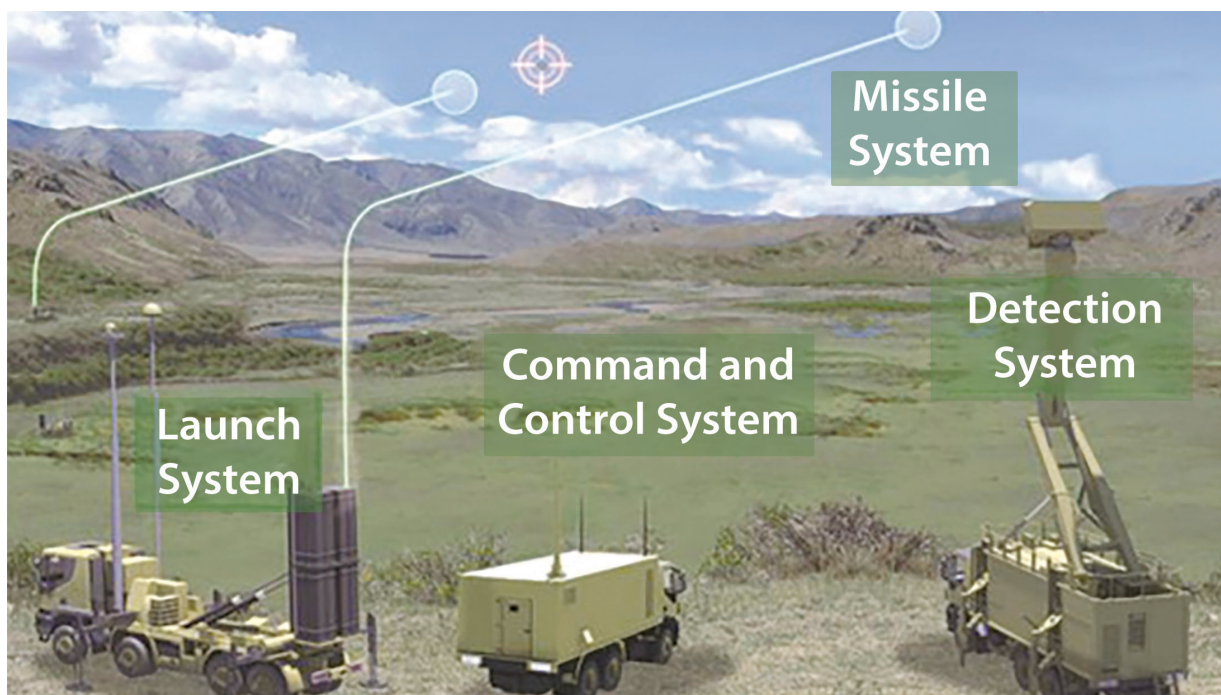
- ◆ **Surface-to-Air Missiles (SAMs):** These missiles intercept enemy aircraft or incoming projectiles before they reach their target.

- ◆ **Electronic Warfare (EW) Systems:** Jammers disrupt enemy communications and radar signals, reducing their ability to coordinate attacks.
- ◆ **Anti-Aircraft Artillery:** In close-range combat, high-caliber guns provide an additional layer of defense.

## India's Air Defence System

### Ballistic Missile Defence (BMD) System:

- India's BMD programme began in **1995** following Pakistan's acquisition of M-11 missiles from China and gained momentum after the **1998 nuclear tests** and **1999 Kargil War**.
- **Phase I** (completed in 2019) focuses on **endo-atmospheric interception** to counter threats from Pakistan.
- **Phase II** (ongoing) aims at **exo-atmospheric interception** to address Chinese missile threats.
- BMD is a **two-tier system** capable of intercepting ballistic missiles with ranges up to **2,000 km (Phase I)** and **5,000 km (Phase II)**.
- **Prithvi Air Defence (PAD)** intercepts missiles at **80 km altitude**, speed **Mach 5**, designed for high-altitude interception.
- **Advanced Air Defence (AAD)** targets missiles at **lower altitudes (up to 30 km)**.
- Under Phase II, India is developing the **Prithvi Defence Vehicle (PDV)**, tested in 2017, with interception capability up to **100 km altitude**.



**Long-Range Air Defence (up to 400 km):**

- ➔ **S-400 Triumf**, developed by Russia, is India's most advanced long-range SAM system; India signed a **\$5.4 billion deal in 2016** for five units.
- ➔ **S-400 uses four types of missiles:**
  - ◆ 9M96E (40 km),
  - ◆ 9M96E2 (120 km),
  - ◆ 48N6DM (250 km),
  - ◆ 40N6 (400 km).
- ➔ Capable of targeting **aircraft, UAVs, cruise and ballistic missiles** at altitudes up to **30 km**.
- ➔ Tracks and engages up to **36 targets** simultaneously; can be deployed in **five minutes**.
- ➔ Delivered as **S-400 Sudarshan Chakra**; three regiments received by 2023, two more due by 2026.

**Medium-Range Air Defence (up to 100 km):**

- ➔ **Barak-8** has two variants:
  - ◆ **LRSAM (Naval, 100 km range)**
  - ◆ **MRSAM (Army, Air Force, 70 km range).**
  - ◆ Co-developed by **DRDO and Israel Aerospace Industries**; inducted across all three services.
  - ◆ Provides defence against **aircraft, UAVs, missiles, and munitions.**
  - ◆ Final user trials were conducted in **April 2025**.

**Short-Range Air Defence (up to 35 km):**

**AKASHTEER AIR DEFENCE SYSTEM**

Akashteer is an advanced Air Defence Control and Reporting System (ADCRS) developed by Bharat Electronics Limited (et) for the Indian Army.

**Akashteer Air Defence System**

- **Command and Control:** Manages air defence operations but does not fire missiles.
- **Automation:** Provides automated detection, tracking, and response.
- **Sensor Integration:** Fuses radar and sensor data from Army and Air Force units.
- **Decentralised Operations:** Allows field units to take action independently.
- **Redundancy and Upgrades:** Includes backup communication and upgrade capabilities.
- **Mobile and Static Use:** Deployable on vehicles or in fixed locations.



- ➔ **Akash** is an indigenous SAM system inducted in **2015** with a range of **30–35 km** and altitude of **up to 18 km**.
- ➔ Capable of engaging **multiple targets** in autonomous mode.
- ➔ **Akash-NG**, with a range up to **70 km**, was successfully tested in **2021 and 2024**.
- ➔ **SPYDER** is an Israeli quick-reaction SAM system, capable of engaging **aircraft, UAVs, and PGMs**.
- ➔ **Comes in two variants:**
  - ◆ **SPYDER-SR (Short Range)** – Range: 15 km, Altitude: 20 m to 9,000 m
  - ◆ **SPYDER-MR (Medium Range)** – Range: 35 km, Altitude: up to 20 km

- ◆ Uses **Python-5** and **Derby** missiles; India purchased **18 SPYDER-MR units in 2009**.
- ◆ Successfully used to shoot down a **Pakistani drone** after the **Balakot strike**.
- ◆ India also operates **legacy Soviet systems** such as **S-125 Pechora, Osa-AK, and Kub/Kvadrat**.
- ➔ DRDO is developing the **Quick Reaction Surface-to-Air Missile (QRSAM)** with a range of **25–30 km**.

**Very Short-Range Air Defence (up to 10 km):**

- ➔ Designed to protect **infantry, tank regiments, and strategic assets** from low-flying aircraft and drones.
- ➔ India uses legacy systems like **2K22 Tunguska, L-70 guns, and ZSU-23-4 Shilka**.
- ➔ Procured Russian **Igla-M** and **Igla-S** MANPADS, with new batches inducted in **April 2024**.
- ➔ DRDO is also developing an **indigenous VSHORADS system** for future deployment.

**Monitoring and Coordination Mechanisms:**

- ➔ The **Mission Control Centre (MCC)** coordinates BMD operations using **Long-Range Tracking Radars (LRTRs)**.
- ➔ India uses **two imported EL/M-2080 Green Pine radars** and **two indigenous Swordfish AESA radars**, with ranges extended to **1,500 km**.
- ➔ MCC also integrates inputs from **IAF early warning systems** and **NTRO's ELM-2090 Terra radars**.
- ➔ DRDO's **Netra AEW&C** has **240° coverage** and **200 km range**; **Phalcon AWACS** provides **360° coverage** up to **400 km**.

**Command and Control Infrastructure:**

- ➔ **Integrated Air Command and Control System (IACCS)** is the IAF's automated air defence control network.
- ➔ Currently, **nine IACCS nodes** are operational, integrating **civilian radars, IAF sensors, and AWACS**.
- ➔ Provides a real-time **composite air picture** and facilitates weapon control.
- ➔ **Akashteer** is the Indian Army's air defence control and reporting system, developed by **BEL**.
- ➔ It automates radar and communication data for **faster real-time threat analysis**.
- ➔ Over **100 systems** delivered by September 2024; integration with IACCS underway.

**Significance of Air defence System during Op. Sindoor:**

- ➔ **Neutralisation of Aerial Threats:** During Operation Sindoor (May 7–10, 2025), India's air defence network successfully intercepted all incoming threats, including drones, cruise missiles, and rocket barrages. No damage was reported to Indian territory, infrastructure, or strategic assets.
- ➔ **Role of Akashteer System:** The indigenous Akashteer command-and-control system was the backbone of the operation.

- ♦ It enabled seamless integration of sensor and radar inputs from Army and Air Force assets, achieving a 100% kill rate against incoming aerial targets.
- **Layered Defensive Integration:** India deployed a multi-layered defence grid combining legacy systems like Pechora and OSA-AK with modern systems such as Akash, SPYDER, Barak-8, and S-400.
  - ♦ These systems worked in coordination to create overlapping zones of interception.
- **Operational Synergy via IACCS and MCC:** The Integrated Air Command and Control System (IACCS) and the Mission Control Centre (MCC) ensured real-time threat tracking and rapid engagement decisions.
  - ♦ This networked defence approach enabled swift and accurate responses to high-speed aerial threats.
- **Suppression of Enemy Air Defences:** Indian forces neutralised Pakistani air defence infrastructure, including radars at bases like Lahore and Rahimyar Khan.
  - ♦ These precision strikes ensured degraded enemy response without civilian collateral damage.
- **Use of Loitering Munitions and EW Systems:** India deployed loitering “kamikaze” drones and electronic warfare systems to jam and bypass enemy radar grids.
  - ♦ These platforms completed their missions within 23 minutes, reflecting India’s advancements in unmanned and electronic warfare.
- **Zero Losses to Indian Air Assets:** No Indian aircraft were lost during the operation. This demonstrated superior planning, electronic countermeasure effectiveness, and tactical execution by the Indian Air Force.
- **Effectiveness of S-400 and BrahMos Integration:** S-400 systems successfully defended high-value airbases, while BrahMos missiles were used to target and disable deep enemy military installations. This demonstrated India’s offensive–defensive operational synergy.
- **Strategic Significance:** The operation showcased India’s maturing air defence capabilities and the operational success of indigenously developed systems. Akashteer, in particular, emerged as a key asset under the Aatmanirbhar Bharat initiative, redefining India’s networked air defence doctrine.

MAJOR AIR DEFENCE SYSTEMS IN THE WORLD

System	Country of Origin	Type	Range	Key Features
S-400 Triumf	Russia	Long-range SAM	Up to 400 km	Can track 300 targets; engage 36; multiple target engagement
THAAD	USA	Terminal High Altitude Area Defence	~200 km (interception)	Intercepts ballistic missiles in terminal phase
Patriot PAC-3	USA	Medium to long-range SAM	~70–160 km	Can intercept aircraft, cruise, and ballistic missiles
Iron Dome	Israel	Short-range air defence	Up to 70 km	Intercepts rockets, artillery shells; mobile; rapid response
David’s Sling	Israel	Medium-range missile defence	~40–300 km	Bridges gap between Iron Dome and Arrow systems
Arrow-2 / Arrow-3	Israel (with USA)	Long-range anti-ballistic missile	Arrow-3: up to 2400 km	Designed to intercept exo-atmospheric ballistic threats
HQ-9	China	Long-range SAM (S-300 equivalent)	Up to 200 km	Based on Russian tech; integrated air and missile defence
Aster 30 (SAMP/T)	France-Italy (EU)	Medium-long range SAM	~120 km	Used in EU and NATO; multi-target tracking
NASAMS	USA-Norway	Medium-range air defence	~25–50 km	Uses AIM-120 AMRAAM missiles; highly mobile; NATO-standard
Sky Sabre	United Kingdom	Medium-range air defence	~25–40 km	Replaces Rapier; uses CAMM missiles; networked engagement
FD-2000 (HQ-9B)	China	Export variant of HQ-9	Up to 200 km	Exported to Pakistan, Turkmenistan, and others
KM-SAM (Cheongung)	South Korea	Medium-range SAM	~40–60 km	Developed with Russian tech; intercepts aircraft & missiles

# PSYCHOLOGICAL WARFARE

During Operation Sindoor (May 2025), Pakistan attempted psychological warfare by spreading misinformation online. India effectively countered it through rapid fact-checking, official communication, and public outreach.

## About Psychological Warfare:

- Psychological warfare is the deliberate use of misinformation, fear, and influence operations to manipulate emotions, decision-making, and public perception.
- It targets both civilian populations and military structures to weaken resistance and morale.

## Psychological Warfare & Propaganda – Key Tactics:

- **Propaganda:** Spreads biased or false info to glorify one's side and demonize the enemy using emotional and sensational content.
- **Fear & Intimidation:** Uses fake threats and exaggerated warnings to trigger panic and lower troop morale.
- **Misinformation & Deception:** Circulates false narratives about battlefield outcomes to confuse enemy leadership and public.
- **Cyber PSYOPs:** Employs bots, deepfakes, and fake handles to amplify fake news and distort digital spaces.
- **Rumours & Whisper Campaigns:** Spreads subtle, hard-to-trace falsehoods to sow mistrust and disrupt decision-making.
- **False Flag Operations:** Carries out deceptive acts disguised as enemy actions to provoke or mislead observers.

## Pakistan's Tactics:

- **Fake Propaganda:** Spread false claims of Indian military losses, drone downings, and base strikes during Operation Sindoor.
- **ISPR Involvement:** Pakistan's ISPR coordinated digital campaigns using bots and verified accounts.
- **Social Media Amplification:** Misinformation spread rapidly on X, Facebook, WhatsApp, and Telegram using old or unrelated videos.

## India's Response:

- **India's Fact-Checking Response:** India's PIB Fact Check actively debunked false claims and clarified the truth through real-time updates. It helped contain panic by ensuring that accurate, verified information reached the public quickly.
- **Official Military Communication:** The Indian Armed forces along with the Ministry of External Affairs conducted daily briefings to maintain transparency. This helped control the narrative and denied space for hostile disinformation to grow unchecked.
- **Real-Time Situational Awareness:** Systems like Akashteer and IACCS provided integrated data from radars and command centres. This enabled swift decision-making and countered exaggerated claims of Indian vulnerability.

- **Cyber Surveillance and Tracking:** Cyber intelligence units monitored fake news sources, traced origins of hostile content, and initiated digital takedowns. Many coordinated attacks were traced to Pakistani IPs and bot farms.

## Challenges Faced:

- **Rapid Misinformation Spread:** Fake news on platforms like WhatsApp outpaced official clarifications, causing public confusion.
- **Digital Illiteracy:** Many citizens unknowingly shared fake content due to lack of fact-checking awareness.
- **Domestic Amplification:** Some Indian influencers and media unintentionally spread unverified claims, aiding enemy narratives.
- **Slow Moderation:** Social media platforms delayed removing fake content during critical periods.
- **Attribution Issues:** Tracing original sources was hard due to VPNs, fake accounts, and foreign servers.

## Way Forward:

- **Need for Enhanced Fact-Checking Systems:** India should expand PIB Fact Check into a 24x7 multilingual real-time misinformation watchdog.
  - ◆ Integration with AI tools can help detect deepfakes, bots, and disinformation campaigns faster.
- **Stronger Platform Accountability:** Social media platforms must be held legally accountable during national crises for failing to curb fake content.
  - ◆ Binding protocols for urgent takedown must be developed with Indian agencies.
- **Establishment of Cyber PSYOPs Cell:** India needs a dedicated Cyber Psychological Warfare Cell under the Ministry of Defence.
  - ◆ It should proactively design and execute counter-narratives and identify hostile digital operations.
- **Mass Digital Literacy Campaigns:** The government should launch awareness drives through schools, colleges, and media platforms to teach people how to verify information and avoid spreading unverified content.
- **Civil-Military Communication Protocol:** A unified, secure communication framework should be developed between civilian media, armed forces, and government ministries for managing narratives during operations and emergencies.
- **Indigenous Tech for Narrative Control:** India must invest in developing its own AI-powered tools for monitoring, fact-checking, deepfake detection, and influence analysis to remain self-reliant in the information domain.

# DRONE WARFARE

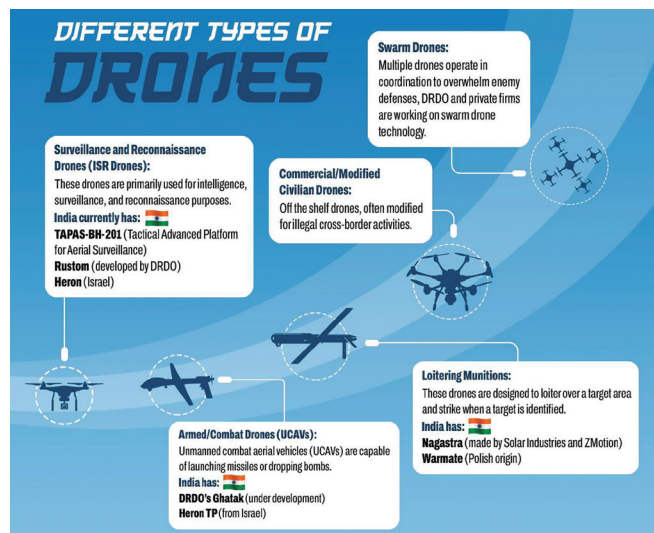
During Operation Sindoor (2024–25), India deployed drones extensively for real-time surveillance, precision targeting, and logistical support.

## About Drones:

- **Drones**, also known as **Unmanned Aerial Vehicles (UAVs)**, are **pilotless aircraft** that operate either **remotely by human operators** or **autonomously using pre-programmed flight paths and artificial intelligence**.
- They are equipped with cameras, sensors, and sometimes weapons, and are widely used for purposes such as **surveillance, reconnaissance, target acquisition, logistics, and combat** in both military and civilian sectors.

## Types of Military Drones

- **Surveillance and Reconnaissance Drones (ISR):** These drones gather intelligence, monitor troop movement, and track infiltration. India uses Heron, Searcher, and Rustom drones in border and maritime zones.
- **Armed/Combat Drones:** Designed to carry out offensive missions with guided missiles and bombs. India is in the process of acquiring MQ-9B SeaGuardian drones with strike capability.
- **Loitering Munitions:** These are self-destructing drones that hover over targets and attack once identified. India is inducting loitering drones for precision strikes in high-altitude zones.
- **Nano and Mini Drones:** Used for close-quarters surveillance, urban warfare, and counter-insurgency. India deploys such drones with special forces like NSG and Para SF.
- **Swarm Drones:** These operate in coordinated groups using AI to overwhelm enemy air defences. India successfully tested indigenous swarm drone systems in recent trials.
- **Logistics Drones:** These are used to deliver medical supplies, ammunition, and food to troops in inaccessible or conflict-prone zones such as Siachen and NE borders.



## Use of Drones in Operation Sindoor

- **Precision Strike Capability:** India deployed loitering munitions like **Nagastra-1** to accurately target terrorist hideouts and enemy bunkers along the LoC without risking troop casualties.
  - ♦ These drones were used for beyond-line-of-sight targeting.
- **Tactical Surveillance in Real-Time:** Drones were used for **continuous aerial surveillance** of infiltration routes, terrain mapping, and troop movement tracking.
  - ♦ Live drone feeds helped ground forces coordinate assaults with precision.
- **Support in Adverse Weather and Terrain:** In foggy or mountainous regions of Jammu and Kashmir, drones equipped with **thermal and night vision cameras** helped maintain situational awareness, especially during **night raids and inclement weather**.
- **Communication Relay:** In difficult terrain where radio communication is often disrupted, drones acted as **aerial communication relays**, facilitating seamless coordination between command centers and forward troops.
- **Disaster and Casualty Evacuation Support:** Drones with **payload delivery** capabilities were used to **drop supplies, medicines, and emergency aid** to inaccessible zones, reducing the risk of ambushes during manned delivery missions.

## Use of Anti-Drone Systems in Operation Sindoor

- **Early-Warning Mechanisms:** Advanced radars, including **active electronically scanned array (AESA) systems**, provided early warning against hostile drone swarms, enabling the Army and Air Force to prepare intercept responses.
- **Electronic Jamming and Soft-Kill Measures:** India deployed **radio frequency jammers** to disable GPS-based drones, diverting or grounding them before they could enter sensitive airspace. These soft-kill options helped avoid physical escalation.
- **Hard-Kill Systems and Laser Weapons:** The **DRDO Anti-Drone System** used **laser-directed energy weapons** to shoot down Pakistani drones, especially those suspected of carrying explosives or surveillance equipment.
- **Integration with Air Defence Nodes:** Anti-drone units were integrated with **IACCS (Integrated Air Command and Control System)** and the **Akashteer system** of the Indian Army to create a **multi-tiered response grid** for threat neutralization.
- **Neutralization of Drone Swarms:** India successfully countered **swarm drone threats** by using a combination of **radar-guided guns, microwave systems, and AI-powered tracking algorithms** to take down multiple targets simultaneously.

- **Civilian Area Protection:** To prevent attacks in civilian zones near the LoC, India stationed **man-portable counter-drone units** in border villages, supported by local intelligence and surveillance footage from drone patrols.

### Importance of Drones in Modern Warfare

- **Real-Time Intelligence:** Drones provide continuous live video and sensor data from deep inside enemy territory.
  - ◆ This enables commanders to make quick, informed decisions for surgical strikes, surveillance, or rescue operations.
- **Reduced Human Risk:** Unmanned drones eliminate the need to send soldiers into dangerous or high-risk zones.
  - ◆ This significantly reduces casualties during reconnaissance, surveillance, or strike missions.
- **Cost Efficiency:** Drones are far cheaper to manufacture, operate, and maintain than traditional fighter jets or helicopters.
  - ◆ Their low operational cost makes them ideal for sustained surveillance and strike missions.
- **24x7 Operational Capability:** Unlike human pilots, drones can operate continuously for extended hours, weather permitting.
  - ◆ This makes them ideal for persistent border surveillance, especially along the LoC and LAC.
- **Deep Penetration & Stealth:** Modern drones can fly at low altitudes and use stealth technology to avoid radar detection. This allows them to infiltrate deep into enemy territory for intelligence gathering or targeted attacks.

### India's Drone Capabilities and Initiatives

- **Indigenous Development:** The Defence Research and Development Organisation (DRDO) has developed drones like **Rustom**, **Tactical Airborne Platform for Aerial Surveillance-Beyond Horizon 201 (TAPAS BH-201)**, and **Ghatak Unmanned Combat Aerial Vehicle (UCAV)** under the **Make in India** initiative.
  - ◆ The **Stealth Wing Flying Testbed (SWiFT)** is being tested as a prototype for stealth drone platforms.
- **Drone Shakti Mission:** Announced in the **Union Budget 2022-23**, the **Drone Shakti Mission** aims to promote the widespread use of drones in sectors such as defence, agriculture, land mapping, and infrastructure surveillance by encouraging drone-as-a-service (DaaS) models.
- **Armed Drone Acquisition:** India has signed a deal with the United States to procure **31 MQ-9B Predator drones**, which will significantly enhance **Intelligence, Surveillance, and Reconnaissance (ISR)** as well as precision strike capabilities for the Indian Navy, Army, and Air Force.
- **Private Sector Involvement:** Indian startups like **IdeaForge**, **NewSpace Research and Technologies**, and **Garuda Aerospace** are actively building tactical drones for **border surveillance,**

**counter-insurgency**, and **disaster response**, boosting domestic defence manufacturing.

- **Drone Testing Facilities:** To ensure safe drone operations and faster regulatory clearances, India has established **dedicated drone testing corridors** and launched the **Digital Sky Platform**, a single-window online system for drone registration, flight permissions, and operator compliance.

### Challenges in Drone Warfare for India

- **Technology Gap:** India's indigenous drones still lack critical subsystems like high-end sensors, long-endurance engines, and satellite-guided navigation.
  - ◆ This limits their capability in high-stakes, precision-based combat scenarios.
- **Import Dependence:** Several key components such as propulsion units, lithium batteries, and advanced optics are imported.
  - ◆ This dependence exposes India to supply chain disruptions, especially during conflicts or global restrictions.
- **Counter-Drone Threats:** Adversaries like Pakistan have increasingly used drones to smuggle weapons or conduct attacks, as seen in the Jammu airbase incident.
  - ◆ India's preparedness to detect and neutralize such threats is still evolving.
- **Cybersecurity Risks:** Military drones can be vulnerable to electronic warfare such as jamming, spoofing GPS signals, or even hacking.
  - ◆ Without strong cybersecurity protocols, drone missions can be compromised mid-air.
- **Regulatory Delays:** Bureaucratic hurdles and lengthy approval processes often slow the deployment of new drone technologies.
  - ◆ This hampers the timely induction of advanced systems into India's defence forces.

### Way Forward

- **Strengthen Indigenous R&D:** India must scale up research on AI-enabled, stealth, and high-endurance drones through DRDO and private-sector collaboration.
- **Develop Anti-Drone Systems:** Deploy radar-based, laser, and jamming systems to neutralize rogue drones. DRDO's D4 system is a key step in this direction.
- **Invest in Drone Swarm Technology:** India should boost investment in swarm drones for battlefield dominance, especially in mountain and desert warfare.
- **Establish Dedicated Drone Units:** Create drone squadrons in the Army, Navy, and Air Force for coordinated deployment in combat, logistics, and ISR.
- **Strategic Partnerships:** Continue collaboration with Israel, the US, and France for tech transfer, joint production, and advanced drone training.

# 70<sup>TH</sup> ANNIVERSARY OF BANDUNG CONFERENCE

This year marks the 70th anniversary of the historic Bandung Conference held in Indonesia in 1955.

## About the Bandung Conference (1955)

- The **Bandung Conference** was held in **Indonesia** in 1955 and attended by **29 newly independent Asian and African countries**.
- It aimed to discuss **common post-colonial challenges** and establish a **collective voice** in a world dominated by the **Cold War superpowers**.
- It promoted **Afro-Asian economic and cultural cooperation** and strongly opposed **colonialism, imperialism, and neocolonialism**.
- Bandung served as a **precursor to the Non-Aligned Movement (NAM)**, which later formalized many of its principles.

## NAM PRINCIPLES

The NAM builds its work on 10 Bandung principles

- ✓ Respect for fundamental human rights and for the purposes and principles of the Charter of the United Nations. 
- ✓ Respect for the sovereignty and territorial integrity of all nations. 
- ✓ Recognition of the equality of all races and of the equality of all nations, large and small. 
- ✓ Abstention from intervention or interference in the internal affairs of another country. 
- ✓ Respect for the right of each nation to defend itself singly or collectively, in conformity with the Charter of the United Nations. 
- ✓ Abstention from the use of arrangements of collective defence to serve the particular interests of any of the big powers; abstention by any country from exerting pressures on other countries. 
- ✓ Refraining from acts or threats of aggression or the use of force against the territorial integrity or political independence of any country. 
- ✓ Settlement of all international disputes by peaceful means, such as negotiation, conciliation, arbitration, or judicial settlement, as well as other peaceful means of the parties' own choice, in conformity with the Charter of the United Nations. 
- ✓ Promotion of mutual interests and cooperation. 
- ✓ Respect for justice and international obligations. 

## Non-Aligned Movement (NAM)

- **NAM** is an alliance of developing nations that refuses to identify with any major superpower during the Cold War.
- **History:** It has its origins in the 1955 **Bandung conference** in Indonesia.
- **NAM was established** and held its first conference in **1961 in Belgrade**, the capital of Yugoslavia.
- **Founders:** The movement's founders are President Sukarno of Indonesia, Prime Minister Jawaharlal Nehru of India, Gamal Abdel Nasser of Egypt, Kwame Nkrumah of Ghana, and President Josip Tito of Yugoslavia.
- **Secretariat:** NAM does **not have a permanent secretariat** or a formal founding charter, act, or treaty. After the United Nations, NAM is the second-largest grouping of nations.

- **Members:** Currently, NAM membership consists of **120 countries**: 53 from Africa, 39 from Asia, 26 from Latin America and the Caribbean, and two from Europe. It also includes the non-UN member state of Palestine, and 17 other observer countries.

## Achievements of the Non-Aligned Movement (NAM)

- **Global Voice of the Developing World:** NAM became the largest platform for the **Global South**, with over **120 member countries** representing two-thirds of the world's population.
- **Support for Decolonization:** NAM played a key role in the **independence movements** in Africa, Asia, and the Caribbean.
- **Advocated Disarmament:** It consistently demanded **nuclear disarmament**, a **no-first-use policy**, and **demilitarization of outer space**.
- **Reduced Cold War Tensions:** Provided a buffer and moderated Cold War tensions by promoting **dialogue over confrontation**.
- **Pushed Economic Equity:** Advocated for **equitable global economic policies**, debt relief, and better trade terms for developing countries.
- **Platform for South-South Cooperation:** NAM facilitated **technical, scientific, and economic cooperation** among member states.
- **Strengthened UN's Role:** NAM backed the **centrality of the United Nations** in international decision-making and peacekeeping.

## NAM Remains Relevant in the Contemporary World:

- **Strategic Autonomy in a Multipolar World:** NAM offers a platform for countries like **India to maintain strategic autonomy amidst polarity dilemma** in global affairs without becoming subordinate to any power bloc.
  - ◆ This is crucial today when rising tensions between powers like the **U.S., China, and Russia** threaten global stability.

### Polarity Dilemma

- C. Raja Mohan highlights the **"polarity dilemma"** as the confusion over how to define the current global power structure.
- While some see a **unipolar world** led by the **USA**, others argue it is **bipolar** (USA–China rivalry), and some believe in **multipolarity** with rising powers like **India, Russia, Japan, and Israel**.
- **Voice of the Global South:** NAM continues to represent the **aspirations of over 120 developing countries**, especially in forums where their voices are marginalized.

- ◆ It remains a **collective forum for South-South cooperation** in areas like climate justice, trade equity, and technology access.
- **Opposing Neocolonialism and Economic Coercion:** In a world where powerful nations and corporations exercise control through **economic dependency, debt traps, or digital dominance**, NAM's foundational principles of **non-interference and sovereignty** are still highly relevant.
- **Platform for Multilateralism and Peace:** As global institutions face a **legitimacy crisis**, NAM can promote **multilateral dialogue**, peaceful conflict resolution, and reforms in **global governance structures** like the UN Security Council.
- **Relevance to India's Foreign Policy Goals:** India's "**multi-alignment**" strategy (e.g., engaging with QUAD, BRICS, SCO) resonates with NAM's principle of **non-alignment** — not in isolation, but as **strategic independence** and issue-based alignment.
- ◆ With the end of the Cold War and the **disintegration of the Soviet Union**, the original rationale for NAM has weakened.
- **Lack of Cohesion and Agenda:** NAM suffers from **internal divisions, lack of unity, and an unclear contemporary agenda**. Many members pursue divergent foreign policies, making collective action difficult and often ineffective.
- **Ineffectiveness in Crisis Situations:** NAM has **failed to respond effectively to major global crises**, such as the Russia-Ukraine war, U.S.-China tech and rivalry, or the Israel-Palestine conflict. It is often seen as a **rhetorical platform** without real influence.
- **Rise of Issue-Based Coalitions:** Today, **issue-specific groupings** like the G20, BRICS, QUAD, and I2U2 have overtaken NAM in relevance by offering **action-oriented, functional cooperation**.
  - ◆ NAM lacks similar effectiveness or institutional mechanisms.
- **Neglect by Its Own Members:** Key members, including **India**, often **prioritize other regional and global platforms**, reducing NAM's visibility and relevance in foreign policy practice.

### NAM Has Lost its Relevance:

- **Absence of Bipolarity:** NAM emerged as a response to Cold War bipolarity.

### India and NAM

- India was a **founding member** of NAM in **1961**, under the leadership of **Jawaharlal Nehru**, along with **Yugoslavia (Tito), Egypt (Nasser), Ghana (Nkrumah), and Indonesia (Sukarno)**.
  - The movement emerged as a **third path** during the Cold War to resist pressures to align with either the **USA-led Western bloc** or the **USSR-led Eastern bloc**.
  - NAM is based on **five principles of Panchsheel**: mutual respect, non-aggression, non-interference, equality, and peaceful coexistence.
- India's Key Contributions to NAM:**
- **Moral Leadership:** India championed **anti-colonial struggles**, supported **African liberation movements**, and upheld **sovereignty and self-determination**.
  - **Global South Advocate:** India was instrumental in shaping NAM's agenda on **economic justice**, calling for a **New International Economic Order (NIEO)** and fair terms in **global trade and finance**.
  - **Peace and Disarmament:** India has consistently used NAM platforms to promote **nuclear disarmament**, oppose **military alliances**, and support **global peace** initiatives (e.g., against apartheid, Iraq War).
  - **1983 NAM Summit in New Delhi** under **Indira Gandhi** further consolidated India's leadership, focusing on issues like **North-South dialogue, Palestinian rights, and non-intervention**.
  - **South-South Cooperation:** India promoted collaboration among developing countries in technology, education, and capacity building.
  - **Consensus Builder:** India has often played the role of a **mediator** in international disputes among NAM members and between blocs (e.g., Suez Crisis, Cuba).
- Contemporary Relevance of NAM for India**
- **Strategic Autonomy:** NAM continues to align with India's vision of maintaining **strategic independence**, especially amid rising **US-China rivalry**.
  - **Platform for Global South:** In multilateral platforms like **UN, WTO, and Climate Summits**, India uses NAM to rally developing nations on issues like **Climate justice, Vaccine equity, Debt relief and Digital sovereignty**.
  - **Multipolar World Order:** With growing multipolarity, NAM allows India to **expand influence without bloc politics**.
  - **Counterbalance to China:** Through NAM and related groupings like the **India-Africa Forum Summit**, India seeks to balance **China's assertive diplomacy** among developing nations.
  - **Alternative Global Voice:** As major power blocs re-emerge (e.g., G7 vs. BRICS), NAM offers India an **inclusive platform** to present a **non-hegemonic narrative**.
  - **Vasudhaiva Kutumbakam Vision:** NAM fits India's **civilizational ethos** of peaceful coexistence and cooperation among all nations.

# INDIA'S ARCTIC ENGAGEMENT

At the Arctic Circle India Forum 2025, External Affairs Minister Dr. S. Jaishankar emphasized the global significance of the Arctic and India's growing involvement in the region.

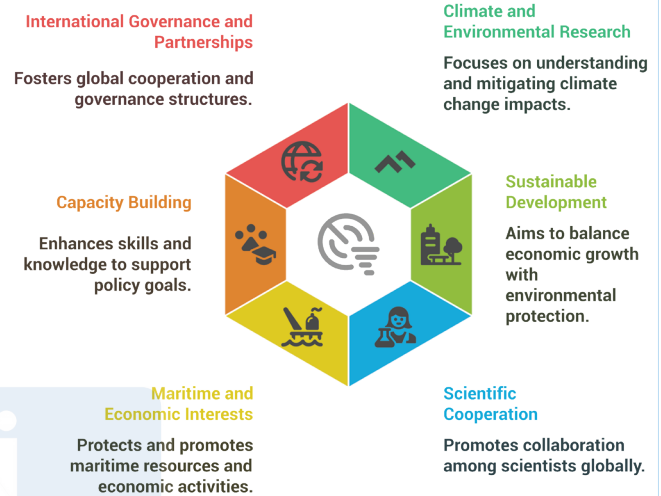
## India's Arctic Engagement: Phases and Strategic Dimensions

- **Early Scientific Engagement (2008–2020):** India began Arctic research with the **Himadri Station** in **Ny-Ålesund, Svalbard (Norway)** in 2008.
  - ◆ Initial focus was on **climate science, cryospheric studies,** and understanding **Arctic influence on the Indian monsoon and sea-level rise.**
- **Role of Climate Change:** The Arctic is warming **four times faster** than the global average. Melting ice affects **global ocean circulation, monsoon variability,** and **extreme weather events** in India.
  - ◆ India studies these **climate teleconnections** to improve forecasting and disaster preparedness.
  - ◆ Arctic research helps understand Himalayan glacier melt, which feeds major Indian rivers like the Ganga and Brahmaputra.
- **Shift to Strategic Outlook (Post-2020):** Post-2020, India broadened its Arctic approach to include **geopolitical, economic, and strategic interests.** Triggered by **China–Russia Arctic cooperation, Russia–West tensions,** and emerging **global power rivalries** in the region.
- **Role of Navigation: Melting Arctic sea ice** is opening the **Northern Sea Route (NSR)** — a shorter and cost-effective shipping route between Europe and Asia.
  - ◆ India sees potential for **trade diversification, logistics efficiency,** and **maritime strategic access** through the Arctic.
- **Resource-Rich Arctic:** The Arctic holds **13% of the world's undiscovered oil** and **30% of its natural gas,** plus **rare earth minerals, fisheries, and freshwater.**
  - ◆ India's engagement includes **research cooperation and long-term interests in sustainable resource access and energy security.**
- **Launch of India's Arctic Policy (2022):** In 2022, India formally released its **Arctic Policy,** outlining a structured and multi-dimensional roadmap for engagement.

### Arctic Region

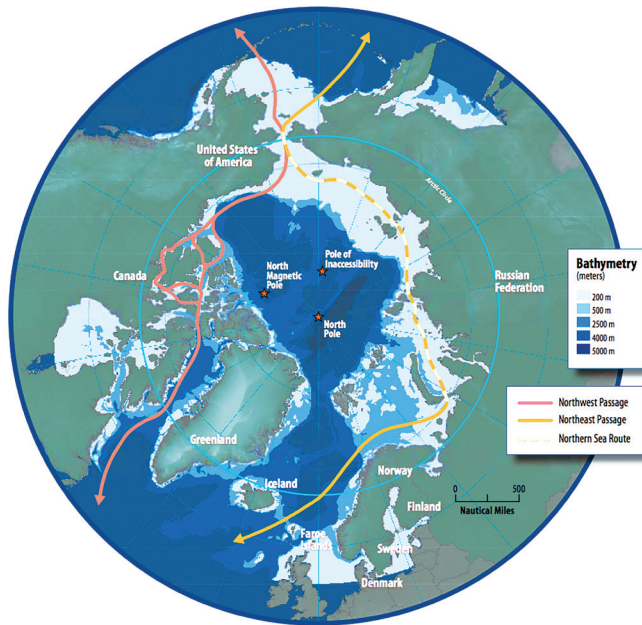
- **Location:** Surrounds the North Pole, includes Arctic Ocean and parts of 8 countries (e.g., Russia, Canada, USA).
- **Climate Role:** Regulates global temperature via ice-albedo effect; melting ice affects sea levels and weather.
- **Resources:** Rich in untapped oil, gas, and minerals; potential for new shipping routes like the Northern Sea Route.
- **Geopolitics:** Rising interest from non-Arctic nations (e.g., India, China) makes it a zone of strategic competition.

### 6 Pillars of Policy



### Importance of Arctic Region for India:

- **Climate Linkages:** The Arctic influences Indian monsoon patterns, glacial melt, and sea-level rise, directly affecting India's agriculture, water security, and coastal vulnerability.
- **Energy and Mineral Security:** The Arctic contains large reserves of oil, natural gas, and critical minerals like rare earth elements, crucial for India's energy transition and digital infrastructure.
- **Strategic Trade Routes:** The Northern Sea Route (NSR) offers a shorter and cost-effective maritime path between Asia and Europe, diversifying India's trade routes and reducing reliance on traditional choke points.
  - ◆ The **Northern Sea Route (NSR)** is a **shipping lane along Russia's Arctic coast,** connecting the **Atlantic Ocean (via the Barents Sea)** to the **Pacific Ocean (via the Bering Strait).**
  - ◆ It significantly **reduces travel time** between Europe and Asia compared to the Suez Canal route.
  - ◆ Due to **melting Arctic ice,** it is becoming more navigable, attracting interest for **trade, energy transport, and geopolitics.**
- **Connectivity and Goeconomic Interests:** Arctic engagement complements the International North-South Transport Corridor (INSTC), strengthening India's trade connectivity with Russia, Central Asia, and the Nordic-Baltic region.
- **Strategic Autonomy and China Counterbalance:** India's active role in the Arctic helps assert strategic autonomy and serves as a counterweight to China's growing presence and investments in the region.



### Role of Arctic in influencing Monsoon Pattern

- **Jet stream changes:** When the Arctic warms faster, it makes the **jet streams (high-altitude winds)** weak and wavy. This can delay or disturb the **monsoon winds** that bring rain to India.
- **Ocean current impact:** Melting Arctic ice changes the **cold and warm ocean currents**, especially in the **Atlantic and Indian Oceans**. This affects the **temperature and moisture** needed for a strong monsoon.
- **Pressure changes over land:** Arctic warming also changes **air pressure patterns** over large areas like **Eurasia**. This can reduce the **pull of monsoon winds** from the sea to the land, weakening rainfall.

### Challenges:

- **Limited Role in Arctic Governance:** India is only an Observer in the Arctic Council, limiting its influence over rule-making, strategic dialogues, and resource-sharing decisions.
- **Geopolitical Balancing Act:** Managing ties with Russia amid its global isolation, while maintaining relations with Nordic and Western countries, is a complex diplomatic challenge.
- **Technological and Infrastructure Gaps:** India lacks dedicated polar logistics infrastructure, indigenous Arctic-capable vessels, and technological expertise required for deep Arctic engagement.
- **Human Resource Constraints:** There is a shortage of trained scientists, polar researchers, and Arctic policy experts in India, hindering long-term engagement and leadership.
- **Funding and Resource Allocation:** Limited allocation of financial resources and prioritization for polar research reduces India's capacity to scale up its Arctic presence.

- **Low Private Sector Involvement:** Indian private companies have minimal presence or investment in Arctic research, shipping, or resource exploration, unlike China's state-supported enterprises.
- **Environmental and Ethical Concerns:** Arctic exploration poses risks to fragile ecosystems, requiring India to balance its development ambitions with international environmental obligations.
- **Limited Maritime Capabilities:** India lacks ice-class ships or icebreaker fleets, essential for sustained operations and research in Arctic waters throughout the year.

### Arctic Council

- **Established:** Formed in **1996** under the **Ottawa Declaration** as a **high-level intergovernmental forum** to promote cooperation, coordination, and interaction among Arctic States.
- **Members:** The 8 member countries are: **Canada, United States, Russia, Norway, Denmark** (via Greenland), **Sweden, Finland and Iceland**.
- **Mandate:** Focuses on **environmental protection, climate change, biodiversity, and sustainable development** in the Arctic region. It excludes military security issues.
- **India's Status:** India is an **Observer** since **2013** and contributes through scientific research on **Arctic climate and polar studies**.

### Way Forward:

- **Formulate a Strategic Arctic Doctrine:** India should adopt a comprehensive Arctic strategy that integrates science, climate diplomacy, energy security, and trade interests.
- **Deepen Partnerships with Nordic Countries:** Strengthen bilateral ties with Norway, Sweden, Finland, and Denmark through joint initiatives in clean energy, digital innovation, and polar research.
- **Enhance Cooperation with Russia:** Leverage long-standing ties with Russia to access Arctic shipping lanes (NSR), LNG projects, and critical mineral resources while maintaining strategic neutrality.
- **Increase Participation in Arctic Governance Forums:** Actively engage in platforms like the Arctic Circle Assembly and Arctic Science Ministerial to influence global discussions and advocate a multipolar Arctic.
- **Develop Indigenous Polar Infrastructure:** Invest in building Arctic-capable research vessels, icebreakers, and autonomous monitoring equipment to support long-term operations.
- **Expand Scientific and Technical Capacity:** Promote polar research fellowships, train Arctic policy experts, and build a pool of scientists specialized in cryospheric sciences and Arctic climatology.

# PRESIDENTIAL REFERENCE UNDER ARTICLE 143

The President of India has used Article 143 to ask the Supreme Court for its opinion on 14 legal questions about the powers of Governors and the President in dealing with State Bills,

## Background:

- The **Supreme Court**, in the State of Tamil Nadu v. Governor case, used **Article 142** to **set deadlines** for the Governor and the President to act on Bills passed by the State Legislature.
- This judgment raised questions on whether the judiciary can **set time limits** for constitutional authorities when the Constitution itself does **not specify any timeline** in **Articles 200 and 201**.
- Concerned about the constitutional implications and possible judicial overreach, the **Union Government advised the President** to seek an **advisory opinion** from the Supreme Court under **Article 143**.
- The reference includes **14 key questions**, mainly about the Governor's **role**, **President's powers**, and whether courts can **intervene before a Bill becomes law**.

## Article 142, 200 and 201

- **Article 142 – Enforcement of Supreme Court Orders:**
  - ◆ The **Supreme Court** may **pass any order or decree** necessary to do **“complete justice”** in any case before it.
  - ◆ Such orders are **binding** across the country and **enforceable like law**.
  - ◆ This power is **extraordinary and discretionary**, often used when existing laws are **inadequate** to ensure fairness.
- **Article 200 – Governor's Options on State Bills**
  - ◆ When a **Bill is passed by the State Legislature**, the **Governor** has the following choices:
    - ◆ **Give assent** – The Bill becomes law.
    - ◆ **Withhold assent** – The Bill is rejected.
    - ◆ **Return the Bill** (if not a money bill) for reconsideration. If passed again, the Governor must act accordingly.
    - ◆ **Reserve the Bill for the consideration of the President** – especially if it may conflict with central laws or national interest.
- **Article 201 – President's Role on Reserved Bills:**
  - ◆ When a State Bill is **reserved for the President**, the President may:
    - ◆ **Give assent** – The Bill becomes law.
    - ◆ **Withhold assent** – The Bill is rejected.
    - ◆ **Direct the Governor to return the Bill** to the State Legislature (if not a money bill) for reconsideration.

## About Article 143:

- This article allows the **President** to ask the **Supreme Court** for its **opinion** on **important legal or constitutional questions**.

- Under **Article 143(1)**: The President can ask for the Court's opinion on any **matter of public importance**. The Supreme Court **may give or refuse** its opinion.
- Under **Article 143(2)**: If the issue involves a **pre-1950 treaty or agreement**, the Court **must give its opinion**.
- The opinion given is **not binding**, but it carries **high value** and helps the government make informed decisions.

## HISTORICAL REFERENCES UNDER ARTICLE 143

Case	Year	Constitutional Significance
Delhi Laws Act	1951	Limits of delegated legislation
Berubari Union	1960	Cession of territory needs amendment
Keshav Singh Case	1965	Legislative privilege vs. judiciary

## Significance of the Reference:

- **Clarifies Executive Roles:** Helps define constitutional duties of the **President and Governors**.
- **Judicial Oversight:** May determine if **non-action** by constitutional heads is **justiciable**.
- **Strengthens Federalism:** Clarifies Centre–State responsibilities, reducing friction.
- **Procedural Certainty:** Can set precedent for **timely decision-making** on Bills.

## Challenges in Using Article 143:

- **Non-Binding Nature:** Limits enforceability of the Court's opinion.
- **Political Instrumentalization:** Risk of using the reference to **question adverse verdicts**.
- **Lack of Criteria:** No clarity on what qualifies as **“public importance”**.
- **Judicial-Executive Strain:** May aggravate existing institutional tensions.
- **No Time Limit:** Delays possible in resolving urgent constitutional matters.

## Way Forward:

- **Codify Reference Criteria:** Define what constitutes valid questions for referral.
- **Enhance Efficacy:** Explore mechanisms to give **more weight** to SC's advice.
- **Promote Dialogue:** Institutional coordination should precede judicial intervention.
- **Timely Disposal:** SC must prioritize such references for **constitutional clarity**.



## THE 14 QUESTIONS PRESIDENT MURMU HAS ASKED THE SUPREME COURT



1. What are the constitutional options before a Governor when a Bill is presented to him under Article 200 of the Constitution of India?
2. Is the Governor bound by the aid & advice tendered by the Council of Ministers while exercising all the options available with him when a Bill is presented before him under Article 200 of the Constitution of India?
3. Is the exercise of constitutional discretion by the Governor under Article 200 of the Constitution of India justiciable?
4. Is Article 361 of the Constitution of India an absolute bar to the judicial review in relation to the actions of a Governor under Article 200 of the Constitution of India?
5. In the absence of a constitutionally prescribed time limit, and the manner of exercise of powers by the Governor, can timelines be imposed and the manner of exercise be prescribed through judicial orders for the exercise of all powers under Article 200 of the Constitution of India by the Governor?
6. Is the exercise of constitutional discretion by the President under Article 201 of the Constitution of India justiciable?
7. In the absence of a constitutionally prescribed timeline and the manner of exercise of powers by the President, can timelines be imposed and the manner of exercise be prescribed through judicial orders for the exercise of discretion by the President under Article 201 of the Constitution of India?
8. In light of the constitutional scheme governing the powers of the President, is the President required to seek advice of the Supreme Court by way of a reference under Article 143 of the Constitution of India and take the opinion of the Supreme Court when the Governor reserves a Bill for the President's assent or otherwise?
9. Are the decisions of the Governor and the President under Article 200 and Article 201 of the Constitution of India, respectively, justiciable at a stage anterior into the law coming into force? Is it permissible for the Courts to undertake judicial adjudication over the contents of a Bill, in any manner, before it becomes law?
10. Can the exercise of constitutional powers and the orders of/ by the President / Governor be substituted in any manner under Article 142 of the Constitution of India?
11. Is a law made by the State legislature a law in force without the assent of the Governor granted under Article 200 of the Constitution of India?
12. In view of the proviso to Article 145(3) of the Constitution of India, is it not mandatory for any bench of this Hon'ble Court to first decide as to whether the question involved in the proceedings before it is of such a nature which involves substantial questions of law as to the interpretation of constitution and to refer it to a bench of minimum five Judges?
13. Do the powers of the Supreme Court under Article 142 of the Constitution of India limited to matters of procedural law or Article 142 of the Constitution of India extends to issuing directions /passing orders which are contrary to or inconsistent with existing substantive or procedural provisions of the Constitution or law in force?
14. Does the Constitution bar any other jurisdiction of the Supreme Court to resolve disputes between the Union Government and the State Governments except by way of a suit under Article 131 of the Constitution of India?

# UNEMPLOYMENT AT 5.1%, WOMEN LABOUR FORCE RISES: PLFS DATA

The latest Periodic Labour Force Survey (PLFS) data, released by the Ministry of Statistics & Programme Implementation (MoSPI), shows that India's unemployment rate stood at 5.1% in April 2025.

## Periodic Labour Force Survey (PLFS)

➔ **About:** It is conducted by the MoSPI to assess employment and unemployment trends in India.

- It provides key labour market indicators, including the **Labour Force Participation Rate (LFPR)**, **Worker Population Ratio (WPR)**, and **Unemployment Rate (UR)**.

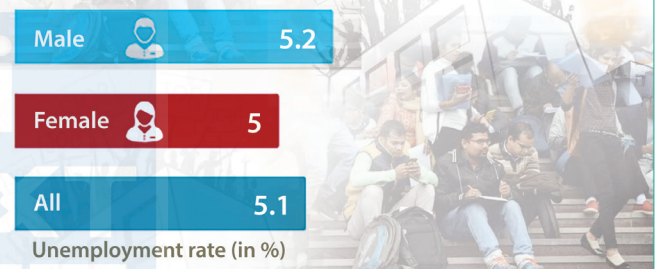
➔ **Features:**

- Revamped Sampling Design (2025):** The survey now includes **monthly estimates for both rural and urban areas**, improving data accuracy.
- Current Weekly Status (CWS) Approach:** Measures employment status **based on activity in the last seven days** preceding the survey.
- Expanded Coverage:** The sample size has increased to 22,692 **First Stage Units (FSUs)**, covering both rural and urban sectors.
  - Earlier, 12,800 FSUs surveyed in PLFS up to December, 2024.
- Annual Reports:** PLFS results are now released based on the calendar year, ensuring timely updates.

- For persons aged 15 years and above: 55.6%
- Rural: 58.0%; Urban: 50.7%
- Male: 79.0% (rural areas); 75.3% (urban areas)
- Female: 38.2% (rural areas); 25.7% (urban areas)
- ➔ **Worker Population Ratio (WPR):** It measures employed persons as a percentage of the total population.
  - Overall: 52.8%
  - Rural WPR: 55.4%; Urban WPR: 47.4%
  - Female WPR: 36.8% (rural areas); 23.5% (urban areas)

## State of unemployment

The chart shows the unemployment rate in men, women, and overall persons above the age of 15 in India in April 2025



## Key Findings of the PLFS Report

- ➔ **Unemployment Rate:** It is defined as the percentage of persons unemployed among the persons in the labour force.
- Overall (persons aged 15 years and above):** 5.1%
  - Male:** 5.2%; **Female:** 5.0%
  - Rural:** 4.5%; **Urban:** 6.5%
  - Youth among urban females (15-29 years): 23.7%
- ➔ **Labour Force Participation Rate (LFPR):** It is defined as the percentage of persons in the labour force (i.e. working or seeking or available for work) in the population.

## Significance of the Findings

- ➔ The rise in female labour force participation, particularly in rural areas, signifies increasing economic engagement.
- ➔ However, high youth unemployment among urban females raises concerns about gender disparities, job availability, and skill gaps.
- ➔ The revamped PLFS model provides monthly employment estimates, but timely implementation of corrective measures remains a challenge.

## BIG GAPS IN SALARIES OF MEN AND WOMEN

Average salary (Rs/month) for different categories of workers

Period	Regular Employees			Casual Labour (30 days)			Self-Employed		
	Men	Women	Total	Men	Women	Total	Men	Women	Total
July – Sept 2023	21,478	15,790	20,095	13,170	8,790	12,120	15,317	5,297	12,685
Oct – Dec 2023	21,963	16,621	20,575	13,530	8,790	12,480	15,654	5,384	13,044
Jan – March 2024	22,554	16,546	21,036	13,530	8,790	12,570	16,334	5,503	13,487
April – June 2024	22,375	17,034	21,103	13,770	9,180	12,990	16,723	5,803	13,900

\*LFPR, WPR, and unemployment rates are for those who join the workforce or get employment at some point in the year. Source: PLFS

## Reasons Behind Low LFPR for Women

- ➔ **Social and Cultural Barriers:** Persistent gender norms and family responsibilities restrict women's workforce participation, particularly in urban areas (LFPR 20.5% vs. 38.2% rural).
- ➔ **Limited Access to Formal Jobs:** Women are often confined to informal, low-paying roles (e.g., self-employment, unpaid household work), with 58.4% of employment in 2023-24 being self-employed, discouraging sustained participation.
- ➔ **Skill-Job Mismatches:** Inadequate skills for high-demand sectors (e.g., technology, healthcare) limit urban women's employability, contributing to higher urban unemployment (8.7%).
- ➔ **Wage Inequity:** Gender-based wage gaps reduce the incentive for women to join or remain in the labour force, especially in urban formal sectors.
- ➔ **Structural Urban Challenges:** Urban areas lack sufficient job opportunities for women, exacerbated by safety concerns and inadequate childcare support, leading to a low LFPR (20.5%).

## Implications of Low Women's LFPR

- ➔ **Economic Loss:** Low LFPR (34.2% vs. 77.7% for men) limits India's economic potential, reducing GDP contributions from half the population.
- ➔ **High Unemployment Rates:** Urban female unemployment (8.7%) and youth unemployment (23.7%) indicate underutilized labour, risking long-term economic exclusion.
- ➔ **Perpetuation of Gender Inequality:** Low participation reinforces gender disparities in income, decision-making, and social mobility, particularly in urban settings.
- ➔ **Overreliance on Informal Work:** Women's concentration in informal sectors (e.g., unpaid household work) leads to job insecurity and lack of social protections.
- ➔ **Policy Gaps:** The significant rural-urban LFPR gap (38.2% vs. 20.5%) highlights the need for targeted interventions to address regional disparities.

## Significance of the Findings

- ➔ The rise in female labour force participation, particularly in rural areas, signifies increasing economic engagement.
- ➔ However, high youth unemployment among urban females raises concerns about gender disparities, job availability, and skill gaps.
- ➔ The revamped PLFS model provides monthly employment estimates, but timely implementation of corrective measures remains a challenge.

## Way Forward

- ➔ **Tackle Social Barriers:** Promote gender sensitization and provide childcare facilities to reduce family-related constraints, especially in urban areas.
- ➔ **Enhance Skilling Programs:** Align training with industry needs (e.g., AI, green jobs, healthcare) to improve employability, targeting urban women and youth.

- ➔ **Boost Formal Employment:** Incentivize MSMEs and industries to create formal jobs with equitable wages and safe working conditions for women.
- ➔ **Address Wage Gaps:** Enforce equal pay policies and monitor compliance to encourage women's sustained workforce participation.
- ➔ **Leverage PLFS Data:** Use monthly PLFS insights to design region-specific policies, addressing urban unemployment spikes and rural reliance on informal work.

## Steps by Government of India

- ➔ **Skill Development:**
  - ◆ **Skill India Mission:** Trains women for high-demand sectors (e.g., healthcare, AI), targeting urban unemployment (8.7%).
  - ◆ **National Career Service:** Connects women to formal jobs via a digital platform.
- ➔ **Financial Inclusion:**
  - ◆ **Stand Up India & Mudra Yojana:** Provide loans to women entrepreneurs, boosting self-employment (58.4% in 2023-24).
  - ◆ **Rashtriya Mahila Kosh:** Offers micro-credit for rural women's livelihoods.
- ➔ **Workplace Support:**
  - ◆ **Sexual Harassment Act, 2013 & SHe-Box:** Ensure safe workplaces, encouraging urban participation (LFPR 20.5%).
  - ◆ **Factories Act:** Allows women in night shifts with safety measures.
- ➔ **Rural Empowerment:**
  - ◆ **MGNREGS:** 55% female participation, supporting rural LFPR (38.2%).
  - ◆ **DAY-NRLM:** Mobilizes 89 million women via SHGs for entrepreneurship.
  - ◆ **Drone Didi:** Trains women in modern agricultural roles.
- ➔ **Care Economy:**
  - ◆ **Gender Budget (6.5% of FY 2025):** Funds creches and maternity support to reduce care burdens.
  - ◆ **Proposed Policy:** Targets post-marriage FLFPR decline.
- ➔ **Data-Driven Policy:**
  - ◆ **Monthly PLFS:** Enables targeted interventions for urban-rural gaps.
  - ◆ **2024 Survey:** Assesses women-friendly workplace practices.

## Conclusion

- ➔ The April 2025 PLFS data reveals a stable unemployment rate of 5.1%, with women's labor force participation rising to 32.5%, driven by rural gains.
- ➔ However, high urban youth unemployment, especially among women (23.7%), and regional disparities highlight persistent challenges.
- ➔ Targeted policies to boost job quality and address skill mismatches are essential for inclusive growth.

# INDIA'S TRADE DEFICIT WIDENS TO \$8.65 BILLION

India's total trade deficit, combining both merchandise and services, widened to \$8.65 billion in April 2025, compared to \$5.77 billion in April 2024, as per data released by the Ministry of Commerce and Industry.

## About

- **Export Performance:** India's total exports (merchandise + services) in FY 2024–25 touched an all-time high of **\$824.9 billion**, registering a **6%** year-on-year growth.
- **Merchandise Trade (Goods):**
  - ◆ **Exports rose 9%** to **\$38.49 billion** in April 2025.
  - ◆ **Imports increased** at a faster pace, **19.1%**, reaching **\$64.91 billion**.
  - ◆ Merchandise trade deficit widened to **\$26.4 billion** (up from **\$19.19 billion in April 2024**).
- **Services Trade:**
  - ◆ **Services exports** grew 17% to **\$35.31 billion**.
  - ◆ **Services imports** rose 4.6% to **\$17.54 billion**.
  - ◆ **Services trade surplus** thus stood at **\$17.77 billion**, which helped moderate the overall deficit.

## What is Trade Deficit?

- If a country imports more goods and services from other countries than it exports to them, it is said to have a trade deficit.
- **Trade Deficit** weakens the domestic currency.

## Implications of the Widening Trade Deficit

- **Pressure on Rupee:** A wider deficit weakens the Indian rupee (down 0.5% in November 2024), increasing import costs and inflation risks.
- **Current Account Deficit (CAD):** The trade deficit contributes to a wider CAD, projected at 1.4% of GDP in FY25 (up from 1.1% in Q1 FY25), straining foreign exchange reserves.
- **Dependence on China:** The \$99.2 billion deficit with China raises concerns about supply chain vulnerabilities and national security, especially in electronics and critical goods.
- **Threat to Manufacturing:** Cheap Chinese imports (e.g., steel, electronics) undermine domestic industries, risking job losses and reduced industrial growth.
- **Economic Stability:** While services exports mitigate the deficit, persistent merchandise imbalances could deter foreign investment and slow economic momentum if not addressed.

## Reasons Behind the Widening Trade Deficit

- **Surge in Merchandise Imports:** Merchandise imports in April 2025 rose 19% year-on-year to \$64.91 billion, driven by petroleum products (\$20.72 billion) and electronic goods, outpacing export growth (9% to \$38.49 billion).
  - ◆ May 2025 likely saw similar trends, with imports continuing to grow faster.

- **Decline in Key Exports:** Falling petroleum export values, due to global price drops, have constrained merchandise export growth. Non-petroleum exports (e.g., electronic goods, up 39.51%) grew but couldn't offset the import surge.
- **Trade Imbalance with China:** Imports from China surged (e.g., 25% in March 2025 to \$9.7 billion), particularly in electronics and consumer durables, while exports to China fell (2.99% in March), widening the bilateral deficit to \$99.2 billion in FY25.
- **Global Trade Volatility:** U.S. tariff policies and geopolitical tensions (e.g., Red Sea crisis, Israel-Iran conflicts) increased import costs and disrupted export routes, impacting India's trade balance.
- **Strong Domestic Demand:** India's 7% economic growth (vs. 3.5% global) fuels higher import demand, particularly for gold, petroleum, and capital goods, compared to slower global demand for Indian exports.

## Steps Taken by Government of India

- **Export Promotion:**
  - ◆ **Production-Linked Incentive (PLI) Schemes:** Encourages manufacturing in electronics, pharmaceuticals, and textiles to increase export competitiveness and reduce import reliance.
- **Import Monitoring:**
  - ◆ **Inter-Ministerial Committee (IMC):** Monitors weekly/monthly import trends to prevent dumping from countries like China, Vietnam, and Indonesia amid U.S. tariff shifts.
  - ◆ **Anti-Dumping Measures:** Strengthens tariffs on low-priced imports (e.g., steel, chemicals) to protect domestic industries.
- **Trade Agreements:**
  - ◆ **Bilateral Talks with U.S.:** Seeks a trade pact to avoid U.S. tariffs, leveraging India's \$41 billion surplus with the U.S. in FY25.
  - ◆ **Free Trade Agreements (FTAs):** Negotiates FTAs with various nations like New Zealand to diversify export markets and reduce dependence on volatile regions.
- **Services Sector Boost:**
  - ◆ **IT and ITeS Promotion:** Enhances services exports (up 17% to \$35.31 billion in April 2025) through digital infrastructure and global outsourcing campaigns.
- **Data-Driven Policy:**
  - ◆ **Monthly Trade Data Analysis:** Uses real-time data to adjust policies, addressing seasonal import surges and export declines.

# URBAN FLOODING

Bengaluru rain has led to widespread waterlogging, severe damages and traffic disruptions.

## About:

- Environmentalists and water conservationists have flagged the **poor status of the city's current drainage system**, which is outdated and ill-equipped to handle the city's current population and rainfall intensity.

## What are Floods?

- Floods are the most frequent type of natural disaster and occur when **an overflow of water submerges land that is usually dry**.

## Types of Floods

- **Flash floods** are caused by rapid and excessive rainfall that raises water heights quickly, and rivers, streams, channels or roads may be overtaken.
- **River floods** are caused when consistent rain or snow melt forces a river to exceed capacity.
- **Coastal floods** are caused by storm surges associated with tropical cyclones and tsunamis.
- **Urban flooding** occurs as a result of land development. Permeable soil layers are being replaced by impermeable paved surfaces, through which water cannot infiltrate.
  - ◆ This leads to greater runoff being generated, which can make rivers out of roadways and ponds out of car parks.

## Causes of Urban Flooding

- Heavy or intense rainfall in a short period.
- Blocked or undersized drainage systems.
- Encroachment of natural drains, lakes, or wetlands.
- Loss of green cover, leading to reduced water absorption.
- Rapid urbanization without proper planning or zoning regulations.
- Outdated infrastructure that can't handle current population or rainfall levels.

## Solutions to Mitigate Urban Flooding

- Upgrading and maintaining stormwater drainage infrastructure.
- Protecting and restoring wetlands, lakes, and natural waterways.
- Promoting green infrastructure: rain gardens, green roofs, permeable pavements.
- Implementing urban planning policies to prevent construction on flood-prone areas.
- Rainwater harvesting and better solid waste management.

## Government Initiatives

- **Swachh Bharat Mission (Urban):** While primarily focused on sanitation, this mission also emphasizes solid waste management and pollution control, which contribute to preventing waterlogging and flooding.
- **National smart cities mission:** It promotes the measures to manage urban flooding through rainwater harvesting, green spaces and proper drainage system.
- **Atal Mission for Rejuvenation and Urban Transformation (AMRUT):** The Mission focuses on developing basic urban infrastructure in cities and towns, particularly in the areas of **water supply, sewerage and septage management, and stormwater drainage**.
- **Guidelines and Regulations:** The government has issued guidelines for sustainable urban development, encouraging the incorporation of features like permeable pavements, green roofs, and retention ponds to enhance water absorption.

## Global Models Related to Mitigating Urban Flooding

- **Singapore**, a global leader in **managing urban flooding despite its high rainfall and dense urban environment**.
- **China – "Sponge Cities" Initiative**
  - ◆ **Challenge:** Urban flooding due to rapid city expansion and impermeable surfaces.
  - ◆ **Solution:** Cities designed to absorb and reuse rainwater like sponges.
- **United States – New York City (Post-Hurricane Sandy)**
  - ◆ **Challenge:** Severe coastal flooding from hurricanes and storm surges.
  - ◆ **Solution:** The "Big U" project in Manhattan.
  - ◆ Raised parks, floodwalls, berms, and green infrastructure wrapping around the city.
  - ◆ Multi-functional public spaces that act as flood barriers.
- **Japan – Tokyo's Underground Flood Water System**
  - ◆ **Challenge:** Flooding from typhoons and river overflows in a dense urban area.
  - ◆ **Solution:** Built the world's largest underground flood diversion system.

## Conclusion

- Combining engineering solutions, smart urban planning, real-time technologies, and community participation is key to building flood-resilient cities and effectively mitigating the challenge of urban flooding in India.

# INDIA BECOMES THE WORLD'S 4TH LARGEST ECONOMY

Recently, NITI Aayog CEO B.V.R. Subrahmanyam informed that India has surpassed Japan to become the world's fourth-largest economy (nominal GDP), and poised to displace Germany in the next 2.5 to 3 years.

## India's Economic Growth

- India's nominal GDP has **now reached \$4.19 trillion**, overtaking Japan's estimated \$4.18 trillion.
- The **IMF's World Economic Outlook** report predicts that India aims to **continue to be the fastest-growing major economy**, with a projected growth rate of **6.2% in 2025 and 6.3% in 2026**.
  - ◆ Over the past decade, India has **doubled its GDP from \$2.1 trillion in 2015** to its current level.

## Becoming the Third-Largest Economy

- The IMF projects that India will become the **third-largest economy by 2028**, with an expected GDP of **\$5.5 trillion** by overtaking Germany.
- **Germany's projected GDP growth: 0% (2025), and 0.9% (2026)** (*due to ongoing global trade tensions*).

## Key Determinants of India's Economic Growth

- **Expanding Domestic Consumption:** India's economic growth is largely fueled by private consumption, particularly in rural areas.
  - ◆ Also, the urbanization and lifestyle shifts have led to an increase in consumption-led growth. India's urban population is **expected to touch 600 million by 2030**.
  - ◆ The demographic dividend is a unique edge—India's median age is just 29 years, offering a productive workforce for the coming decades.
- **Infrastructure Development & Digital Transformation:** India has invested heavily in modernizing infrastructure, including transportation, energy, and digital connectivity.
  - ◆ **For example:** India's Digital Public Infrastructure (DPI), emergence of India as a **global startup hub** & boost in the IT sector enhancing innovation driven growth.
- **Manufacturing & Services Sector Growth:** India's manufacturing sector has seen significant growth due to initiatives like **Make in India** and **Production-Linked Incentive (PLI) schemes**.
  - ◆ Additionally, the services sector, particularly IT and financial services, continues to be a major contributor to GDP.
- **External and Global Realignment:** Strategic initiatives like "China Plus One" and Supply Chain Resilience Initiative (SCRI) are leading to increased FDI inflows into India.
  - ◆ Global firms are diversifying their manufacturing bases, turning to India as an alternative to China amid geopolitical tensions **For example:** Apple has investors in India for manufacturing units.
- **Reform-Driven Growth:** Introduction of Goods and Services Tax (GST) has created a unified domestic market, Insolvency

and Bankruptcy Code (IBC) has improved the ease of doing business, Corporate tax cuts & initiatives like PM Gati Shakti, National Infrastructure Pipeline (NIP), and Atmanirbhar Bharat are boosting capital formation.

## Additional Information

- **Real GDP:** It measures the total value of goods and services produced in an economy, **adjusted for inflation**.
  - ◆ It reflects the actual growth in production by using constant prices from a base year.
- **Nominal GDP:** It measures the total value of goods and services produced at current market prices, **without adjusting for inflation**.
  - ◆ It means that if prices rise due to inflation, Nominal GDP may appear higher even if actual production remains unchanged.

## Challenges and Concerns

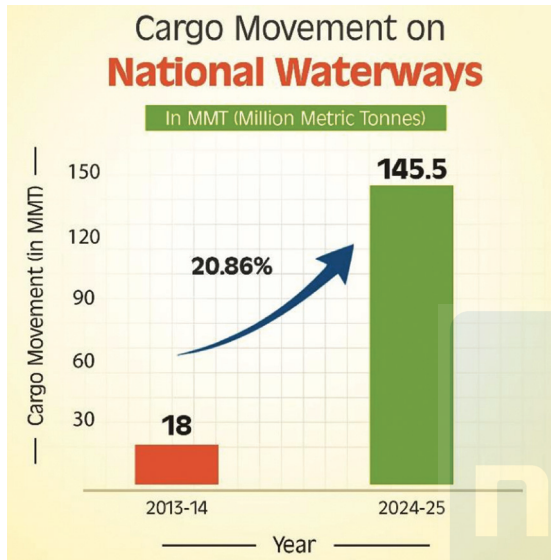
- **Global Geopolitical Uncertainty:** India's economy is deeply connected to global trade, and geopolitical tensions — including conflicts, trade restrictions, and supply chain disruptions — pose risks to its growth.
  - ◆ The **Economic Survey 2025** highlights that ongoing conflicts and trade policy risks could create vulnerabilities for India's economic stability.
- **Inflation and Price Volatility:** While inflationary pressures have eased, services inflation remains persistent.
  - ◆ The rising cost of essential commodities, including fuel and food, continues to be a concern for policymakers.
- **Employment and Workforce Challenges:** India's workforce faces disruptions due to automation and AI.
  - ◆ The need for upskilling and reskilling is critical to ensure that workers remain competitive in a rapidly evolving job market.
- **Trade Deficit and Export Challenges:** India's current account deficit has been reduced to 1% of GDP, but weak global demand has impacted exports.
  - ◆ The government is focusing on diversifying trade partnerships to mitigate risks associated with declining exports.
- **Infrastructure and Investment Needs:** India's **Capital Expenditure (Capex) to GDP ratio** has surged to 3.3%, reflecting strong investment in infrastructure.
  - ◆ However, sustained investment is required to modernize transportation, energy, and digital connectivity.

# INDIA'S RECORD CARGO MOVEMENT ON INLAND WATERWAYS

India has achieved a record of over 145 million tonnes of cargo movement on inland waterways in 2024-25.

## About

- The number of National Waterways increased from **5 to 111**, with the **operational length growing from 2,716 km (2014-15) to 4,894 km (2023-24)**.



- **Future Prospects:** India aims to increase IWT modal share from 2% to 5%, and raise traffic to 200+ MMT by 2030 and 500+ MMT by 2047 under Maritime Amrit Kaal Vision.

## Inland Waterways

- Inland waterways refer to **navigable rivers, canals, backwaters, and creeks** used for **transportation of goods and passengers within a country**.
- **National Waterways Act, 2016** has declared **111 inland waterways** as 'National Waterways' (NWs) in the country to promote shipping and navigation on them.
  - ◆ The **total length of NWs is 20,275 km** spread across **24 States** in the country.
- Currently, Indian operates to a few stretches in the **Ganga-Bhagirathi-Hooghly** rivers, the **Brahmaputra**, the **Barak river**, the **rivers in Goa**, the **backwaters in Kerala**, **inland waters in Mumbai** and the deltaic regions of the **Godavari - Krishna** rivers.
- **Importance of Inland Waterways**
  - ◆ **Economic Benefits:** Lower transportation costs compared to road and rail.
  - ◆ **Fuel Efficiency:** Uses 30% less fuel than road transport and 50% less than rail. **1 Litre of fuel** moves **24 tonne on road, 95 tonne on rail** and **215 tonne on IWT** (for a kilometer).
  - ◆ **Environmental Sustainability:** Reduces carbon emissions and congestion on roads.

- ◆ **Connectivity:** Supports hinterland trade and rural economies.
- ◆ **Tourism & Passenger Transport:** Plays a role in ferry services and river cruises. Exp.-Ganga Vilas.

## Criteria for Declaring a National Waterway

- **The Inland Waterways Authority of India (IWAI)** declares the National Waterway.
- **National Transport Policy Committee (1980)** recommended the following criteria for **National Waterway**:
  - ◆ Navigable by mechanically propelled vessels of reasonable size.
  - ◆ Channel width of ~45 m and depth of ~1.5 m.
  - ◆ Continuous stretch of at least 50 km.
  - ◆ Should serve multiple states, or connect major ports/hinterlands, or be strategically important, or serve underserved areas.

## Inland Waterways Authority of India (IWAI)

- Based on recommendations of the National Transport Policy Committee (1980), Inland Waterways Authority of India (IWAI) was established in **1986** under the IWAI Act, 1985.
- **Ministry:** Union Ministry of Ports, Shipping and Waterways.
- **IWAI Functions:**
  - ◆ Develop and maintain infrastructure on National Waterways (NWs).
  - ◆ Conduct feasibility studies.
  - ◆ Recommend declaration of new NWs.
  - ◆ Advise Central Government and assist State Governments.

## Challenges in Inland Waterway Development

- Seasonal water level variations affect navigation.
- Lack of infrastructure (terminals, dredging, and navigation aids).
- Slow adoption by industries due to underdeveloped routes.
- Competition from road and rail transport.

## Policy Measures to Boost Inland Waterways

- **Jalvahak – Cargo Promotion Scheme:** It was launched in 2024 and has two key components:
  - ◆ **Financial Incentive:** Cargo owners get a 35% reimbursement on actual operating costs for shifting cargo from road/rail to IWT, encouraging use of waterways.
  - ◆ **Scheduled Services:** Regular cargo services have been introduced to boost reliability and predictability.

- **Extension of Tonnage Tax to Inland Vessels:** It was announced in 2025 during the budget, the tonnage tax regime has been extended to inland vessels registered under the **Indian Vessels Act, 2021**.
  - ◆ **Benefit:** Provides a stable and predictable tax regime based on vessel tonnage rather than profits, thereby lowering the tax burden and encouraging broader adoption of inland shipping.
- **Regulatory Framework for Private Investment:** The National Waterways (Construction of Jetties/Terminals) Regulations, 2025 have been notified, enabling private investment in inland waterways infrastructure.
- **Port Integration:** To ensure seamless multimodal logistics, the Multi-Modal Terminals at Varanasi, Sahibganj, and Haldia, as well as the Intermodal Terminal at Kalughat, are being transferred to Shyama Prasad Mookerjee Port, Kolkata for operation and management.
  - ◆ This integration is expected to streamline cargo movement between ports and inland waterways.
- **Digitisation and Centralised Database:** A centralised portal is being developed for the registration of inland vessels and crew, similar to the 'Vahan' and 'Sarathi' systems used for road transport.
- **Cargo Aggregation Infrastructure:** To resolve issues related to sparse industrial presence along waterways, cargo aggregation hubs are under development:
  - ◆ Freight Village at Varanasi.
  - ◆ Integrated Cluster-cum-Logistics Park at Sahibganj.
- **Engagement with Public Sector Undertakings (PSUs):** More than 140 PSUs have been engaged to explore shifting a portion of their cargo to IWT.

### Government's Vision for Inland Water Transport

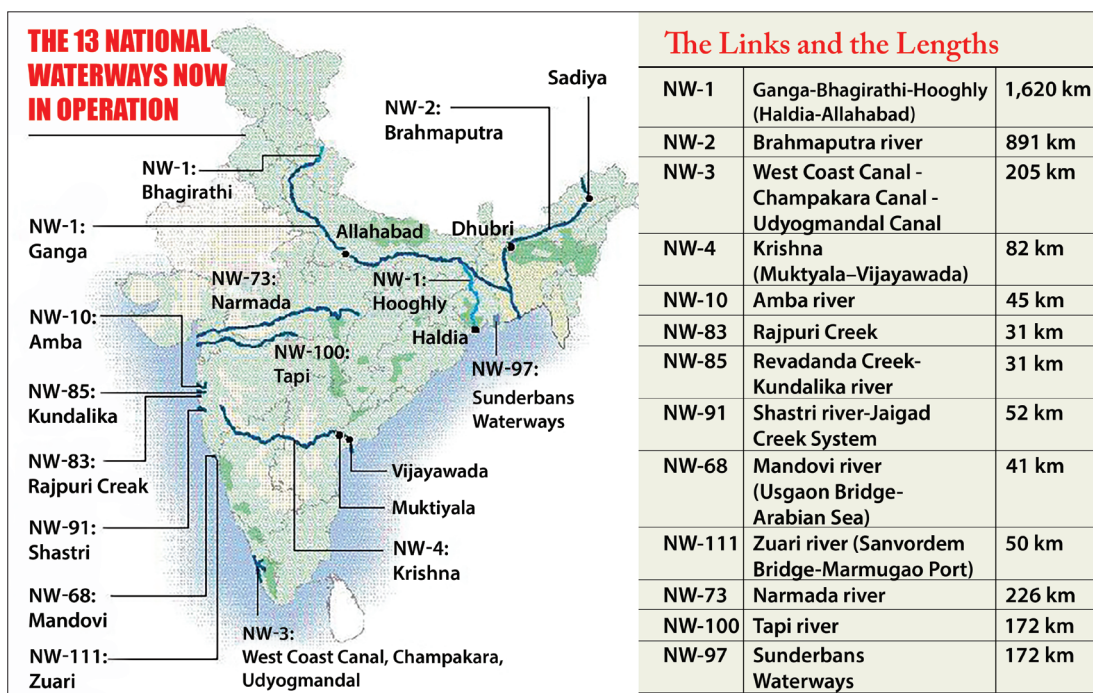
- The **Shipping Ministry** has set a goal to **complete 150 maritime projects** by September 2025, strengthening India's inland waterways sector.
- The **Harbour Craft Green Transition Programme** aims to accelerate the adoption of **clean energy solutions** across Indian ports.
- **Hybrid Electric and Hydrogen Vessels:** It promotes green technology for sustainable inland navigation.
- A **Coastal Green Shipping Corridor** is being developed, with the Kandla-Tuticorin route as the first corridor.

### Recent Developments

- The **Inland Waterways Authority of India (IWAI)** has established a new **regional office in Srinagar**, committed Rs. 100 crore to **improve three National Waterways in the region — River Chenab (NW-26), River Jhelum (NW-49), and River Ravi (NW-84)**.
- A MoU was signed between **IWAI and the J&K Government** to promote river cruise tourism.
- Dredging operations will be conducted to maintain navigational fairways for safe vessel movement.

### Conclusion

- **India's inland waterways** can become a **key pillar** of sustainable transport, reducing logistics costs and environmental impact, with continued policy support and technological advancements.
- By enhancing waterway connectivity, tourism, and economic opportunities, the initiative aligns with **India's broader Blue Economy vision**.



# HUMAN DEVELOPMENT REPORT 2025

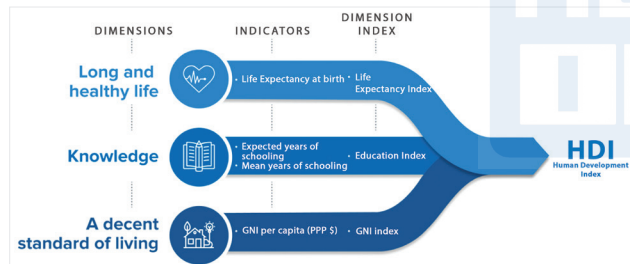
Recently, the United Nations Development Programme (UNDP) released the Human Development Report (HDR) for 2025.

## About

- Titled as '**A Matter of Choice: People and Possibilities in the Age of AI**', it explores AI's role in shaping future development.
- It highlights India's progress in life expectancy, education, and income levels.

## Human Development Index (HDI)

- Pakistani economist **Mahbub ul Haq** created the HDI in 1990 and was further used by **UNDP** in creating a report on the **nation's socio-economic achievement**.
- It evaluates **three key dimensions** and is calculated using a **geometric mean** of these three indices:
  - ◆ **Health** is measured by life expectancy at birth (SDG-3).
  - ◆ **Education** is assessed through mean years of schooling for adults (SDG-4.4) and expected years of schooling for children (SDG-4.3).
  - ◆ **Standard of Living** is evaluated using **Gross National Income (GNI) per capita** (SDG-8.5), adjusted for income distribution.



- **Human Development Index (HDI):** It categorizes countries into **four development levels** based on their HDI values:
  - ◆ **Low Human Development:** HDI value below 0.550
  - ◆ **Medium Human Development:** HDI value between 0.550 and 0.699
  - ◆ **High Human Development:** HDI value between 0.700 and 0.799
  - ◆ **Very High Human Development:** HDI value 0.800 and above

## Limitations and Complementary Indices

- While HDI is a valuable tool, it **does not capture inequality, poverty, human security, or empowerment**. To address these gaps, UNDP provides additional indices, including:
  - ◆ Inequality-adjusted HDI (IHDI)
  - ◆ Gender Inequality Index (GII)
  - ◆ Multidimensional Poverty Index (MPI)

## Human Development Index: Current Status

- **Iceland** (HDI value of 0.972), ranked at the top of the Index, followed by Norway and Switzerland.
  - ◆ **South Sudan was at the bottom** at 193 with 0.388.
- **India** improved its HDI value from 0.676 in 2022 (133th) to **0.685 in 2023 (130th)**, remaining in the medium human development category.
  - ◆ India's HDI value has increased by over 53% since 1990, growing faster than both the global and South Asian averages.
- Among India's neighbours, China (75th), Sri Lanka (78th) and Bhutan (127th) are ranked above India, while **Bangladesh (130th) is ranked at par**. Nepal (145th), Myanmar (149th), Pakistan (168th) are ranked below India.

## Highlights of India's HDI Progress

- **Improved Life Expectancy:** India's life expectancy has risen from 58.6 years in 1990 to 72 years in 2023, marking its highest level since the index began.
  - ◆ National health programs like Ayushman Bharat, Janani Suraksha Yojana, and Poshan Abhiyaan have contributed to this growth.
- **Advancements in Education:** The average years of schooling have increased from 8.2 years in 1990 to 13 years in 2023.
  - ◆ Policies like the Right to Education Act, Samagra Shiksha Abhiyan, and National Education Policy 2020 have played a crucial role.
- **Economic Growth and Poverty Reduction:** India's Gross National Income (GNI) per capita has risen over four times, from \$2,167 in 1990 to \$9,046 in 2023.
  - ◆ 135 million Indians escaped multidimensional poverty between 2015-16 and 2019-21.

## Key Challenges

### Global Perspective

- **Slow HDI Progress:** Slowest HDI gains in 35 years, risking decades-long delays in achieving high human development.
- **Widening Inequality:** Growing gap between high- and low-HDI countries; persistent income and gender disparities.
- **AI Inequity:** Unequal AI access risks digital divide; only 20% use AI tools, with benefits skewed to wealthy nations.
- **Job Displacement:** Half of AI users fear job loss or transformation due to automation.
- **Economic Barriers:** Debt crises, trade tensions, and jobless industrialization limit low-HDI countries' growth.

- **Gender Gaps:** Ongoing disparities in employment, education, and political representation (e.g., India's GII rank: 102).
- **Social Exclusion:** Marginalized groups lack access to AI benefits and basic services, perpetuating poverty.
- **Governance Weakness:** Insufficient global cooperation and policy gaps hinder equitable AI and development progress.

#### Indian Perspective

- **Persistent Inequality:** High income inequality (Gini coefficient: 0.410) reduces HDI by 30.7%, with significant disparities across regions and social groups.
- **Gender Disparities:** Notable gaps in female labor force participation, education, and political representation (Gender Inequality Index rank: 102).
- **Uneven AI Access:** Limited access to AI tools for rural and marginalized communities risks widening the digital divide, despite India's growing AI ecosystem.
- **Job Displacement Risks:** AI-driven automation threatens job security, particularly in low-skill sectors, with half of AI users fearing job changes.
- **Economic Constraints:** Trade disruptions and economic uncertainties hinder sustained investment in health, education, and infrastructure.
- **Social Exclusion:** Marginalized groups, including rural populations and low-income communities, face barriers to accessing AI benefits, education, and healthcare.
- **Policy Implementation Gaps:** Uneven execution of inclusive schemes (e.g., education, healthcare programs) limits their impact on reducing poverty and inequality.

#### Overall Global Suggestions (2025 UNDP HDR)

- **Inclusive AI:** Ensure equitable AI access for marginalized groups and low-HDI countries.
- **Job Reskilling:** Upskill workers to counter AI-driven job displacement.
- **Reduce Inequalities:** Address income, gender, and regional disparities.
- **Invest in Health/Education:** Boost universal healthcare and education access.
- **Global Cooperation:** Tackle trade, debt, and tech barriers via multilateral efforts.
- **Ethical AI:** Regulate AI to prioritize human well-being.
- **Inclusive Governance:** Promote transparent policies for equitable development.

#### India-Specific Suggestions

- **AI Access:** Expand AI tools/training for rural and marginalized groups.
- **Reskilling:** Train low-skill workers to adapt to AI automation.

- **Social Schemes:** Enhance MGNREGA, Jan Dhan, NEP 2020 for inclusion.
- **Gender Equity:** Improve women's education, jobs, and political roles.
- **Health/Education:** Scale up Ayushman Bharat and schooling investments.
- **AI Applications:** Use AI in agriculture, services, and skills (e.g., Tamil Nadu, Telangana).
- **Reduce Inequality:** Address income gaps (Gini: 0.410) and poverty.
- **Global Engagement:** Join efforts on trade, debt, and tech access.

#### Way Forward

- **Enhance Awareness:** Conduct widespread campaigns and workshops to educate farmers about NFCS benefits, processes, and market opportunities.
- **Expand Digital Access:** Strengthen the Jaivik Kheti portal with user-friendly interfaces and multilingual support to simplify certification applications and market linkages.
- **Scale Up Infrastructure:** Increase the number of Bio-Input Resource Centers (BRCs) to provide accessible, affordable natural inputs, especially in remote areas.
- **Boost Training Programs:** Offer more 30-day NCONF courses and localized training for farmers and extension workers on natural farming and certification standards.
- **Strengthen PGS-India:** Expand the Participatory Guarantee System's peer-review network to ensure robust, scalable, and credible certification for small farmers.
- **Streamline Compliance:** Simplify documentation and inspection processes during the 2–3-year conversion period to encourage farmer participation.
- **Promote Market Linkages:** Connect certified farmers with domestic and export markets through cooperatives, e-commerce, and organic fairs, leveraging the India Organic logo.
- **Integrate Technology:** Use mobile apps and AI tools for real-time monitoring, input tracking, and certification updates to enhance efficiency.
- **Incentivize Adoption:** Provide subsidies or financial incentives for farmers transitioning to natural farming to offset initial costs.
- **Collaborate with States:** Support state-specific initiatives (e.g., Andhra Pradesh's Community-Managed Natural Farming) to replicate successful models nationwide.
- These steps aim to make NFCS more accessible, efficient, and impactful for sustainable agriculture.

# SUPREME COURT FLAGS BITCOIN TRADING AS A WAY FOR HAWALA

The Supreme Court expressed concern over the unregulated nature of Bitcoin trading in India, likening it to a “refined way of Hawala business.”

## What is Bitcoin?

- Bitcoin is a type of digital or virtual currency that uses cryptography for security, making it difficult to counterfeit or double-spend.
- It operates on **decentralized networks** based on **blockchain technology**—a distributed ledger enforced by a network of computers.
- Cryptocurrencies are typically **not controlled by any central authority**, which makes them theoretically immune to government interference or manipulation.

## Blockchain Technology

- Blockchain technology is a **decentralized, distributed ledger system** that records transactions across many computers in a way that ensures security and transparency.
- Blockchain networks rely on **consensus algorithms to validate transactions** and maintain network integrity.
  - ◆ These mechanisms ensure that **only legitimate transactions are added** to the chain.

## Concerns of Bitcoin

- **Lack of Regulation:** Despite repeated judicial nudges, the government has not issued a clear legal framework for virtual currency.
- **Potential for Misuse:** Due to the absence of KYC/AML enforcement and its cross-border nature, cryptocurrency can be misused for illicit activities, including a digital form of Hawala.
- **Threat to Financial Integrity:** The unregulated market could jeopardize India's efforts to curb black money and maintain capital controls.

## India's Cryptocurrency Landscape

- At present, India does not have any Law or provision which specifically deals with Cryptocurrency. India has not officially banned or allowed cryptocurrency trading.
- **Regulatory Uncertainty:** In 2018, the **Central Board of Direct Taxes** proposed a ban on cryptocurrencies, and the Reserve Bank of India (RBI) restricted banks from facilitating cryptocurrency transactions labeling it as a “**macro-economic risk**.”
  - ◆ This decision was overturned by the Supreme Court in 2020.
- **Taxation Policies:** The Indian government imposed a **30% tax** on income from transfers of virtual digital assets in 2022, along with a **1% tax deducted at source (TDS)** on each transaction.

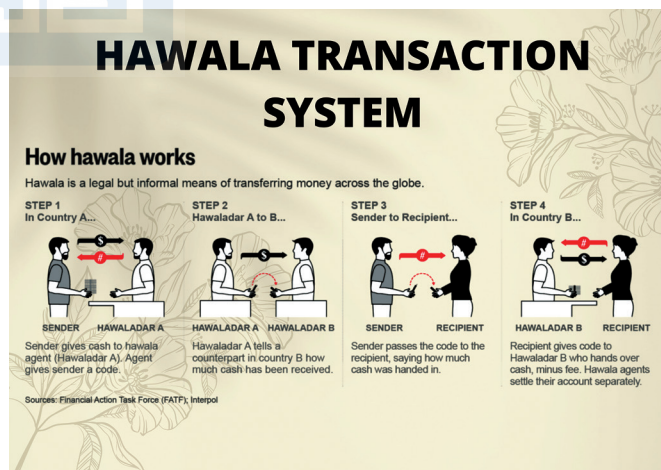
- ◆ These stringent measures have dampened domestic enthusiasm for cryptocurrency trading.

## What is Hawala?

- Hawala is an informal method of transferring money without any physical movement of cash.
- It works outside traditional banking channels and is often used for money laundering, terror financing, and tax evasion.

## How Bitcoin can be in Hawala?

- **Anonymity:** Traditional Hawala relies on trust and secrecy.
  - ◆ Bitcoin allows pseudonymous transactions that are hard to trace, mimicking Hawala's secrecy.
- **Cross-Border Transfers:** In traditional Hawala, money doesn't physically cross borders; balances are settled informally.
  - ◆ With Bitcoin, a person in one country can send Bitcoin to a counterpart in another country, who can convert it into local currency and deliver it to the intended recipient—mirroring the Hawala model.
- **Quick Transfers:** Unlike traditional remittances that take days and charge fees, Bitcoin transactions can be near-instantaneous and low-cost, making it attractive for illicit transfers.



## Way Ahead

- **Comprehensive Legislation:** India must enact a clear legal framework defining and regulating cryptocurrencies, exchanges, and wallets.
- **Strengthen Enforcement:** Enhance capabilities of financial intelligence units to monitor crypto transactions.
- **International Cooperation:** Work with FATF and G20 to establish global norms on crypto governance.

# FOURTH GLOBAL BLEACHING EVENT

The US National Oceanic and Atmospheric Administration in partnership with the International Coral Reef Initiative, confirmed that the world is witnessing its fourth global bleaching event.

## About

- The **bleaching-level heat stress has impacted 83.7%** of the planet's coral reef area and mass **coral bleaching** has been recorded in at least **83 countries and territories**.
  - ◆ The ongoing global coral bleaching event is the **biggest to date**.
- **Previous Bleaching:**
  - ◆ **The 1st and 2nd global coral bleaching events** occurred in 1998 and 2010, respectively.
  - ◆ **The 3rd global coral bleaching event**, which occurred from 2014-2017, when 68.2% of the world's reef area experienced bleaching-level heat stress.
- **Future Projections:** Climate models predict that by 2040-2050, nearly every coral reef worldwide will face annual bleaching events.

## What are Corals?

- Corals are **invertebrates** that belong to a large group of animals called **Cnidaria**.
  - ◆ Corals are formed by **multiple small, soft organisms known as polyps**.
  - ◆ They secrete a **rocky chalk-like (calcium carbonate) exoskeleton** around themselves for protection.
  - ◆ **Coral reefs** are therefore created by **millions of tiny polyps forming large carbonate structures**.
  - ◆ Coral Reefs are also called "**The Rainforests of the Sea**" for the diverse ecosystem services it provides and support **25%** of all marine life.
- **Appearance:** Corals range in colour from **red to purple and even blue**, but are most commonly shades of **brown and green**.
  - ◆ Coral are bright and colorful because of microscopic algae called **zooxanthellae**.
- **There are three types of coral reefs** – fringing reefs, barrier reefs and atolls.
  - ◆ Fringing reefs **form along shorelines, barrier reefs form in open water** and **atolls are circular reefs** that have formed around **sunken volcanoes**.

## Coral Bleaching

- Coral bleaching occurs when **corals expel the colourful algae** living in their tissues.
- Without these helpful algae, the **corals become pale** and are vulnerable to **starvation and disease**.
- A bleached coral is not dead, but **ocean temperatures need to cool off for any hope of recovery**.
- At least **14% of the world's** remaining corals were estimated to

have died in the previous two global bleaching events.

## What Triggers Coral Bleaching?

- The leading cause of coral bleaching is **climate change**.
  - ◆ A warming planet means a warming ocean, and a change in water temperature—as little as **2 degrees Fahrenheit**—can cause coral to drive out algae.
- Coral also bleaches for other reasons, like **extremely low tides, pollution, or too much sunlight**.

## Concerns

- Coral bleaching matters because once these **corals die, reefs rarely come back**.
- With few corals surviving, they **struggle to reproduce**, and entire reef ecosystems, on which people and wildlife depend, **deteriorate**.
- This would have dire implications for **ocean health, subsistence fisheries and tourism**.

## Impact of Coral Bleaching

- **Wildlife:** Thousands of marine animals depend on coral reefs for survival.
  - ◆ Coral reefs **provide shelter, spawning grounds, and protection** from predators.
  - ◆ They also support organisms at the **base of ocean food chains**.
  - ◆ As reef ecosystems collapse, already **at-risk species may face extinction**.
- **Humans:** Coral reefs are natural barriers that absorb the force of waves and storm surges, keeping **coastal communities safe**.
  - ◆ Every year, reefs provide about \$2.7 trillion in goods and services, according to a 2020 estimate by the Global Coral Reef Monitoring Network.
  - ◆ Bleached coral also **compounds the overfishing crisis** by removing links in the food web and depriving some fish of a place to spawn and develop.
  - ◆ **Reef tourism** brings in billions of dollars each year and supports thousands of jobs.

## Can Corals Recover from Bleaching?

- Corals can recover if conditions improve, but recovery can take years or even a decade, depending on the extent of the damage.
- Corals can recover **only if temperatures drop and conditions return to normal**.
- When this happens, the **algae returns** and the corals gradually regain their health.

# MONSOON IN INDIA

The India Meteorological Department (IMD) predicted 'above normal' rainfall (105% of the long-period average) during the 2025 southwest monsoon season (June-September).

## About:

- As per the IMD, there are chances of early onset of the southwest monsoon. The normal onset date of the monsoon over Kerala is June 1 and it usually takes about 10 days for the system to reach Kerala from the Nicobar islands.
- The monsoon is crucial for agriculture, economy, and water resources, providing around 70% of India's annual rainfall.

## Long Period Average (LPA) of Rainfall

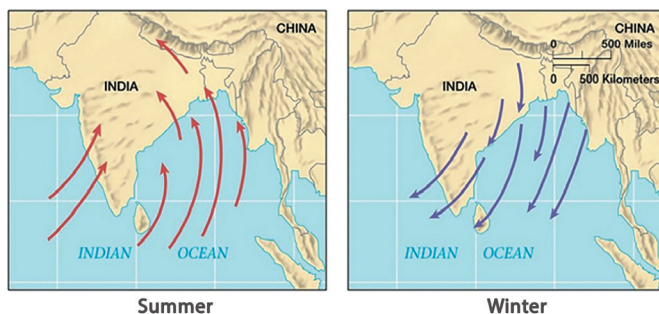
- LPA of rainfall is the rainfall recorded over a particular region for a given interval (like month or season) averaged over a long period like 30 years, 50-years etc.
- It acts as a benchmark while forecasting the quantitative rainfall for that region for a specific month or season.
- Current LPA of all India south west monsoon rainfall based on the average rainfall over the period 1961 -2010 is 880.6mm.
- IMD, which monitors the rainfall in the country, has **prepared this rainfall normal** based on the data **for the period of 50 years** and is **updated periodically** once **every decade** by incorporating the latest data from rain gauge stations.
- The current LPA of all India south-west monsoon** rainfall based on the average rainfall over the **period 1971-2020 is 868 cm.**
- The IMD has in the past calculated the LPA at 88 cm for the 1961-2010 period and at 89 cm for the period 1951-2000.

## Did You Know?

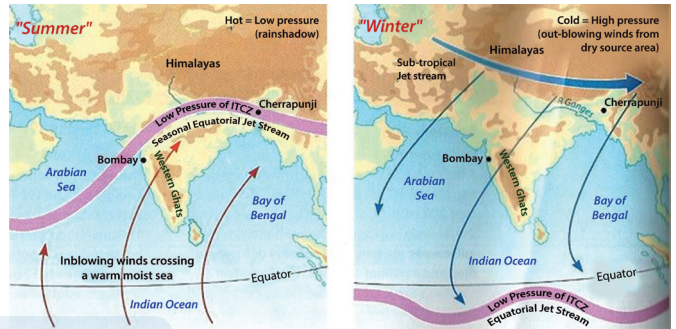
India was the first developing country in the world to have its own geostationary satellite, INSAT, for continuous weather monitoring of this part of the globe and particularly for cyclone warning.

## Mechanism of the Indian Monsoon: The Driving Forces

- Differential Heating of Land and Sea:** In summer, India's landmass heats faster than the ocean, creating low pressure over land and drawing in moisture-laden winds from the sea.



- Inter-Tropical Convergence Zone (ITCZ):** The ITCZ, where trade winds meet near the equator, shifts north during summer, intensifying low pressure over the Indo-Gangetic plain and drawing in monsoon winds.



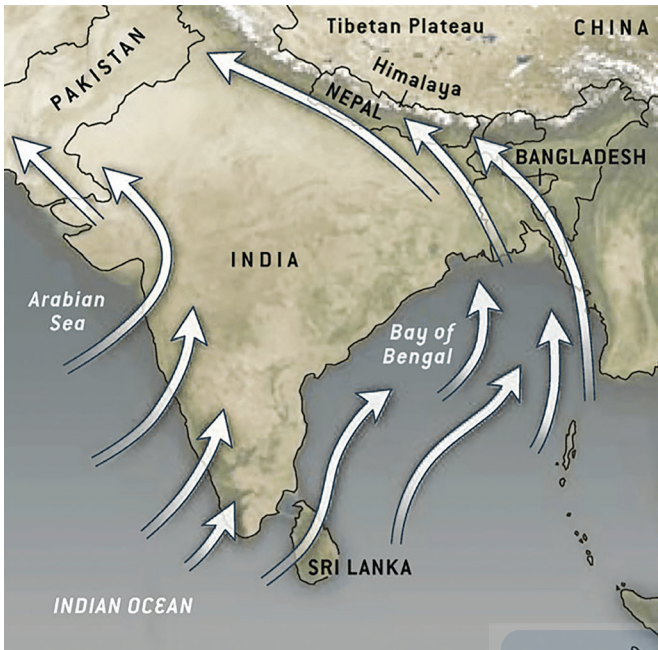
- Tibetan Plateau:** Its high elevation heats up, creating an upper-air low-pressure zone that strengthens vertical circulation and attracts monsoon winds.
- Tropical Easterly Jet:** Develops during summer, strengthening monsoon trough and rainfall.
- ENSO:**
  - El Niño:** Warms Pacific waters, usually weakening Indian monsoon.
  - La Niña:** Cools Pacific, often strengthening monsoon.
- Indian Ocean Dipole (IOD):**
  - Positive IOD:** Strengthens monsoon with warm western Indian Ocean.
  - Negative IOD:** Weakens monsoon.

## Onset and Advancement

- Arabian Sea Branch:** Hits Kerala around June 1, moves up the west coast, bringing heavy rain to Western Ghats and inland states.
- Bay of Bengal Branch:** Reaches Northeast India in early June, then moves westward along the Indo-Gangetic plain. India is usually fully covered by mid-July.
- Retreat of the Monsoon:** Retreat begins in October from northwest India. Clear skies and residual moisture cause hot, humid conditions called "October heat."
- Reversal of wind direction brings rain to the southeastern coast, notably Tamil Nadu and Andhra Pradesh.

## Impact of the Monsoon

- Agriculture:** Essential for Kharif crops like **rice and maize**. A good monsoon improves yields; a poor one leads to drought.
- Economy:** Monsoon-linked agriculture influences GDP, rural income, and food prices.



- **Water Resources and Hydropower:** Rains recharge rivers and reservoirs, crucial for drinking water, irrigation, and electricity.
- **Environment and Culture:** Supports biodiversity and cultural traditions like festivals celebrating rain.
- **Disasters:** Heavy rains can trigger floods, landslides, and other disasters, especially in vulnerable regions.

### Authenticity of Monsoon Forecasts

- Since 2007, the accuracy of monsoon forecasts has improved significantly, with the absolute error in rainfall reducing by 21% from 1989-2006 to 2007-2024.

**Additional Information**

- Meteorology in India dates back to ancient times, with early texts like the **Upanishads, Brihatsamhita, Arthashastra, and Meghdoot** showing advanced understanding of weather and rain.
- Scientific meteorology began in the 17th century, with Edmund Halley explaining the monsoon. The British established early observatories in the 18th and 19th centuries, and Captain Piddington coined the term "cyclone."

### History of Monsoon Forecasting

- The IMD began forecasting the monsoon in 1877, driven by the need to understand rainfall patterns after the **devastating 1876-78 Great Famine**.

- **Henry Francis Blanford**, in the late 1800s, studied the relationship between Himalayan snow cover and monsoon rainfall.
  - ◆ He made the first long-range forecast in 1886.
- **Sir John Eliot** took **Blanford's work** forward by incorporating local weather conditions and data from the Indian Ocean and Australia, although his predictions were still limited in accuracy.
- **Sir Gilbert Walker in 1904**, introduced statistical models using 28 parameters, identifying the **Southern Oscillation (SO)** as a key influence on the Indian monsoon.
  - ◆ He divided India into three subregions for forecasting.

### Scenario After Independence

- IMD continued using Walker's model until 1987, but it became less effective due to changes in climate patterns and loss of correlation with key parameters.
- In 1988, The IMD shifted to a new regression model (**Gowariker Model**) using 16 variables, but issues persisted with the accuracy of regional forecasts.

### New Models and Strategies

- In **2003**, IMD introduced two new models based on 8 and 10 parameters.
  - ◆ The two-stage forecast strategy was also implemented, although it had mixed results.
- In **2007**, IMD developed a **Statistical Ensemble Forecasting System**, reducing the number of parameters to improve accuracy and introduced ensemble forecasts to increase robustness.
- In **2012**, the **Monsoon Mission Coupled Forecasting System (MMCFS)** was launched to combine ocean, atmospheric, and land data for better forecasts.
- In **2021**, the **Multi-Model Ensemble system** further improved forecast accuracy by combining global climate models, including MMCFS.

### Recent Government Initiatives to Improve Monsoon Forecasting

- **Monsoon Mission:** Launched in 2012 by the Ministry of Earth Sciences it was a major initiative aimed at enhancing the accuracy of monsoon forecasting.
- **National Supercomputing Mission:** Aimed at enhancing computational infrastructure needed for running high-end dynamical weather models.
- **ICAR & IMD Collab:** The IMD, in collaboration with the Indian Council of Agricultural Research (ICAR), provides Agromet Advisory Services.

# BIRTH RATES IN DELHI, KERALA, AND T.N. DECLINING AT TWICE THE RATE OF NATIONAL AVERAGE

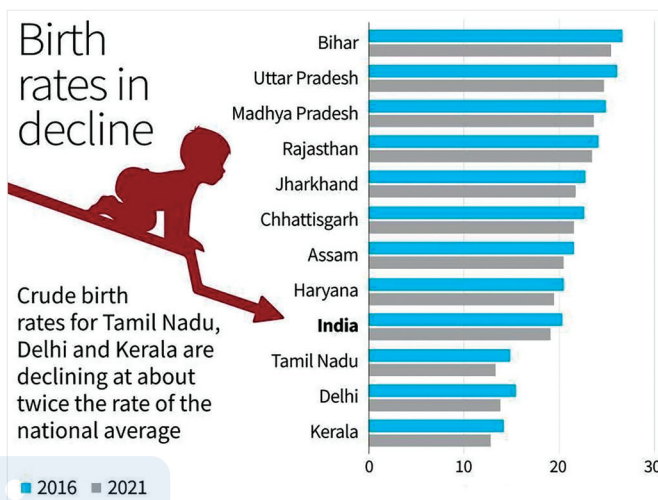
The annual crude birth rates for Tamil Nadu, Delhi and Kerala are declining at twice the rate of the national average.

## About

- The data from the **Sample Registration System (SRS) Statistical Report 2021**, was released by the **Registrar General of India**.
- The SRS is the **largest demographic survey** in the country, meant to provide **annual estimates on fertility and mortality indicators** such as birth rates, death rates, etc.
- The **crude birth rate (CBR)** is a demographic measure that indicates the **number of live births per 1,000 people in a population** during a specific time period, usually a year.

## Major Findings

- **India's Total Fertility Rate (TFR)** has remained constant at 2.0 in 2021, the same as in 2020.
  - ◆ **Total Fertility Rate** is the average number of children born to a woman during her childbearing years.
  - ◆ A TFR of **2.1** is considered the replacement level needed to maintain a stable population.
  - ◆ States such as Bihar, Uttar Pradesh, Rajasthan, Madhya Pradesh had a TFR higher than the national average.
- **All-India crude birth rate** was 19.3 in 2021, dropping at a rate of **1.12% every year from 2016 to 2021**.
- **The birth rate for Tamil Nadu** has been **declining** at a rate of 2.35% every year, Delhi's has been declining at a rate of 2.23% and Kerala's is dropping at a rate of 2.05%.
- **Birth rates were seen declining faster than the national average** for Maharashtra (1.57%), Gujarat (1.24%), Odisha (1.34%), Himachal Pradesh (1.29%), Haryana (1.21%), and Jammu and Kashmir (1.47%).
- **The slowest rate of decline in birth rate** was seen in States such as Rajasthan (0.48%), Bihar (0.86%), Chhattisgarh (0.98%), Jharkhand (0.98%), Assam (1.05%), Madhya Pradesh (1.05%), West Bengal (1.08%), and Uttar Pradesh (1.09%).
- **Rise in the number of registered births** were seen in about 11 States and union territories: Bihar, Rajasthan, Uttar Pradesh, Uttarakhand, West Bengal, Jammu and Kashmir, Ladakh, Lakshadweep, Arunachal Pradesh, Mizoram and Nagaland.
- **Gross reproduction rate (GRR):** The GRR for India stood at 1, meaning that on an average, each woman in India is having one daughter who survives to reproductive age and has children of her own.
  - ◆ **Gross reproduction rate (GRR)** is the average number of daughters a woman would have if she survived all of her childbearing years.
  - ◆ In Bihar, Rajasthan, Madhya Pradesh, and Uttar Pradesh the GRR was significantly higher than the India average.



## Concerns

- **Uneven Decline in Birth Rates Across States:** Some states (e.g., Bihar, UP, MP, Rajasthan) show slow or minimal decline in birth rates, contributing to regional population imbalances.
  - ◆ These high-birth-rate states may continue to drive overall population growth, putting pressure on resources, infrastructure, and services.
- **Demographic Divergence Between Regions:** Southern and western States are moving toward or below replacement-level fertility, while northern and eastern States remain above it.
  - ◆ This creates policy and planning complexity — a "two-speed" demographic transition in the country.
- **Aging Population Risk in Low Fertility States:** States with low TFR (e.g., Kerala, West Bengal) risk aging population challenges shrinking labor force, increased burden on healthcare and pensions, and need for revised economic and social policies.
- **Persistent High Fertility in Some States:** Despite national TFR at 2.0, states like Bihar (TFR 3.0) and UP (TFR 2.7) still report high fertility. Indicates gaps in education, healthcare, and awareness, particularly in rural and underserved areas.

## Way Ahead

- **Enhance Family Planning Services:** Expand access to contraception and reproductive health.
- **Promote Female Education:** Focus on girl child education and awareness to delay marriage and childbirth.
- **Improve Data Quality:** Align and strengthen SRS and CRS systems; expedite the delayed Census for accurate planning.
- **Prepare for Aging Population:** In low-fertility states, build systems for elderly care, healthcare, and pensions.

## SUPREME COURT SAYS 'SHARIA COURT' HAVE NO LEGAL RECOGNITION

### Context

*The Supreme Court ruled that Sharia Courts or Courts of Kazi have no legal recognition in India and their decisions are not binding.*

### Background of the Case:

- A **Muslim woman**, in her second marriage with a BSF personnel (married in 2002), was **denied maintenance** by the **Jhansi Family Court** and later by the **Allahabad High Court**.
- The husband had earlier filed for **divorce in a Sharia Court (Darul Kaja, Bhopal)**, which was not legally recognized.
- The woman alleged **dowry harassment** and claimed she was thrown out with her children in 2008.
- She approached the **Supreme Court** after being denied maintenance.

### Supreme Court Judgment:

- **Sharia Courts, Courts of Kazi, or Darul Kaja** have **no legal status** under Indian law.
- Cited **Vishwa Lochan Madan v. Union of India (2014)**: Fatwas and decisions of such bodies are not binding.
- Any decision from such forums is valid **only if accepted voluntarily** and does **not conflict with existing laws**.
- **Family Court erred** in denying maintenance; compromise agreement (2005) didn't preclude legal rights.
- **Dowry allegations** cannot be dismissed simply because it was a **second marriage**.
- Directed that the **woman is entitled to maintenance**.

### Sharia Courts

- They are informal Islamic forums led by a Qazi that interpret Shariat (Islamic law based on the Quran and the teachings of the Prophet Mohammed) to provide guidance on personal matters like **marriage, divorce, inheritance, and maintenance**.
- They serve mainly as arbitration centers, especially for the economically disadvantaged.
- However, their decisions are not legally binding or enforceable, and any party dissatisfied with their ruling can seek recourse in regular courts.

## CABINET APPROVES CASTE ENUMERATION IN UPCOMING CENSUS

### Context

*Recently, the Cabinet Committee on Political Affairs (CCPA) has decided to include caste enumeration in the upcoming Census exercise.*

### Caste Based Enumeration

- **Historical Perspective:** The last caste-based enumeration in India was carried out in **1931** under British rule, recording **4,147** distinct castes.
  - ◆ Although caste details were **gathered in 1941**, they were **never published** due to the **outbreak of World War II**.
  - ◆ **Post-Independence**, only Scheduled Castes (SCs) and Scheduled Tribes (STs) have been counted in the **decennial Census**.
  - ◆ In **1961 Directive**, the Union Government authorized states to conduct their own surveys to identify OBCs (Other Backward Classes).
  - ◆ In 2011, **Socio-Economic Caste Census** was conducted to obtain data about socio-economic status of various communities.

### Constitutional Basis for the Decision

- **Union Subject:** As per **Article 246** of the Constitution of India, the Census is a Union subject, listed in the **Union List under the Seventh Schedule**.
  - ◆ It ensures that **caste enumeration, conducted as part of the main Census**, will have a uniform and transparent framework across the country.
  - ◆ The **Census Act, 1948** provides the legal framework for conducting population censuses in India. It outlines the procedures, duties, and penalties associated with census operations.

### Significance of Caste Enumeration

- **Data-Driven Governance:** Enables evidence-based policy formulation in education, jobs, welfare.
- **Refines Reservation Policies:** Helps in rational allocation of quotas based on actual caste data.
- **Supports Women's Reservation:** Assists in implementing 33% reservation by mapping intersectionality.
- **Addresses Inequalities:** Identifies intra-caste economic disparities for targeted interventions.

- **Digital Integration:** First digital census with app-based data entry and drop-down caste directory.
- **Judicial Compliance:** Fulfills SC directive (Indra Sawhney case) for objective backwardness assessment.

### Concerns Related to Caste Enumeration

- **Political Misuse:** Risk of data being exploited for vote-bank politics and electoral manipulation.
- **Social Fragmentation:** May reinforce caste identities and widen community divisions.
- **Transparency Issues:** Past state surveys lacked clarity and consistency in methodology.
- **Implementation Challenges:** Ensuring accuracy, avoiding duplication/misreporting, and validating caste lists scientifically is complex.

### Way Forward

- **Ensure Transparency & Scientific Methodology:** Use standardized and scientifically validated methods for caste classification and data collection.
- **Institutional Oversight:** Set up an independent expert committee to monitor the enumeration process and prevent political interference.
- **Public Awareness & Sensitization:** Conduct awareness campaigns to reduce stigma and promote the use of data for inclusive development, not division.
- **Link with Welfare Delivery:** Integrate caste data with socio-economic indicators to design targeted welfare schemes and improve service delivery outcomes.

## SC MANDATES 3-YEAR PRACTICE TO APPEAR IN JUDICIAL SERVICES EXAMINATIONS

### Context

*The Supreme Court restored the condition that a minimum of three years practice as an advocate is required for candidates applying to entry-level judicial service examinations.*

### Background

- The issue concerns the **eligibility criteria** for candidates applying to **junior judicial positions**, such as **Munsiff-Magistrate**.
- **Before 2002**, most states required candidates to have **at least three years of legal practice**.
- In **2002**, the Supreme Court allowed **fresh law graduates** to directly apply for judicial service, removing the earlier requirement.
- In recent years, **multiple petitions** were filed before the Court, asking to **reinstate the practice requirement**.

- **Majority of High Courts** and **State governments** supported this move, arguing that **lack of court experience** in fresh graduates affected **judicial performance**.
- **Only the High Courts of Sikkim and Chhattisgarh** opposed the reintroduction of the requirement.
- **Amicus Curiae Siddharth Bhatnagar** highlighted that admitting law graduates without any legal practice is **detrimental to the quality of justice**.
- Pending the verdict, the Supreme Court **put a stay** on recruitments that were proceeding **without the three-year practice requirement**.

### Key Observations by the Supreme Court

- The Court in **All India Judges Association and Others v. Union of India and Others (2025)** held that a **minimum of three years' practice as an advocate** is essential to **ensure competence** in judicial roles.
- The practice period will be **counted from the date of provisional Bar enrollment**.
- The rule will apply **only to future recruitment cycles** and will **not affect ongoing or past selection processes**.
- **To prove the required practice:**
  - ◆ A **certificate from a senior advocate** (with minimum 10 years of practice), **endorsed by a local judicial officer**, will be accepted.
  - ◆ For those practicing in the **Supreme Court or High Courts**, the certificate must be **endorsed by a designated court officer**.
- The Court also noted concerns about **misuse of the practice requirement**, such as **signing vakalatnamas without real advocacy work**, and urged **careful verification**.
- It acknowledged that the **majority opinion among High Courts** supports the **need for practical experience** to maintain **judicial efficiency and integrity**.

### Arguments in Favour of the Rule

- **Bridges Theory-Practice Gap:** Most law colleges lack practical training. Court exposure equips candidates with procedural knowledge, evidence handling, and courtroom etiquette.
- **Improved Judgment Quality:** Experience fosters better reasoning, empathy, and understanding of litigants' challenges, leading to higher-quality verdicts and fewer procedural errors.
- **Safeguard Against External Pressures:** Prior experience builds resilience and ethical grounding, especially crucial in lower courts prone to influence and pressure.
- **Global Best Practice:** Countries like Canada, UK, and Australia require prior experience for judicial posts, emphasizing maturity and professional credibility.

### Arguments Against

- **Impact on Attracting Talent:** Best law students from National Law Universities (NLUs) are increasingly drawn to lucrative corporate jobs, not judiciary.
- **Irregular Examinations and Age Limit:** Judicial service exams are not conducted annually in many states.
  - ◆ Adding three years' experience requirement, on top of a 5-year law degree, could push candidates beyond age limits or deter them from the exam altogether.
- **Gender Implications:** As per the India Justice Report, women account for **38%** of the judges in district judiciary.
  - ◆ They may find it difficult to meet the requirement due to maternity breaks or social constraints.
- **Social implications:** The economically marginalised sections are most disadvantaged, as they need to begin earning early. The added delay deters aspirants from such backgrounds.

### RIGHT TO DIGITAL ACCESS

#### Context

*The Supreme court emphasized that digital access is a crucial component of the Right to Life under Article 21.*

#### Background

- The judgment was based on a petition filed by a group of acid attack survivors.
- They raised concerns about how disabled people, including acid attack victims, find it nearly impossible to successfully complete the digital KYC processes, which include visual tasks.

#### Key Highlights of the Ruling:

- **Inclusive Digital Ecosystem Mandated:** The State has a constitutional obligation to ensure digital inclusion for the marginalised, underprivileged, vulnerable, disabled, and historically excluded groups.
- **Directive on KYC Verification:** Court ordered the introduction of alternative KYC methods for individuals unable to blink or use facial recognition, ensuring equal access to digital services.
- **Enforcement of Disability Rights Law:** Emphasised full compliance with Section 46 of the Rights of Persons with Disabilities Act, 2016, which requires accessibility in electronic and print communication.
- **Universal Accessibility of Digital Platforms:** Directed that all government websites, apps, and digital portals must conform to universal accessibility standards to be usable by all.
- **Constitutional Backing:** Linked the state's obligation to ensure digital accessibility with Article 21 (Right to Life), read with Articles 14 (Equality), 15 (Non-discrimination), and 38 (Social justice and welfare of all).

### Article 21 of the Indian Constitution

- No person shall be deprived of his life or personal liberty except according to procedure established by law.
- **Article 21** is part of the **Fundamental Rights, Part III** of the Constitution. It is guaranteed to all persons, citizens and non-citizens alike.
- It places a restriction on the state from arbitrarily interfering with a person's life and liberty.
  - ◆ Over time, courts have interpreted it to also impose **positive obligations** on the state to ensure a dignified life.

#### SOME OF THE RIGHTS INCLUDED UNDER ARTICLE 21 (JUDICIAL INTERPRETATION)

Right	Landmark Case
Right to livelihood	Olga Tellis v. Bombay Municipal Corporation (1985)
Right to clean environment	Subhash Kumar v. State of Bihar (1991)
Right to education (prior to Article 21A)	Mohini Jain v. State of Karnataka (1992)
Right to privacy	Justice K.S. Puttaswamy v. Union of India (2017)
Right to die with dignity	Common Cause v. Union of India (2018)

### SC UPHOLDS COURTS' POWER TO MODIFY ARBITRAL AWARDS

#### Context

*The Supreme Court of India, ruled that courts have the limited power to modify arbitral awards under Section 34 or 37 of the Arbitration and Conciliation Act, 1996.*

#### Key Rulings by the Supreme Court:

- **Severability of Award:** Courts can **separate invalid portions** from valid ones if the award is **severable**.
- **Doctrine Invoked:** Applied the Latin maxim: "**omne majus continet in se minus**" (*the greater power includes the lesser*), implying the power to **set aside an award** also includes the power to **set it aside in part**.
- **Permissible Corrections:** Courts can correct **clerical, typographical, or computational errors**.
- **Post-Award Interest Modification:** Courts may **alter post-award interest** if found excessive or inconsistent with fairness.
- **Use of Article 142:** Invoked **Article 142** of the Constitution (complete justice), provided it aligns with the **fundamental principles of the Arbitration Act, 1996**.

### Section 34 and 37 of Arbitration and Conciliation Act

- **Section 34:** Provides for **recourse to courts only for setting aside awards** on specific grounds (e.g., fraud, bias, public policy violation).
- **Section 37:** Lists instances where **appeals** are allowed, including against orders under Section 34.

### Arbitration in India:

- **Definition:** Arbitration is a consensual dispute resolution mechanism that functions outside the traditional court system through a private adjudication process.
- **Advantages:** Less adversarial, flexible, cost-effective, and time-efficient alternative to litigation.
- **Legal Framework:** Governed by the Arbitration and Conciliation Act, 1996, based on the UNCITRAL Model Law (1985).

## ELECTION COMMISSION INTERNET (ECINET) APP

### Context

*The Election Commission of India (ECI) has announced a single-point App ECINET for voters and other stakeholders such as election officials, political parties and the civil society.*

### About

- **Purpose:** A one-stop platform that will integrate and streamline over **40** of the EC's existing **mobile and web apps** in a single and user friendly platform, easing navigation by eliminating the need for multiple logins.
  - ◆ To ensure that data are as accurate as possible, ECINET data will be entered solely by **authorised EC officials**.
- **Key Apps Being Merged:** Voter Helpline, Voter Turnout, cVIGIL, Suvidha 2.0, ESMS, Saksham, and KYC – with over **5.5 crore total downloads**.
- **Development Process:** Envisioned by the **Chief Election Commissioner (CEC) Gyanesh Kumar**.
- **Reach:** The new initiative is expected to benefit nearly **100 crore electors** and the entire electoral administration.

## ONE YEAR EXTENSION OF CBI DIRECTOR

### Context

*The Appointments Committee of the Cabinet, based on the recommendations of the selection committee, approved CBI Director Praveen Sood's extension for a period of one year.*

### About the Central Bureau of Investigation (CBI)

- It is India's specialized investigative agency, responsible for tackling high-profile crimes, corruption, and national security matters.
- **Origins & Evolution**
  - ◆ The CBI traces its roots to the **Special Police Establishment (SPE), formed in 1941** to investigate corruption in wartime procurement.
  - ◆ It was officially **established by an executive order** of the Government of India in **1963**, on the recommendation of **Santhanam Committee**.
  - ◆ It was **not created by an Act of Parliament**, thus **not a Statutory Body**.
- **Functioning:** Under DoPT, Ministry of Personnel, Public Grievances, and Pensions.
  - ◆ It derives its **investigative powers** from the **Delhi Special Police Establishment (DSPE) Act, 1946**.
  - ◆ It is **exempted** from the purview of the **RTI Act**.
- **Jurisdiction:** The Central Government can authorize CBI to investigate such a crime in a State **but only with the consent** of the concerned State Government.
  - ◆ The **Supreme Court and High Courts** can order CBI to investigate such a crime anywhere in the country **without the consent of the State**.
  - ◆ CBI can **suo-moto** take up investigation of offences **only in the Union Territories**.
- **Organizational Structure of CBI**
  - ◆ **Director of CBI:** It is the head of the agency, appointed by the Central Government.
  - ◆ Oversees all investigative operations and policy decisions.
  - ◆ **Specialized Divisions:** Anti-Corruption Division; Economic Offences Division; Special Crimes Division; Directorate of Prosecution; Policy & Coordination Division; and Central Forensic Science Laboratory.
  - ◆ **Regional Offices:** CBI has regional offices across India, each headed by a Joint Director or Additional Director.
  - ◆ **International Coordination:** CBI serves as India's nodal agency for **Interpol**, handling **cross-border investigations**.

### Appointment of the Director of the CBI

- The Director of the CBI is appointed by the **Appointments Committee of the Cabinet** based on recommendations from a **high-level selection panel**.
- The selection process follows provisions under the **Delhi Special Police Establishment (DSPE) Act, 1946**.
- **Selection Committee Composition:**
  - ◆ Prime Minister of India (Chairperson)
  - ◆ Chief Justice of India (CJI)
  - ◆ Leader of the Opposition (LoP) in Lok Sabha
- **Tenure:** The head of **CBI** can have a maximum tenure of **5 years**.

## RULES FOR OBTAINING VOTER ID IN INDIA

### Context

*Following the Pahalgam terror attack, several deported Pakistani nationals were found to possess Indian identity documents including Voter IDs.*

### Constitutional and Legal Framework

- **Article 326** of the Constitution states that every Indian citizen aged 18 years or above has the right to vote in elections to the Lok Sabha and state/Union Territory Assemblies.
- **Section 16** of the **Representation of the People Act, 1950** disqualifies a person from being registered on an electoral roll if:
  - ◆ They are not a citizen of India,
  - ◆ Are of unsound mind, as declared by a competent court, or
  - ◆ Are disqualified under any law relating to corrupt practices or offences in connection with elections.

### Procedure for Voter Registration

- The Election Commission of India (ECI) mandates new voters to apply using **Form 6**.
- **Applicants must submit:**
  - ◆ **Self-attested proof of age and address** (such as utility bills, passport, etc.)
  - ◆ **A declaration of Indian citizenship**, which they must personally sign.
  - ◆ Proof of citizenship (such as passport or birth certificate) is not strictly required unless the ERO suspects the applicant's credentials.
- **Electoral Registration Officers (EROs) and Booth Level Officers (BLOs)** are responsible for verifying the applications. The process includes:
  - ◆ Verification of documents,
  - ◆ Hearings for claims and objections,
  - ◆ Acceptance or rejection of the application.
- **Section 31 of the RP Act, 1950** penalizes false declarations in voter applications.

## SC RULES ROHINGYA REFUGEES SUBJECT TO FOREIGNERS ACT

### Context

*The Supreme Court observed that if Rohingya refugees are found to be 'foreigners' under the Foreigners Act, they will be dealt with as per the law.*

### About

- **Petitioners' Arguments:**
  - ◆ The Rohingya are recognized as **refugees by the United Nations High Commissioner for Refugees (UNHCR)**, and thus **deserve protection under the principle of non-refoulement** (not returning refugees to a place where they face serious threats).
  - ◆ Deportation to Myanmar, where they are stateless and allegedly face torture and death, **violates Article 21** (Right to Life) and **Article 14** (Right to Equality).
- **Government's and Court's Position:**
  - ◆ India is **not a signatory to the 1951 Refugee Convention**, and the **Foreigners Act** gives the government broad powers to regulate the entry and exit of foreigners.
  - ◆ **Article 19(1)(e)** (Right to reside/settle) **applies only to Indian citizens**, not to foreigners, per the Supreme Court's interpretation.
  - ◆ The SC acknowledged basic constitutional protections (like Articles 14 and 21) extend to all persons in India, but **not a right to stay or settle in India**.
  - ◆ The bench reiterated that the matter of whether the refugees can stay is **subject to legal procedure under Indian law**.

### About Rohingya Refugees

- The Rohingya are a **Muslim minority ethnic group** with their roots in the **Arakan kingdom in Myanmar**.
- The Rohingya are culturally and religiously distinct from the **majority Buddhist population in Myanmar**.
- The Rohingya claim to have lived in Myanmar's **Rakhine State** for generations, but successive governments in the country have disputed their ties, labelling them **illegal immigrants from Bangladesh**.
- Myanmar has **denied them citizenship since 1982**, thus making them the **world's largest stateless population**.
- Their **largest exodus began in 2017** driving more than 7.5 lakh people to seek refuge in Bangladesh to escape the brutality of security forces.

### India's Policy on Refugees

- India has welcomed refugees in the past, with nearly **300,000 people categorised as refugees**.
  - ◆ This includes the Tibetans, Chakmas from Bangladesh, and refugees from Afghanistan, Sri Lanka, etc.
- But **India is not a signatory to the 1951 UN Refugee Convention or the 1967 Protocol relating to the Status of Refugee**. Nor does India have a refugee policy or a refugee law.
- **All foreign undocumented nationals** are governed as per the provisions of **The Foreigners Act, 1946, The Registration of Foreigners Act, 1939, The Passport (Entry into India) Act, 1920 and The Citizenship Act, 1955**.
- As per the MHA foreign nationals who enter into the country **without valid travel documents are treated as illegal immigrants**.

## Reasons for India's Policy on Refugees

- ➔ **Resource Strain:** Hosting refugees puts pressure on resources, especially in areas where infrastructure is already stretched thin.
- ➔ **Social Cohesion:** Large numbers of refugees can strain social cohesion, potentially leading to tensions with host communities.
- ➔ **Security Concerns:** Refugee influxes can raise security concerns, including the potential infiltration of extremist elements and difficulties in monitoring movements across porous borders.
- ➔ **Diplomatic Relations:** Hosting refugees strain diplomatic relations with neighboring countries or countries of origin.
- ➔ **Economic Impact:** Refugees compete for low-skilled jobs, affecting the local job market, while their potential contributions to the economy through entrepreneurship or labor may not be fully realized.

## SUTLEJ-YAMUNA LINK (SYL) CANAL

### Context

*The Supreme Court recently termed Punjab's de-notification of land acquired for the construction of the Sutlej-Yamuna Link (SYL) canal an act of "high-handedness".*

### About

- ➔ The court reminded Punjab of its **2017 order** to **maintain status quo on canal-related land and property.**
- ➔ The **SYL canal** was conceptualised for the effective allocation of **water from the Ravi and Beas rivers.**
  - ◆ The project envisaged a **214-km canal**, of which 122 km was to be constructed in Punjab and 92 km in Haryana.

### Background of the Dispute:

- ➔ **1981 Agreement:** Between Punjab, Haryana, and Rajasthan for sharing Ravi-Beas waters; SYL canal was a key part.
- ➔ **1996 Suit:** Haryana filed a case seeking completion of the canal.
- ➔ **2002 Verdict:** Supreme Court ruled in favor of Haryana; Punjab was directed to complete its share.
- ➔ **2004 Action:** Punjab passed the Termination of Agreements Act, halting construction unilaterally.
- ➔ **2016 Ruling:** A Constitution Bench struck down Punjab's 2004 Act as unconstitutional.

### Recent Court Directions:

- ➔ The apex court appointed Union Home Secretary, Punjab Chief Secretary, and DGP Punjab as Receivers to oversee land-related issues.
- ➔ It urged Punjab, Haryana, and the Centre to work towards a mutually agreeable solution.

- ➔ If unresolved, the matter will be listed again on August 13.

## Dispute Resolution Mechanism for Inter-State Water Sharing in India

- ➔ **Constitutional Provisions: Article 262** of the Indian Constitution **empowers Parliament** to legislate for adjudication of inter-state river water disputes.
  - ◆ **Bars the jurisdiction of the Supreme Court** or any other court in such matters if a law is made under this provision.
- ➔ **Parliament enacted the below-mentioned Acts according to Article 262** of the Indian Constitution:
  - ◆ **River Board Act, 1956:** The Act empowered the Central Government to establish boards for Interstate Rivers and river valleys in consultation with State Governments. However, no board has been created to date.
  - ◆ **Inter-State Water Dispute Act, 1956:** If the State Government(s) approach the Central Government for the constitution of the Tribunal, the Centre may form a Tribunal after trying to resolve the dispute through consultations.
    - ◆ The Supreme Court shall not question the Award or formula given by the Tribunal but it can question the working of the Tribunal.

## CJI FORWARDS 'IN-HOUSE' PANEL PROBE REPORT TO PRESIDENT

### Context

*The Chief Justice of India (CJI) has forwarded to the President and the Prime Minister the report of an in-house committee that investigated allegations against the Delhi High Court judge.*

### In-House Procedure for Investigation

To address judicial misconduct **outside the formal impeachment process**, the Supreme Court in **1999** adopted an **"in-house procedure"** for conducting investigations;

- ➔ **Filing Complaints:** Complaints can be made to the CJI, High Court Chief Justice, or the President.
- ➔ **Preliminary Inquiry:** The Chief Justice of the High Court seeks a response from the accused judge and forwards the findings to the CJI.
- ➔ **Fact-Finding Committee:** If serious allegations arise, the CJI appoints a committee comprising two Chief Justices of other High Courts and one High Court judge to investigate.
- ➔ **Recommendations and Action:** If the committee finds sufficient grounds for removal, the CJI may advise the judge to resign. If the judge refuses, the report is forwarded to the President and the Prime Minister for further action, paving the way for impeachment.

## Judicial Precedents

- **K Veeraswami v. Union of India (1991):** No criminal case can be registered against a judge of a high court or the Supreme Court without the prior permission of the Chief Justice of India.
- **The Additional District and Sessions Judge versus Registrar General, High Court Of Madhya Pradesh judgment, 2014:** If a judge refuses to resign despite adverse findings by an in-house panel, the report must be forwarded to constitutional authorities for further action.

## Mechanism for Removal of Judges

- The Constitution of India provides for the removal of judges of the Supreme Court and High Courts under **Article 124(4)** and **Article 217** on grounds of "**proved misbehavior or incapacity.**"
- **Judges (Inquiry) Act, 1968:** Prescribes the detailed **procedure** for investigation and removal.

## Steps in the Impeachment Process:

- **Initiation of Motion:** A removal motion can be introduced in **either House of Parliament**. Must be signed by **100 Lok Sabha members** or **50 Rajya Sabha members**.
  - ◆ Admissibility is decided by the **Speaker/Chairman**.
- **Constitution of Inquiry Committee:** Once admitted, a **three-member committee** is constituted comprising a **Supreme Court judge**, a **High Court Chief Justice** and a **distinguished jurist**.
  - ◆ This committee **investigates the charges** of misbehaviour or incapacity.
- **Parliamentary Approval:** If the committee finds the judge **guilty**, both Houses of Parliament must pass the removal motion. The motion must be passed by a **special majority** in **both Houses**:
  - ◆ **Majority of the total membership**, and
  - ◆ **Two-thirds of members present and voting**
- **Presidential Order:** Once both Houses approve the motion, the **President of India issues an order** for the judge's removal.

## SIKKIM'S 50TH STATEHOOD DAY

### Context

*Prime Minister Narendra Modi extended his wishes on the occasion of the 50th anniversary of Sikkim's statehood.*

## About: Sikkim's Status before Integration:

- Sikkim was a **Himalayan kingdom** ruled by the **Chogyal (monarch)** and remained an **Indian protectorate** after 1947.
- Under the **1950 India-Sikkim Treaty**, India controlled its **defence, external affairs, and communication**, while Sikkim retained internal autonomy.

- Over time, internal **democratic demands** and **external strategic concerns** pushed India toward deeper integration.

## Steps Leading to Integration:

- **Political Unrest and Demand for Democracy (Early 1970s):**
  - ◆ The **Sikkim National Congress** and other parties began demanding **greater democratic rights** and **reduction of the Chogyal's powers**.
  - ◆ Discontent grew due to **authoritarian rule** by the monarchy and fears of Chinese influence.
- **1973 Tripartite Agreement:**
  - ◆ Signed between the **Chogyal, Indian Government, and political parties** of Sikkim.
  - ◆ India agreed to **supervise elections**, and a **Chief Executive** (nominated by India) was appointed to assist governance.
- **Sikkim Assembly Resolution (1974):**
  - ◆ The **Sikkim State Assembly** passed a resolution seeking **greater association with India**.
  - ◆ A new **Sikkim Government Act** was introduced under Indian supervision.
- **1975 Referendum:**
  - ◆ A **referendum** was held on **April 14, 1975**, asking Sikkimese citizens whether they wanted to **abolish the monarchy and join India**.
  - ◆ **Over 97% voted in favour** of integration with India.
- **Constitutional Amendment:**
  - ◆ The **36th Constitutional Amendment Act, 1975** was passed by the Indian Parliament.
  - ◆ It made Sikkim the **22nd State of India**.
  - ◆ **Article 371F** was added to the Constitution to provide **special provisions** for Sikkim's transition and legal framework.
- Sikkim became the **22nd state of India** on **May 16, 1975**, under the leadership of **Lhendup Dorjee Khangsarpa**, the state's first Chief Minister.
  - ◆ Sikkim was earlier referred to as the **Chogyal Kingdom**, ruled by Chogyals.

## About Sikkim:

- **Location:** Sikkim is located in the **northeastern part of the country**, in the eastern Himalayas.
  - ◆ It is bordered by the Tibet Autonomous Region of China to the north and northeast, by Bhutan to the southeast, by the Indian state of West Bengal to the south, and by Nepal to the west.
- **Kangchenjunga**, the highest peak of India is situated in Sikkim.
- **The People of Sikkim consist of three ethnic groups**, that is, Lepcha, Bhutia and Nepali.
- **The official languages of the state** are English, Nepali, Sikkimese (Bhutia) and Lepcha.
- **State Animal:** Red Panda

## APPOINTMENT OF UPSC CHAIRMAN

### Context

*President Droupadi Murmu has appointed Dr. Ajay Kumar as the Chairman of the Union Public Service Commission under Article 316 (1) of the Constitution.*

### About UPSC:

- ➔ The **Union Public Service Commission (UPSC)** is a **constitutional body** established under **Part XIV** of the Indian Constitution, dealing with **Services under the Union and the States**. Its provisions are outlined in **Articles 315 to 323**.
- ➔ **Composition and Appointment:**
  - ◆ The **Chairman and other members** of the UPSC are appointed by the **President of India**.
  - ◆ The **number of members** and their **conditions of service** are also determined by the President.
- ➔ **Term and Reappointment:**
  - ◆ A member holds office for a **term of six years** or until the **age of 65**, whichever is earlier.
  - ◆ **Reappointment is not allowed**. Once a person has served as a member, they are **ineligible for reappointment** to the same office.
- ➔ **Resignation and Removal:**
  - ◆ A member may **resign** by submitting a written resignation to the **President**.
  - ◆ The **President** can **remove or suspend** the Chairman or any other member:
    - ◆ However, removal requires a **reference to the Supreme Court**, which must **inquire and report** on the matter.
    - ◆ **Grounds for removal include:**
      - ◆ Insolvency (bankruptcy)
      - ◆ Engaging in **paid employment** outside official duties during the tenure
      - ◆ **Mental or physical unfitness**, as determined by the President
- ➔ **Conditions of Service**
  - ◆ The **conditions of service** of UPSC members **cannot be altered to their disadvantage** after their appointment.
  - ◆ The President also prescribes:
    - ◆ The **number of Commission employees**
    - ◆ Their **service conditions**
- ➔ **Functions and Additional Powers:** The **Parliament or a State Legislature** may assign **additional functions** to the UPSC or any State Public Service Commission (SPSC), including services related to:
  - ◆ The Union or a State
  - ◆ Local bodies
  - ◆ Statutory corporations or public institutions

- ➔ **Finances:** All **expenses of the UPSC**, including salaries, allowances, and pensions of its members and staff, are charged to the **Consolidated Fund of India**.
- ➔ **Annual Report and Accountability:**
  - ◆ The UPSC must submit an **annual report** of its activities to the **President of India**.
  - ◆ In cases where the **government does not accept the Commission's advice**, a **memorandum** must be submitted to the President explaining the reasons.
  - ◆ This memorandum, along with the **Commission's report**, is then **laid before both Houses of Parliament**.

## GOVT SCHOOL ENROLMENT DROPS IN 23 STATES

### Context

*Minutes of meetings held by the Ministry of Education (MoE) with 33 States and UTs show that student enrolment dipped in 23 states.*

### About

- ➔ The **drop first came to light late last year in the UDISE+ report for 2023-24**, which pointed to a sharp fall of around 1.5 crore in overall school enrolment (government and private) compared to the 2018-19 to 2021-22 average.
  - ◆ PM-POSHAN minutes show the **trend continuing into 2024-25**, triggering fresh concern in the government.
- ➔ **At least eight witnessed declines exceeding 100,000:** led by Uttar Pradesh (21.83 lakh), Bihar (6.14 lakh), Rajasthan (5.63 lakh) and West Bengal (4.01 lakh).

ENROLMENT DIP: TOP 5 STATES			
State	Enrolment 2023-24	Enrolment 2024-25	Drop
UP	1.74 crore	1.52 crore	21.83 lakh
Bihar	1.79 crore	1.73 crore	6.14 lakh
Rajasthan	62.65 lakh	57.02 lakh	5.63 lakh
West Bengal	1.17 crore	1.13 crore	4.01 lakh
Karnataka	43.49 lakh	41.33 lakh	2.15 lakh

- ➔ **Compared to 2023-24**, Karnataka saw its enrollment fall by around 2 lakh; Assam by 1.68 lakh, Tamil Nadu by 1.65 lakh and Delhi by 1.05 lakh.
- ➔ **The PM-POSHAN meetings flagged low scheme coverage:** In Delhi, the number of students availing midday meals fell by 97,000 in 2024-25 versus 2023-24.
  - ◆ In Uttar Pradesh, meal coverage dropped by 5.41 lakh students, by 3.27 lakh in Rajasthan and 8.04 lakh in West Bengal.
  - ◆ Some States reported students bringing their own tiffin.

## Possible Reasons for the Decline in Enrolment

- **Change in Data Collection Methodology:** UDISE+ moved from **school-wise aggregate data** to **student-wise data**. This shift helped **clean up inflated or duplicate ("ghost") entries**, leading to a statistical decline.
- **Post-Covid Shift to Private Schools:** During the pandemic, many students had **shifted from private to government schools** due to financial stress.
  - ◆ In recent years, with economic recovery, there appears to be a **reverse migration back to private schools**, not fully captured yet.
- **Low PM-POSHAN Coverage:** Drop in midday meal beneficiaries may discourage **attendance**, especially in poor and rural areas. In some states, students are now **bringing their own food**, pointing to falling scheme credibility or coverage.
- **Migration and Dropouts:** Internal migration due to livelihood distress post-pandemic may have caused disruption in school continuity.
- **Demographic Changes:** In some states, **declining birth rates** and **falling child population** may lead to a **natural dip in enrolment**.
- **Digital Divide and Learning Loss:** **Loss of interest in education** due to poor learning outcomes in online classes during Covid has led to **long-term disengagement** among some students.
- **Quality Concerns in Public Schools:** Parents may prefer **low-cost private schools** due to perceived better discipline, learning outcomes, and infrastructure.

### PM-POSHAN

- **PM-POSHAN** — Pradhan Mantri Poshan Shakti Nirman, formerly known as the midday-meal scheme, is a **centrally sponsored Scheme** under the Ministry of Education.
  - ◆ It operates on a **60:40 funding model** between the **Centre and the states**.
- Provides **hot cooked meals to 11.20 crore students** in Balvatika and **classes 1 to 8**.
- Covers 10.36 lakh govt. & govt.-aided schools.
- Under the scheme, **material cost is provided** for procurement of ingredients such as pulses, vegetables, oil, spices and condiments, and fuel required for cooking the meals.
  - ◆ The Centre also supplies around 2.6 million metric tonnes of food grains annually through the Food Corporation of India (FCI), covering 100% of the cost.
- Besides addressing child nutrition, **a cooked meal in school is known to boost attendance**, learning outcomes and attention spans.

## SMILE SCHEME

### Context

*As per the Union Social Justice Ministry, the SMILE scheme has identified fewer than 10,000 people engaged in begging.*

### About

- **Scheme Name:** Support for Marginalised Individuals for Livelihood and Enterprise (SMILE).
- **Launch Year:** 2022.
- **Implementing Ministry:** Union Ministry of Social Justice and Empowerment.
  - ◆ One of its components was the sub-scheme to **identify, profile, and rehabilitate individuals** engaged in the act of begging with their consent.
  - ◆ The other component of the scheme is for the **empowerment of transgender persons**.
- **Objectives:** Make religious, tourist, and historical urban spaces **"beggary-free"**.
  - ◆ Rehabilitate at least 8,000 individuals **over FY 2023–24 to FY 2025–26**.
- **Implementation Phases:** **Phase 1:** Began in 30 cities (e.g., Ayodhya, Amritsar, New Delhi, Kolkata, Lucknow).
  - ◆ **Phase 2:** Expanded to 50 more cities in the second year.
- **Key Data (as of December 31, 2024):** Identified Individuals Engaged in Begging: 9,958 persons across 81 major cities/towns.
  - ◆ **Rehabilitated Individuals:** 970 persons (including 352 children).
  - ◆ **2011 Census Data:** 3.72 lakh beggars recorded nationwide.
  - ◆ **Socio-Economic and Caste Census 2011:** 6.62 lakh rural households reliant on begging or alms.

## GYAN POST

### Context

*Minister of Communications Jyotiraditya Scindia announced the launch of Gyan Post.*

### About

- It is a new **India Post service** which will provide affordable delivery of educational, social, cultural, and religious books across the country.
- It will use **trackable surface transport** to keep costs low and ensure accessibility, reflecting a commitment to bridging educational gaps regardless of location or affordability.
  - ◆ Only printed materials with clearly marked publishers or printers will be eligible.

➤ Objectives:

- ♦ It reinforces India Post’s role in public service and education empowerment.
- ♦ It is aimed at enhancing access to learning, especially in remote areas.
- ♦ It supports the goals of the new education policy by ensuring educational content reaches every corner of India.

**e-ZERO FIR INITIATIVE**

Context

*Indian Cybercrime Coordination Centre (I4C) has introduced the new e-Zero FIR initiative to nab any criminal with unprecedented speed.*

About Zero FIR

- A Zero FIR is an FIR (First Information Report) that can be filed at any police station, regardless of the place of incident or jurisdiction.
- It is later transferred to the relevant police station that has jurisdiction over the area where the crime occurred.
- It is called “zero” because the FIR is registered with serial number 0, and the regular FIR number is given by the appropriate jurisdictional police station later.

About New e-Zero FIR System:

- Complaints involving **cheating amounts above ₹10 lakh** registered via **1930 Cyber Helpline**, or **National Cybercrime Reporting Portal (NCRP)** will be **automatically converted into Zero FIRs**.
- **The system integrates:**
  - ♦ Indian Cyber Crime Coordination Centre (I4C)’s NCRP system
  - ♦ Delhi Police’s e-FIR system
  - ♦ NCRB’s Crime and Criminal Tracking Network & Systems (CCTNS).
- Zero FIR will be immediately routed to the appropriate **cybercrime police station** based on jurisdiction.
- **Complainants can visit the cybercrime police station within 3 days** to get the Zero FIR converted into a **regular FIR**.
- **Objective:**
  - ♦ Speed up investigations
  - ♦ Facilitate quicker recovery of lost money
  - ♦ Swift action against cybercriminals

**GEM CELEBRATES 8TH INCORPORATION DAY**

Context

*Government e Marketplace (GeM), India’s national public procurement portal, marked its 8th Incorporation Day.*

Government e-Marketplace

- GeM is a one stop portal **to facilitate online procurement of common use Goods & Services** required by various **Government Departments / Organizations / PSUs**.
- It was launched in **2016**, and is operated by the **GeM SPV (Special Purpose Vehicle)**, a 100% government-owned company under the **Ministry of Commerce and Industry**.
- **Aim:** To enhance transparency, efficiency and speed in public procurement.
- The purchases through GeM by Government users have been authorized and made **mandatory by the Ministry of Finance** in 2017.

Core Principles of GeM

Transparency

Relevant information on sellers, goods, and services shall be easy to find and readily available for users.

Fairness

GeM allow sellers, big and small, to gain direct access to Government buyers.

Inclusiveness

All sellers interested in conducting business with the Government shall be welcomed on the platform

GeM: Transforming Public Procurement in India

- **GeM’s user base** has seen a **threefold increase** in recent years, with over 1.64 lakh primary buyers and 4.2 lakh active sellers now onboard. The platform offers more than **10,000 product categories and over 330 services**.
  - ♦ Over 10 lakh Micro and Small Enterprises (MSEs), 1.3 lakh artisans and weavers, 1.84 lakh women entrepreneurs, and 31,000 startups are now part of the GeM ecosystem.
- **Expansion of Role:** GeM’s role in advancing national priorities was underscored by key transactions, including ₹5,000 crore worth of equipment for the Akash Missile System and ₹5,085 crore in vaccine procurement.
  - ♦ The platform is also enabling complex services such as drone-as-a-service for AIIMS, GIS and insurance for over 1.3 crore lives, and wet leasing of chartered flights and CT scanners.
- **Nationwide Adoption:** GeM has now been adopted across all 36 States and Union Territories, with Uttar Pradesh leading the way.
  - ♦ **Eight states** — including Maharashtra, Manipur, Gujarat, Himachal Pradesh, Assam, Uttarakhand, and Chhattisgarh—have mandated GeM usage.

**Significance**

- **Transparent and Efficient Procurement:** GeM aims to reduce human intervention in government purchases, ensuring transparency, efficiency, and speed. It minimizes corruption and delays in procurement.
- **Cost Savings:** Competitive pricing has resulted in lower procurement costs for the government.
- **Boost to MSMEs & Startups:** Significant amount of the orders on GeM are from MSMEs, promoting small businesses.
- **Digital Process:** The entire process, from vendor registration to payment, is done online.
- **Security and Audit Trails:** Built-in mechanisms for data security, digital signatures, and audit trails to ensure accountability.

**Government Initiatives to Improve GeM**

- **SWAYATT (Startups, Women & Youth Advantage Through e-Transactions):** The portal committed to enhance ease of doing business and establish direct market linkages to annual public procurement for startups, women entrepreneurs, Micro & Small Enterprises (MSEs), Self Help Groups (SHGs) and youth.
- **Startup Runway 2.0:** It is an opportunity for Startups to showcase their innovative products and services to Government buyers and engage in public procurement.
  - ◆ GeM has created a dedicated marketplace category for all Startups to list their products and services, irrespective of their DPIIT-certification.
- **Womaniya initiative:** To showcase products made by women entrepreneurs and women self-help groups [WSHG].
- GeM is collaborating with various stakeholders from the **Micro, Small and Medium Enterprises [MSME]** ecosystem with special focus on entrepreneurs from the **Scheduled Caste/ Schedule Tribes [SC/ ST]**.
- **The SARAS Collection:** It is a pristine handcrafted collection of handicrafts, handloom textiles, office décor, furnishings, accessories, event souvenirs, personal hygiene and care products from top of the line SHGs in India.

**MIZORAM DECLARED INDIA'S FIRST FULLY LITERATE STATE**

**Context**

*Mizoram has been declared India's first fully literate state, marking a historic milestone in the state's educational journey.*

**About Literacy:**

- As per the Office of the Registrar General of India, a literate person is someone aged 7 or above who can read and write with understanding in any language.

- The Department of School Education and Literacy has introduced a **refined definition of literacy** aligned with **NEP 2020 and SDG 4.6 goals**.
  - ◆ Literacy is now defined as the ability to read, write, and compute with comprehension, along with **critical life skills such as digital and financial literacy**.
  - ◆ This expanded definition aims to ensure full societal participation and economic progress.
  - ◆ A state/UT achieving **95% literacy is considered fully literate**.

**Present Status:**

- India's total literacy rate for individuals aged 7 and above, across both rural and urban areas, stands at **80.9% for the period 2023–24**. India's literacy rate has grown from 14% at independence to approximately 80.9% in 2023–24.
- Mizoram has achieved "**full literacy**" status, reaching 98.2%, surpassing the 95% threshold set by the Ministry of Education as per the 2023–24 PLFS survey.
- Earlier, Ladakh became the **first administrative unit to declare full functional literacy under ULLAS** (Understanding of Lifelong Learning for All in Society).
- Andhra Pradesh (72.6%) and Bihar (74.3%) have the lowest literacy rates, per the PLFS 2023–24 MoSPI survey.

**Top 10 States/UTs in India with the Highest Literacy Rates in 2024**

S.No.	State/UT	Total Literacy Rate
1	Mizoram	98.2%
2	Lakshadweep	97.3%
3	Nagaland	95.7%
4	Kerala	95.3%
5	Meghalaya	94.2%
6	Tripura	93.7%
7	Chandigarh	93.7%
8	Goa	93.6%
9	Puducherry	92.7% (corrected from "92./%")
10	Manipur	92%

**ULLAS - Nav Bharat Saaksharta Karyakram (New India Literacy Programme)**

- It is a **centrally sponsored scheme** (2022–2027) aligned with **NEP 2020**, aimed at educating adults aged **15+ who missed formal schooling**.
- It has five components- Foundational Literacy and Numeracy, Critical Life Skills, Basic Education, Vocational Skills and Continuing Education.
- It aims to **make Bharat - Jan Jan Saakshar** and is based on the spirit of Kartavya Bodh and is being implemented on volunteerism.

## PAKISTAN SHUTS AIRSPACE, SNAPS TRADE RELATIONS WITH INDIA

### Context

*The Pahalgam terror attack has escalated tensions between India and Pakistan, leading to a series of retaliatory measures by both countries.*

### Key Measures By India & Pakistan

#### India's Measures

- Suspension of the Indus Waters Treaty
- Closure of the **Attari-Wagah Border**
- Cancellation of **SAARC Visa Exemption Scheme (SVES Visas)**
- Expulsion of Pakistani Military Advisors
- Reduction of Diplomatic Personnel

#### Pakistan's Retaliatory Measures

- Airspace Closure
- Trade Suspension
- Diplomatic Retaliation like reducing the strength of India's High Commission and **suspension of Simla Agreement** and all bilateral agreements with India.
- Visa Restrictions except for Sikh pilgrims visiting the **Kartarpur Corridor**.
- Labeling the suspension of the Indus Waters Treaty as an 'act of war'.

### Pakistan's Airspace Closure for India

- **Airspace** refers to the portion of the atmosphere controlled by a country, where it regulates the movement of aircraft.
- Its closure is governed by both domestic regulations and international frameworks.

### Domestic Regulations

- Each country has exclusive rights over the airspace above its territory, as defined by its civil aviation authority.
- In India, the **Directorate General of Civil Aviation (DGCA)** oversees airspace management and closures during emergencies.
- Domestic laws allow governments to issue **Notice to Airmen (NOTAMs)** to inform airlines of restrictions.

### International Regulations

- **Chicago Convention (1944)**: It establishes rules for airspace sovereignty and international flight operations, under the **International Civil Aviation Organization (ICAO)**.

- ◆ **Article 1** recognizes the **complete and exclusive sovereignty of nations** over their airspace.

### Impacts of Airspace Closure

- **Flight Rerouting and Increased Costs**: Indian carriers have been forced to reroute flights to Europe, North America, and the Middle East.
  - ◆ Longer flight paths over the Arabian Sea and Central Asia are increasing fuel consumption and operational costs.
  - ◆ Ticket prices for international flights may rise by 8–12%, affecting passengers.
- **Economic Implications**: The move **mirrors Pakistan's 2019 airspace closure**, following the **Indian Air Force's air strikes in Balakot** in retaliation for the Pulwama terror attack, which lasted five months and cost Indian airlines over ₹700 crore.

## INDIA, FRANCE INTER-GOVERNMENTAL AGREEMENT ON RAFALE-M JETS

### Context

*India and France formally concluded an Inter-Governmental Agreement (IGA), valued at nearly ₹64,000 crore, to procure 26 Rafale-M fighter jets for the Indian Navy.*

### About

- G2G is a mode of **defence procurement** involving **direct negotiation between the government** of the importer country with that of the exporter country.

### Major Highlights of the Agreement

- Deliveries are set to begin from **mid-2028 and likely to be completed by 2030**.
- It includes **26 Rafale-M aircraft**, it also covers **training of crew members in both France and India**.
  - ◆ The package includes **extra equipment for the existing Rafale fleet of the Indian Air Force**.
- **Transfer of Technology**: The ToT provisions for the integration of indigenous weapons such as the Astra Beyond Visual Range (BVR) air-to-air missile on the Rafale aircraft.
  - ◆ It also includes the establishment of a production facility for the Rafale fuselage in India, as well as **Maintenance, Repair, and Overhaul (MRO)** facilities for aircraft engines, sensors, and weapons.

- **Significance:** This initiative is expected to generate thousands of jobs and create significant revenue for numerous Micro, Small, and Medium Enterprises (MSMEs) in India.

### Modernising Indian Navy's Requirements

- **The Indian Navy currently operates two aircraft carriers:** INS Vikramaditya, which was acquired from Russia, and INS Vikrant, which was indigenously developed and commissioned in 2022. These carriers currently operate the MiG-29K fighter jets, 45 of which were procured from Russia.
- Due to their low availability rates and the approaching end of their service life, the Navy sought to acquire a new fleet of carrier-based fighter jets.
  - ◆ Although the original plan was to **acquire 54 jets**, the number was reduced to 26 following the DRDO's proposal **to develop the indigenous Twin Engine Deck-Based Fighter (TEDBF)**.
- The Indian armed forces will also receive **31 MQ-9B armed High Altitude Long Endurance (HALE) Remotely Piloted Aircraft Systems (RPAS)** under a deal with the U.S.
  - ◆ Of the 31 RPAS, also known as Sea Guardians, 15 are meant for the Navy and eight each for the Army and IAF.
  - ◆ Deliveries are scheduled between January 2029 and September 2030.

### OPEC AND OPEC+

#### Context

*Oil prices plunge to multi-year low as OPEC+ plans to accelerate production hikes.*

#### About OPEC

- The **Organization of the Petroleum Exporting Countries (OPEC)** is an intergovernmental organisation established in 1960 at the **Baghdad Conference** by **Saudi Arabia, Iran, Venezuela, Kuwait and Iraq**.
- Currently, it has **12 members**, viz. Algeria, Congo, Equatorial Guinea, Gabon, Iran, Iraq, Kuwait, Libya, Nigeria, Saudi Arabia, the United Arab Emirates and Venezuela.
- The **objective of the organisation** is to coordinate policies with respect to petroleum demand and supply to ensure fair and stable prices and ensure a steady income to oil producing countries.
- **HQ:** Vienna, Austria.

#### OPEC+

- **OPEC+ has 22 members**, made up of **10 major oil producing countries** (Russia, Kazakhstan, Azerbaijan, Brunei, Bahrain, Mexico, Oman, South Sudan, Sudan and Malaysia), **along with the 12 OPEC members**.

- The **OPEC+ was formed in 2016** after the adoption of the '**Algiers Accord**' by OPEC countries in September 2016 and signing of the '**Vienna Agreement**' in November 2016 between OPEC and other major oil exporting countries.
- The move was largely a response to sharply falling oil prices caused by a surge in U.S. shale oil production.

### INDIA TO MOVE UNSC 1267 TO DECLARE TRF A TERROR GROUP

#### Context

*India has decided to send a team to the United Nations Security Council's 1267 Sanctions Committee meeting to seek the designation of The Resistance Front (TRF) as a terrorist organisation.*

#### About

- The team will present new evidence pointing to Pakistan's involvement in supporting terrorism. The evidence will highlight TRF's role in the attack.
- Pakistan, a non-permanent member of the UNSC, has been protecting TRF at the council with support from China.

#### 1267 Sanctions Committee

- It is also called the **ISIS and Al-Qaeda Sanctions Committee**, was established under a UNSC resolution in **1999**, to focus on **combating terrorism linked to ISIS, Al-Qaeda, and related groups**.
- **Member States** may at any time submit to the **Committee listing requests** for inclusion of individuals, groups, undertakings and entities.
- The Committee **comprises all 15 members** of the Security Council and makes its **decision by consensus**.
- **Sanctions Measures Include:**
  - ◆ **Asset Freeze:** All assets of designated individuals/entities are frozen.
  - ◆ **Travel Ban:** Listed individuals are banned from entering or transiting through any member state.
  - ◆ **Arms Embargo:** Prohibition on supplying arms or related material.

### ISRAEL CABINET APPROVES PLAN FOR GAZA CONQUEST

#### Context

*Israel's security Cabinet approved an expansion of military operations in Gaza, including the potential conquest and occupation of the territory. The Israeli army has called up tens of thousands of reservists for the offensive.*

**The Gaza Strip**



- It is a small piece of land in the Middle East. It is located on the Mediterranean Sea between Israel and Egypt.
- The territory is 25 miles (40 kilometers) long and 4–5 miles (6–8 kilometers) wide.
- It is named for the ancient city of Gaza, which lies near the northeastern end of the strip.
  - ◆ The area has been a source of conflict for many years.

**ORGANISATION OF ISLAMIC COOPERATION**

**Context**

*India strongly criticised the Organisation of Islamic Cooperation (OIC) for its statement about not mentioning the Pahalgam terror attack and parroting Pakistan's propaganda on Kashmir.*

**About OIC**

- **Established:** 1969, in Rabat, Morocco.
- **Trigger Event:** Response to the arson attack on Al-Aqsa Mosque
- **Headquarters:** Currently in Jeddah, Saudi Arabia.
- **Membership:** Open to UN member states with a Muslim majority (57 member states as of 2024).
- **Goals and Mandate:** Present itself as the “collective voice of the Muslim world”
  - ◆ Promote solidarity and unity among members.

**Membership & Voting:**

- ◆ Full membership requires consensus in the Council of Foreign Ministers
- ◆ Observer status follows a similar process
- ◆ **Quorum:** Two-thirds of members present
- ◆ **Decisions:** Preferably by consensus, or by two-thirds majority of those present and voting

**Key Organs**

- ◆ **Islamic Summit:** Highest authority, composed of Heads of State, meets every 3 years.
- ◆ **Council of Foreign Ministers (CFM):** Primary decision-making body, meets annually.

**IMF LOAN TO PAKISTAN**

**Context**

*The Executive Board of the International Monetary Fund (IMF) decided to allow for “an immediate disbursement” of \$1 billion (around Rs 8,500 crore) to Pakistan. This disbursal was done as part of IMF’s Extended Fund Facility (EFF) to Pakistan.*

**About EFF**

- The **Extended Fund Facility** is a loan-based support mechanism provided by the IMF to countries that suffer from medium-term balance of payments problems, particularly due to structural deficiencies in their economies.
- Unlike short-term bailouts, the EFF is designed to assist countries in implementing structural reforms that take time to yield results.
- **According to the IMF, EFF loans:**
  - ◆ Offer longer repayment periods
  - ◆ Support reforms in fiscal governance, banking, taxation, etc.
  - ◆ Target countries with long-standing issues such as poor infrastructure, financial instability, or chronic budget deficits
- It is **not financial aid or a grant**—countries are expected to repay these funds along with agreed interest.

**Resilience and Sustainability Facility (RSF)**

- It provides affordable, long-term financing to support low- and vulnerable middle-income countries in implementing macro-critical reforms to address balance of payments risks, particularly those related to climate change and pandemic preparedness.
- It aims to strengthen macroeconomic resilience by supporting policy reforms that reduce these risks and enhance financial buffers.

## India's Dissent: Strategic and Security Concerns

- India formally conveyed its strong objections to the IMF Board regarding the disbursement, highlighting two major concerns:
  - ◆ **Track Record of Misuse:** India pointed to Pakistan's poor utilization of previous IMF loans, often failing to implement promised reforms or misallocating funds.
  - ◆ **National Security Threats:** Citing state-sponsored cross-border terrorism, India warned that the debt financing might be indirectly used to fund military or terror activities against India.
- While the IMF Executive Board does not allow member countries to vote "against" such proposals, India abstained from the decision as a diplomatic expression of protest.

## International Monetary Fund (IMF)

### ➤ Introduction:

- ◆ The IMF is a specialised agency of the United Nations, founded in 1944 at the Bretton Woods Conference.
- ◆ It was created to ensure global monetary stability after the disruptions caused by the Great Depression and World War II.

### ➤ Objectives:

- ◆ Promote international monetary cooperation.
- ◆ Ensure exchange rate stability and orderly currency arrangements.
- ◆ Facilitate balanced growth of international trade.

### ➤ Functions:

- ◆ **Economic Surveillance:** Monitors global and country-specific economic trends and provides policy advice.
- ◆ **Financial Assistance:** Offers loans to countries with balance of payments problems.
- ◆ **Technical Assistance and Capacity Development:** Provides training and expertise in public finance, monetary policy, statistics, etc.
- ◆ **Conditionality:** Loans are tied to economic reform programmes to ensure fiscal discipline and long-term stability.

### ➤ Membership and Voting Power:

- ◆ It comprises 190 member countries. Each member contributes a quota (based on GDP and economic indicators), which determines:
  - ◆ Voting power (formula: 1 vote per 100,000 SDRs + basic votes). (US has the highest share)
  - ◆ Access to financial resources.
- ◆ **SDRs (Special Drawing Rights):** An international reserve asset created by the IMF. Not a currency but can be exchanged for freely usable currencies like USD, EUR, JPY, GBP, and CNY.

## COLOMBIA JOINS BELT AND ROAD INITIATIVE

### Context

*Colombia formally agreed to join China's Belt and Road infrastructure initiative.*

### About

- **Genesis:** Launched in 2013 by Chinese President Xi Jinping under the initial name One Belt One Road (OBOR).
- **Aim:** To enhance regional integration, boost trade, and stimulate economic growth by developing infrastructure and connectivity across Asia, Africa, and Europe.
- **Key Components:**
  - ◆ **Silk Road Economic Belt:** Overland routes connecting China to Central Asia, Europe, and the Middle East.
  - ◆ **21st Century Maritime Silk Road:** Sea routes connecting China's eastern coast to Southeast Asia, South Asia, Africa, and Europe.

### China's Economic Influence & US Concerns

- China is now the largest trading partner of **several Latin American countries (Brazil, Chile, Peru)**.
- China is expanding its footprint through the **Belt and Road Initiative (BRI)**, while the U.S. views Chinese presence near strategic locations like the **Panama Canal as a national security threat**.
- **The U.S. accuses China of trapping countries in unsustainable debt for geopolitical leverage.**

### India's Concerns with BRI

- **Sovereignty Concerns:** A major point of contention for India is the China-Pakistan Economic Corridor (CPEC), a flagship project under the BRI, which passes through Pakistan-occupied Kashmir (PoK), a territory India claims as its own.
- **Security Threats:** Like Nepal formally joined the BRI in 2017 and China's increasing infrastructure projects in Nepal, particularly those close to the border (like the Chinese-funded airport in Pokhara), are seen as potentially compromising India's security
- **Erosion of Regional Influence:** BRI projects in Nepal and other South Asian nations (Sri Lanka, Maldives, Bangladesh) reflect China's growing political-economic footprint, diluting India's traditional sphere of influence.
  - ◆ Part of the broader "String of Pearls" strategy — perceived Chinese effort to encircle India with pro-China regimes or strategic assets.
- **Debt Trap Diplomacy:** India is wary that China might use its economic leverage through the BRI to ensnare smaller neighboring countries like Nepal in debt traps.

## RARE EARTH MAGNETS

### Context

*China has imposed curbs on rare earth magnets.*

### About

- **Rare earth magnets**, especially **neodymium-iron-boron (NdFeB) magnets**, are crucial for **Electric Vehicle (EV) manufacturing**, particularly in electric motors.
- They provide the **strong magnetic fields** needed for **efficient and powerful electric motors**, including traction motors that drive EVs. These magnets also play a **major role in other EV components** like power steering systems, wiper motors, and braking systems.
- **China** has a near monopoly over these rare earth magnets.
  - ◆ **US and India are heavily dependent** on Chinese exports of these metals.

### Rare Earth Elements

- **Rare earth elements** are a series of **seventeen substances** that are **present in the earth's crust**.
  - ◆ Unlike what the name may indicate, **rare earths occur plentifully in nature**, but the **rarity comes from the ability to isolate them chemically** and make them usable in industrial applications.
- **Demand for rare earth metals** such as neodymium, dysprosium, praseodymium and yttrium is increasing alongside technological advancements.
- **Heavy and light rare earths occur naturally in several countries**, such as India, China, Myanmar, Japan, Australia and North Korea.
  - ◆ **China** is the world's largest producer of rare earths followed by the USA.
- **Significance:** They are used in everyday technologies like a cellphone, computer and in advanced medical technologies like MRIs, laser scalpels etc.

## FUTURES & OPTIONS

### Context

*The former SEBI Chairman has raised concern over the rising risks associated with F&Os [futures and options] as most of the individuals who invested in them are losing money.*

### What is a derivative?

- A derivative is a **financial contract** whose **value depends on the price of an underlying asset**.
  - ◆ **An underlying asset** is the primary asset based on which a derivative's value is derived at.
- They can be **stocks, stock indices or commodities** such as crude oil, natural gas, gold, silver, copper etc.
  - ◆ **Derivatives are a helpful tool for those** informed traders who use them as a **hedging strategy** (to mitigate losses).
- **Futures:** Futures are derivative contracts in which **both the buyers and the sellers have an obligation to buy or sell** an underlying asset at a predetermined price on a future date, decided today.
  - ◆ If a trader thinks the price of natural gas will increase in the next three months, he can buy a natural gas futures contract today.
  - ◆ If his prediction is right, he can gain considerable profit. But if his prediction fails, he would incur an unlimited loss.
- **Options:** In an options contract, buyers have the **right, but not an obligation**, to buy an underlying asset via the call option, or have the right to sell an underlying asset via the put option at a specified price before a certain date. It's because of this flexibility, **investors think options are safer**.
  - ◆ Though options provide an investor with more choices, they are highly risky, to the extent that your capital would erode to zero.

## NET FDI SLUMPS 96% IN FY25 TO \$353 MN

### Context

*As per the RBI, the Net foreign direct investment (FDI) into India crashed by more than 96% to just \$353 million in 2024-25 as compared to the previous year.*

### About

- The net FDI figure stood at **\$44 billion in 2020-21**, it fell to \$10.1 billion in 2023-24, and finally to just **\$353 million (\$0.4 billion) in 2024-25**.
- While **gross FDI inflows** are healthy and diversified, **net FDI** is falling due to:
  - ◆ **Higher repatriation by foreign companies** (profit-taking, divestment).
  - ◆ **Increasing outward investment** by Indian companies (global expansion).

- ◆ In 2024-25, Indian companies invested a total of **\$29.2 billion in other countries, 75% higher** than the previous year.
- **Gross Inflows:** Gross FDI **remained elevated** in FY25, with 13.7% year-on-year (Y-o-Y) growth to clock \$81 billion worth of flows.
  - ◆ More than **60%** of gross FDI inflows in FY25 were in **manufacturing, financial services, electricity and other energy, and communication services sectors.**
  - ◆ Singapore, Mauritius, the UAE, the Netherlands, and the United States (US) accounted for more than **75% of the flows.**

## Net Foreign Direct Investment

- **Net FDI** is gross FDI, which is the total money coming in, minus the money being repatriated out by foreign companies doing business in India and the outward FDI by Indian companies.
  - ◆ **Net FDI** = Gross FDI Inflows – (Repatriation by foreign firms + Outward FDI by Indian firms).
- **Key Components:**
  - ◆ **Gross FDI Inflows:** Total new investments made by foreign entities into the country. It includes setting up factories, acquiring local companies, or expanding operations.
  - ◆ **Repatriation & Disinvestment:** Profits or capital that foreign companies send back to their home countries. Includes sale of assets or shares in domestic firms.
  - ◆ **Outward FDI:** Investments made by domestic companies in foreign countries (e.g., acquisitions, setting up subsidiaries).

## Why Net FDI Matters?

- **Positive Net FDI:** Indicates more foreign investment is coming in than going out, often seen as a sign of economic attractiveness.
- **Low or Negative Net FDI:** May suggest capital is being withdrawn or domestic firms are investing more abroad than foreigners are investing locally.
  - ◆ Not always negative but it may reflect economic maturity or global ambition.

## ALGERIA JOINS NEW DEVELOPMENT BANK

### Context

*The New Development Bank (NDB) has admitted Algeria as a new member, further expanding its global membership base.*

## About

- **Genesis:** Founded by BRICS nations (Brazil, Russia, India, China, South Africa). Established during the 6th BRICS Summit in Fortaleza, Brazil (2014) and operational since 2015.

- **Objectives:** To mobilize resources for infrastructure and sustainable development projects in BRICS and other emerging economies.
- **Membership:** Initially limited to BRICS, now includes Bangladesh, Egypt, UAE, Uruguay, and Algeria.
- **Capital Structure:** Its initial authorized capital is USD 100 billion, with an initial subscribed capital of USD 50 billion equally distributed among the founding members. It has equal shareholding among BRICS countries ensures no single country has veto power.
- **Headquarters:** Shanghai, China.

## REVISED ECONOMIC CAPITAL FRAMEWORK OF THE RESERVE BANK OF INDIA

### Context

*The Board of Directors of Reserve Bank of India (RBI) has approved a record transfer of over 2.68 lakh crore rupees as surplus to the Central government for the financial year 2024-25.*

## About

- The Central Board of Directors of the Reserve Bank of India (RBI) reviewed the Economic Capital Framework (ECF), to assess risk provisioning and surplus distribution.
- The surplus was calculated under the **revised Economic Capital Framework**, which now mandates maintaining the **Contingent Risk Buffer (CRB) between 5.50 per cent and 7.50 per cent** of the central bank's balance sheet.
  - ◆ For 2024-25, the **CRB has been increased to 7.50 per cent.**
  - ◆ **A higher risk buffer would mean a lower amount of transferable surplus and vice versa.**
- This marks the **highest-ever dividend transfer by the RBI**, aimed at bolstering government finances amid ongoing economic challenges.

## Economic Capital Framework

- The **Economic Capital Framework (ECF)** guides **how the RBI manages its capital reserves** and **determines the surplus it can transfer** to the Government of India.
- It was originally formulated based on **recommendations from the Bimal Jalan Committee (2019)** and adopted in RBI's 578th meeting in 2019.
- The **Bimal Jalan Committee** had recommended a **5-year periodic review** of the ECF.
- The **2025 review is the first such exercise** since the framework's adoption.

## Key Features of the Revised ECF

- **Continuity in Core Principles:** The broad principles and risk assessment methodologies of the existing ECF were retained.

- ◆ The ECF continues to balance financial resilience with optimal surplus transfer to the government.
- ⇒ **Flexibility in Risk Buffer Maintenance:** The revised framework allows the RBI Central Board greater flexibility to adjust risk buffers year-on-year.
  - ◆ This allows adaptation to prevailing macroeconomic risks, such as inflation, global instability, or exchange rate volatility.
- ⇒ **Inter-Temporal Smoothing of Surplus Transfer:** The framework enables smoother and more predictable surplus transfers to the Government over time.
  - ◆ This avoids abrupt increases or cuts in transfer, aiding better fiscal planning for the government.

### Why ECF Matters?

- ⇒ Ensures the RBI retains adequate capital **to maintain its monetary and financial stability mandate.**
- ⇒ Supports **fiscal planning** by providing the Government with a **predictable flow of surplus.**
- ⇒ Protects the RBI from **potential external shocks** or changes in asset risks, while contributing to public finance health.

### How RBI Earns Profit and Decides Dividend?

- ⇒ Though RBI's primary role is not to earn profit, but to maintain economic stability.
- ⇒ **Its main functions include:** Ensuring price stability (controlling inflation), Managing currency issuance, Handling foreign exchange reserves, Regulating the banking system & managing government debt.
- ⇒ Despite these roles, profit can emerge as a **byproduct of RBI's operations.**
- ⇒ **RBI earns through:**
  - ◆ Interest on government bonds it holds.
  - ◆ Lending to banks (like repo operations).
  - ◆ Foreign exchange operations (buying/selling dollars).
  - ◆ Seigniorage – Profit from printing currency (since printing cost < face value).
  - ◆ Market operations – It buys/sells assets to control liquidity and earns interest or capital gains.

## INDIA'S OUTWARD REMITTANCES DECREASES UNDER LIBERALISED REMITTANCE SCHEME

### Context

*India's outward remittances under the Liberalised Remittance Scheme (LRS) moderated by 6.85 percent year-on-year (YoY) to \$29.56 billion in FY25, after reaching an all-time high of \$31.73 billion in FY24.*

### What is Outward Remittance?

- ⇒ Outward remittance refers to the **transfer of money in foreign currency** by a resident of India to a person or entity outside India, for purposes such as education, travel, medical treatment, investment, or gifting.

### What is the Liberalised Remittance Scheme (LRS)?

- ⇒ LRS was introduced in **2004** by the **Reserve Bank of India (RBI).**
- ⇒ It allows resident individuals (including minors) to remit up to **\$250,000 per financial year** for permissible current or capital account transactions.
- ⇒ Initially launched with a \$25,000 limit, later increased to current levels.
- ⇒ Remittances can be made for;
  - ◆ Education and studies abroad,
  - ◆ Travel and tourism,
  - ◆ Medical treatment abroad,
  - ◆ Purchase of property,
  - ◆ Investment in foreign securities or businesses.
- ⇒ LRS is governed under the **Foreign Exchange Management Act (FEMA), 1999.**

### Key Trends in FY25

- ⇒ **Travel Remittances** emerged as the largest component, accounting for **\$16.96 billion**, or over **57%** of total outflows.
  - ◆ It indicates a growing preference for international travel among Indian residents despite a marginal dip from FY24.
- ⇒ **Education Remittances** declined 16% year-on-year, from \$3.48 billion in FY24 to **\$2.92 billion in FY25.**
- ⇒ **Investment Abroad:** The funds remitted by Indians to invest in foreign equity and debt rose by 12.51%, reaching **\$1.699 billion in FY25** compared to \$1.51 billion in FY24.
  - ◆ It reflects growing interest in diversifying portfolios and accessing global financial markets.

### Policy Changes & Tax Implications

- ⇒ Union Budget 2025, raised the **Tax Collected at Source (TCS)** threshold on LRS transactions from **₹7 lakh to ₹10 lakh**, providing relief to middle-class travellers and students.
- ⇒ **TCS on LRS:**
  - ◆ **20% TCS** applies to overseas tour packages above **₹10 lakh.**
  - ◆ TCS is not an extra tax, as it is adjustable against final tax liability.
  - ◆ **Credit card** spending abroad is **excluded from TCS under LRS.**

### Why did Student Remittances Decline?

- ⇒ **Global Visa Restrictions:** Major destinations like US, UK, Canada saw **25–31% declines** in Indian student visas.
- ⇒ **Economic Uncertainty:** Families postponed study and travel plans due to global financial volatility.
- ⇒ **High Base Effect:** Remittances were at peak levels in FY24, making a decline statistically likely.

Way Ahead

- India's outward remittances under LRS reflect both the aspirations of a growing middle class and the challenges posed by global economic dynamics.
- While travel and investment continue to rise, falling student remittances highlight the importance of immigration policies abroad.
- Policy responses, such as rationalising TCS and easing compliance, aim to strike a balance between enabling individual freedom and maintaining macroeconomic prudence.

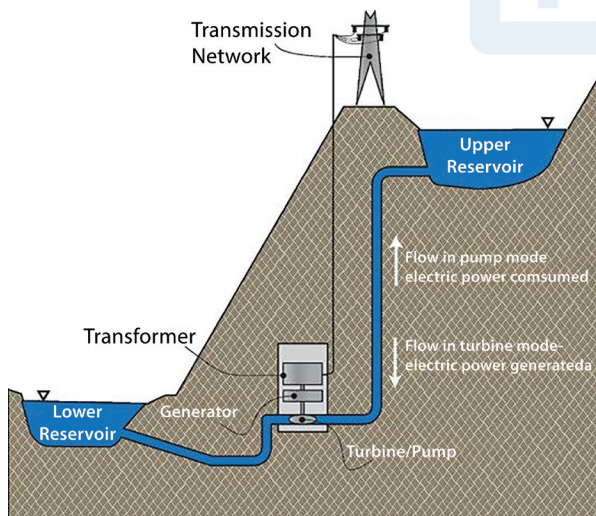
PUMPED STORAGE HYDROPOWER

Context

The Central Electricity Authority (CEA) has identified Greenko, Adani Green, and JSW Energy as key players in India's ambitious plan to add 51 GW of pumped storage hydropower (PSH) capacity by 2032.

What is Pumped Storage Hydropower (PSH)?

- Pumped storage hydropower is a type of hydroelectric energy storage used by power grids for load balancing.
- It involves two reservoirs at different elevations:
  - During low demand:** Excess renewable energy (mainly solar) pumps water from a lower to an upper reservoir.
  - During peak demand:** Water is released to generate electricity, thus functioning like a battery.



Current Status in India

- Installed Capacity:** Less than 5 GW (as of 2024)
- Planned Capacity** by 2032: 51.24 GW (39 projects)
- Under Construction:** ~10 GW, with 3 GW likely to be commissioned in FY25
- Major States:** Andhra Pradesh (16 GW) and Maharashtra (13 GW) together will host 57% of new capacity.

Significance of Pumped Storage in India

- Grid Balancing for Renewables:** Integration of variable solar and wind energy requires stable, dispatchable power sources. PSH provides this flexibility, helping maintain grid stability.
- Higher Economic Returns:** Internal Rate of Return (IRR) for PSH is slightly higher than for standalone solar or wind projects.

Pumped Storage Hydropower vs Battery Energy Storage Systems

Parameter	Pumped Storage (PSH)	Battery Energy Storage (BESS)
Environmental Impact	Requires more land and water	Resource-intensive (minerals, chemicals)
Scalability	High, with multi-GW potential	Modular, best suited for short-duration use
Supply Chain Risk	Low (local resources)	High (dependence on Chinese batteries)
Response Time	Moderate	Instantaneous
Gestation Period	~5 years	1-2 years

NITI AAYOG RELEASES REPORT ON "DESIGNING A POLICY FOR MEDIUM ENTERPRISES"

Context

The MSME sector is a cornerstone of India's economy, contributing nearly 29% to GDP, 40% to exports, and employing over 60% of the workforce. However, it's overwhelmingly skewed in favour of micro enterprises.

About:

- Micro units form 97% of registered MSMEs.
- Small enterprises account for 2.7%.
- Medium enterprises make up just 0.3%, yet medium enterprises account for **nearly 40% of MSME exports**, showcasing their **potential and strategic importance**.

Classification of the MSME Units

Enterprise	Earlier classification (July 2020)		Revised Classification (April 2025)	
	Investment in plant and machinery	Turnover	Investment in plant and machinery	Turnover
Micro	Not exceeding Rs. 1 crore.	Not exceeding Rs. 5 crores.	Not exceeding Rs. 2.5 crore.	Not exceeding Rs. 10 crore.
Small	Not exceeding Rs. 10 crores.	Not exceeding Rs. 50 crores.	Not exceeding Rs. 25 crores.	Not exceeding Rs. 100 crores.
Medium	Not exceeding Rs 50 crores.	Not exceeding Rs. 250 crores.	Not exceeding Rs 125 crores.	Not exceeding Rs 500 crores.

## Why Such Tilt Towards Micro Enterprises?

- Over dependence on informal and subsistence-level micro firms.
- A gross under-leveraging of medium enterprises, which are better positioned to scale, adopt innovation, and integrate with global supply chains.

## Challenges Faced by Medium Enterprises

- **Access to Finance is Limited:** Only 37% of medium enterprises can access formal loans. Collateral-heavy procedures, poor risk assessment, and lack of dedicated credit lines are barriers.
- **Technology Gap:** A whopping 82% of Medium Enterprises don't use advanced tech like AI, IoT, or digital automation — hindering their productivity and global competitiveness.
- **Skill Mismatch:** About 88% of medium enterprises don't benefit from any government skill or training program. Training modules are either outdated or inaccessible.
- **Low Scheme Awareness:** Over 90% are unaware of key government portals or schemes like RAMP, ZED, or GeM. Even when aware, bureaucratic complexity hampers usage.
- **Heavy Compliance Burden:** Multiple inspections from labour, health, and safety departments increase transaction costs and reduce ease of doing business.

## Why Do Medium Enterprises Matter?

- **High Forex Yield:** Each medium enterprise generates ₹39.95 crore in forex income, compared to ₹8.3 crore by small and just ₹1.39 crore by micro units.
- **Innovation Leaders:** Medium enterprises contribute 81% of total MSME R&D expenditure, investing in automation, AI, and process improvements.
- **Employment Generators:** With an average of 89 employees per unit, medium firms create far more jobs than micro (5.7) and small (19.1) units.
- **Profitability and Scale:** These firms benefit from economies of scale, better infrastructure, and investment capabilities, ensuring higher return on capital and sustained competitiveness.

## Policy Recommendations

- **Tailored Finance Instruments:** Launch a working capital scheme tied to enterprise turnover, with fast-track approvals.
  - ♦ Introduce a ₹5 crore ME credit card at market rates with minimal collateral.
- **Technology Upgradation through Competence Centres:** Convert existing tech centres into India ME 4.0 hubs, offering access to Industry 4.0 tools for sectors like ESDM, pharma, and sports.
- **Focused R&D Ecosystem:** Establish a 3-tier funding mechanism (Expert Committee → Proposal Solicitation → Monitoring).
  - ♦ Use Self-Reliant India Fund (SRI) to finance sector-specific innovation projects.

- **Cluster-Based Testing and Certification:** Expand MSE-CDP to include medium enterprises.
  - ♦ Set up testing labs in regional ME clusters to ensure quality compliance, especially in exports.
- **Customized Skill Development:** Design export-oriented, sector-specific training curricula.
  - ♦ Integrate ME modules into existing ESDP programs with help from the Ministry of Skill Development.
- **Centralized Digital Support Portal:** Develop a dedicated ME sub-portal under Udyam with scheme discovery, compliance tracking, and market intelligence modules.

## REPORT ON "ENHANCING COMPETITIVENESS OF MSMEs IN INDIA"

### Context

*NITI Aayog released a report on improving Micro, Small, and Medium Enterprises (MSMEs) competitiveness in India.*

## Challenges Highlighted in recent Report

- Although, between 2020 and 2024, MSME access to formal credit improved (micro and small enterprises from 14% to 20%, medium enterprises from 4% to 9%), however, 81% of **MSME credit demand remains unmet**, with an estimated ₹80 lakh crore gap.
- Credit Guarantee Fund (CGTMSE) has expanded but **still faces limitations**.
- **Many MSME workers lack formal vocational** or technical training, hindering productivity and scalability.
- A significant portion of MSMEs also **underinvests in research and development**, quality improvement, and innovation.
- **MSMEs face challenges** in adopting **modern technologies** due to unreliable electricity, weak internet connectivity, and high implementation costs.
- State government schemes supporting technological advancements are often **inaccessible due to low awareness**.
- Despite several MSME support policies, their effectiveness is limited by **low awareness and poor implementation**.

## About the Report

- It was prepared by NITI Aayog in collaboration with the **Institute for Competitiveness (IFC)**.
- The aim is to unlock the potential of India's MSMEs through systemic reforms in financing, skilling, innovation, and market access.
- It highlights challenges in financing, skilling, innovation, and market access across key sectors like textiles, chemicals, automotive, and food processing.

## RoDTEP SCHEME

### Context

The Government of India has announced the restoration of benefits under the Remission of Duties and Taxes on Exported Products scheme for exports made by Advance Authorization (AA) holders, Export-Oriented Units (EOUs), and units operating in Special Economic Zones (SEZs).

### About:

- The benefits will be applicable for all eligible exports made from 1st June 2025 onwards.
- **Remission of Duties and Taxes on Exported Products (RoDTEP)** scheme was launched in January 2021.
- It reimburses exporters for embedded Central, State, and local taxes that were previously non-refundable.
- It follows the principle that taxes on exported goods should be exempted or refunded.
- It complies with **WTO** rules and uses a fully digital platform for transparent and efficient implementation.
- The rebate is issued as a transferable electronic scrip by the **Central Board of Indirect Taxes & Customs (CBIC)** through a fully digital system.

## WORLD BANK: INDIA'S EXTREME POVERTY DROPS TO 2.3%

### Context

According to the World Bank's Poverty and Equity Briefs (PEBs), India's extreme poverty (measured at \$2.15 per day in purchasing power parity (PPP) terms) dropped significantly from 16% in 2011–12 to 2.3% in 2022–23, marking major progress in poverty reduction.

### About

- They are biannual reports by the **World Bank** and provide a quick overview of **poverty, inequality, and shared prosperity** trends in over 100 developing countries.
- It is released during the Spring and Annual Meetings of the World Bank and IMF, they aim to keep poverty reduction central on the global agenda.

#### MEASURING STANDARDS

Poverty at different lines	2022–23
	Poverty Rate (%)
International poverty line (\$2.15/day)	2.3
Lower middle-income class poverty line (\$3.65/day)	28.1
Multidimensional poverty measure	15.5

## Recent Findings for India

- India's five most populous states – **Uttar Pradesh, Maharashtra, Bihar, West Bengal, and Madhya Pradesh** -- accounted for 54 per cent of the country's extreme poor in 2022–23 and 51 percent of its multidimensionally poor in 2019–21.
  - ◆ These states had contributed 65 per cent of the extreme poor in 2011–12 and drove two-thirds of the overall decline by 2022–23.
- Despite improvements, **wage inequality is high**, the top 10% earn 13 times more than the bottom 10%.
- The **Gini index** based on consumption improved (28.8 to 25.5), but income inequality rose (Gini from 52 to 62).
- **Youth unemployment stands** at 13.3%, rising to 29% among graduates, with most jobs remaining informal, particularly in agriculture.
- Female employment remains low at 31% with a 234 million gap compared to men, though overall employment has been growing since 2021–22.

### Do You Know?

**Gini index** is a measure of income inequality within a population, ranging from 0 to 1, where 0 represents perfect equality and **1 represents perfect inequality**.

## GREEN MUNICIPAL BOND (GMB)

### Context

Under Swachh Bharat Mission-Urban, Ghaziabad issued India's first Certified Green Municipal Bond, raising ₹150 crore for a state-of-the-art Tertiary Sewage Treatment Plant (TSTP).

### About

- Municipal Bond is a **debt instrument** issued by **urban local bodies (ULBs) or municipal corporations** to finance infrastructure and public service projects.
- The Green Municipal Bond is a **subtype of municipal bonds** used exclusively to fund environmentally sustainable and climate-resilient infrastructure projects, such as renewable energy, water treatment, and waste management.
- **Article 243W** of the Indian Constitution entrusts ULBs with functions like water supply, sanitation, and waste management—making them eligible to raise bonds.

### Significance of GMBs

- **Sustainable Development:** Aligns with ESG (Environment, Social, Governance) investing principles, now integral to many global investors' strategies.
- **Low-Cost Capital:** Offers cost-effective, long-term financing, often more affordable than commercial bank loans.

- **Broadened Investor Base:** Attracts institutional and international investors, reducing over-reliance on traditional domestic loans.
- **Infrastructure Boost:** Ideal for urban capacity building in water treatment, sanitation, and waste management.

### Challenges

- **Limited Municipal Capacity:** Many urban local bodies (ULBs) lack financial expertise and creditworthiness to issue bonds independently.
- **Regulatory Hurdles:** Complex approval processes and limited market depth hinder faster adoption of green bonds.
- **Monitoring and Accountability:** Ensuring transparent utilization of funds and environmental impact assessment remains difficult.
- **Low Investor Awareness:** Limited awareness among domestic investors about green finance instruments reduces demand.

### Way Ahead

- **Capacity Building:** Strengthen ULBs through training in financial planning, ESG compliance, and project evaluation.
- **Policy Incentives:** Provide tax breaks, risk guarantees, and simplified frameworks to encourage green bond issuance.
- **Robust Verification Mechanisms:** Establish third-party certification systems for green credentials and impact tracking.
- **Expand Investor Outreach:** Promote green bonds to pension funds, insurance companies, and ESG-focused investors.
- **Integrate with National Missions:** Align municipal green finance initiatives with AMRUT, Smart Cities, and Jal Jeevan Mission for synergy.

## INSUFFICIENT SUPPORT FOR DEEP TECH START-UPS IN INDIA: STUDY

### Context

*A recent study commissioned by the Office of the Principal Scientific Advisor and executed by the Confederation of Indian Industry (CII) and others has revealed significant gaps in the support provided to deep tech start-ups by public-funded R&D organisations in India.*

### About Deep Tech Start-ups

- Deep Technology refers to innovations founded on **advanced scientific and technological breakthroughs** such as AI, quantum computing, biotechnology, and space tech and of its disruptive nature.
- Deep tech start-ups **differ from traditional start-ups** primarily in their technology-driven approach, longer development cycles, and higher risk factors.

### Just about 4 of India's 117 unicorns can be considered deep tech

- ⊙Ather Energy ⊙Fractal ⊙Krutrim AI ⊙Netradyne

### Less than one-tenth of Startup India start-ups have raised funding

**1,62,134**

Total start-ups recognised by DPIIT as of date

**15,597**

Number of start-ups that have raised funding out of these start-ups

- ◆ Traditional start-ups often rely on business model innovation, such as e-commerce, SaaS, or consumer services.

### Key Findings of the Study

- **Limited Incubation Support:** Only one in four public-funded R&D organisations provide incubation support to start-ups.
  - ◆ Support for deep tech start-ups is even lower, with **only one in six** institutions engaging in such initiatives.
- **Weak Industry Collaboration:** A mere 15% of organisations collaborate with overseas industries, highlighting an urgent need for global partnerships.
- **Restricted Access to Facilities:** Half of the organisations fail to open their infrastructure to external researchers and students, reducing opportunities for knowledge-sharing and innovation.

### Budget Allocation and Workforce Trends

- **R&D Expenditure:** The Central government's R&D expenditure was approximately ₹55,685 crore in 2020-21, with ₹24,587 crore allocated to key scientific agencies.
  - ◆ Around 25% of participating institutions reported spending 75%-100% of their budgets on R&D, while others fell below the median share.
- **Declining Permanent Staff:** Observed from 2021-22 to 2022-23, accompanied by increased reliance on contractual staff.

### Efforts Related To Deep Tech Start-Ups

- **National Deep Tech Startup Policy (NDTSP):** It aims to strengthen India's deep tech ecosystem by fostering research-driven innovation.
  - ◆ It focuses on economic security, knowledge-driven growth, and ethical innovation.
- **Quantum Computing and Deep Tech Innovation:** India is making strides in quantum computing, with start-ups like QpiAI launching advanced quantum systems.
  - ◆ The **National Quantum Mission** supports deep tech ventures in life sciences, drug discovery, and sustainability.

### Recommendations for Strengthening Deep Tech Innovation

- **Enhanced Industry Collaboration:** Establish stronger ties with domestic and international industries to foster innovation and leverage global expertise.

- **Focus on Deep Tech and Start-ups:** Increase support for deep tech ventures and incubation programs to catalyse breakthroughs in emerging technologies.
- **Open Access to Facilities:** Public R&D institutions should provide greater access to their facilities for external researchers and students to encourage knowledge-sharing and interdisciplinary research.
- **Aligning Mandates to Viksit Bharat Goals:** To accelerate India's journey toward Viksit Bharat@2047, public-funded R&D institutions must reassess their mandates and align with national strategic priorities.

## HIGH TEMPERATURES AND MANGO PRODUCTION

### Context

*Mango productivity has been affected due to rising temperatures.*

### About

- **IMD Report (2024):** 2024 was the **warmest year since 1901**.
  - ♦ The last 12 years have consistently been warmer than earlier decades.
- **Mango Productivity Trends in India:** In 2024-25, it is expected to be 9.4 MT per hectare.
  - ♦ This is higher than the two other leading major producers of mango, which are China (8.74 MT/Ha) and Thailand (8.36 MT/Ha).
  - ♦ **India is the largest producer** of Mango in the world followed by China.
  - ♦ **Uttar Pradesh** is the largest producer in India followed by Andhra Pradesh and Bihar.
- **Heat Stress and Plant Physiology:**
  - ♦ Excess heat causes fruit drop, early maturity, sun scalding, uneven ripening.
  - ♦ Disorders like spongy tissue in varieties such as Alphonso.

### Climatic Conditions

- **Temperature:** Ideal range is 24°C to 30°C.
  - ♦ Can tolerate up to 48°C for short durations.
  - ♦ Sensitive to frost and cold winds, which can damage flowers and young fruits.
- **Rainfall:** A rainfall range of 890-1,015 mm in a year is considered as ideal for growing mangoes.
  - ♦ However, mango can be grown in regions of both heavy (2540 mm) or scanty (254 mm) rainfall.
- **The loamy, alluvial, well-drained, aerated** and deep soils (2-2.5 m) rich in organic matter with a pH range of 5.5-7.5 are ideal for mango cultivation.

## FAIR AND REMUNERATIVE PRICE (FRP) OF SUGARCANE

### Context

*The Centre has approved an increase in the Fair and Remunerative Price (FRP) of sugarcane to Rs. 355 per quintal for the 2025-26 sugar season, up from Rs. 340 per quintal in the previous season.*

### About

- FRP was introduced by the government in **2009** by an amendment to the **Sugarcane (Control) Order, 1966**.
- It replaced the **Statutory Minimum Price (SMP)** on the Commission for Agricultural Costs and Prices (CACP) consultation.
- **Aim:** To ensure remunerative returns to farmers and a stable supply of sugarcane to mills.
- The FRP system **assured timely payment to farmers**, irrespective of the profit and loss to sugar mills.
  - ♦ It made it **mandatory for sugar mills to pay the farmers within 14 days of delivery of sugarcane**.
  - ♦ The FRP system also introduced **grading on the basis of sugar recovery rate** from sugarcane wherein a **premium was paid to the farmer on higher recovery and a reduction in rates on lower recovery**.
- It is recommended by the **Commission for Agricultural Costs and Prices (CACP)**; fixed by the **Cabinet Committee on Economic Affairs (CCEA)**.

### Commission for Agricultural Costs and Prices (CACP)

- It is an attached office under the Ministry of Agriculture & Farmers Welfare, Government of India, that recommends Minimum Support Prices (MSPs) for select crops.
- It was established in 1965 as the Agricultural Prices Commission, and was given its present name in 1985.

## DOMESTIC INSTITUTIONAL INVESTORS (DIIS) UPSTAGE FPIS

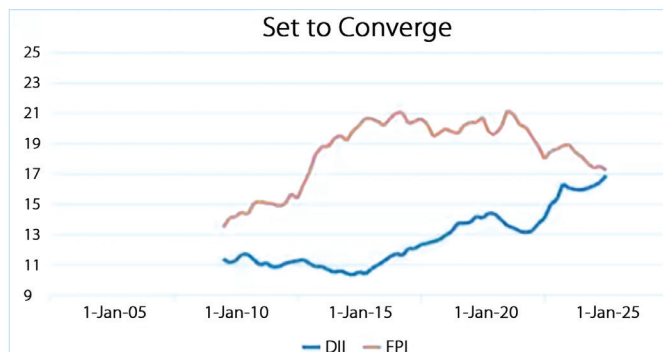
### Context

*Domestic institutional investors (DIIs) overtook foreign portfolio investors (FPIs) in ownership of NSE-listed companies in the March quarter of 2025.*

### About

- DIIs held a **17.62 per cent** stake, up from **16.89 percent** in the December 2024 quarter.

- ◆ FPI ownership stood at **17.22 percent**.
- ➔ It is the first time DIIs have outpaced FPIs since Prime Database began tracking data in **2009**.
- ➔ **Impact:** DIIs act as shock absorbers during phases of FPI withdrawal, reducing market volatility.



### Domestic Institutional Investors (DIIs)

- ➔ These include institutions such as **mutual funds, insurance companies, pension funds, and banks** that invest in domestic financial markets.
- ➔ DIIs also channel retail investments via **Systematic Investment Plans (SIPs)**.

### Foreign Portfolio Investment (FPI)

- ➔ FPI consists of securities and other financial assets held by investors in another country.
- ➔ It does **not provide the investor with direct ownership of a company's assets** and is relatively liquid depending on the volatility of the market.
- ➔ **FPI holdings can include** stocks, American Depositary Receipts (ADRs), Global Depositary Receipts (GDRs), bonds, mutual funds, and Exchange-traded funds (ETFs).
- ➔ It is different from **Foreign direct investment (FDI)**, which is an ownership stake in a foreign company or project made by an investor, company, or government from another country.

## INDIA POISED TO BECOME THE CAPITAL OF MICE TOURISM

### Context

*The Union Minister for Culture and Tourism said that India is poised to become the global capital of MICE (Meetings, Incentives, Conferences, and Exhibitions) tourism.*

### About

- ➔ The **Meetings, Incentives, Conferences, and Exhibitions (MICE)** refers to a specialized segment of the tourism and hospitality industry focused on organizing and hosting business events.

- ◆ MICE is also known as the **'Meetings industry'** or **'Events industry'**.
- ➔ The India MICE market generated a revenue of **USD 49,402.6 million in 2024** and is expected to reach **USD 103,686.5 million by 2030** while registering a growth of **13% CAGR**.

### Infrastructure Growth Supporting MICE

- ➔ **Transport Connectivity:**
  - ◆ Over **1.5 lakh km** of roads were built in the last decade.
  - ◆ Expansion of **railway infrastructure**, including semi high-speed trains.
  - ◆ **Growth in inland waterways** and cargo transport.
  - ◆ More than **150 operational airports** enhance domestic and international access.
- ➔ **Accommodation and Event Facilities:**
  - ◆ Over 2.48 million hotel rooms across various categories.
  - ◆ **World-class convention centres** such as Bharat Mandapam, Yashobhoomi, Hyderabad International Convention Centre.
- ➔ The Ministry of Tourism has further launched a dedicated brand **'Meet in India'** for promoting India as a MICE destination.

## FREE TRADE AGREEMENT (FTA) SIGNED BETWEEN UK-INDIA

### Context

*India and the United Kingdom have signed a landmark Free Trade Agreement (FTA) after nearly three years of negotiations.*

### What is a Free Trade Agreement or FTA?

- ➔ FTAs are arrangements between two or more countries or trading blocs that primarily agree to **reduce or eliminate customs tariff and non tariff barriers** on substantial trade between them.
  - ◆ They can cover both goods and services.
- ➔ FTAs also address issues such as investment, mobility of professionals, and regulatory cooperation.
- ➔ The India-UK FTA negotiations were formally launched in **2022**, as part of efforts to deepen economic cooperation and boost bilateral trade.

### Key highlights of FTA

- ➔ **Tariff Elimination:** Nearly **99% of Indian exports to the UK** will now be **tariff-free**.
  - ◆ Key sectors to benefit include: textiles, marine products, leather, footwear, sports goods, toys, gems and jewellery, engineering goods, auto components, and organic chemicals.

- **Services Sector Gains:** UK has offered its most ambitious market access commitments for Indian service providers.
- Indian professionals in the UK will be exempt from **paying UK social security contributions** for up to three years, reducing employment costs and increasing competitiveness.
- **Enhanced Mobility:**
  - ◆ Simplified visa and mobility norms for Indian professionals and intra-corporate transferees.
  - ◆ Special quotas for Indian workers in select UK sectors.

### Benefits for the UK

- **Whisky and Gin:** Tariffs to be halved from **150% to 75%** immediately, and further reduced to **40% in 10 years**.
- **Automobile Exports:** India to reduce import duty on cars to **10%** under a quota system.
- **Other sectors benefiting:**
  - ◆ Cosmetics, medical devices, aerospace
  - ◆ Electrical machinery, chocolate, soft drinks, lamb.

### Trade and Economic Impact

- India was Britain's **11th largest trade partner in 2024** and accounted for **2.4%** of total UK trade.
- India's exports to the UK were worth **\$34 billion (£25.5 billion) in 2024**, and UK exports to India amounted to **\$22.8 billion (£17.1 billion) in 2024**.

### Why was the FTA needed?

- **Post-Brexit Strategy:** The UK needed new trade partnerships after losing access to the EU market and India's large and growing economy offers a viable alternative.
- **China-Plus-One Policy:** Western nations are reducing dependence on Chinese supply chains, seeking diversified trade ties.
- **India's Global Trade Realignment:** The India-UK FTA is part of India's broader strategy to diversify trade partners and reduce dependence on China and multilateral blocs like RCEP, which India opted out of in 2019 over concerns of trade imbalances and inadequate safeguards.
- **Global Trade Uncertainties:** With US tariffs and geopolitical instability, the FTA provides a more stable and predictable trade relationship.

### Concerns

- **Limited Additional Benefits:** The Global Trade Research Initiative (GTRI) suggests that the FTA might yield only marginal gains, as many Indian goods already faced low or zero tariffs.
- **Environmental Tariffs:** The UK's carbon border tax proposal on imports like metals posed a potential barrier for Indian exporters which needed further negotiation.

### Concluding Remarks

- The India-UK FTA is a significant stride in India's evolving trade architecture.

- While its immediate economic impact may be modest, strategically it enhances India's global trade integration, supports domestic reforms, and lays the groundwork for deeper economic engagement with developed nations.
- Successful implementation and follow-up negotiations in sensitive sectors will be key to realizing its full potential.

### Carbon Border Adjustment Mechanism (CBAM)

- It is a proposed environmental tax that aims to put a **carbon price on certain goods imported** into the United Kingdom, based on the carbon emissions generated during their production.
- It is designed to **level the playing field between domestic producers** (who must comply with the UK's strict climate regulations) and **foreign exporters** from countries with weaker or no carbon pricing mechanisms.

## CCI NOTIFIES NEW DEFINITIONS TO CURB PREDATORY PRICING

### Context

*The Competition Commission of India (CCI) has notified the "Determination of Cost of Production Regulations, 2025", replacing its 2009 framework.*

### About

- This regulatory shift aims to empower the watchdog to better **scrutinize predatory pricing and deep discounting**, especially in the e-commerce and quick commerce sectors.

### Background: Predatory Pricing and Competition Law

- Predatory pricing is defined under the **Competition Act, 2002** as "the sale of goods or provision of services, at a **price below the cost of production with a view to reduce competition or eliminate competitors.**"
- Such practices are deemed abuse of dominant position under **Section 4 of the Act**.
- The earlier Cost Regulations (2009) were increasingly seen as outdated amid the rise of digital markets, which involve complex pricing structures, cross-subsidies, and non-monetary value exchanges.

### Key Features of the 2025 Regulations

- **Flexible, Sector-Agnostic Framework:** Moves away from a one-size-fits-all model. Allows case-by-case assessment, adapting to sector-specific dynamics, including platform-based digital businesses.
- **Focus on Measurable Production Costs:** Reaffirms that internal production costs form the benchmark, not market value (which can be influenced by consumer perceptions, brand value, or subsidies).

- Rejects stakeholder proposals to use market value due to its subjectivity and external dependencies.
- **Modernization & Global Alignment:** Aligns with international competition law standards and best practices. Incorporates insights from modern economic theories and judicial interpretations relevant to platform economies and dynamic pricing.

### Significance

- **Legal Clarity:** Provides a defined cost-benchmark framework grounded in economic rationale.
- **Digital Economy Readiness:** Accounts for cross-subsidisation, high fixed costs, and non-traditional revenue models prevalent in digital platforms.
- **Consumer and MSME Protection:** Prevents dominant firms from using price wars to wipe out smaller players.
- **Ease of Regulation:** Enhances CCI's ability to investigate, quantify, and adjudicate anti-competitive pricing with consistency.

## MOST FAVOURED NATION

### Context

*The United States President signed an executive order to lower the prices of prescription drugs describing the move as the "most favored nation's policy."*

### Most Favoured Status (MFN)

- **Aim:** The MFN principle was designed to **prevent countries from giving different treatment to one partner over the other.**
  - ◆ Each member treats all the other members equally as "most-favoured" trading partners.
  - ◆ If a country improves the benefits that it gives to one trading partner, it has to give the same "best" treatment to all the other World Trade Organization (WTO) members so **that they all remain "most-favoured"**.
- **Principle:** It seeks to **replace the frictions and distortions** of power-based (bilateral) policies with the guarantees of a rules-based framework where trading rights do not depend on the individual participants' economic or political clout.
- **Countries outside the WTO:** Countries such as Russia, Iran, North Korea, Syria and Belarus are not a part of WTO & WTO members can impose whatever trade measures they wish without flouting global trading rules.
- **Exceptions:** There can be exceptions to allow for preferential treatment of developing countries, regional free trade areas and customs unions.

### Removal of MFN Status

- There is **no formal procedure for suspending MFN treatment**, it does formally allow the members to increase import tariffs or impose quotas on goods, or even ban them.

- In 2019 India suspended Pakistan's **MFN status** following Pakistan's terror attack on Pulwama in Jammu & Kashmir.

### What does losing MFN Status Mean?

- Revoking MFN status sends a strong signal that the member countries do not consider the losing country an economic partner.
- Members can increase import tariffs or impose quotas on goods, or even ban them, and to restrict services out of the country.

### World Trade Organization (WTO)

- The WTO is the successor of the erstwhile GATT, and is the world's largest **intergovernmental trading body** established in **1995**.
- It has **over 160 member nations**, and represents **98% of the world's trade**.
- Its stated goal is to **open trade for the benefit of all**.

## ACCOUNT AGGREGATORS

### Context

*With the Digital Personal Data Protection (DPDP) Act, 2023 and Draft DPDP Rules, 2025, India aims to expand its consent-based data-sharing system by building on the Account Aggregator model.*

### What is an Account Aggregator (AA)?

- **Definition:** An Account Aggregator is a type of **Non-Banking Financial Company (NBFC-AA)** regulated by the **Reserve Bank of India (RBI)**.
  - ◆ It helps individuals **securely and digitally access and share information** from one financial institution to another in a real-time, consent-based, and secure manner.
  - ◆ It acts as an **intermediary** between Financial Information Providers (FIPs) and Financial Information Users (FIUs).
  - ◆ The AA does not store or process the data; it simply facilitates the encrypted transfer of data.
  - ◆ The system is based on a **'consent layer'**, ensuring user control and privacy.
- **Working:** Users link their bank accounts to an AA.
  - ◆ Gives consent to share data (e.g., bank statement) with a Financial Information User (FIU) like a bank or NBFC.
  - ◆ The AA fetches the data from the Financial Information Provider (FIP), like a bank, and shares it securely with the FIU.
- **Examples of licensed Account Aggregators (AAs):**
  - ◆ **CAMS FinServ:** A subsidiary of Computer Age Management Services (CAMS).
  - ◆ **PhonePe AA:** A subsidiary of PhonePe, leveraging its digital reach.

### Key Stakeholders of Account Aggregator

- **Financial Information Providers (FIPs):** Banks, mutual fund companies, insurance companies, etc.
- **Financial Information Users (FIUs):** Lenders, wealth managers, insurers, etc.
- **Account Aggregators (AAs):** Licensed entities that facilitate data flow between FIPs and FIUs.

### The DPDP Act and Consent Managers (CMs)

- **The Digital Personal Data Protection Act, 2023** introduces **Consent Managers (CMs)** as intermediaries to facilitate:
  - ◆ Consent collection and withdrawal
  - ◆ Consent lifecycle management
  - ◆ Secure data sharing between **Data Principals** (individuals) and **Data Fiduciaries** (entities processing personal data).

### Draft DPDP Rules, 2025

- The recently released Draft DPDP Rules, 2025 outline the registration process, obligations, and permitted activities of consent managers.
- Given the significant structural alignment between the **Account Aggregator (AA) and Consent Manager (CM) frameworks**, certain revisions have been proposed to the Draft Rules:
  - ◆ **Mandatory Registration with the Data Protection Board (DPB):** Entities seeking to operate as consent managers under the DPDP regime must be mandatorily registered with the DPB.
  - ◆ **Enable Sector-Specific Consent Managers:** The DPB should allow for the registration of sector-specific consent managers, provided they operate on common, interoperable APIs and technical specifications as prescribed.
  - ◆ **Allow Commercial Arrangements with Data Fiduciaries:** Consent managers should be allowed to have business deals with data fiduciaries (like banks or companies that use personal data).

### Significance of a Unified Consent Infrastructure

- **Avoids duplication:** Aligning AA and CM frameworks reduces regulatory overlap.
- **Increases efficiency:** Leveraging existing AA insights accelerates CM implementation.
- **Promotes innovation:** Encourages startups and established entities to develop secure data services.
- **Supports Digital Public Infrastructure (DPI):** Strengthens India's ambition for a holistic, interoperable data governance regime.

### Concluding Remarks

- India has an unprecedented opportunity to become a global pioneer in citizen-centric data governance.
- By harmonising the Account Aggregator framework with the emerging Consent Manager regime under the DPDP Act, India can move toward a secure, scalable, and inclusive data economy.

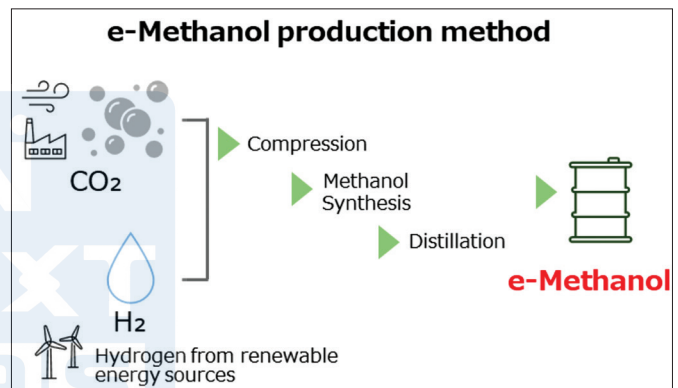
## WORLD'S FIRST COMMERCIAL-SCALE E-METHANOL PLANT OPENS IN DENMARK

### Context

Denmark has launched the world's first commercial-scale e-methanol plant in Kasso. Developed by European Energy (Denmark) and Mitsui (Japan)

### What is e-Methanol?

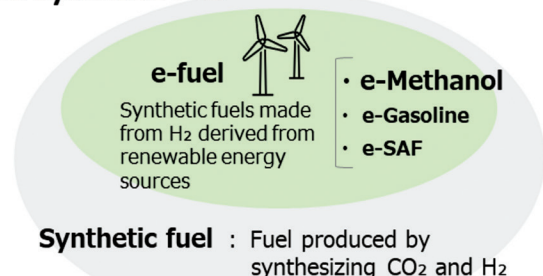
- **About:** e-methanol is simple methanol produced by combining renewably sourced CO<sub>2</sub> with hydrogen that has been separated from water using electrolysis powered by renewable energy sources.
- **Applications:** Used in shipping fuel, plastic production, manufacturing fuel cells etc.



### Challenges in e-Methanol Adoption

- **High Cost:** Not yet price-competitive with fossil fuels; price parity expected around 2035.
- **Scale of Production:** Infrastructure for large-scale green methanol is nascent.
- **CO<sub>2</sub> Sourcing:** Sustainable and reliable CO<sub>2</sub> capture remains a technological challenge.
- **Storage and Distribution:** Needs new or adapted logistics infrastructure.

### Difference between e-Methanol, e-fuel, and synthetic fuel



### India's Methanol Economy Programme

- **About:** Launched by NITI Aayog, the Methanol Economy Programme aims to reduce oil import bills, curb pollution and promote cleaner alternatives of fuel.
- **Key Pillars:** Production of methanol from coal, biomass, and municipal waste can be used in LPG blend, power generation, and transportation which eventually helps in reducing India's oil import bill & greenhouse gas (GHG) emissions.
  - ◆ The program targets a 10% reduction in crude oil imports by 2030 by substituting it with methanol.
- **Government Initiatives and Progress:** The Department of Science and Technology (DST) has initiated the Methanol Economy Research Programme (MERP) to support research and development in methanol production and utilization.
  - ◆ Blending of 15% methanol in gasoline (M15) has been notified, and test standards are being developed.
  - ◆ National Policy on Biofuels 2018 recognizes methanol and DME (dimethyl ether) as alternative fuels.

## CABINET APPROVES SEMICONDUCTOR UNIT IN UTTAR PRADESH

### Context

*The Union Cabinet approved the establishment of a Semiconductor Unit in Uttar Pradesh. It is the sixth project to receive approval under the India Semiconductor Mission.*

### About

- The unit approved is a joint venture of HCL and Foxconn and will attract investment of Rs 3,700 crore.
  - ◆ Together they will set up a plant near Jewar airport in Yamuna Expressway Industrial Development Authority (YEIDA).
- This plant will manufacture display driver chips for mobile phones, laptops, automobiles, PCs, and a myriad of other devices that have displays.
- The plant is designed for 20,000 wafers per month. The design output capacity is 36 million units per month.

### What is a Semiconductor?

- Semiconductors also referred to as 'chips' are silicon and germanium products that are highly complex to design and manufacture, providing the essential functionality for electronic devices to process, store and transmit data.
- The chip comprises interconnections of transistors, diodes, capacitors and resistors, layered on a wafer sheet of silicon.

### Plants Under India Semiconductor Mission

- **Four plants** – including a fab and three assembly units – are in Gujarat and one assembly and packaging plant is under construction in Assam.
- India's other five semiconductor development projects are in;
  - ◆ Micron Technology - Sanand, Gujarat.
  - ◆ Tata Electronics Pvt. Ltd. with PSMC (Taiwan) – Dholera, Gujarat
  - ◆ Tata Semiconductor Assembly and Test Pvt Ltd (TSAT) - Morigaon, Assam.
  - ◆ CG Power, in partnership with Renesas Electronics Corporation, Japan and Stars Microelectronics, Thailand - Sanand, Gujarat.
  - ◆ Kaynes Semicon - Sanand, Gujarat.

### Significance of the Project

- **Import Dependency:** India imported `1.71 lakh crore worth of semiconductors in 2024. Nearly 38% came from China.
- **Export Opportunities:** India's semiconductor market is projected to grow from \$22 billion (2019) to \$110 billion by 2030. Expected to account for 10% of global chip consumption, driven by demand in smartphones, 5G, EVs, AI, IoT.
- **India's R&D Edge:** India houses 20% of the world's semiconductor design engineers.

### Initiatives for Semiconductor Industry

- **The India Semiconductor Mission (ISM)** aims to build a strong semiconductor and display ecosystem, positioning India as a global hub for electronics manufacturing and design, while serving as the nodal agency for the efficient and seamless implementation of semiconductor and display schemes.
- **Production Linked Incentive scheme:** Incentives are being provided for semiconductor design and packaging.
- **QUAD Semiconductor Supply Chain Initiatives:** To assess the capacity, pinpoint vulnerabilities, and enhance supply chain security for semiconductor and its critical components.

## VIZHINJAM INTERNATIONAL SEAPORT

### Context

*Prime Minister Narendra Modi on May 2, 2025 formally commissioned the Vizhinjam International Seaport after trial operations.*

**About:**

- The Vizhinjam International Seaport, located in Thiruvananthapuram, Kerala, is India's first deepwater transshipment and multipurpose port, designed to handle large container ships, bulk cargo, and cruise vessels.
- **Landlord Model:** Fully owned by the Government of Kerala and operated by Adani Vizhinjam Port Private Limited (AVPPL) under a 40-year Public-Private Partnership (PPP) agreement, the port is a landmark infrastructure project costing Rs.8,867 crore.
- Strategically positioned 10 nautical miles from the east-west international shipping route (connecting Europe, the Persian Gulf, Southeast Asia, and the Far East), Vizhinjam leverages its natural depth of 18–24 meters to accommodate megamax container ships (up to 24,300 TEUs) with minimal dredging.
- It aims to capture 75% of India's transshipment cargo currently handled by foreign ports like Colombo, Singapore, and Dubai, saving India \$220 million annually in logistics costs.
- The port features advanced automation, including India's tallest STS Super Post-Panamax crane (74 m lifting height) and an AI-powered Vessel Traffic Management System developed with IIT Madras, making it India's first automated port.
- It is also being developed as a multi-modal hub, with direct road access to National Highway 66 and Kerala's first cloverleaf interchange to handle future cargo growth.
- **Infrastructure:**
  - ◆ Breakwater: Deepest in India (28 m tall, 3.1 km long), ensuring all-weather operations.
  - ◆ Automation: Features automated yard cranes, remotely operated STS cranes, and AI-based traffic management, reducing VTT.
  - ◆ Connectivity: Plans for a 10 km railway link (third-longest tunnel in India) and integration with NH-66 via a cloverleaf interchange.

**Conclusion:**

- The **Vizhinjam International Seaport**, commissioned in May 2025, is India's first deepwater transshipment hub, has fulfilled a long term demand for a deep transshipment port in India.
- It is a major plank in Sagarmala Project (Port Led Development) and will play an important role in India growth story and making a VIKSITBHARAT@47.

**Transshipment Hub**

A transshipment hub is a port where cargo is transferred between ships (e.g., from large mother vessels to smaller feeder vessels) for onward distribution, reducing logistics costs and transit times.

**INDIA'S NORTHEAST - KOLKATA LINK VIA MYANMAR**

**Context**

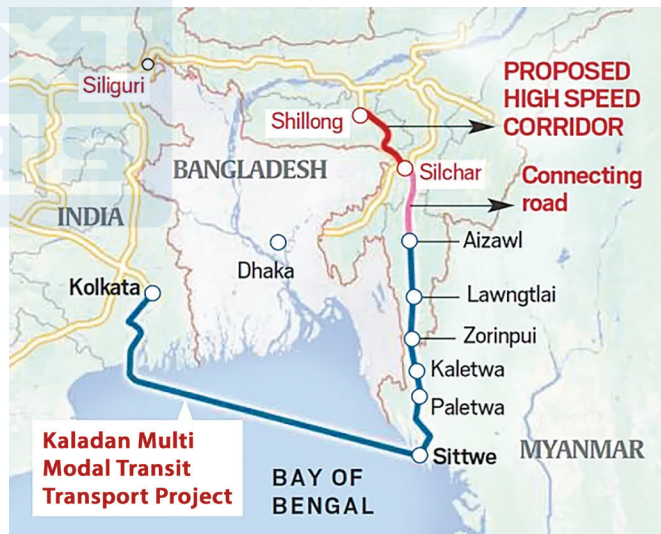
*India's decision to establish a direct link between the Northeast and Kolkata via Myanmar, bypassing Bangladesh, marks a strategic shift in regional connectivity.*

**Key Aspects of India's Northeast & Myanmar**

- India shares a 1,643 km land border with Myanmar, connecting Arunachal Pradesh, Nagaland, Manipur, and Mizoram.
- Myanmar serves as India's gateway to Southeast Asia, making it vital for trade and connectivity.

**Kaladan Multimodal Transit Transport Project (KMTTP)**

- It aims to link Kolkata to Mizoram via Sittwe Port (Myanmar) and Paletwa inland waterways.
  - ◆ It enables multi-modal cargo flow (sea, river, road).
  - ◆ It reduces distance and time compared to the 'Chicken's Neck' corridor (Siliguri).
  - ◆ It connects with India's East-West industrial corridor plans.



**Significance**

- **Shift in Connectivity Strategy:** Historically, the Northeast has relied on Bangladesh for transit access to Kolkata and other parts of India.
- **Geopolitical Considerations:** The decision to bypass Bangladesh comes after Bangladesh's interim government remark related to Northeast India as 'landlocked' and dependent on Dhaka for ocean access.
- **Economic and Strategic Benefits:**
  - ◆ **Boost to Northeast's Economy:** Improved connectivity will enhance trade, tourism, and industrial growth in the region.

- ◆ **Strengthening India's Act East Policy:** The Myanmar route aligns with India's broader strategy to deepen ties with Southeast Asia.
- ➔ **Security Implications:** India's investments in Myanmar infrastructure also help counter Chinese influence.

### Challenges with Myanmar Route

- ➔ Insurgency threats (e.g., Arakan Army operations).
- ➔ Slow construction progress due to terrain and security issues.
- ➔ Chinese infrastructure competition in the same region (Kyaukpyu port, CMEC).

## INDIA'S FARM TRADE AND IMPACT OF FTAS WITH US, EU AND UK

### Context

India is negotiating trade agreements with the United States and European Union, which are both seeking tariff reductions and greater market access for their agricultural products.

### Status of India's Farm Trade

- ➔ India's agriculture exports rose by 6.4% to \$51.9 billion in 2024–25, while overall goods exports remained nearly flat.
- ➔ However, agriculture imports surged by 17.2% to \$38.5 billion, widening the trade gap.
- ➔ Over the past decade, exports grew just 20%, while imports jumped 148%, causing the agri-trade surplus to shrink from \$27.7 billion in 2013–14 to \$13.4 billion in 2024–25.

### Export Trends Productwise

- ➔ Marine exports from India are largely to the US (roughly 35% share), China (20%) and the EU (15%).
  - ◆ Shipments to the US, predominantly frozen shrimps, now attract 17.7% duty.
- ➔ Rice (basmati and non-basmati) hit a record \$12.5 billion, driven by strong demand in West Asia and Africa.
- ➔ Spices, tobacco, coffee, fruits & vegetables reached new highs.
- ➔ Coffee and tobacco exports rose due to poor global harvests.
- ➔ Exports fell for wheat, sugar, and cotton due to domestic supply issues and export restrictions.
- ➔ Cotton has seen a major decline, with India turning into a net importer.
- ➔ Buffalo meat exports exceeded \$4 billion but are still below past highs.

### INDIA'S TOP AGRI EXPORT ITEMS (\$ million)

	2021-22	2022-23	2023-24	2024-25
Marine products	7772.36	8077.98	7372	7405
Non-basmati rice	6133.63	6356.71	4573.41	6527.58
Basmati rice	3537.49	4787.65	5843.3	5944.48
Spices	3896.03	3785.36	4248.56	4451.54
Buffalo meat	3303.78	3193.69	3743.26	4060.54
Sugar	4602.65	5770.83	2824.74	2159.4
Fruits & Vegetables	1692.48	1791.05	2037.58	2065.39
Processed F&V	1190.59	1417.59	1624.22	1805.76
Tobacco	923.57	1213.39	1449.54	1979.01
Coffee	1020.74	1146.18	1286.28	1805.57
Oil meals	1031.94	1601.72	1713.98	1344.39
Oilseeds	1113.65	1337.69	1437.02	1344.31
Castor oil	1175.5	1265.64	1071.55	1152.37
Raw cotton	2816.24	781.43	1116.52	809.72
Wheat	2122.13	1520.46	56.74	2.03
Other cereals	1087.39	1194.07	517.79	270.88
TOTAL	50240.21	53153.55	48821.68	51940.67

### Import Trends

- ➔ Vegetable oils and pulses are top import items due to low yields and lack of MSP support.
- ➔ Pulses imports hit a record \$5.5 billion. Cotton and natural rubber imports rose as domestic production fell.

### INDIA'S TOP AGRI IMPORT ITEMS (\$ MILLION)

	2021-22	2022-23	2023-24	2024-25
Vegetable oils	18991.62	20837.7	14871.66	17333.14
Pulses	2228.95	1943.89	3746.78	5477.28
Fresh fruits	2460.33	2483.95	2734.97	3043.7
Cashew	1255.46	1805.67	1431.39	1669.43
Spices	1299.38	1336.65	1455.57	1625.42
Sugar	169.2	292.97	1984.88	1388.1
Raw cotton	559.55	1438.69	598.66	1219.32
Alcoholic beverages	693.23	797.64	1328.22	1115.51
Natural rubber	1032.71	937.6	739.18	1069.05
TOTAL	32422.3	35686.2	32870.03	38509.32

### Impacts of Trade Agreements

- ➔ India's upcoming trade agreements with the US, EU, and UK (Already executed) are expected to see increased imports of dry fruits, wines, and spirits.
- ➔ The Trump administration may also push for lower import duties and relaxed non-tariff barriers on GM crops like maize, soyabean, and cotton. These developments could impact India's agricultural trade balance, potentially further shrinking the surplus.

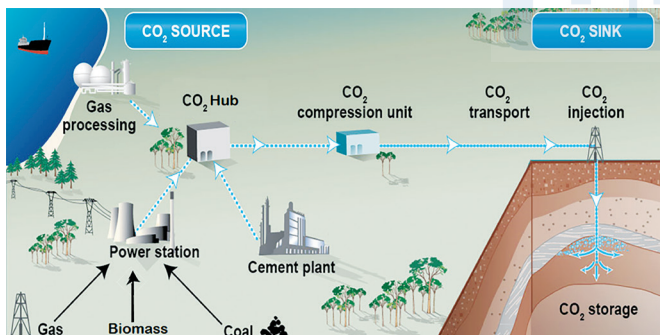
## CCU TESTBEDS

### Context

India launched its first cluster of Carbon Capture and Utilisation (CCU) testbeds for the cement sector.

### About

- **Definition:** Carbon Capture and Utilisation (CCU) refers to a set of technologies that involve capturing carbon dioxide (CO<sub>2</sub>) emissions from sources like power plants and industrial facilities and then converting them into useful products.
- **Process:** The first step involves separating CO<sub>2</sub> from other gases emitted by industrial processes or even directly from the atmosphere (Direct Air Capture - DAC). Various technologies like solvent absorption, membrane separation, and adsorption are used for this purpose.
- **Examples of CO<sub>2</sub> Utilisation:** Injecting CO<sub>2</sub> into oil reservoirs to increase oil extraction, CO<sub>2</sub> can be combined with hydrogen to create synthetic fuels like methanol, ethanol or captured CO<sub>2</sub> can be used to produce concrete, cement alternatives, and other construction materials.



### Significance of the Initiative

- **Decarbonising Hard-to-Abate Sectors:** Cement, steel, power, oil & gas, and fertilizer industries contribute significantly to India's industrial CO<sub>2</sub> emissions. CCU offers a scalable pathway to reduce emissions while maintaining economic growth.
- **Fulfilling Climate Commitments:** The initiative supports India's Nationally Determined Contributions (NDCs) under the Paris Agreement and aligns with long-term Low Emission Development Strategies (LEDS).
- **Public-Private-Academia Synergy:** A unique PPP model brings together academia, industry, and government to deploy translational R&D.

- **Green Cement Production:** Focused innovation may reduce the cost of green cement, enabling wider market adoption and decarbonisation of construction.
- **Circular Economy:** CCU promotes a circular approach by turning a waste product (CO<sub>2</sub>) into a valuable resource, reducing reliance on fossil-based feedstocks.

## TSARAP CHU CONSERVATION RESERVE

### Context

Himachal Pradesh notified the Tsarap Chu Conservation Reserve under the Section 36A(1) of the Wildlife (Protection) Act, 1972. Tsarap Chu joins Darlaghat, Naina Devi, Potter Hill, and Shilli as Himachal Pradesh's fifth conservation reserve.

### About Tsarap Chu

- **Location:** Tsarap Chu is bounded by the Union Territory of Ladakh to the north, the Kibber Wildlife Sanctuary extending up to Malang Nala and Lungar Lungpa to the east, Kabjima Nala to the south and Chandratul Wildlife Sanctuary to the west. It is also the location for the confluence of the **Unam River and Charap Nala**.
- **Biodiversity:** It is one of the select areas in Himachal Pradesh with a **high density of snow leopards**.

### Conservation Reserve

- A Conservation Reserve is a type of protected area designated under the **Wildlife Protection Act, 1972 (amended in 2002)**.
- It is meant to protect landscapes, ecosystems, habitats, and wildlife that lie outside national parks and wildlife sanctuaries but still have ecological, biological, or cultural importance.

## SAGARMATHA SAMBAAD

### Context

Union Minister for Environment addressed the 1st Sagarmatha Sambaad in Nepal, presenting a five-point global action plan to protect fragile mountain ecosystems, with a focus on the Himalayas.

**Additional Information**

- **Sagarmatha Sambaad** is a **biennial**, multi-stakeholder global dialogue forum initiated by the Government of Nepal, named after Mount Everest (Sagarmatha in Nepali), symbolizing friendship, resilience, and hope.
- **“Sagarmatha”**, meaning **‘Head of the Sky’**, symbolizes both the majesty and responsibility of protecting mountain ecosystems. **Sambaad (dialogue)** is named after the world’s tallest mountain **Sagarmatha (Mt. Everest)**.
- It aims to address pressing global, regional, and national issues, with a focus on fostering cooperation, knowledge exchange, and collective action for the common good and humanity’s well-being.

**Key Details:**

- **Establishment:** Launched in 2019, headquartered in Kathmandu, Nepal.
- **First Edition:** Originally planned for April 2–4, 2020, it was postponed due to the COVID-19 pandemic and held on **May 16–18, 2025**, in Kathmandu.
- **Theme:** “Climate Change, Mountains, and the Future of Humanity,” emphasizing the impacts of climate change on mountain ecosystems, glaciers, and sustainable development.
- **Key Outcomes:**
  - ♦ Adoption of the **Sagarmatha Call for Action**, a 25-point declaration urging global action on climate change, glacier preservation, green technologies, climate justice, and financial support for developing nations.
  - ♦ Commitment to establish a multi-stakeholder international forum and knowledge hubs focused on the Himalayas.
- **Significance:** Coincided with the UN’s **International Year of Glaciers’ Preservation (2025)** and aimed to amplify mountain communities’ voices, promote sustainable development, and align with the Paris Agreement’s 1.5°C target.

**Importance of Himalayas**

- **Climate Regulator:** The Himalayas act as a barrier against cold Central Asian winds and influence the Indian monsoon, ensuring rainfall across northern plains.
- **Water Source:** They are the origin of major rivers like the Ganga, Indus, and Brahmaputra, supporting water and food security for over a billion people.
- **Biodiversity Hotspot:** Home to diverse flora and fauna, including endangered species like the snow leopard and red panda.
- **Cultural Significance:** Sacred in Hinduism and Buddhism, the region hosts many pilgrimage sites like Amarnath, Badrinath, and Kailash Mansarovar.

- **Strategic Importance:** Serving as a natural frontier with China, Nepal, and Bhutan, the Himalayas are vital to India’s national security.

**Initiatives Taken to Protect Himalayas**

- **National Mission on Sustaining Himalayan Ecosystem (NMSHE):** Part of India’s National Action Plan on Climate Change (NAPCC), it focuses on sustainable development, glacier monitoring, and biodiversity conservation in the Himalayan region.
- **Secure Himalaya Project:** Launched with UNDP support, it promotes conservation of high-altitude biodiversity and supports sustainable livelihoods in Himachal Pradesh, Uttarakhand, Sikkim, and Ladakh
- **Project Snow Leopard:** Aims to protect snow leopards and their habitat through community-based conservation and scientific research in five Himalayan states.
- **International Big Cats Alliance (IBCA):** India-led initiative to foster global cooperation in protecting big cats like snow leopards and tigers across transboundary Himalayan regions.

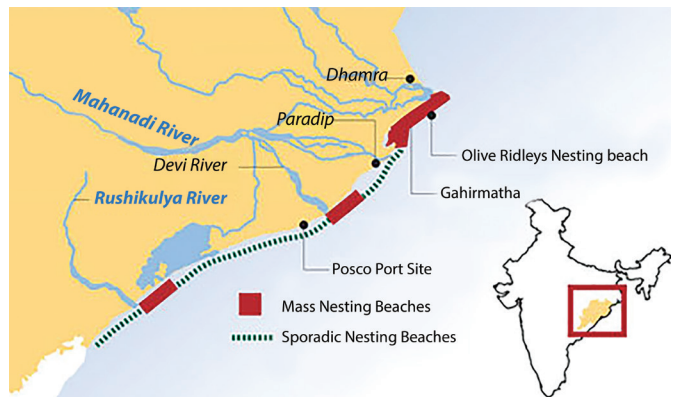
**OPERATION OLIVIA**

**Context**

*Operation Olivia helped protect a record of over 6.98 lakh Olive Ridley turtles nested at the Rushikulya river mouth in Odisha.*

**About**

- **Operation Olivia** is an annual mission of the **Indian Coast Guard’s (ICG)** conducted from November to May.
- **It is aimed at** ensuring safe nesting grounds for Olive Ridley turtles particularly at **Gahirmatha Beach** and surrounding coastal areas of Odisha, which see the arrival of over eight lakh turtles each year.



**About Olive Ridley Turtles**

- The olive ridley gets its name from the **olive green color of its heart-shaped shell**.

- ◆ These are **carnivores** and feed mainly on jellyfish, shrimp etc.
- ⇒ **Distribution:** Olive ridleys are **found throughout the world** primarily in the tropical regions of the **Pacific, Indian, and Atlantic oceans.**
- ⇒ **Major nesting sites in India:** Rushikulya rookery coast (Odisha), Gahirmatha beach (Bhitarkanika National park) and the mouth of the Debi River.
- ⇒ **Features:** They are known for their unique mass nesting called **Arribada**, where thousands of females come together on the same beach to lay eggs.
- ⇒ **Conservation Status:**
  - ◆ **IUCN Red List:** Vulnerable
  - ◆ **CITES Appendix I**
  - ◆ **Schedule I** of the Indian Wildlife (Protection) Act, 1972.

## GLOBAL ENVIRONMENT FACILITY

### Context

*A new study found that biodiversity conservation funds especially from the Global Environment Facility (GEF) are not reaching the indigenous people and local communities (IPLC).*

### About

- ⇒ **Genesis:** The GEF was established in **1992 during the Rio Earth Summit**, reflecting a global commitment to addressing pressing environmental challenges.
- ⇒ **Governance:** The GEF Council serves as the main governing body, responsible for developing, adopting, and evaluating operational policies and programs for GEF-financed activities.
- ⇒ **Functions:** The GEF plays a crucial role as the financial mechanism for five major environmental conventions:
  - ◆ Convention on Biological Diversity (CBD)
  - ◆ United Nations Framework Convention on Climate Change (UNFCCC)
  - ◆ Stockholm Convention on Persistent Organic Pollutants (POPs)
  - ◆ UN Convention to Combat Desertification (UNCCD)
  - ◆ Minamata Convention on Mercury
- ⇒ **GEF Trustee:** **The World Bank** acts as the GEF Trustee, responsible for administering the GEF Trust Fund, mobilizing resources, disbursing funds, and preparing financial reports.
- ⇒ **Member Countries:** The GEF has a wide global reach with 186 member countries, including India, demonstrating broad international participation in its environmental efforts.
- ⇒ **Secretariat:** Washington, D.C., USA.

## EUTHALIA MALACCANA

### Context

*Euthalia malaccana, the latest member of India's butterfly family, has been recorded from Arunachal Pradesh.*

### About

- ⇒ **E. malaccana** was previously thought to be a **subspecies of Euthalia adonia**, but is now recognized as a **distinct species primarily found in Southeast Asia.**
- ⇒ This marks the **first definitive record of the species** in India, supported by photographic and morphological analysis.
- ⇒ **The butterfly is identifiable by:**
  - ◆ A blue apical spot on male forewings (larger in females).
  - ◆ Reduced red spots on the hindwings.
  - ◆ These traits help differentiate it from similar species like Euthalia lubentina.
- ⇒ This discovery extends E. malaccana's **known range into the Indo-Australian region** and contributes to the growing knowledge of butterfly diversity in northeastern India.

## MOEFCC ANNOUNCES WINNING IDEAS UNDER 'IDEAS4LIFE' INITIATIVE

### Context

*The Union Ministry of Environment, Forest and Climate Change announced the 21 winning ideas under the 'Ideas4LiFE' initiative, which was conceptualised under the broader framework of Mission LiFE.*

### About

- ⇒ **The 'Ideas4LiFE' initiative** was launched through a dedicated portal in association with **'UNICEF YuWaah'**, to seek innovative ideas from students, research scholars/faculties and institutions.
- ⇒ **Eligibility:** Open to students, research scholars, faculties, and academic institutions.
- ⇒ **Themes Covered:** Save Energy, Save Water, Say No Single Use Plastic, Sustainable Food Systems adopted, Reduce Waste, Reduce e-waste, Adopt Healthy Lifestyles.

## GLOBAL FOREST WATCH

### Context

*India lost 18,200 hectares (ha) of primary forest in 2024 compared to 17,700 hectares in 2023, according to new data from Global Forest Watch (GFW).*

### Global Findings

- **Tropical primary forest loss:** 6.7 million hectares lost globally – nearly double 2023's figures.
- **Fires Surpass Agriculture as Leading Cause:** For the first time in over two decades, fires became the primary driver of tropical forest loss, accounting for nearly 50% of the total.
  - ◆ The combination of climate change and El Niño led to record-breaking heat and drought, creating conditions ripe for wildfires.
- **Regional Impacts:** Brazil accounted for 42% of global tropical forest loss. Bolivia experienced a 200% increase in forest loss, surpassing the Democratic Republic of Congo for the first time.

### Indian Findings

- **Overall Tree Cover Loss Decreases:** India saw a 6.9% decrease in total tree cover loss between 2023 and 2024, indicating some progress in forest conservation efforts.
- **Increase in Humid Primary Forest Loss:** Contrarily, humid primary forest loss increased by 5.9% in 2024, highlighting ongoing challenges in preserving old-growth forests.
- **Surge in Fire-Related Forest Loss:** Fire-induced primary forest loss escalated to 950 hectares in 2024, marking a 158% increase from the previous year.
- **Regional Hotspots:** The Northeastern states, including Assam, Nagaland, and Mizoram, have been the most affected, primarily due to shifting cultivation, agricultural expansion, and logging.
- **According to the UN Food and Agriculture Organisation:** India had the second highest rate of **deforestation** in the world between 2015 and 2020, losing about 6,68,000 hectares of forest per year.

### What are India's Initiatives to Combat Forest Loss?

- **Policy and Legislative Measures:**
  - ◆ **Forest Conservation Act, 1980 (Amended 2023):** Regulates the diversion of forest land for non-forest purposes, with recent amendments aiming to streamline processes.
  - ◆ **National Forest Policy, 1988:** Aims to maintain at least 33% of India's geographical area under forest or tree cover.
  - ◆ **Compensatory Afforestation Fund Act, 2016 (CAMPA):** Ensures funds collected from forest land diversion are used for afforestation and eco-restoration.
- **Afforestation and Reforestation Programs:**
  - ◆ **Green India Mission:** Part of the National Action Plan on Climate Change, focusing on enhancing forest cover and ecosystem services.
  - ◆ **State-Level Initiatives:** For instance, Uttar Pradesh's plan to plant 35 crore saplings in 2025 to increase green cover.
- **Community Engagement and Rights:**
  - ◆ **Joint Forest Management:** Collaborative management of forests involving local communities and forest departments.

- ◆ **Forest Rights Act, 2006:** Recognizes the rights of forest-dwelling communities, empowering them to manage and conserve forests.
- **Technological Interventions:**
  - ◆ **Satellite Monitoring:** Utilization of satellite data for real-time monitoring of forest cover and illegal activities.
  - ◆ **Mobile Applications:** Development of apps like 'My Plants' to record plantation data and engage the public in afforestation efforts.
- **International Collaborations:** Forest-PLUS 3.0: A U.S.-India initiative aimed at strengthening sustainable forestry practices and enhancing climate resilience.

### Global Forest Watch

- **The World Resources Institute (WRI)** established Global Forest Watch in **1997** as a part of the **forest frontiers initiative**.
- It is an **online platform** that provides data and tools for monitoring forests.
- GFW allows anyone to **access near real-time information** about where and how forests are changing around the world.
- GFW serves a **variety of users** including governments, the private sector, NGOs, journalists, universities, and the general public.

## INDIA'S LION POPULATION RISEN BY 32% SINCE 2020

### Context

*As per the 16th Lion Population Estimation, India has reported a 32% increase in its lion population between 2020 and 2025.*

### Key Findings

- **Population Increase:** The total number of Asiatic lions has risen from 674 in 2020 to 891 in 2025.
- **Demographic Composition:** **Males:** 196, **Females:** 330 (up from 260 in 2020; 26.92% increase), **Sub-adults:** 140 and **Cubs:** 225.
- **Habitat Distribution:**
  - ◆ **55.78%** of lions are located in forested areas.
  - ◆ **44.22%** reside in non-forested landscapes, reflecting the growing range and adaptability of the species.
- **Frequency of Census:** Conducted every five years to monitor population trends and guide conservation strategies.

### Asiatic Lion (Panthera Leo Persica)

- It is one of the **five big cat species** found in India.
- **Physical Characteristics:** Asiatic lions are slightly **smaller than African lions**.

- ◆ Males have **less developed manes**, compared to their African counterparts leaving their ears visible.
  - ◆ Prominent **longitudinal fold of skin** along the belly (a distinguishing feature from African lions).
- **Distribution:** In India, concentrated in the state of Gujarat and around the Gir Forest mainly in;
- ◆ Gir National Park and Wildlife Sanctuary
  - ◆ Paniya Wildlife Sanctuary
  - ◆ Mityala Wildlife Sanctuary
  - ◆ Barda Wildlife Sanctuary
- **Conservation Status:**
- ◆ **IUCN Red List status:** Endangered
  - ◆ **CITES:** Appendix I
  - ◆ **Wildlife Protection Act, 1972:** Schedule I

## MORINGA

### Context

*PKM1, a variety of Moringa oleifera, has created a global impact, especially in countries such as Senegal, Rwanda and Madagascar in the African continent.*

### About Moringa (Moringa oleifera)

- **Origin and Distribution:**
- ◆ Native to India, especially the foothills of the Himalayas.
  - ◆ Now widely cultivated in South Asia, Africa, and tropical regions of Central and South America.
- **Agricultural Requirements:**
- ◆ Prefers deep sandy loam soil with pH between 6.5–8.0.
  - ◆ Thrives in semi-arid and tropical climates. Optimal temperature: 25–30°C.
  - ◆ Drought-resistant and fast-growing — can be harvested multiple times a year.
- **Medicinal & Health Uses:**
- ◆ Used in Ayurveda to treat over 300 conditions.
  - ◆ Known for anti-inflammatory, antimicrobial, and anti-diabetic properties.
  - ◆ Seeds are used to purify water due to their coagulating ability.



## INDIA'S FIRST WOLF SANCTUARY : MAHUADANR

### Context

*A recent study conducted in the Mahuadanr Wolf Sanctuary, Jharkhand, explores the relationship between tribal cultural practices and wolf denning behavior.*

### Mahuadanr Wolf Sanctuary

- It is situated in Jharkhand and was established in **1976 within the Palamau Tiger Reserve** to conserve the endangered **Indian gray wolf**.
- It features rugged grasslands, dense forests, and hills and provides a diverse habitat for various wildlife, including leopards, sloth bears, hyenas, jackals, deer, and numerous bird species. It is India's only protected area dedicated to the Indian gray wolf.



### The Grey Wolf (Canis lupus)

- It was once found across the northern hemisphere from North America to India. Today, their range is more restricted, primarily in remote wilderness areas of Canada, Alaska, northern USA, Europe, and Asia.
- The species is included in CITES Appendix II, except populations from Bhutan, India, Nepal and Pakistan, which are listed on Appendix I.
- It is listed as **Least Concern** on the IUCN Red List.

### Do You Know?

- The Indian wolf (*Canis lupus pallipes*) is a subspecies of grey wolf inhabiting semi-arid and arid areas.
- It primarily inhabits scrublands, grasslands, and semi-arid pastoral ecosystems.
- In eastern regions, including parts of Odisha, Bihar, and West Bengal, they are found in moist, low-density forested areas.
- It is placed under Schedule I of India's Wildlife (Protection) Act, 1972.

## MUSK DEER

### Context

Breeding efforts for musk deer began in 1965, but no breeding programme has been started in Indian zoos for its conservation.

### About

- **Appearance:** Small, solitary ungulates active at night or twilight, belonging to the family Moschidae.
- **Habitat:** They live mainly in the Himalayan mountains, at elevations between 2,500 to 5,000 meters.
  - ◆ They can be found in Jammu & Kashmir, Himachal Pradesh, Uttarakhand, Sikkim, and Arunachal Pradesh.
- **Species:** In India, the main species is the **Kashmir musk deer (Moschus cupreus)**, others species found are the **Himalayan musk deer (Moschus leucogaster) in different Himalayan regions.**
  - ◆ The musk deer is the **state animal of Uttarakhand.**
- **Musk:** The males produce a special musk from a gland near their abdomen, which they use to mark territory and attract mates.
  - ◆ This musk is extremely valuable in the perfume industry and traditional medicine, which makes them targets for poaching.
- **Threats:** Habitat loss, poaching for musk, and climate change threaten their survival.

- **Conservation status:** It is classified as 'endangered' by the International Union for Conservation of Nature (IUCN) and protected under the Wildlife (Protection) Act, 1972.

## GREEN HYDROGEN PRODUCTION

### Context

Researchers have uncovered new insights into proton adsorption on catalyst surfaces, paving the way for more efficient electrocatalysts for green hydrogen production.

### What is Hydrogen?

- Hydrogen is the chemical element with the **symbol H** and **atomic number 1.**
- Hydrogen is the **lightest element** and the most abundant chemical substance in the universe, **constituting roughly 75%** of all normal matter.
- It is colorless, odorless, tasteless, non-toxic, and highly combustible gas.

### What is Green Hydrogen?

- **Green Hydrogen:** The hydrogen produced via **electrolysis**, the splitting of water into hydrogen and oxygen with electricity generated from renewable energy sources such as solar or wind, is known as Green hydrogen.

Hydrogen Colour	Mode of Production	Fuel	Carbon intensity
Green Hydrogen	Electrolysis	Electricity from Wind, Solar, Geothermal, Tidal, Hydro	Near zero
Purple/Pink Hydrogen		Natural heat and electricity/Nuclear electricity in electrolysis	
Yellow Hydrogen		Solar electricity	
Blue Hydrogen	Steam Methane Reforming, Gasification + CCS	Natural gas and coal	Low
Turquoise Hydrogen	Pyrolysis	Natural gas	Medium/low - solid carbon by-product
Grey Hydrogen	Steam methane reforming, (SMR)		Medium
Brown Hydrogen	Gasification	Coal - Brown: Lignite, Black: Black coal	Highest
Black Hydrogen			

- **MNRE defines Green Hydrogen** as having a **well-to-gate emission** (i.e., including water treatment, electrolysis, gas purification, drying and compression of hydrogen) of **not more than 2 kg CO2 equivalent / kg H2**.
- **Gujarat's Kandla port** is the first in India to have an operational Green Hydrogen plant using indigenous Electrolysers.

### Challenges

- **Risks associated with the transportation:** Hydrogen in gaseous form is highly inflammable and difficult to transport, thereby making safety a primary concern.
- **High Production Costs:** The **levelized cost of electricity (LCOE) and electrolyzer costs** are major factors driving up the overall production costs.
- **Disparity in Production Costs:** A substantial disparity between **green hydrogen production costs (\$5.30- \$6.70 per kg)** and traditional grey/blue hydrogen production costs (\$1.9-\$2.4 per kg).
- **Technological Readiness:** The adoption rates and risk factors associated with futuristic technologies pose challenges for financing and scaling up production.

### National Green Hydrogen Mission

- The mission was launched in **2023** with an outlay of **Rs. 19,744 crores**.
- It aims to make India a Global Hub for production, utilization and export of Green Hydrogen and its derivatives.
- The **Ministry of New and Renewable Energy (MNRE)** will be responsible for overall coordination and implementation of the Mission.
- Under the **Strategic Interventions for Green Hydrogen Transition Programme (SIGHT)**, two distinct financial incentive mechanisms – targeting domestic manufacturing of electrolysers and production of Green Hydrogen – will be provided under the Mission.

**NATIONAL GREEN HYDROGEN MISSION OUTCOMES**

- 5 MMT of green hydrogen by 2030
- 60-100 GW electrolyzer installations
- 6 lakh new green jobs
- 125 GW renewable energy for green hydrogen production
- 50 MMT of carbon abatement cumulatively
- Over ₹ 8 lakh crore investments

## DRAFT GEI TARGET RULES

### Context

*The emissions intensity targets, with 2023–24 as the baseline year and 2025–26 and 2026–27 as the target years, aim at the gradual reduction of emissions intensity to promote low-carbon industrial growth.*

### About

- The draft rules **target 282 industrial units** across four highly energy-intensive sectors: 13 aluminium plants, 186 cement plants, 53 pulp and paper plants, and 30 chlor-alkali plants.
- **Alignment with National Climate Goals:** It supports India's commitment to reduce the emissions intensity of its GDP by **45% by 2030** compared to 2005 levels.

### Government Initiatives

- **The Perform Achieve and Trade (PAT) Scheme** was initiated in the year **2012** and is a market-based mechanism aimed to improve energy efficiency in energy-intensive industries by notifying specific energy consumption reduction targets to industries (called Designated Consumers or DCs).
- **Carbon Credit Trading Scheme (CCTS), 2023** provides a platform to generate, trade, and utilise carbon credits. The entities that reduce emissions below targets can sell surplus credits.

### Carbon Markets

- Carbon markets are systems designed to place a price on carbon emissions and create economic incentives for emission reduction, also known as **'carbon credits'**.
- A carbon credit is a kind of tradable permit that as per **United Nations standards**, equals one tonne of carbon dioxide removed, reduced, or sequestered from the atmosphere.
- Under **Article 17 of the Kyoto Protocol**, countries with surplus emission allowances can sell them to those exceeding their targets, creating an international carbon market.

### Voluntary Offsets

- Voluntary offsets refer to **measures undertaken by private individuals**, including afforestation, that can trap carbon dioxide as commercial projects.

## 'REVIVE OUR OCEAN' INITIATIVE

### Context

*A new global initiative, 'Revive Our Ocean,' has been launched to scale up effective, community-led marine protected areas (MPAs) through local action.*

About

- **Objective:** To remove key barriers that prevent coastal communities from managing and conserving their marine spaces.
- **Approach:** It inspires, enables, and equips communities to lead marine conservation.
  - ◆ Create a **Revive Our Ocean Collective** to connect local leaders and successful community-led marine protection models.
  - ◆ It launched a **microfinance program** to provide loans and grants for community-driven marine protection projects.

Marine Protected Areas (MPAs)

- Ocean areas are reserved for long-term conservation of marine ecosystems, governed by national authorities, local governments, NGOs, or through community co-management.
- **Current Status:** Over **16,000** MPAs established globally, covering about **8%** of the world's oceans.
  - ◆ However only **3%** of oceans are under full protection.
- **Global Target:** The 30X30 target of the **Kunming-Montreal Global Biodiversity Framework (KMGBF)** aims to protect **30 percent** of the oceans by **2030**.

PANGOLIN

Context

*Global trafficking of pangolin has sharply declined since 2020.*

About

- Pangolins are mammals covered in **keratin scales**, the only such mammals on Earth.
- They feed on ants, termites, and larvae using their long sticky tongues.
- When threatened, they use **volvation** (rolling into a ball) to protect themselves with their armor-like scales.
- They are considered "**ecosystem engineers**" due to their role in soil aeration and pest control.
- **Indian Pangolin (Manis crassicaudata)**
  - ◆ **IUCN Status:** Endangered
  - ◆ **Habitat:** Widely distributed across India, except arid zones (e.g., Rajasthan), High Himalayas & North-Eastern states
  - ◆ Also found in Bangladesh, Nepal, Pakistan, Sri Lanka
- **Chinese Pangolin (Manis pentadactyla)**
  - ◆ **IUCN Status:** Critically Endangered
  - ◆ **Habitat:** Himalayan foothills – Eastern Nepal, Bhutan, Northern India, Northeast Bangladesh, Southern China.

NORTHEAST'S FIRST GEOTHERMAL PRODUCTION IN ARUNACHAL PRADESH

Context

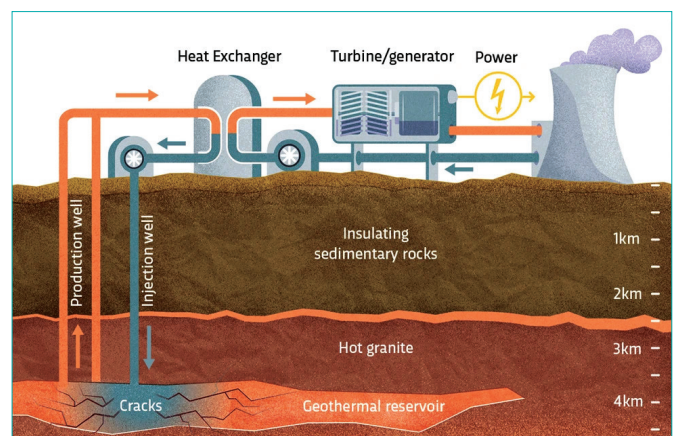
*The Centre for Earth Sciences and Himalayan Studies (CESHS) has successfully drilled Northeast India's first geothermal production well at Dirang in Arunachal Pradesh's West Kameng district.*

About the Project

- The Dirang area is a medium-to-high enthalpy geothermal zone (~115°C), with geological features supporting efficient and low-impact drilling.
- The project involves CESHS, Norwegian Geotechnical Institute (NGI), Icelandic firm Geotropy ehf, and Guwahati Boring Service (GBS).
- It is supported by the **Arunachal Pradesh government** and **India's Ministry of Earth Sciences**.
- This marks a major step toward clean, eco-friendly energy solutions in the high-altitude region.

What is Geothermal Energy?

- Geothermal energy is heat energy from the earth—geo (earth) + thermal (heat).
  - ◆ Geothermal resources are reservoirs of hot water that exist or are human-made at varying temperatures and depths below the earth's surface.
- It taps into the **Earth's subsurface heat** for direct heating or electricity generation, requiring medium- to high-temperature resources typically found near tectonic activity.
- Its key advantages are low cost, reliable year-round operation, and the ability to provide steady, dispatchable power—making it increasingly valuable alongside intermittent sources like solar and wind.
- In India, the Geological Survey of India estimates a potential of 10 GW.



### Applications of Geothermal Energy

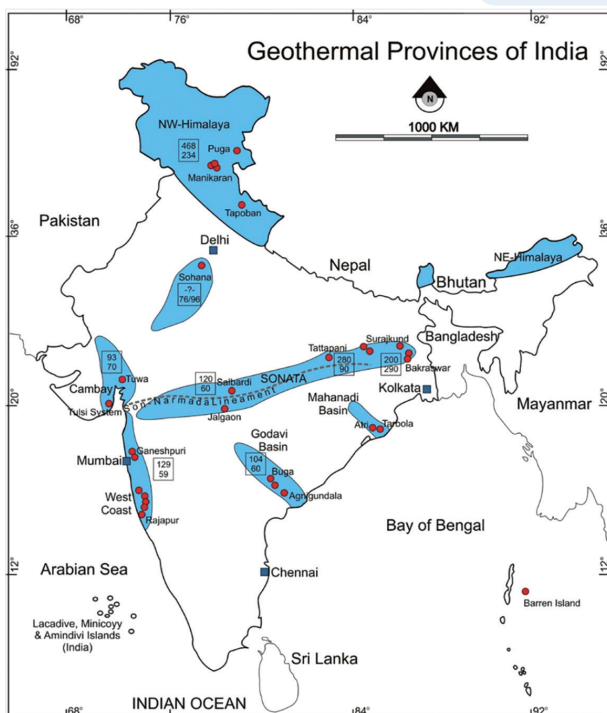
- Geothermal energy serves multiple purposes, including **heating and cooling buildings** with heat pumps, **generating electricity** with power plants, and directly **heating structures** through direct-use applications.
- Geothermal energy can be used for fruit, nut, and meat drying, space heating, and controlled-atmosphere storage—key to improving agriculture and living conditions in high-altitude areas.

### Concerns

- Geothermal energy can cause minor earthquakes in seismically active areas due to high-pressure water injection
- Drilling and resource exploration require significant investment, making the cost a barrier.
- Viable geothermal sites are often **concentrated in specific regions** with active tectonic activity.
- It can pose risks such as land subsidence, water use conflicts, and the release of trace gases if not properly managed.

### Suggestions and Way Ahead

- The successful drilling in Northeast marks a major milestone in India's quest for sustainable energy.
- Geothermal energy can play a vital role in a low-carbon, resilient energy future.
- But it needs continued research, technological innovation, and supportive policies to unlock its full potential.
  - ◆ Public and private sector collaboration will be essential in lowering costs, improving drilling techniques, and integrating geothermal more broadly into energy systems.



## CAQM UNVEILS 19-POINT PLAN TO STAMP OUT STUBBLE BURNING IN DELHI-NCR

### Context

The Commission for Air Quality Management (CAQM) in the National Capital Region and adjoining areas announced a 19-step directive for state governments to eliminate stubble burning.

### About

- The comprehensive plan outlined here represents one of the most robust multi-tiered efforts to curb stubble burning and its associated air pollution across Punjab, Haryana, and NCR Uttar Pradesh.
- The approach integrates administrative accountability, technological innovation, farmer engagement, and legal enforcement.

### Key Measures in the CAQM Plan

- **Farm-Level Mapping & Nodal Officers:** Every farm will be mapped to track stubble management strategies.
  - ◆ One nodal officer will oversee every 50 farmers to ensure localized monitoring.
- **Stubble Management Options:**
  - ◆ **In-situ:** Mulching, use of bio-decomposers.
  - ◆ **Ex-situ:** Baling, storage, and transportation to power plants, packaging industries, brick kilns.
  - ◆ **Crop diversification:** Reducing reliance on paddy to lower residue generation.
- **Infrastructure & Logistics:** Conduct gap analysis of Crop Residue Management (CRM) machinery.
  - ◆ Plan storage for baled straw to prevent fire loss.
  - ◆ Create district-level supply chains for straw transport and utilization.
- **Enforcement & Monitoring:** Supreme Court-directed formation of state-level committees headed by Chief Secretaries.
  - ◆ Monthly compliance reports starting June 1, 2025.
  - ◆ Launch of an online real-time reporting platform for crop residue data.
- **Pilot Project:** A common boiler run on paddy straw will be tested in an industrial estate to supply steam—an ex-situ utilization model.
- **Enforcement Force:** A Parali Protection Force at district and block levels.
  - ◆ Involvement of police, agriculture, and administrative officers.
  - ◆ Enhanced evening patrols and citizen-reporting mechanisms.
- **Penalties for Non-Compliance:** Ensure red entries and impose fines on violating farmers.

### The Commission for Air Quality Management (CAQM)

- Formalized through the Commission for **Air Quality Management in National Capital Region and Adjoining Areas Act, 2021**.
- **Jurisdiction:** Covers Delhi, Punjab, Haryana, Rajasthan, and Uttar Pradesh — especially areas contributing to air pollution in the NCR.
- CAQM is meant to provide an integrated and permanent mechanism for:
  - ◆ Coordinated response to air pollution.
  - ◆ Ensuring synergy across different ministries and states.
  - ◆ Replacing the fragmented approach that involved multiple agencies with overlapping responsibilities.

## IEA'S GLOBAL METHANE TRACKER

### Context

The International Energy Agency (IEA) released *Global Methane Tracker 2025*.

### The IEA's Global Methane Tracker

- It is a vital tool for reducing methane emissions in the energy sector.
- It offers updated estimates of emissions using the latest satellite and ground-based data, alongside information on the costs and opportunities for reduction.

### Key Points

- **Methane** is a greenhouse gas responsible for around **30% of the rise** in global temperatures since the **Industrial Revolution**.
  - ◆ Its levels in the atmosphere are growing faster than other greenhouse gases, with its concentration being two-and-a-half times higher than the preindustrial era.
- **The three main sources of methane** include agriculture, energy and waste sectors.
  - ◆ The energy sector — including oil, natural gas, coal and bioenergy — accounts for more than 35 per cent of methane emissions from human activity.
    - ◆ The energy sector emitted about 145 million tonnes (Mt) of methane in 2024, with oil and gas facilities contributing over 80 Mt.
- **Top methane-emitting countries** from fossil fuels include: China, the United States, Russia, Iran, Turkmenistan, India, Venezuela, and Indonesia.

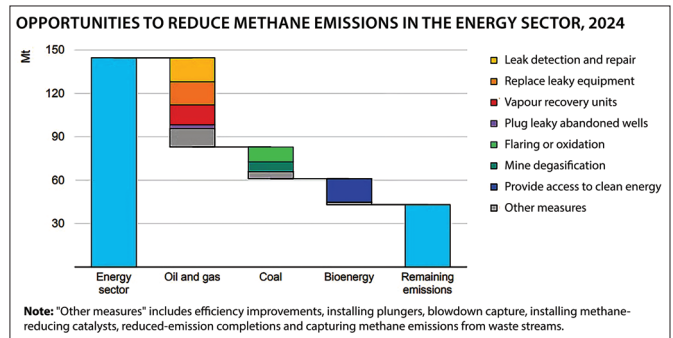
### Challenges

- The IEA also points out a major underreporting issue—**actual methane emissions are 80% higher than reported to the UN**.

- Only about 30 countries included methane reduction in their climate action plans (NDCs) for 2024, and just nine had measurable targets.
  - ◆ A new round of NDCs is due in 2025, with a few nations like Brazil, Canada, UAE, and the UK already incorporating methane measures.
- Few countries and companies have shown verified reductions since initiatives like the **Global Methane Pledge (GMP)** and the Oil and Gas Decarbonization Charter began.
  - ◆ Key emitters like China, India, and Russia, responsible for 45% of methane emissions, have not joined GMP.

### Suggestions

- The International Energy Agency (IEA) highlights key actions to reduce methane emissions, including sealing abandoned coal mines, plugging and monitoring closed wells, and capturing methane for energy or flaring when recovery isn't viable.
- **Bioenergy emissions** can be reduced by promoting clean cooking, modern heating, and careful handling of biogas and biomethane to prevent leaks.
- The report reiterated that with current technologies, around 70 per cent of methane emissions from the fossil sector can be reduced.
  - ◆ For oil and gas sectors specifically, around 75 percent of emissions can be reduced through well-known measures like upgrading leaky and high-emitting equipment or plugging leaky wells.



## GEOTUBING: A BREAKTHROUGH IN COASTAL EROSION CONTROL

### Context

A recent study has found that geotubing technology deployed at Poonthura, Kerala, has been highly effective in controlling coastal erosion.



### Geo-Tubing Technology for Coastal Erosion

- Geotubes are large fabric **containers filled with sand or slurry**, placed strategically along the coast.
- They act as **wave barriers**, diminishing the force of incoming waves and preventing shoreline erosion.
- The **multi-layered geotube** system ensures long-term stability, even under intense sea motion.

### Coastal Erosion in India

- India's coastline is facing severe erosion, with 33.6% of its shoreline classified as vulnerable.

#### Do You Know?

- India's coastline length has been **revised to 11,098.81 km** following a new methodology for measurement.
- Previously, the official coastline length was 7,516.60 kms.

## CROSS RIVER GORILLA, TAPANULI ORANGUTAN AMONG 25 MOST ENDANGERED PRIMATES: REPORT

### Context

*The Cross River Gorilla (*Gorilla gorilla diehli*) and the Tapanuli Orangutan (*Pongo tapanuliensis*) are among the 25 most endangered primates in the world.*

### About

- The **2023-2025 list of the world's 25 most endangered primates** has six species from Africa, four from Madagascar, nine from Asia, and six from the Neotropics (South America).

### Cross River Gorilla (*Gorilla gorilla diehli*)

- Cross River gorillas is a **subspecies of the western lowland gorilla**.

- They tend to have **redder or greyer fur than eastern gorillas**.
- **It is the rarest subspecies of gorilla**, with only a few hundred individuals remaining in highly fragmented forest patches.
- **Region:** Border region of Cameroon and Nigeria in Central Africa.
- **Threats:**
  - ◆ Poaching.
  - ◆ Habitat fragmentation due to agriculture and infrastructure.
  - ◆ Limited genetic diversity due to small population size.
- **IUCN Status:** Critically Endangered.

### Tapanuli Orangutan (*Pongo tapanuliensis*)

- It is the most endangered species of great ape; only discovered as a **distinct species in 2017**.
- **Region:** North Sumatra, Indonesia
- **Threats:**
  - ◆ Habitat destruction from hydropower development and agriculture.
  - ◆ Small and isolated population.
- **IUCN Status:** Critically Endangered.

## NEW RULES FOR ACCESS AND BENEFIT SHARING OF BIODIVERSITY

### Context

*The National Biodiversity Authority (NBA) has notified the Biological Diversity (Access to Biological Resources and Knowledge Associated thereto and Fair and Equitable Sharing of Benefits) Regulation, 2025.*

### What is Access and Benefit Sharing (ABS)?

- The rules are notified to streamline and regulate benefit sharing from the use of biological resources and associated knowledge.
- ABS refers to the framework through which benefits arising from the use of biological resources and associated traditional knowledge are shared fairly and equitably with the communities that have conserved these resources.
- It is a principle under the Convention on Biological Diversity (CBD).
- India operationalizes ABS through the Biological Diversity Act, 2002, and its recent amendment the Biological Diversity (Amendment) Act, 2023.

### Key Features of the 2025 Regulation

- **Turnover-Based Benefit Sharing:**
  - ◆ **Below ₹5 crore:** Exempt from benefit sharing.
  - ◆ **₹5 crore–₹50 crore:** 0.2% of annual gross ex-factory sale price (excluding taxes).
  - ◆ **₹50 crore–₹250 crore:** 0.4% of annual turnover.

- ◆ **Above ₹250 crore:** 0.6% of annual turnover.
- ◆ Entities with turnover above ₹1 crore must file annual statements on resource usage.
- ➔ **Inclusion of Digital Sequence Information (DSI):** DSI now considered part of genetic resources, closing earlier loopholes where only physical materials were covered.
  - ◆ It aligns with the outcomes from COP16 of the Convention on Biological Diversity in Cali, Colombia.
  - ◆ Cultivated medicinal plants are exempted, provided they are notified by the Ministry of Environment in consultation with the AYUSH Ministry.
- ➔ **High-Value Resources:** For resources of high conservation/economic value (red sanders, sandalwood, agarwood and threatened species), minimum 5% of proceeds from auction/sale must be shared.
  - ◆ This can go up to 20% in case of commercial exploitation.
- ➔ **Intellectual Property Rights (IPR):** Applicants for IPR involving biodiversity must disclose the use of biological resources and share benefits accordingly.
- ➔ **Distribution of Benefits:** 10–15% retained by the National Biodiversity Authority.
  - ◆ Remaining benefits directed to local communities and claimants through Biodiversity Management Committees (BMCs).

### Significance of the New Regulation

- ➔ **Addresses regulatory gaps:** It includes DSI which was previously excluded under the 2014 guidelines.
- ➔ **Transparency:** Clear slabs promote predictability for industries like pharmaceuticals, cosmetics, and biotechnology.
- ➔ **Supports cultivation:** Encourages cultivation of medicinal plants over extraction from wild sources.

### Digital Sequence Information

Digital Sequence Information, or “DSI”, is a policy term that refers broadly to genomic sequence data and other related digital data. This includes the details of an organism’s DNA and RNA, which determine its characteristics and unique traits.

## CHLORPYRIFOS

### Context

*At meetings of the conferences of the Parties to the Basel, Rotterdam and Stockholm (BRS) conventions in Switzerland, India has opposed the inclusion of the insecticide Chlorpyrifos under the Stockholm Convention on Persistent Organic Pollutants (POPs), citing concerns over food security due to the lack of alternatives.*

### About:

- ➔ Over 40 countries have banned Chlorpyrifos.
- ➔ Many Indian experts have also called for an immediate ban on chlorpyrifos—a toxic pesticide.
- ➔ It is an insecticide which is a chemical linked to adverse effects on neurodevelopment, reduced birth size, lung and prostate cancer upon chronic exposure.
- ➔ The World Health Organization (WHO) has classified chlorpyrifos as a moderately hazardous pesticide. The chemical inhibits an enzyme called acetylcholinesterase, which results in adverse nervous system effects.

### Stockholm Convention on Persistent Organic Pollutants (POPs)

- ➔ It was adopted in May 2001 in Stockholm, Sweden, and entered into force on 17 May 2004.
- ➔ It aims to protect human health and the environment from harmful chemicals known as persistent organic pollutants.
- ➔ The Stockholm Convention lists chemicals in three annexes. While Annex A lists chemicals to be eliminated, Annex B and C lists chemicals to be restricted, and minimising unintentional production and release of listed chemicals.
- ➔ India ratified the Stockholm Convention and Rotterdam Convention in 2006.

### The Rotterdam Convention:

- ➔ The Rotterdam Convention is a multilateral treaty to promote shared responsibilities in relation to importation of hazardous chemicals.
- ➔ The convention promotes open exchange of information and calls on exporters of hazardous chemicals to use proper labeling, include directions on safe handling, and inform purchasers of any known restrictions or bans.
- ➔ Signatory Nations can decide whether to allow or ban the importation of chemicals listed in the treaty, and exporting countries are obliged to make sure that producers within their jurisdiction comply.
- ➔ Annex III of the Rotterdam Convention lists chemicals subject to the Prior Informed Consent (PIC) procedure, which requires exporting countries to obtain consent from importing countries before shipping these substances.

### Basel Convention

- ➔ The Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal, is an international treaty that was designed to reduce the movements of hazardous waste between nations, and specifically to restrict the transfer of hazardous waste from developed to less developed countries.
- ➔ It does not address the movement of radioactive waste, controlled by the International Atomic Energy Agency.

## PALMYRA

### Context

*The Syrian civil war in 2011, turned Palmyra's strategic location into a conflict zone, leading to widespread destruction of its ancient monuments.*

### About

- **Location:** Palmyra is an ancient city in central Syria.
- **Historical Significance:** It has been a site of human settlement since the Neolithic period. Historical documents first mention the city in the early **second millennium BCE**.
  - ◆ In the 1st century AD it was integrated into the **Roman Empire**.
  - ◆ Situated at a key junction on the **Silk Road**, Palmyra became a major trade and cultural hub, linking the Roman Empire with Persia, India, and China.



- **Architectural Significance:** The site is a fusion of Graeco-Roman, local, and Persian architectural styles. Palmyra was inscribed as a **UNESCO World Heritage Site** in 1980.

## TIEXIAN REEF (SANDY CAY REEF)

### Context

*The South China Sea dispute has intensified as China and the Philippines assert claims over Tiexian Reef (Sandy Cay Reef).*

## South China Sea tensions



### About

- **Location:** It is a part of the Spratly Islands chain in the South China Sea. It lies close to **Thitu Island (Pag-asa)**, which is under Philippine control.
- China refers to **Tiexian Reef** as part of **Nansha Islands** and Philippines refers to it as **Sandy Cay**.
- The reef is partially **submerged at high tide** and **consists of sandbars** that occasionally rise above sea level.
- **Strategic Importance:** Control of the reef allows for increased military and surveillance capability in the region.

## WESTERN DISTURBANCE

### Context

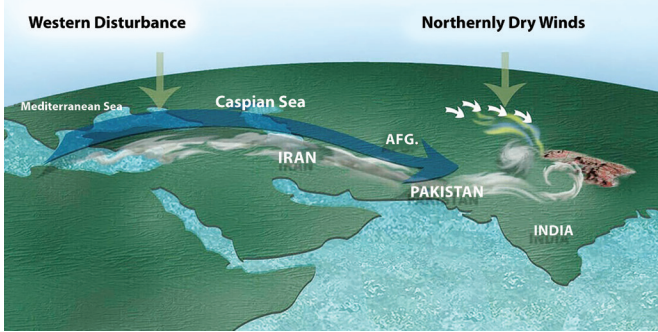
*The weather conditions were triggered by a fresh Western Disturbance over northern and northwestern parts of the country causing heavy rainfall.*

### About

- Western Disturbances are **cyclonic storms** that form over land. These are referred to as **middle latitude or extra tropical cyclones**, because of development in the **mid and high latitude**.
- They occur mostly in the **Mediterranean region** due to a temperature gradient caused by the mixing of warm air from the tropics and cold air from the northern polar regions.

- ◆ They collect moisture from the Mediterranean Sea, Black Sea and Caspian Sea and traverse over Iran and Afghanistan before hitting the western Himalayas.
- ⇒ While the storm systems occur throughout the year, they travel to India mostly between December and April because of the trajectory of the subtropical westerly jet stream.

### WESTERN DISTURBANCES IN INDIA



- ⇒ **Origin:** It is formed by the confluence of two rivers, Chandra and Bhaga, at Tandi in the Lahaul and Spiti district of Himachal Pradesh.
  - ◆ Known as **Chandra-Bhaga** in upper reaches, it becomes Chenab downstream.
- ⇒ **Course:** It flows then through the Jammu region of Jammu and Kashmir, joins the Sutlej River to form the Panjnad in Pakistan, which ultimately flows into the Indus River at Mithankot.
- ⇒ **Tributaries: Right Bank:** Marusudar (largest tributary), Miyar Nalla, Bhut Nalla, and Kalnai
- ⇒ **Left Bank:** Niru, Tawi, Neeru, and Lidrar
- ⇒ **Major Hydroelectric Projects on Chenab River:** Salal Hydroelectric Project (at Reasi), Baglihar Hydroelectric Power Project (at Ramban), Dul Hasti Hydroelectric Plant (Kishtwar district) & Ratle Hydroelectric Plant (Drabshalla in the Kishtwar district).

### YALA GLACIER

#### Context

Glaciologists and local communities mourned the loss of Nepal's Yala glacier, believed to be the first Nepalese glacier to be declared "dead".

#### About

- ⇒ **Location:** It is situated in Langtang National Park, in Nepal's Himalayan region.
- ⇒ **Altitude:** It lies at an elevation of about 5,000 meters above sea level.
- ⇒ **Type:** It is a small plateau glacier often used as a training site for glaciological studies and mountaineering.
- ⇒ **Size:** It has shrunk by 66% and retreated 784 meters since the 1970s. It is expected to vanish completely by 2040.

#### Glaciers Lost Earlier

- ⇒ **Lemthang Glacier, Bhutan:** Vanished after a glacial lake outburst flood in 2017.
- ⇒ **OK Glacier in Iceland (2019):** First glacier in the world to be declared "dead."
- ⇒ **Pizol Glacier, Switzerland (2019):** The glacier had lost more than 80% of its volume since 2006.

### NEW CALEDONIA

#### Context

New Caledonia is facing deepened political uncertainty ahead of the November 2025 provincial elections.

### Impacts of Western Disturbances in India

- ⇒ Western Disturbances support rabi crops by bringing rainfall and sustaining river flow, but irregular patterns can negatively impact the rabi crops yields.
- ⇒ These have a significant impact on India's climate and environment, affecting not only the weather patterns but also the country's food and water security.

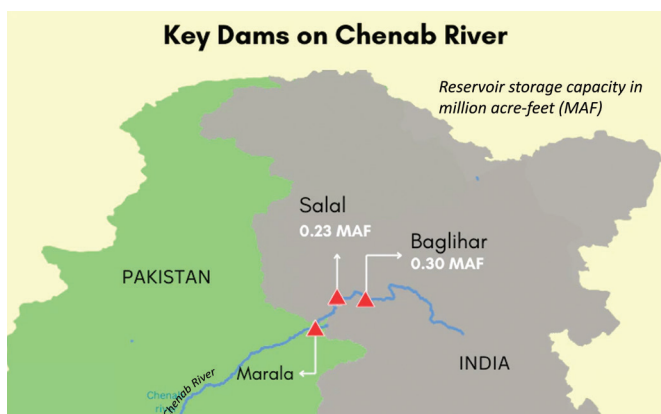
### CHENAB RIVER

#### Context

India has restricted the flow of waters of Chenab at the Baglihar and Salal hydro-electric dams in Jammu and Kashmir after the Indus Treaty suspension.

#### About

- ⇒ The Chenab is part of the Indus river system and flows into Pakistan.



## About

- It is classified as a **French overseas collectivity**, enjoying significant autonomy under French sovereignty.
- **Colonised in 1853** by France as a penal colony, its history is marked by resistance from the **Indigenous Kanak population**.
- The **1998 Nouméa Accord** granted autonomy and led to three referendums, all rejecting independence, though the 2021 vote was boycotted by pro-independence groups, casting doubt on its legitimacy.
- The push for **independence continues** due to unresolved historical grievances and contested **political status**.



## New Caledonia

- New Caledonia is located in the Southwestern Pacific Ocean, approximately 1,500 km east of Australia.
- It lies within a geopolitically sensitive area, surrounded by Australia (west), Vanuatu (north), and Fiji (northeast) — placing it within the **Indo-Pacific strategic sphere**.
- The **Nouméa Accord (1998)** granted New Caledonia enhanced autonomy and set the path for independence referendums.
- Under the Noumea Accord signed in 1998, the French State retains sovereignty for defence, foreign affairs, law and order, monetary policy, and tertiary education and research.

## BHARAT FORECASTING SYSTEM LAUNCHED

### Context

*The Ministry of Earth Sciences has launched the Bharat Forecasting System (BFS).*

## Bharat Forecasting System

- Developed by the **Indian Institute of Tropical Meteorology (IITM), Pune**, to deliver highly localized weather forecasts with a **6 km resolution—the most advanced globally**.
- It allows for more precise prediction of small-scale weather events.

- It is powered by the **supercomputer Arka (11.77 petaflops, 33 petabytes)**.
  - ◆ The previous supercomputer '**Pratyush**' used to take up to 10 hours to run the forecasting model.
- It covers the tropical region (30°S to 30°N), including all of India, and surpasses global models from the **U.S., UK, and Europe**, which operate at 9–14 km resolution.

## Importance

- It significantly improves processing speed over the previous system, reducing model run time from 10 hours to 4.
  - ◆ It uses data from **40 Doppler Weather Radars**, with plans to expand to 100, enabling both detailed local forecasts and nowcasts (2-hour forecasts).
- It marks a major advancement in India's meteorological self-reliance, with benefits for disaster management, agriculture, water resources, and public safety down to the panchayat level.
- Supports India's commitment to the **Sendai Framework for Disaster Risk Reduction**.

## Sendai Framework for Disaster Risk Reduction

- The Sendai Framework for Disaster Risk Reduction 2015-2030 outlines **seven clear targets and four priorities** for action to prevent new and reduce existing disaster risks:
  - ◆ Understanding disaster risk;
  - ◆ Strengthening disaster risk governance to manage disaster risk;
  - ◆ Investing in disaster reduction for resilience and;
  - ◆ Enhancing disaster preparedness for effective response, and to "Build Back Better" in recovery, rehabilitation and reconstruction.
- It aims to achieve the substantial reduction of disaster risk and losses in lives, livelihoods and health and in the economic, physical, social, cultural and environmental assets of persons, businesses, communities and countries over the next 15 years.
- The Framework was adopted at the Third UN World Conference on Disaster Risk Reduction in Sendai, Japan, on March 18, 2015.

## IRAN SLAMS TRUMP'S PLAN TO RENAME PERSIAN GULF

### Context

*US President Donald Trump's now-aborted move to rename the Persian Gulf as the 'Arabian Gulf' or 'Gulf of Arabia' stirred sharp condemnation from Iranian officials.*

About

- Iran saw it as a politically charged attack on its national identity and historical legacy.
- The suggestion reportedly emerged ahead of Trump's visit to Saudi Arabia, Qatar and the United Arab Emirates.

Persian Gulf

- The Persian Gulf is a strategically important and economically vital body of water in **Western Asia**.
  - ◆ A gulf is a large part of the ocean or sea that is **partially enclosed by land, typically with a narrow opening to the sea**.
- It opens into the **Gulf of Oman and the Arabian Sea** via the **Strait of Hormuz**.
- The countries that surround the Persian Gulf are **Iran, Iraq, Kuwait, Saudi Arabia, Bahrain, Qatar, and UAE**.
  - ◆ All these nations, except Iran, use the names **'Arabian Gulf' or just 'Gulf'** to refer to the body of water, and have debated for long that it must be renamed.



- **Background:** The Persian Gulf gets its name from **Persia**, which was the **former name for Iran**.
  - ◆ Persia was officially **renamed Iran in 1935** after Reza Shah Pahlavi, then Shah of Iran, felt that 'Persia' was an **exonym - a historical name given by outsiders**.
  - ◆ He decided that the country deserves to be known by its **endonym - a name given by its natives**.

KANGCHENJUNGA MOUNTAIN

Context

*The Chief Minister of Sikkim has urged the Central Government to declare Mount Khangchendzonga, sacred to the people of Sikkim, as out of bounds for mountaineers.*

About Khangchenjunga

- The Sikkim government banned all climbing activities on Mt. Khangchendzonga through notifications in 1998 and 2001 under the Sacred Places of Worship (Special Provisions) Act, 1991.



- It is the **third-highest mountain** in the world at an elevation of **8,586 metres**.
- It is located on the border between **Sikkim in India and eastern Nepal**. It is part of a section of the Himalayas known as the **Kangchenjunga Himal**.
- This section is geographically bounded by the **Tamur River in the west** and the **Teesta River in the east**.

UNESCO World Heritage Status

- The **Khangchendzonga National Park**, located in Sikkim, was declared a UNESCO World Heritage Site in **2016** under the **Mixed category**, both cultural and natural.
- Numerous glaciers, such as the **26 km long Zemu Glacier**, and high-altitude lakes further enhance the park's ecological diversity.
- The park lies in the **Eastern Himalaya global biodiversity hotspot** and covers **25%** of the total area of Sikkim.

Do You Know?

Until 1852, Kangchenjunga was assumed to be the highest mountain in the world. However, precise calculations and meticulous measurements by the **Great Trigonometrical Survey of India in 1849** showed that Mount Everest, known as Peak XV at the time, is actually higher. After allowing for further verification of all calculations, it was officially announced in 1856 that Kangchenjunga is the third-highest mountain in the world.

MAGNETIC FLIP-FLOP

Context

*Recent studies indicate that Earth's magnetic field is weakening and shifting, raising concerns over possible magnetic excursions or even a full-scale polarity reversal.*

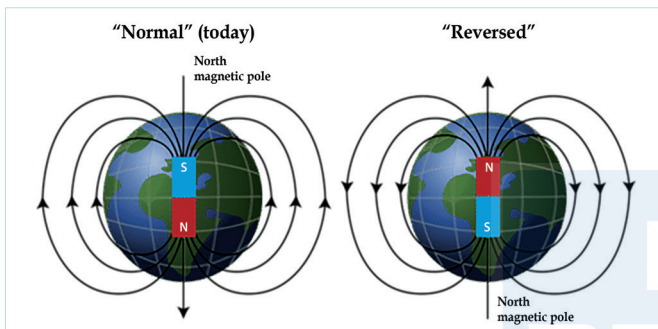
Earth's Magnetic Field

- It is generated by the complex flow of molten metallic material in the outer core of the planet.

- The flow of this material is affected both by the rotation of Earth and the presence of a solid iron core, which results in a dipolar magnetic field where the axis roughly aligns with the rotational axis of the planet.

### Cause of Magnetic Field Reversal

- Short-term variations (milliseconds to days) are caused by solar activity and interaction with charged particles in space.
- Long-term changes, such as reversals and excursions, result from turbulent flows in the outer core, driven by heat released from the inner core and modulated by planetary rotation.
- A reversal happens when the flow of molten material in the core changes direction—for instance, from clockwise to anticlockwise—altering the magnetic field’s orientation.



### Magnetic Reversals and Excursions

- Magnetic reversal is a phenomenon where the magnetic north and south poles swap places. It occurred 183 times in the past 83 million years.
  - ◆ The last major reversal was the Brunhes-Matuyama reversal, about 780,000 years ago.
  - ◆ It can take thousands of years to complete, estimated at 22,000 years.
- Magnetic excursions are temporary and incomplete shifts in the magnetic field direction. It occurs 10 times more frequently than full reversals. The examples are as:
  - ◆ Norwegian-Greenland Sea event (64,500 years ago),
  - ◆ Laschamps and Mono Lake (34,500 years ago),

### Concerns Arising from Field Instability

- **Atmospheric Vulnerability:** During weak-field phases, Earth’s atmosphere is more exposed to harmful solar wind and cosmic rays.

- **Technological Impacts:** It could disrupt power grids, satellite operations, and communication systems.
- **Biological Impact:** Many animals, such as birds, sea turtles, and whales, rely on Earth’s magnetic field for navigation. A flip or fluctuation could disrupt migratory patterns and breeding cycles.

### Concluding Remarks

- Though Earth’s magnetic field has reversed and fluctuated many times in geological history, the precise timing and triggers of such events remain uncertain.
- However, as human society grows increasingly dependent on electromagnetic infrastructure, understanding and predicting the behavior of the magnetic field becomes vital.

## KILAUEA VOLCANO

### Context

The Kilauea volcano on Hawaii’s Big Island released lava fountains over 1,000 feet high, marking the 23rd eruption episode since December 2024.

### About

- It is **one of six active volcanoes** in the Hawaiian Islands. It is a **shield volcano**, known for effusive lava flows rather than explosive eruptions.
- It is located within the **Hawaii Volcanoes National Park**, alongside **Mauna Loa** (the largest volcano in the world).
- Although **smaller** than Mauna Loa, **Kilauea is more active** and draws frequent attention due to its **consistent volcanic activity**. It has been **erupting frequently since 1983**.

### Shield Volcano

- Shield volcanoes are broad, gently sloping volcanoes built by the eruption of low-viscosity basaltic lava, which flows long distances before solidifying.
- Their shape resembles a warrior’s shield, with a wide base and low profile.
- They are the largest type of volcano in terms of area covered, primarily formed by repeated, fluid lava flows rather than explosive eruptions.

FEATURE	SHIELD VOLCANO	STRATOVOLCANO	CINDER CONE
Shape	Broad, gentle slopes	Steep, conical	Small, steep
Lava Type	Basaltic, fluid	Andesitic, viscous	Basaltic, fragmental
Eruption Style	Effusive	Explosive	Moderately explosive
Example	Mauna Loa	Mount Fuji	Paricutin
Height	Low relative to width	Tall, prominent	Small, <1 km

## DRDO'S BREAKTHROUGH: INDIA ADVANCES HYPERSONIC PROPULSION

### Context

*DRDL, a laboratory under DRDO, successfully conducted ground testing of an Active-Cooled Scramjet Subscale Combustor for over 1000 seconds.*

### About Hypersonic Propulsion Technology

- It is a cutting-edge field focused on enabling vehicles to travel at speeds exceeding **Mach 5 (five times the speed of sound)**.
- It is primarily used in hypersonic cruise missiles and advanced aerospace systems.

### Mach Number (M)

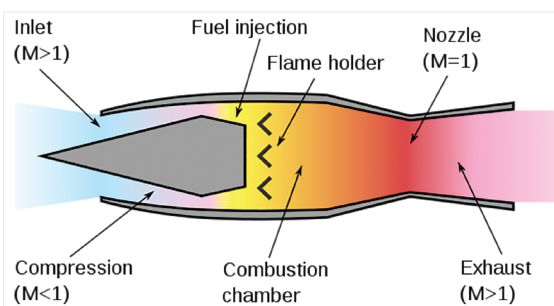
- It is the ratio of speed of object and speed of sound.
  - Subsonic:**  $M < 1$
  - Transonic:**  $M = 0$  (Speed of an object is equal to the speed of sound)
  - Supersonic:**  $1 < M < 3$
  - High Supersonic:**  $3 < M < 5$
  - Hypersonic:**  $M > 5$
- The Space Shuttle re-enters the atmosphere at high hypersonic speeds ( $M \sim 25$ ).

### Key Features of Hypersonic Propulsion Technology

- Air-Breathing Engines:** Hypersonic vehicles use **Scramjet (Supersonic Combustion Ramjet) Engine**, which **rely on atmospheric oxygen** for combustion instead of carrying onboard oxidizers. It makes them more efficient for sustained high-speed flight.

### Scramjet (Supersonic Combustion Ramjet) Engine

- A Scramjet is an air-breathing engine that operates efficiently at hypersonic speeds by allowing supersonic combustion of air.



### Key difference from a Ramjet:

- In a Ramjet, air slows down to subsonic speeds before combustion.
- In a Scramjet, air remains supersonic throughout the process, allowing higher speeds.
- Working principle:** Uses the vehicle's forward motion to compress incoming air without any rotating compressor.
- India became the **fourth country after the USA, Russia, and China** to demonstrate flight testing of a Scramjet engine.

### Significance of the Scramjet Engine Test

- Validation of Long-Duration Supersonic Combustion:** The test confirms the design and efficiency of the scramjet combustor, ensuring sustained high-speed flight capabilities.
  - It follows an earlier 120-second test conducted in January, demonstrating incremental advancements.
- Strengthening India's Hypersonic Missile Program:** Scramjet engines enable air-breathing propulsion, **reducing reliance on onboard oxygen** and enhancing missile range.
  - The successful test paves the way for full-scale flight testing of hypersonic cruise missiles.

## NATIONAL SECURITY ADVISORY BOARD

### Context

*The government has reconstituted the National Security Advisory Board (NSAB) and appointed former Research and Analysis Wing (RAW) chief Alok Joshi as its new chairman.*

### National Security Advisory Board

- The NSAB was constituted in **1998**, as an **advisory body** of eminent persons outside the government to render advice on national security issues.
- Structure:** It is headed by a Chairperson and composed of eminent persons from diverse fields.
  - It draws people of diverse domains including industry, media and civil society, among others.
- Key Functions:**
  - It advises the **National Security Council (NSC)** on policy matters related to national security.
  - Suggests measures and policy options on internal and external security, strategic and technological challenges.

## MILITARY EXPENDITURE REPORT BY SIPRI

### Context

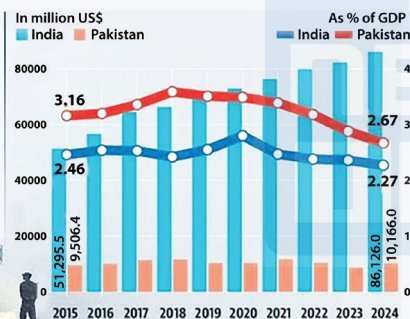
According to the Stockholm International Peace Research Institute (SIPRI), India's military spending in 2024 reached \$86.1 billion nearly nine times Pakistan's \$10.2 billion.

### Key Findings of recent report

- Global military spending reached a **record \$2,718 billion in 2024**. The global military burden rose to **2.5% of GDP**.
- Europe was the biggest driver, increasing spending by 17% due to the war in Ukraine.
- The top five military spenders (U.S., China, Russia, Germany, and India) accounted for **60% of global defence expenditure**.
- China** spent \$314 billion, **dominating Asia's military spending**, while Russia's expenditure surged 38% to \$149 billion amid the ongoing Ukraine war.
- Ukraine spent \$64.7 billion, **representing 34% of its GDP** — the highest military burden globally.

## INDIA, PAK'S MILITARY EXPENDITURE

India's expenditure on defence continues to vastly outstrip Pak's even though Islamabad spends a higher proportion of its GDP on the military, said a Sipri report.



## IGLA-S MISSILES

### Context

The Indian Army has received fresh supplies of the Russian-made Igla-S missiles.

### About Igla-S Missiles

- They are the Russian-made man-portable air-defense system (MANPADS) designed to engage low-flying aircraft, helicopters, drones, and cruise missiles.
- The missile uses infrared (IR) homing to lock onto the heat signatures of aerial targets.
- It has enhanced ability to resist jamming and decoy flares due to its dual-band IR seeker.
- It can engage targets at ranges up to 6 km and altitudes up to 3.5 km.

- The Igla-S is an advanced version of the Igla missile system, which has been in service since the 1990s.

## CIVIL DEFENCE DRILLS

### Context

The Ministry of Home Affairs (MHA) has directed states to conduct nationwide mock drills to strengthen civil defence preparedness in response to heightened tensions with Pakistan following a terrorist attack in Pahalgam.

### About 'Civil Defence' Drills

- The drills are part of **India's passive defence strategy** amid continued cross-border firing and rising geopolitical tensions.
- The drills will be carried out in **244 identified districts, including village-level operations**.
- It will involve operationalising air-raid warning signs, crash blackout measures, camouflaging vital installations, evacuation plans, establishing hotline with the Indian Air Force and training civilians on the aspects of civil defence measures in the event of a "hostile attack."
- States have been asked to activate control rooms, firefighting and warden services and undertake **cleaning of bunkers** and trenches among others.
- Bunkers are prevalent in border villages mostly in Jammu and Kashmir to shield civilians from cross-border firing.

### Civil Defence Framework in India

- The **Civil Defence Act, 1968** was enacted in the aftermath of the **1962 India-China War and the 1965 India-Pakistan War**.
- It provides for protective measures for people, property, and infrastructure against hostile attacks from air, land, or sea.
- The Act also authorises:**
  - Formation of Civil Defence Corps.
  - Framing of rules and regulations for implementation.
- Civil Defence Corps** consists of trained civilian volunteers, mobilised during war or disaster for relief and support.
  - School, college students, National Cadet Corps (NCC), members from Nehru Yuva Kendra Sangathan (NYKS) will also be involved in the exercise.

## IMDEX ASIA 2025

### Context

Indian Naval Ship INS Kiltan arrived in Singapore to participate in IMDEX Asia 2025 at the Changi Exhibition Centre.

About

- It is **Asia Pacific’s premier naval and maritime defence exhibition**, held in **Singapore** and was established in **1997**.
- It is a biennial **event that brings** together naval leaders, maritime defence companies, and technology innovators from around the world.
- The **2025 edition** features over 230 exhibitors from 25 countries and welcomes more than 12,000 attendees from 70 nations.

INS ARNALA

Context

*The Indian Navy took delivery of a new shallow-water vessel designed for anti-submarine warfare (ASW).*

About

- INS Arnala is the lead ship of the **Arnala-class anti-submarine warfare (ASW) corvette**, it is named after **Arnala Island**, which is located off the coast of Maharashtra.
- Indigenously designed** by Garden Reach Shipbuilders and Engineers (GRSE), Kolkata.
- Role:** The ship has been designed for underwater surveillance, search & rescue operations and Low Intensity Maritime Operations (LIMO).
- Features:**
  - The ship is capable of full-scale sub-surface surveillance of coastal waters as well as search and attack. It can also carry out ASW operations in coordination with aircraft.
  - Arnala also boasts a combat management system and armament consisting of lightweight torpedoes and ASW rockets.

TERRITORIAL ARMY (TA)

Context

*Rule 33 empowers the Central Government to authorize the Chief of the Army Staff (COAS) to call out the Territorial Army. This provision can be invoked to provide essential guard duties or to supplement and support the regular Indian Army.*

About the Territorial Army (TA)

- About:** It is a **volunteer force** that acts as a **second line of defence** after the regular Indian Army.
  - Unlike full-time soldiers, TA members are **civilians who take time out of their regular jobs** (doctors, engineers, business owners, and more) to train and serve the country in times of need.

- History:** The genesis of the Territorial Army in India can be traced back to the **first war of Independence in 1857**, when a Volunteer Force was raised. The TA in its current form came into being when the **Territorial Army Act** was enacted on **Aug 18, 1948**.
- Rank:** It comprises officers, junior commissioned officers (JCOs), non-commissioned officers (NCOs), and other ranks — all holding **ranks identical to the regular Indian Army**.
- Strength:** The TA currently has a strength of over **40,000 personnel** organised into **32 infantry battalions** and various engineer and departmental units.
- Nickname and Motto:** The force is nicknamed the 'Terriers' and operates under the motto 'Savdhani Va Shoorta' (Vigilance and Valour).
- Command:** It is commanded by a **Director General of Territorial Army**, a **Lieutenant General-ranked officer** deputed from the Indian Army, and falls under the Chief of Defence Staff through the Department of Military Affairs in the **Ministry of Defence**.

Additional Information

Historically, the TA has actively participated in all major Indian conflicts since Independence, including the 1962 Sino-Indian War, the 1965 and 1971 Indo-Pak wars, the Kargil War, and various counter-insurgency and peacekeeping operations such as Operation Pawan in Sri Lanka and Operation Rakshak in Jammu and Kashmir.

BrahMos MISSILE

Context

*Defence Minister Rajnath Singh virtually inaugurated a BrahMos Integration & Testing Facility in Lucknow, boosting India’s missile production capability.*

About BrahMos Missile

- Joint Venture:** Between DRDO (India) and NPO Mashinostroyeniya (Russia).
- Name Origin:** Blend of **Brahmaputra (India)** and **Moskva (Russia)** rivers.
- First Test:** The first successful test of the missile was conducted on June 12, 2001.
  - Induction Timeline:** Navy (2005), Army (2007) and IAF (2017).
- Capability:** It's a 'fire and forget' missile — land, sea, or air — any time, any weather. And nearly impossible to intercept.
  - The BrahMos supersonic cruise missile was likely used for the first time in a combat situation during **Operation Sindoor**.

### Speed:

- ◆ **Current:** Mach 2.8 (Supersonic)
- ◆ **Future:** Mach 5+ (Hypersonic in development)

### Range:

- ◆ Originally capped at **290 km** (MTCR limit)
- ◆ Now extended to **400 km**
- ◆ Under development: **600+ km**

### Stages:

- ◆ BrahMos is a **two-stage missile** with a solid propellant booster engine.
- ◆ Its first stage brings the missile to supersonic speed and then gets separated.
- ◆ The liquid ramjet or the second stage then takes the missile closer to three times the speed of sound in the cruise phase.

### Export Potential:

The **Philippines** is the first nation to sign an agreement with India to import BrahMos. However, other countries, including **Indonesia, Vietnam, Malaysia, UAE, Chile, and South Africa**, have also shown interest in acquiring the missile.

### Additional Information

- ➔ The **Missile Technology Control Regime (MTCR)** is a **voluntary multilateral grouping** that aims to limit the spread of missile technologies that may be used for chemical, biological and nuclear attacks.
- ➔ To achieve its objectives, the MTCR restricts the transfer of missiles and certain technologies to non-MTCR members. **India** became a member in **2016**.

## BHARGAVASTRA

### Context

*India has successfully tested an indigenous counter-drone system dubbed as 'Bhargavastra'.*

### About

- ➔ Designed and developed by **Solar Defence and Aerospace Limited (SDAL)**, Bhargavastra uses **minor rockets to detect and neutralise drones** at a range of up to 2.5 km.
- ➔ The Bhargavastra system deploys unguided **micro rockets to neutralise swarms of drones with a lethal radius of 20 metres**.
- ➔ The system's second layer of defence is the guided micro-missile, which ensures precise and effective targeting. It has the capability to fire 64 micro missiles simultaneously.
- ➔ Its radar has a range of **6 to 10 km for locating small aerial threats**.
- ➔ The system can also be integrated with the existing network-centric warfare infrastructure. It allows integration of soft kill options like jamming and spoofing.

## IB CHIEF GETS ONE-YEAR EXTENSION IN SERVICE

### Context

*The Appointments Committee of the Cabinet has given a one-year extension to Tapan Kumar Deka, the chief of Intelligence Bureau (IB) till June 2026.*

### About

- ➔ This is the **second time his tenure** has been **extended by a year**.
- ➔ The extension comes in the **wake of the evolving security situation** following **Operation Sindoor**.
- ➔ His extension is "**in relaxation of the provisions of FR 56 (d) and Rule 16 (1A) of All India Services (Death cum Retirement Benefits) Rules, 1958**".
  - ◆ The rules allow the central government to **extend in "public interest"** the services of the chiefs of **IB and Research and Analysis Wing (RAW)**, Cabinet Secretary, Home Secretary and others, **beyond 60 years age of superannuation**.

### Intelligence Bureau (IB)

- ➔ IB is India's **oldest intelligence agency** formed in **1887** during the British colonial era.
- ➔ It is India's **internal security agency** responsible for managing **domestic threats**.
- ➔ IB is under the governance of the **Ministry of Home Affairs**.
- ➔ It is responsible for counterterrorism, counterintelligence, and intelligence collection in border areas, infrastructure protection, and anti-secession activities.

## DEFENCE MINISTER APPROVES AMCA FIGHTER JET EXECUTION MODEL

### Context

*Defence Minister Rajnath Singh has approved the execution model for the Advanced Medium Combat Aircraft (AMCA).*

### About

- ➔ The Aeronautical Development Agency (ADA) is set to execute the programme through industry partnership.
- ➔ Hindustan Aeronautics Limited (HAL) will compete with the private industry to manufacture the indigenous fifth-generation fighter jet.
- ➔ **AMCA:** It is the country's **only fifth gen fighter programme**, received approval from the Cabinet Committee on Security (CCS) in **2024** at an approximate cost of **₹15,000 Crore as a 25-tonne twin engine stealth aircraft**.

- ♦ The execution model approach provides **equal opportunities** to **both private and public sectors** on a **competitive basis**.
  - ♦ They **can bid either independently or as joint ventures** or as consortia.
  - ♦ **The entity/bidder should be an Indian company** compliant with the laws and regulations of the country.
- ➔ The design of AMCA is ready and the first prototype is expected to roll out by **2028-29** and production is expected to begin from **2032-33**.
- ➔ The target is to have the aircraft ready for **induction in 2034**.

- ➔ Successful development and induction of AMCA would **place India among a small group of countries with fifth-gen capabilities**.

MAJOR 5TH GENERATION FIGHTER JETS		
Fighter Jet	Country	Key Highlights
F-22 Raptor	USA	First operational 5th-gen fighter; unmatched stealth and air dominance; not for export
F-35 Lightning II	USA (and allies)	Multirole; stealth; sensor fusion; widely deployed by NATO and allies
Chengdu J-20	China	Long-range stealth; focus on air superiority and missile strike; rapid indigenous development
Sukhoi Su-57	Russia	Stealth + supermaneuverability; uses AI and advanced sensors; limited deployment so far

### Significance

- ➔ **Self-reliance (Aatmanirbharta)** in aerospace and defense is central to this initiative.
- ➔ India faces **increased regional security concerns**, especially post Operation Sindoor and growing Chinese-Pakistani military ties.
- ➔ AMCA is essential for maintaining **future air superiority** and technological parity with China.

## AUTONOMOUS WARFARE IN OPERATION SINDOOR

### Context

*Operation Sindoor (May 2025) marked the first large-scale deployment of autonomous weapons systems and drones in a direct conflict between India and Pakistan.*

### Background:

- ➔ Triggered by the **April 22 terror attack in Pahalgam**, India launched **Operation Sindoor** from May 7–10, 2025.
- ➔ **Objective:** retaliatory strikes using **unmanned aerial systems (UAS)** to target terror camps and military infrastructure, while avoiding full-scale war escalation.

INDIA'S AUTONOMOUS WARFARE ARSENAL	
System/Type	Purpose/Use
Heron MK-II (Israeli)	ISR missions deep inside Pakistan; real-time surveillance and coordination
TAPAS-BH-201 / Rustom-II	Indigenous MALE UAV for electronic and thermal surveillance
Nagastra-1 (Indigenous)	Loitering munition for precision strikes on SAM batteries and command posts
Harop drones (Israel)	Radar-seeking kamikaze drones for SEAD (Suppression of Enemy Air Defence) operations
Swarm drones (DRDO)	Radar saturation, spoofing, and air defence exhaustion through coordinated wave attacks
Quadcopters, micro-UAVs	Target tracking and live ISR feeds to forward units via Integrated Battle Management System (IBMS)

PAKISTAN'S RETALIATORY OPERATION – BUNYAN-UM-MARSOOS		
System	Origin	Function
Shahpar-II	Indigenous	MALE UAV for ISR
Burraq	Indigenous	Armed drone for offensive strikes
Bayraktar TB2	Turkey	Tactical UAV with surveillance & strike capability
CH-4, Wing Loong II	China	MALE/HALE UAVs for ISR and strike
CH-901, WS-43	China	Loitering munitions for radar and base targeting

**Significance of Operation Sindoor:**

- First **fully autonomous conflict** between two nuclear powers in South Asia.
- Demonstrated **India's leadership in networked, drone-enabled warfare** using: Algorithmic targeting, AI-assisted ISR and coordination and Swarm and loitering drone tactics.
- Signalled the emergence of a **"new normal"** in deterrence — **pilotless, scalable, and low-escalation warfare.**
- Validated India's **indigenisation in drone and air defence tech**, alongside legacy-modern system fusion.

**USA's GOLDEN DOME PROJECT**

**Context**

US President Donald Trump announced a shortlisted design for the Golden Dome.

**About the Golden Dome Project:**

- The **Golden Dome Project** is a proposed **multi-domain missile defense shield** being developed by the **United States.**
- It is **inspired by Israel's Iron Dome**, but designed to operate on a **much larger, global scale.**

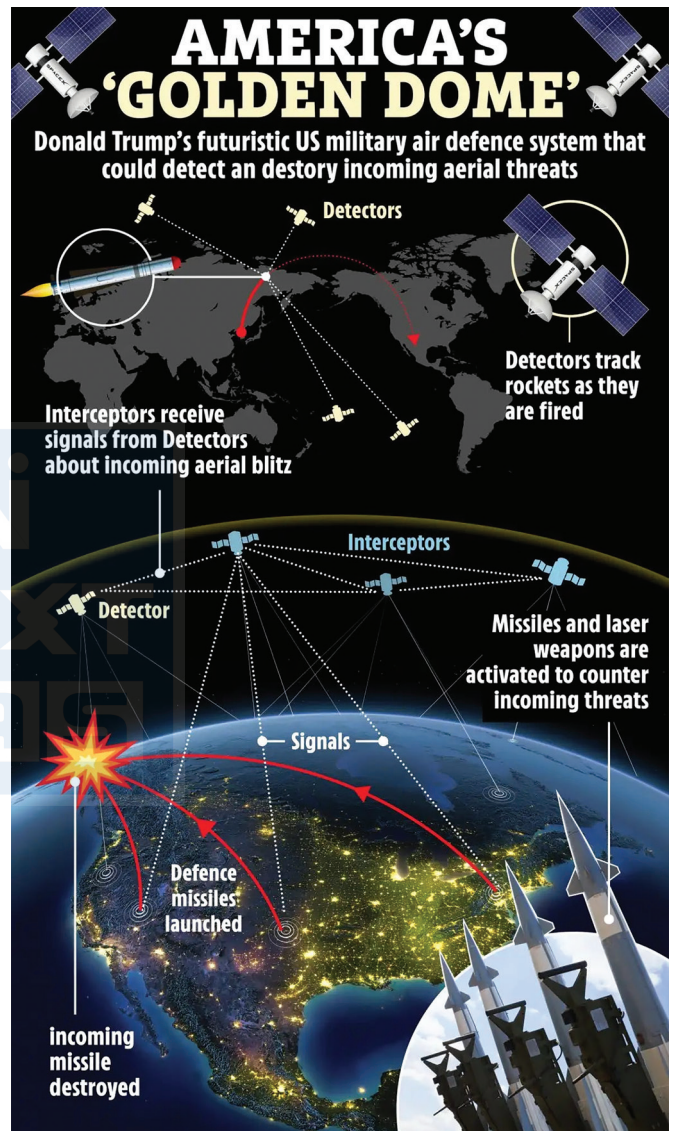
**Key Features:**

- **Multi-Domain Coverage:** Aims to function **across land, sea, air, and space** to counter complex threats.
- **Satellite-Based Architecture:** Plans to deploy **thousands of small satellites** equipped with **interceptor missiles** capable of targeting enemy projectiles **in their early launch phase.**
- **Integrated Defence System:** Will combine **space-based interceptors** with **ground and sea-based radar, tracking, and targeting systems** for enhanced detection and interception.
- **Strategic Purpose:** Designed to **protect the entire United States** from threats such as **Intercontinental Ballistic Missiles (ICBMs)**, especially from strategic rivals like **China and Russia.**

**Significance of the Golden Dome Project:**

- Marks a **shift toward space-based missile defense**, reflecting evolving threats in modern warfare.

- Enhances **deterrence capabilities** against nuclear and long-range missile threats.
- Represents a **technological leap** in multi-domain and integrated defense frameworks.
- Could **reshape strategic stability**, particularly in the context of **US-China-Russia military dynamics.**



**COMPARISON WITH OTHER MAJOR MISSILE DEFENSE SYSTEMS**

System	Country	Coverage Type	Key Features
Iron Dome	Israel	Short-range	Defends against rockets and artillery shells; highly effective in urban protection
THAAD	USA	Medium to high altitude	Intercepts short-, medium-, and intermediate-range ballistic missiles during terminal phase
S-400 Triumf	Russia	Long-range	Can target aircraft, UAVs, and ballistic/cruise missiles; multiple target tracking
HQ-19	China	Mid-course phase	Intercepts ballistic missiles; similar to THAAD capabilities

## KUIPER INTERNET

### Context

Amazon has launched the first batch of its Kuiper internet satellites into space.

### About

- ➔ Six years ago Amazon unveiled its plans to build a constellation of **internet-beaming satellites in low Earth orbit**, called **Project Kuiper**.
- ➔ The service will compete directly with **Elon Musk's Starlink**, which currently dominates the market and has **8,000 satellites in orbit**.
- ➔ **Starlink and Project Kuiper** are both part of an effort to **transform global internet infrastructure**.
  - ◆ The networks aim to **provide access to remote corners of the world** where traditional broadband, which relies on underground cables, is lacking.
- ➔ Amazon is spending as much as **\$10 billion to build the Kuiper network**.

## SHIV SHAKTI POINT

### Context

India's Chandrayaan-3 mission has uncovered critical evidence of primitive lunar mantle materials at the Moon's Shiv Shakti Point.

### About

- ➔ The findings reinforce the Shiv Shakti Point's value as a site for sampling primitive mantle materials, which could clarify the timing of lava crystallisation and volatile distribution during the Moon's early evolution.

### Shiv Shakti Point

- ➔ It is the internationally recognized **site of the Chandrayaan 3's moon lander at the Moon's South Pole**.
- ➔ Planetary nomenclature is like naming places on Earth.
- ➔ It helps to identify and talk about specific features on planets and moons.
- ➔ This list, created by the **International Astronomical Union (IAU)**, includes all the names given to different spots on planets, moons, and even some ring systems since 1919.

## Chandrayaan-3 APXS finds Primitive Mantle Material

### Volatile elements on the Moon

Sodium (Na), Potassium (K), and Sulfur (S) provide insight into the chemistry and volatile budget of its interior.

### Data prior to Chandrayaan-3



Most of the landing sites in the nearside are located in and around the PKT region. No volatile data from the South Polar Region.

### APXS measurements at the Shiv Shakti station in the South Polar region – a site visited for the first time

Sodium: 700-2800 ppm  
Potassium: 300-400 ppm  
Sulfur: 900-1400 ppm

Anomalously low levels of sodium and potassium, but high levels of sulfur compared to what was found in highland soil samples from Apollo 16 and Luna 20 missions.

**Meteorites** – not enough to explain the excess sulfur



**High surface temperature** – unsuitable for cold-trapping of sulfur



### South Pole-Aitken (SPA) basin connection



APXS detected excess sulfur excavated from the primitive lunar mantle by the SPA impact event at 4.3 Ga, when KREEP was not formed.

Procellarum KREEP Terrane (PKT)

Shiv Shakti station

## CLOUD-SEEDING TRIALS ACROSS NATIONAL CAPITAL REGION (NCR)

### Context

The Delhi Cabinet approved a Rs 3.21-crore project for conducting five cloud-seeding trials across the National Capital Region (NCR) amid the fight against pollution.

### About Cloud Seeding

- ➔ Cloud seeding is a **weather modification technique** aimed at enhancing precipitation from clouds by introducing substances that act as cloud condensation or ice nuclei.

- **Method:** Aircraft or rockets disperse seeding agents like **silver iodide, potassium iodide, or dry ice (solid carbon dioxide), or liquid propane** into the atmosphere.
- **Purpose:** Stimulate rainfall, reduce dust, suppress hailstorms, and improve air quality by settling particulates.


**OPENING UP THE CLOUDS**

**WHAT IS CLOUD SEEDING**  
A weather-modification technology that can create rain in drought-affected areas and also help fight air pollution.

**HOW IT WORKS**  
Scientists use aircraft or rockets to inject silver iodide or another substance into the atmosphere to mimic ice nuclei.

**HELPING HAND**  
Clouds often lack naturally occurring ice nuclei, so injecting them with silver iodide particles (which are very similar in structure to ice increases the number of nuclei).

**HOW IT HAPPENS**  
It makes the clouds more efficient at generating ice crystals that either fall as snowflakes or melt to produce raindrops, depending on temperatures in and beneath the cloud. Cloud seeding is also used to disperse fog banks near some airports.



The amount of rain or snow a cloud can produce depends on a balance between the number of ice nuclei it and the amount of water available to grow around those nuclei.

### Suitable Conditions for Cloud Seeding

- Cloud seeding **requires existing clouds**; it will not produce rain out of thin air.
- Not all types of clouds are suitable for seeding. Clouds must be deep enough and of a suitable temperature (**between -10 and -12 degrees Celsius**) to be seeded effectively.
- The wind must be below a certain speed. These conditions are most common in mountainous areas.

## DRAVYARATNĀKARA NIGHANTU AND DRAVYANAMĀKARA NIGHANTU

### Context

*The Central Council for Research in Ayurvedic Sciences (CCRAS) has revived two rare and significant Ayurvedic manuscripts—Dravyaratnakara Nighantu and Dravyanamakara Nighantu.*

### About

- The manuscripts were **critically edited and translated** by renowned manuscriptologist, **Dr. Sadanand D. Kamat**.
  - ◆ These are expected to serve as invaluable resources for students, researchers, academicians, and Ayurveda practitioners.
- **Dravyaratnākara Nighantu:** Authored by **Mudgala Pandita in 1480 AD**, it consists of **eighteen chapters** offering in-depth knowledge on drug synonyms, therapeutic actions, and medicinal properties.
  - ◆ It draws from classical Nighantus like Dhanvantari and Raja Nighantu while documenting numerous novel medicinal substances from plant, mineral, and animal origins.

- **Dravyanamākara Nighantu:** Attributed to Bhisma Vaidya, this work serves as a standalone appendix to the Dhanvantari Nighantu, focusing exclusively on homonyms of drug and plant names.
  - ◆ It compasses 182 verses and two colophon verses.

### The Central Council for Research in Ayurvedic Sciences (CCRAS)

- It is an **autonomous body** of the **Department of AYUSH** (Ayurveda, Yoga & Naturopathy, Unani, Siddha and Homeopathy), **Ministry of Health & Family Welfare**.
- **Functions:** Its functions include formulating research strategies, conducting research programs, supporting research institutions, and facilitating knowledge exchange.

## BREAKTHROUGH IN MAKING 2D METALS

### Context

*A team of Chinese scientists reported a new method to create true 2D sheets of metals like bismuth, gallium, indium, tin, and lead.*

### About Low-Dimensional Materials:

- A material is described as **1D or 2D** depending on **how much it confines its electrons**.
- 2D metals are **ultra-thin layers of metal atoms**, usually just 1–2 atoms thick, where electrons are confined to move only in two dimensions.
- **Graphene is a famous 2D material:** It consists of a single sheet of carbon atoms bonded to each other in a hexagonal pattern.
  - ◆ The electrons in this sheet can only move around in two dimensions, thus 2D.
  - ◆ As a result they behave as if they don't have mass, for example, giving rise to properties not seen in other materials.

### Quantum Dot and Quantum Confinement

- **Quantum Dot:** A semiconductor particle only a few nanometers in size; behaves like a "giant atom" due to restricted electron movement.
- **Quantum Confinement:** When electron movement is restricted to a small space, energy levels become quantized, like in atoms.

### Breakthrough Method: The 2D Sandwich Technique

- Metal powder is melted between MoS<sub>2</sub>-coated sapphire plates and compressed under 200 million Pa pressure, forming ultra-thin sheets — like bismuth, just 6.3 Å thick (about two atoms deep).

**Significance:**

➤ **Expected Properties:**

- ♦ Topological Insulation: Conducts electricity only along edges, not across the surface.
- ♦ Nonlinear Hall Effect: Generates perpendicular voltage under electric field.
- ♦ Field Effect Tunability: Electrical conductivity controlled via external fields.

➤ **Applications:**

- ♦ Ultra-sensitive sensors (medical/military).
- ♦ High-efficiency quantum computing.
- ♦ Next-gen electronic and photonic devices.

**'SAMUDRAYAAN': INDIA'S FIRST MANNED DEEP OCEAN MISSION TO BE LAUNCHED BY 2026**

**Context**

India is set to launch its first manned deep-ocean mission, 'Samudrayaan', by 2026, aiming to explore marine resources at a depth of 6,000 metres using the indigenously developed submersible 'Matsya'.

**About Samudrayaan Mission**

- The Samudrayaan Mission is part of the **manned Deep Ocean Mission**.
- It would have **MATSYA 6000**, a indigenously designed 4th generation manned submersible vehicle capable of carrying three people to a depth of 6,000 meters.
- It is being developed by **National Institute of Ocean Technology (Chennai)**.
- MATSYA 6000 has an operational endurance of **12 hours and an emergency endurance of 96 hours**.
- India's research vessel **Sagar Nidhi** will be used to deploy and recover the **MATSYA 6000**.

**Significance of the Mission**

- **Scientific Research:** Enables collection of deep-sea samples, critical for understanding marine biodiversity, geology, and chemistry.
- **Resource Exploration:** Potential for assessment of living (marine biodiversity) and non-living resources (minerals, polymetallic nodules).
- **Technology Demonstration:** Showcases indigenous capability in high-pressure deep-sea engineering.
- **Tourism Potential:** May lay foundation for future deep-sea tourism.
- **Strategic Capability:** Enhances India's presence in global ocean research and resource diplomacy.

- **League of Nations:** With this mission, India will join a select group of nations (the US, Russia, France, Japan, and China) that have the technology and capabilities for manned deep-sea exploration.

**About Deep Ocean Mission (DOM)**

- The **Deep Ocean Mission (DOM) was launched by the Ministry of Earth Sciences in 2021**, and aims to explore and harness deep-sea resources in a sustainable and technologically advanced manner.
- With a ₹4,077 crore outlay over five years, DOM supports India's Blue Economy and aligns with SDG-14 (Life Below Water).
- The mission is being spearheaded by the **National Institute of Ocean Technology (NIOT) and comprises six components:**
  - ♦ Manned Submersible Development (Samudrayaan).
  - ♦ Deep-sea Biodiversity Exploration
  - ♦ Mining Polymetallic Nodules
  - ♦ Ocean Climate Advisory Services
  - ♦ Marine Station for Ocean Biology to promote research
  - ♦ Advanced Ocean Observation Systems using underwater sensors and AI.

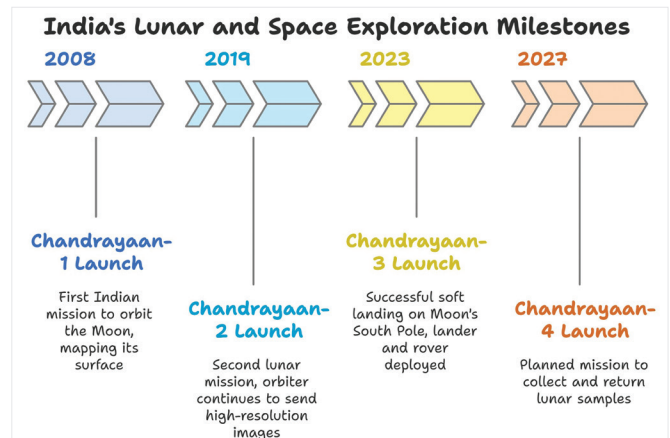
**LUPEX MISSION**

**Context**

India and Japan are set to enter the design phase of the Lunar Polar Exploration (LUPEX) mission, also referred to as Chandrayaan-5.

**About**

- **Objective:** To conduct detailed exploration of the Moon's south polar region, especially focusing on water ice deposits.
- **Mission life:** Approved by the Cabinet in March this year, the mission is proposed to be for **3.5 months (100 days)**.
- **Lander and Rover:** ISRO is developing the lander, while JAXA is building and programming the 350-kg rover to traverse the lunar surface and climb slopes up to **25 degrees**.



## SHINGLES VACCINE

### Context

*A recent study highlighted that shingles vaccination can lower the development of cardiovascular conditions by 23%.*

### About

- It is a **viral infection that causes painful rashes and is caused by varicella-zoster virus (VZV)**, the same virus that causes chickenpox.
- Once a person has chickenpox, the virus stays in their body. The virus can **reactivate later in life and cause shingles**.
- Though, the people who never had chickenpox or didn't get chickenpox vaccine can get **infected with VZV from someone who has shingles**.
- **These people can get the virus through:**
  - ◆ Direct contact with the fluid from shingles rash blisters.
  - ◆ Breathing in virus particles that come from the blisters.
- **Vaccination:** The shingles vaccine, which prevents the reactivation of the varicella-zoster virus, is recommended primarily to individuals **over the age of 50 years**.

## NASA'S GRAIL MISSION

### Context

*NASA's Grail (Gravity Recovery And Interior Laboratory) Mission has unveiled significant differences between the moon's nearside and farside.*

### Major Findings

- **Asymmetrical Lunar Interior:** GRAIL data revealed that the Moon's interior structure is not uniform.
  - ◆ The nearside, which always faces Earth, has a warmer, more geologically active mantle compared to the farside.
- **Tidal Deformation:** The Moon undergoes tidal deformation due to Earth's gravity.
  - ◆ The nearside flexes more, indicating a softer, hotter mantle, which supports the idea of thermal asymmetry.
- **Volcanic Origins of Surface Differences:** Ancient intense volcanism on the nearside led to accumulation of radioactive, heat-generating elements (like thorium and titanium).
  - ◆ This volcanism formed vast mare plains on the nearside, contrasting with the rugged highlands of the farside.
- **Enhanced Gravitational Map:** The GRAIL mission provided the most detailed gravitational map of the Moon to date.
  - ◆ Supports future development for the upcoming lunar missions.

## GRAIL Mission Overview

- **Agency:** NASA
- **Launch Date:** September 10, 2011
- **Orbit Start:** December 31, 2011
- **End of Mission:** December 17, 2012 (controlled crash into the Moon)
- **Spacecraft:** Two identical satellites named Ebb and Flow.
- **Goal:** Map the Moon's gravitational field with unprecedented precision to better understand its internal structure and geological evolution.

### Significance

- Better gravity maps **enhance navigation, landing precision, and safety for rovers and astronauts**.
- Techniques used can be applied to other moons like Enceladus (Saturn) and Ganymede (Jupiter), aiding the search for extraterrestrial life.
- **Reinforces the Moon's role in stabilizing Earth's rotation** and driving ocean tides, which are vital for life and climate.

## 125 YEARS OF KODAIKANAL SOLAR OBSERVATORY

### Context

*The department of posts released a commemorative stamp marking the 125th anniversary of Kodaikanal Solar Observatory.*

### About

- It was established in 1899 by the **Indian Institute of Astrophysics** and is located at the southern tip of the **Palani Hills in Tamil Nadu**.
- It was set up to **study the Sun and its influence on Earth's climate**, especially the Indian monsoons.
- The observatory was established in response to the **devastating Great Drought of 1875–1877**, which, along with a global famine, killed nearly 50 million people.
- The **Famine Commission** of the time recommended setting up a solar observatory to understand the potential link between solar activity and rainfall patterns.
- **Charles Michie Smith, a physicist**, was tasked with identifying a suitable location. Kodaikanal was selected due to its clear skies, low humidity, and minimal fog, ideal for solar observations.
- A landmark scientific discovery made at KoSO was the **Evershed Effect in January 1909**. This phenomenon is the apparent radial flow of gases observed in the penumbra (outer region) of sunspots on the Sun.

### Other Major Indian Space Observatories

- **Indian Astronomical Observatory (IAO) (Hanle, Ladakh):** It is one of India's premier facilities for optical and infrared astronomy. It is also managed by the Indian Institute of Astrophysics.
- **Mt. Abu Infrared Observatory (MIO) (Aravalli Range):** It is operated by the Physical Research Laboratory (PRL). It specializes in infrared observations of celestial bodies.
- **Giant Metrewave Radio Telescope (GMRT) (Pune):** It is one of the world's largest low-frequency radio telescopes. Operated by the National Centre for Radio Astrophysics (NCRA), it consists of 30 steerable parabolic dishes and uses the SMART (Stretch Mesh Attached to Rope Trusses) design concept.

### INDIA AWARDED WITH CERTIFICATE OF ELIMINATION OF TRACHOMA

#### Context

India has been awarded the Certificate of Elimination of Trachoma as a Public Health Problem by the WHO at the 78th World Health Assembly in Geneva.

#### About

- Last year, the WHO declared that the Government of India had eliminated Trachoma as a public health problem.
- India also became the **third country in the Southeast Asia region** to reach this public health milestone.
- The government has taken various steps under the **National Programme for Control of Blindness and Visual Impairment (NPCBVI)** to eliminate Trachoma.

#### About Trachoma

- **Trachoma** is a disease of the eye caused by **infection with the bacterium Chlamydia trachomatis**.
- It is a public health problem in **38 countries** and is responsible for the blindness or **visual impairment of about 1.9 million people**. Blindness from trachoma is irreversible.
- **Infection spreads** through personal contact (via hands, clothes, bedding or hard surfaces) and by flies that have been in contact with discharge from the eyes or nose of an infected person.
- There isn't a commercially available trachoma vaccine, research is ongoing to develop one.

### METRE CONVENTION

#### Context

The Department of Consumer Affairs marked World Metrology Day 2025 commemorating 150 years since the signing of the Metre Convention (1875).

### About Metre Convention

ASPECT	DETAILS
Origin	Signed on May 20, 1875, amended in 1921
Purpose	To establish a globally unified and continually evolving metric system
Institution Created	International Bureau of Weights and Measures (BIPM)
Role of BIPM	Oversees scientific accuracy, standardization, and global traceability in measurements
Significance	Ensures global uniformity in measurements—vital for science, trade, tech, and safety
Membership	64 Member States + 37 Associate States (India is a Member State)

### TIANWEN-2 MISSION

#### Context

China is set to launch its first asteroid sampling mission called Tianwen-2.

#### About

- The mission will investigate **469219 Kamo'oalewa**, a **near-Earth asteroid** that orbits the Sun close to Earth.
- It aims to collect samples from Kamo'oalewa using a **"touch-and-go" technique** or possibly an **"anchor and attach" method**.
- It aims to advance scientific understanding of asteroids and demonstrate China's growing capabilities in deep-space exploration.
  - ♦ If successful, China will join the ranks of the U.S. and Japan as one of the few countries to have collected and returned asteroid samples.

#### Kamo'oalewa

- It is a small **quasi-satellite asteroid of Earth** and it was discovered in 2016 by the **Pan-STARRS 1 telescope in Hawaii**.
- It orbits the Sun but appears to follow Earth due to its unique, elliptical path.
- It has been in its current orbit for about 100 years and is expected to remain for another 300 years.

#### Exploration Plans

- NASA's upcoming mission, Artemis-LOFTID or potentially the NEA Scout mission, is considering studying Kamo'oalewa for insights into asteroid composition and origin of quasi-satellites.
- Potential target for robotic sample return missions in future due to its proximity and stable orbit.

## 58TH JNANPITH AWARD

### Context

*President Droupadi Murmu conferred the 58th Jnanpith Award on Sanskrit scholar Jagadguru Rambhadracharya and Urdu poet and lyricist Gulzar.*

### Jnanpith Award (also spelled Gyanpeeth Award)

- It is India's highest literary honor, instituted in 1961 by the Bharatiya Jnanpith.
  - ◆ **Bharatiya Jnanpith** is a literary and research organization founded by **Sahu Shanti Prasad Jain and Smt. Rama Jain**.
- It is awarded for the work in **22 languages** recognized by the Constitution of India **and, from 2013, in the English language**.
  - ◆ Once a language receives the award, it becomes ineligible for the next 3 years.
- It is **awarded annually** to an Indian author for their outstanding contribution to literature.
- **The prize carries** a cash award, a citation, and a bronze replica of Vagdevi (Saraswati), the goddess of learning.

## CORPORATE SOCIAL RESPONSIBILITY

### Context

*Corporate Social Responsibility (CSR) spending by listed companies rose by 16% to Rs 17,967 crore in FY 2023-24, driven by an 18% increase in average net profits.*

### About:

- **Definition:** CSR refers to corporate initiatives aimed at societal, environmental, and economic development, allowing companies to create a positive impact on communities.
- **Legal Basis:** CSR in India has traditionally been seen as a philanthropic activity. However, with the introduction of **Section 135 in the Companies Act 2013**, India became the first country to have statutorily mandated CSR for specified companies.
- **Eligibility Criteria:** India's CSR policy established through the 2014 and 2021 amendments to the Companies Act of 2013, mandates companies with a net worth of **₹500 crore, turnover of ₹1,000 crore, or a net profit of ₹5 crore** to spend **at least 2% of their average net profit over the last three years on CSR activities**.

- **2019 Amendment:** Unspent funds must be transferred to a **Schedule VII Fund** (e.g., PM CARES, Clean Ganga Fund) by the fiscal year-end.
  - ◆ Unspent CSR funds could be carried forward.

CATEGORY	KEY BENEFITS
Social	Community welfare, environmental sustainability
Economic	Profitability, investment appeal, risk reduction
Corporate	Reputation boost, employee satisfaction, differentiation
Compliance	Adherence to laws, governance standards
Innovation	Sustainable product innovation, new market access
Stakeholder Relations	Trust building, influence on policy

## SUGAR BOARDS IN SCHOOLS

### Context

*The CBSE has directed over 24,000 affiliated schools in India to set up 'sugar boards' that display information educating students about the health risks of excessive sugar consumption.*

### What are Sugar Boards?

- Studies show children consume far more sugar than recommended, with 13–15% of their daily calories from sugar, compared to the **advised limit of 5%**.
- They are **educational displays set up in schools** to visually show the **amount of sugar in popular drinks and foods**, aiming to raise awareness among students about the dangers of excessive sugar consumption.
- The **National Commission for Protection of Child Rights (NCPCR)** has advocated for their introduction in all schools, citing **high sugar intake** from easily available **snacks and drinks** as a major contributor.
- These boards include information on **recommended sugar intake**, health risks of high sugar consumption, and healthier alternatives.
- **Sugar boards** are necessary due to the rising incidence of **Type 2 Diabetes among children**, a condition once mostly seen in adults.

### India's Policy & Regulatory Framework

- India's regulatory stance on **High Fat, Salt, and Sugar (HFSS) content** in foods, particularly school meals, is still evolving.
- Food Safety and Standards Authority of India (FSSAI) is the apex regulatory body for food safety. It has directed food

companies for mandatory nutrition labelling for packaged foods, banning HFSS food in schools & creating "Eat Right India" Campaign for safe, healthy, and sustainable diets.

- Also, India imposes **higher GST (18–28%) on processed**, sugary items like carbonated drinks, packaged snacks, and chocolates.

### National Commission for Protection of Child Rights (NCPCR)

- The **National Commission for Protection of Child Rights (NCPCR)** is an Indian statutory body established by an Act of Parliament, the **Commission for Protection of Child Rights (CPCR) Act, 2005**.
- The Commission works under the aegis of the **Ministry of Women and Child Development**.
  - ◆ The Commission became operational on 5 March 2007.
  - ◆ The Commission is mandated under **Section 13 of the CPCR Act, 2005** "to ensure that all Laws, Policies, Programmes, and Administrative Mechanisms align with the Child Rights perspective as enshrined in the **Constitution of India** and the **UN Convention on the Rights of the Child**."
  - ◆ As defined by the commission, a child includes persons up to the age of 18 years.
- **Type 2 diabetes (T2D)** is a chronic condition where the body becomes resistant to insulin, and the pancreas may eventually produce insufficient insulin, leading to elevated blood sugar levels.
  - ◆ It's primarily linked to lifestyle factors (obesity, inactivity) and genetics.

### NATIONAL COMMISSION FOR PROTECTION OF CHILD RIGHTS (NCPCR)

	Type 1 Diabetes (T1D)	Type 2 Diabetes (T2D)
Definition	Autoimmune; no insulin production due to beta-cell destruction.	Insulin resistance; reduced insulin sensitivity/production.
Dietary Goal	Match insulin doses to carb intake; prevent hypo-/hyperglycaemia.	Improve insulin sensitivity, control weight, stabilize glucose.
Carb Management	Precise carb counting to adjust insulin (e.g., insulin-to-carb ratio).	Moderate carbs, focus on low-GI, high-fibre sources.
Diet Flexibility	Less flexible; requires consistent carb timing with insulin.	More flexible; lifestyle changes can reduce medication need.
Protein/Fat Role	Balanced to support growth, less focus on weight loss.	Emphasized for satiety, weight management, and heart health.
Key Dietary Tools	Carb counting, continuous glucose monitors (CGMs).	Glycaemic index, portion control, plate method.
Insulin Use	Mandatory (injections/pump) from diagnosis.	Optional; used in advanced cases or poor control.
Onset	Rapid, often in childhood/adolescence.	Gradual, typically in adults (increasing in youth).
Prevention	Not preventable (autoimmune).	Preventable via lifestyle (weight loss, exercise).
Prevalence	~5–10% of diabetes cases (20–30 million).	~90–95% of cases (462 million).
Complications	High risk of ketoacidosis (DKA), similar long-term issues.	High risk of cardiovascular disease, similar long-term issues.

## MUZIRIS HERITAGE PROJECT

### Context

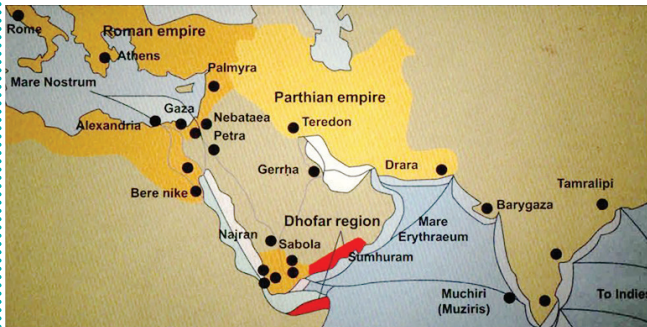
*The Leader of Opposition in the Kerala Assembly recently acknowledged historian M.G.S. Narayanan as a key force behind the Muziris Heritage Project.*

### About the Project

- The **Muziris Heritage Project (MHP)**, launched in 2009, is one of India's largest heritage conservation initiatives.
- It is jointly implemented by the **Government of Kerala** and the **Union Government**, with support from **UNESCO**, aiming to preserve a cultural legacy over **3,000 years old**.
- The aim of the project is to restore and **promote Muziris**, an ancient maritime trade hub and cultural crossroads.

### Do You Know?

- Muziris was a flourishing port on India's southwest coast during the **1st century BCE**, served as a major trade link with the **Greeks, Romans, Arabs, and Egyptians**, dealing in spices, pearls, gems, ivory, and silk.
- It finds mention in a number of records including the **"Sangam Literature"** as well as **"The Periplus of the Erythraean Sea"**
- The port mysteriously disappeared from historical records, possibly due to natural calamities.



## 50 YEARS OF END OF THE VIETNAM WAR

### Context

*The Vietnamese celebrated the 50th anniversary of the end of the Vietnam War.*

### Background

- Vietnam had been a **French colony since the mid-19th century**, part of French Indochina (along with Laos and Cambodia).
- During World War II, the **Japanese occupied Vietnam** but allowed the French to maintain some control.
- After Japan's defeat in 1945, **Ho Chi Minh**, leader of the Viet Minh (League for the Independence of Vietnam), **declared Vietnam's independence in 1945**.
- The French, however, tried to reassert colonial control, leading to the **First Indochina War (1946 to 1954)**.

### The Vietnam War

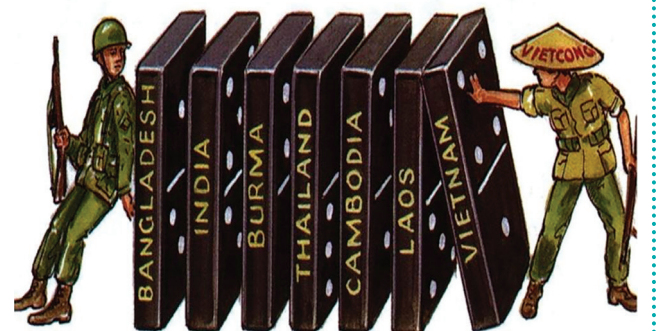
- **The Vietnam War** — also known as the **Second Indochina War** — was a prolonged conflict from **1955 to 1975** between **North Vietnam (Communist)** and **South Vietnam (anti-Communist)**, with heavy **U.S. involvement on the side of the South**.
- **North Vietnam:** Led by **Ho Chi Minh** and the Communist Party, supported by the Soviet Union, China, and other communist allies.
- **South Vietnam:** Initially led by Ngo Dinh Diem, later by various leaders after multiple coups.
  - ♦ Supported by the United States, South Korea, Australia, Thailand, and others.

### Reasons for the War

- **Division of Vietnam:** After the First Indochina War, the **1954 Geneva Accords** temporarily divided Vietnam at the **17th parallel** into North and South Vietnam.
- **Cold War tensions:** The U.S. saw the spread of communism in Asia as a threat (the Domino Theory).

### Domino Theory

The theory that a political event in one country will cause similar events in neighbouring countries, like a falling domino causing an entire row of upended dominoes to fall).



➤ **Internal conflict:** The Communist-aligned Viet Cong insurgency in the South sought to reunify Vietnam under communist rule.

**Do You Know?**

The Viet Cong (VC) was an epithet and umbrella term to refer to the communist-driven armed movement and united front organization in South Vietnam.

**Key Phases**

- **Advisory Phase (1955–1963):** The U.S. provided military advisers and aid to support the South Vietnamese government.
  - ◆ Ngo Dinh Diem's regime became increasingly unpopular and was overthrown in a U.S.-backed coup in 1963.
- **Escalation (1964–1969):**
  - ◆ **Gulf of Tonkin Incident (1964):** Alleged attacks on U.S. ships led to congressional approval for expanded U.S. involvement.
  - ◆ U.S. troop levels peaked at over 500,000 by 1969.
  - ◆ **Major battles:** Tet Offensive (1968), Battle of Hue, Khe Sanh.
  - ◆ Heavy use of napalm, Agent Orange, and carpet bombing sparked international outrage.
- **Withdrawal (1969–1973):** Under President Richard Nixon, the U.S. began "Vietnamization" — training South Vietnamese forces to take over the war.
  - ◆ U.S. forces gradually withdrew; the **Paris Peace Accords** were signed in 1973.
- **Final Collapse (1973–1975):** Fighting continued after U.S. withdrawal.
  - ◆ **Fall of Saigon (April 30, 1975):** North Vietnamese forces captured the capital of South Vietnam, ending the war.
- **Vietnam was reunified** under communist control as the **Socialist Republic of Vietnam**.

**Agent Orange**

- Agent Orange was a **powerful herbicide used by the United States military** during the Vietnam War as part of **Operation Ranch Hand (1961–1971)**.
- It became **one of the most controversial aspects** of the war due to its devastating health and environmental effects.
- The U.S. military used Agent Orange to:
  - ◆ **Defoliate forests and jungles** to reduce enemy cover (especially for the Viet Cong).
  - ◆ Destroy crops used to feed North Vietnamese forces.
- **Over 20 million gallons of herbicides** were sprayed across South Vietnam, particularly in dense jungles and rural farmlands.
- **Aftermath:** Agent Orange remains a symbol of the war's human and moral cost.

**JAGADGURU BASAVESHWARA**

**Context**

*PM Modi remembered the profound wisdom of Jagadguru Basaveshwara on the occasion of Basava Jayanthi.*

**About:**

- Jagadguru Basaveshwara (also known as Basavanna or **Basaveśvara**) was a **12th-century philosopher**, poet, and social reformer, primarily active in the Kalyana region of Karnataka.
- He served as a minister under **King Bijjala II** of the **Kalachuri dynasty**, and played a pivotal role in shaping the **Lingayat religious tradition**.
  - ◆ Lingayats had been classified as a Hindu subcaste called "**Veerashaiva Lingayats**" and they are considered to be **Shaivites**.

**Contributions of Basaveshwara**

- **Women Empowerment:** He promoted gender equality, encouraging women like **Akka Mahadevi** and others to become spiritual leaders and poets.
- **Equality:** Basavanna **rejected the caste system and ritual hierarchy**. He established the **Anubhava Mantapa**, a spiritual parliament where men and women from all castes participated equally in discourse.
- **Literature:** Basavanna's thoughts were expressed through **Vachanas**, short and profound Kannada verses written in the vernacular, making spiritual knowledge accessible to all.

**Do You Know?**

- **Veerashaiva-Lingayats** are set to seek a separate religion code for the community in the national census that will commence in **2026**.
- A separate religion code will officially embolden their religious identity separate from Hinduism. Currently, 6 religious codes are recognized in India: Hinduism, Islam, Christianity, Sikhism, Buddhism, and Jainism.

**THRISSUR POORAM**

**Context**

*The Thrissur Pooram has officially begun with the ceremonial flag hoisting-Kodiyettam*

**About:**

- **Location:** The Thrissur Pooram is an **annual Hindu temple festival** held in **Thrissur, Kerala**.

- **Timing:** Celebrated during the months of April-May.
- It was started by **Shakthan Thampuran, Maharaja of Kochi** and includes the participation of **10 different temples** from Paramekkavu, Thiruvambadi Kanimangalam, Karamucku, Laloor, Choorakottukara, Panamukkampally, Ayyanthole, Chembukkavu and Neythilakavu.

### Key Highlights of the Festival

- **Poorams:** Processions of caparisoned elephants, accompanied by traditional percussion ensembles.
- **Kudamattam Ceremony:** A synchronised and competitive display of colourful parasols changing atop elephants, drawing massive crowds.
- **Ilanjithara Melam:** A traditional percussion orchestra performance held at Vadakkumnathan Temple, featuring hundreds of artists and drawing euphoric participation from spectators.

## VIKRAMADITYA I DATED INSCRIPTION FOUND IN DAVANGERE

### Context

*A rare inscription dating back to the 7th century AD, during the reign of Vikramaditya I of the Badami Chalukya dynasty, has been discovered at Madapura Lake in Karnataka.*

### Vikramaditya I (644–681 CE)

- He revived Chalukya power after a period of decline following **Pulakesin II's death**.
- He avenged his father's defeat by the Pallavas by capturing Kanchipuram and defeating **Pallava king Mahendravarman II in 668 CE**.
- His military campaigns also subdued other southern dynasties, including the **Cholas, Pandyas, and Keralas**. However, his advances were eventually checked when he was defeated by **Pallava king Parameshvaravarman I at the Battle of Peruvalanallur in 674 CE**.

### Latest Developments

- The recently discovered inscription is written in Old Kannada script and measures five feet in length and contains 17 lines.
- It describes an act by Vikramaditya I's officer, Singhavenna, who waived taxes for local villagers and donated six acres of land to the kings who built the lake.
- The inscription also reveals that Ballavi, a significant administrative unit of 70 villages, had organized governance.
- Additionally, the stone slab features a 17th-century relief sculpture, indicating the site's continued cultural importance.

### Chalukyas of Badami

- They succeeded the Vakatakas in the western Deccan and ruled from their capital at Vatapi (modern Badami, Karnataka) between 543 and 753 CE, uniting much of South India.
- **Pulakesin I (543–566 CE)**, was the **true founder of the Chalukyan kingdom**.
  - ◆ He established his capital at Vatapi (modern Badami) and declared independence through a horse sacrifice.
  - ◆ He assumed the titles **Satyasraya (asylum of truth) and Ranavikrama (valorous in war)**.
- **Pulakesin II (609–642 CE)** was the **greatest ruler of the Chalukyas of Badami** and transformed them from a regional power into a dominant force across the Deccan. His reign marked a turning point in southern Indian history.
  - ◆ His **Aihole inscription by Ravikiriti** details victories over Kadambas, Alupas, Gangas, Mauryas of Konkan, Latas, Malwas, Gurjaras, Kosala, Vishnukundins, Kalinga, Pistapura, and Banas.
  - ◆ He defeated Harshavardhana on the banks of the Narmada in 618 CE, which became the boundary between the two empires.
  - ◆ His empire included present-day Maharashtra, Gujarat, coastal Andhra, and Karnataka.
  - ◆ Pulakesin II defeated Mahendravarman I of the Pallavas, but later Narasimhavarman I avenged the defeat, killed Pulakesin II, and captured Badami.

## LAKKUNDI TEMPLES

### Context

*Lakkundi temples are set to be finalised for UNESCO tentative listing as World Heritage Sites.*

### About

- Lakkundi (ancient Lakkigundi) is a village in Gadag district of Karnataka, renowned for its **cluster of medieval temples**. Lakkundi is a significant Jain religious center as well.
- The Lakkundi were patronized by Chalukya rulers, notably Tailapa II and Satyashraya. It subsequently came under the control of the **Kalachuris, Yadavas, and the Hoysalas, with Ballala II** declaring it the capital in 1192 CE. Its importance declined following the invasions of the **Delhi Sultanate in the 14th century**.
- Lakkundi is a key center of the Kalyana Chalukya or Western Chalukya school of architecture which is often described as a **transitional Vesara style** – blending Northern and Southern Indian temple forms.
  - ◆ Temples have Jagati (platforms), Mandapas, Garbhagrihas, and Shikharas.

**Do you know?**

- Tentative sites (TWHs) are sites that are considered for future nomination to the World Heritage List.
- Each State Party submits its own Tentative List and is expected to keep it up-to-date.
- Nominations for WHS can only come from sites on that list. Tentative Sites marked with (EXT) are proposed extensions to current WHS.

**GUNDARAM INSCRIPTIONS IN TELANGANA'S PEDDAPALLI**

**Context**

*The Archaeological Survey of India (ASI) has documented 11 new inscriptions in the Gundaram Reserve Forest near Peddapalli, Telangana.*

**Key Findings**

- These inscriptions date from the **1st century BCE to the 6th century CE** and provide crucial insights into the **Satavahana period** and the early cultural-political landscape of the Deccan region.
- **Scripts and Language:** The inscriptions are in **early Brahmi script and Prakrit language**.

**Satavahana Period**

- **Time Period:** 1st century BCE – 3rd century CE
- **Capital:** Pratishthana (modern Paithan in Maharashtra).
- **They ruled over the Deccan region**, which includes parts of modern-day **Maharashtra, Andhra Pradesh, and Telangana**.
- The dynasty was founded by **Simuka**, who established the early foundations of the Satvahana rule.
  - ◆ However, the Satvahanas reached their zenith under the reign of **Gautamiputra Satakarni**.

**PIPRAHWA RELICS**

**Context**

*The Ministry of Culture has acted swiftly to prevent the auction of the sacred Piprahwa Relics by Sotheby's Hong Kong.*

**The Piprahwa Relics**

- They were excavated from the **Piprahwa Stupa** (believed to be the ancient city of Kapilavastu, the birthplace of Lord Buddha) and hold significant historical and spiritual value.

- They were discovered in **1898 by William Claxton Peppé** and the relics include bone fragments, caskets, and offerings such as gold and gemstones.
  - ◆ An inscription in Brahmi script on one of the caskets confirms these as relics of the Buddha, deposited by the Sakya clan.
- **Status:** The majority of these relics were transferred to the Indian Museum, Kolkata, in 1899 and are classified as 'AA' antiquities under Indian law, prohibiting their removal or sale.
  - ◆ While a portion of the bone relics was gifted to the King of Siam (Thailand), a selection retained by Peppé's descendants has now been listed for auction.

**Do You Know?**

In India artifacts and antiques are governed under "THE ANTIQUITIES AND ART TREASURES ACT, 1972", 'AA' (rare) category of antiquities and art treasures and are not meant to be lent for exhibitions, within India or in foreign nations.

**AHILYABAI HOLKAR**

**Context**

*The Maharashtra govt will make a film on Ahilyabai Holkar's life for her 300th birth anniversary in 2025.*

**About**

- She was the **Holkar Queen of the Malwa kingdom** and regarded as one of the most visionary female rulers of India.
- Born on 31 May 1725 in Chondi, Maharashtra, came from a humble background and was educated by her father.
- Her character caught the attention of Malhar Rao Holkar, who arranged her marriage to his son, Khanderao Holkar, in 1733.
  - ◆ After her husband's death, she was prevented from committing sati by her father-in-law, who instead trained her in administration and warfare.

**Rise to Power**

- Following the deaths of Malhar Rao in 1766 and her son in 1767, Ahilyabai took over the rule of Malwa with the Peshwa's approval and became the ruler of Indore on 11 December 1767.
- She ruled for 28 years with justice, wisdom, and administrative excellence, transforming Maheshwar into a cultural and economic hub.

**Contribution**

- She promoted industry—most notably the **Maheshwari saree textile trade**—encouraged the arts, and supported religious and public welfare projects across India.
- Her most notable contribution was the renovation of the Kashi Vishwanath Temple in 1780.

## Legacy

- Known as the 'Philosopher Queen,' Ahilyabai Holkar passed away on 13 August 1795.
- Her enduring legacy is reflected in the many temples, rest houses, and charitable works she commissioned across the country.

## BUDDHA PURNIMA

### Context

*This year the Vaishakh Buddha Purnima is being celebrated on 12th May.*

## Buddha Purnima

- Buddha Purnima is the **most sacred festival** for Buddhists, observed on the full moon day of Vaishakh (**April-May**).
- **In India** and other South and Southeast Asian nations, Buddha Purnima is celebrated as the "**thrice-blessed day**." It marks the three major life events in the life of Gautama Buddha:
  - ◆ **Birth** at Lumbini
  - ◆ **Enlightenment** (Nirvana) at Bodh Gaya
  - ◆ **Mahaparinirvana** (Death) at Kushinagar
- However, in other parts of the world, the day signifies the birth of the Buddha while his spiritual awakening and death are honoured on separate occasions.
- Since **1999** it has also been recognized by the United Nations as the '**UN Day of Vesak**'.

## NALANDA UNIVERSITY

### Context

*Eminent economist Sachin Chaturvedi, took charge as the Vice-Chancellor of Nalanda University in Bihar.*

## About

- The Parliament of India established the Nalanda University through the **Nalanda University Act, 2010**.
- It started functioning in **2014** from a makeshift location with 14 students, and construction work started in 2017.
- The new campus of Nalanda University is close to the site of the **ancient ruins of Nalanda** in Rajgir, Bihar.

## Ancient Nalanda University

- The ancient **Nalanda University** was established in the **5th century** by the Gupta ruler **Kumaragupta I**.
- It includes **stupas, shrines, viharas** (residential and

educational buildings) and important art works in stucco, stone and metal.

- It was patronized by various rulers including King **Harshavardhana of Kannauj** (7th century CE) and the **Pala rulers** (8th – 12th century CE).
- It flourished for 800 years before it was burnt down by **Bakhtiar Khilji** in the **12th century**.
- The site after its decline was first discovered by **Sir Francis Buchanan** and was systematically excavated and consolidated by the Archaeological Survey of India.

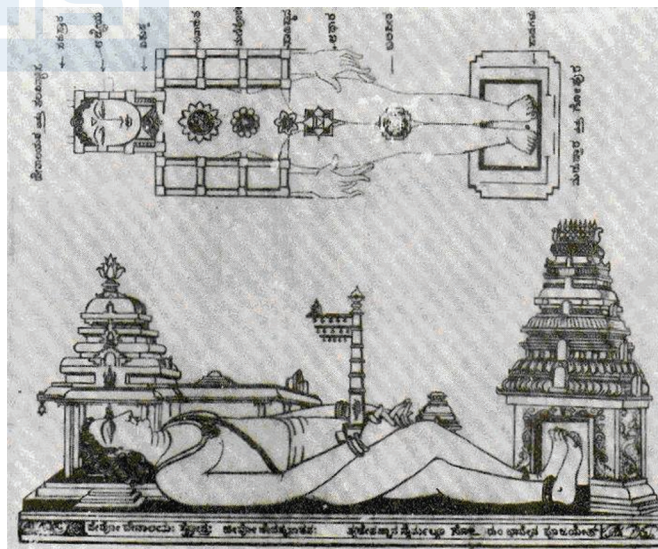
## Significance

- Chinese scholar **Xuanzang (Hsüan-tsang)** visited Nalanda in 637 and 642 CE, and studied under the guidance of **Shilabhadra**.
- It attracted students from all over the world and stands out as the **most ancient university** of the Indian Subcontinent.
- **In 2016** it was inscribed as a **World Heritage Site by UNESCO**.

## AGAMAS

### Context

*The Supreme Court has allowed the Tamil Nadu government to appoint 'archakas' (priests) to the state's temples not governed by Agama tradition.*



## Background

- Tamil Nadu has witnessed debates over **caste-based priesthood, temple autonomy, and ritual conformity**.
- Identifying Agamic temples ensures that appointments (archakars/maniyams) follow traditional procedures and constitutional norms.

### What are Agamas?

- Agamas are a collection of scriptures that **lay down rituals, temple architecture, idol worship methods**, and daily worship procedures in temples. They are **distinct from the Vedas** and form the scriptural foundation of temple-based Hinduism, particularly in South India.
- Agamas are central to the Shaiva, Vaishnava, and Shakta traditions.
  - ◆ **Shaiva Agamas:** Focused on the worship of Lord Shiva; widely followed in Tamil Shaiva temples.
  - ◆ **Vaishnava Agamas (Pancharatra and Vaikhanasa):** These deal with the worship of **Lord Vishnu** and are prevalent in many major South Indian Vaishnava temples like Tirupati.
  - ◆ **Shakta Agamas (Tantras):** Worship of Goddess Shakti.

## GOND AND MADHUBANI ART

### Context

*The artists of Gond art and Madhubani art met President Droupadi Murmu at Rashtrapati Bhavan as part of the Artists in Residence programme- Kala Utsav.*

### Madhubani Paintings

- Originated in the Madhubani district of Bihar’s Mithila region.

- Known for their intricate line drawings filled with bright, earthy colors and tribal motifs.
- Traditionally created by women on mud walls of bridal chambers.
- Featured themes from Hindu mythology and local beliefs, symbolizing marriage and fertility.
- The paintings show human beings, animals, trees, flowers, birds, etc.

### Gond paintings

- Gonds are one of the prominent tribes in India. They are mainly settled in Madhya Pradesh and Chhattisgarh
  - ◆ The Akbar Nama, a history of Akbar's reign, mentions the Gond kingdom of Garha Katanga that had 70,000 villages.
- Gond tribals belong to the Dravida race, and are very fond of dance, music and storytelling.
- Gond paintings, also called **Thingna**, often feature geometrical designs and motifs like horses, elephants, birds, and human figures, painted using earth colours (white, red, yellow, black).
  - ◆ Homes are decorated with these motifs, especially around doors, windows, and courtyards, often with relief work made from cow dung and rice husk.



MADHUBANI PAINTINGS



GOND PAINTINGS

## PADMA AWARDS

### Context

*The President of India presented Padma Vibhushan, Padma Bhushan and Padma Shri Awards for the year 2025 at the Civil Investiture Ceremony-I held at Rashtrapati Bhavan.*

### About

- **Introduction:** Among India's highest civilian honours, the Padma Awards are conferred in three categories:
  - ◆ **Padma Vibhushan** – for exceptional and distinguished service (highest).
  - ◆ **Padma Bhushan** – for distinguished service of a higher order.
  - ◆ **Padma Shri** – for distinguished service in any field.
- **Institution:** Established in **1954**.
- **Announcement:** Declared annually on Republic Day (26th January).
- **Suspension Periods:** Awards were not given in **1978, 1979, and from 1993 to 1997**.
- **Objective:** To honour exceptional and distinguished contributions across various fields.
- **Disciplines:** Includes art, literature and education, medicine, science and engineering, public affairs, social work, trade and industry, sports, civil service, etc.

### Eligibility & Nomination

- **Eligibility:** Open to **all individuals** regardless of race, occupation, position, or gender. **Government servants**, including those in PSUs, are **not eligible**, except for **doctors and scientists**.
- **Nominations:**
  - ◆ Open to all citizens, including **self-nominations**.
  - ◆ **Can be recommended by:**
    - ◆ Central Ministries/Departments
    - ◆ State/UT Governments
    - ◆ Past Bharat Ratna and Padma Vibhushan awardees
    - ◆ Institutions of Excellence

### Selection Process:

- **Award Committee:** Constituted annually by the Prime Minister. Headed by the Cabinet Secretary.
  - ◆ **Includes:** Home Secretary, Secretary to the President, and 4–6 eminent persons.

- **Final Approval:** Recommendations approved by the **Home Minister, Prime Minister**, and the **President**. Official announcement made on the **eve of Republic Day**.

## MAJOR DHYAN CHAND KHEL RATNA AWARD

### Context

*Olympians Satwiksairaj Rankireddy and Chirag Shetty received the Major Dhyan Chand Khel Ratna award.*

### About

- It is considered **India's highest sporting honour** and is named after the Indian hockey legend, **Major Dhyan Chand (1905–79)**.
- It was **established in 1991-92** and is given for outstanding performances in sports spanning over a period of **four years**.
- The winners receive a medallion, certificate and a cash prize.
- Legendary sports figures like MC Mary Kom, S. MirabaiChanu, PV Sindhu, Saina Nehwal, Vijender Singh, Sachin Tendulkar, Virat Kohli amongst others have received this highest sporting honour in the past.

### Major Dhyan Chand

- He was the star of the Indian hockey team that dominated the sport in the years before World War II.
- He played a key role in **India's three consecutive gold hauls** at the Olympic Games - in **1928, 1932 and 1936**.
- His mastery of the game and ball control was so dazzling that it earned him the epithets '**Hockey Wizard**' and '**The Magician**'.

## PULITZER PRIZE 2025

### Context

*Columbia University has announced the 2025 Pulitzer Prizes, awarded on the recommendation of the Pulitzer Prize Board.*

### About

- The Pulitzer Award was established in **1917**, named in honour of newspaper publisher **Joseph Pulitzer**.

- **Significance:** It is considered the highest honor in American journalism and one of the most respected awards in literature and the arts.
- The Pulitzer Prize is awarded in over 23 categories, which include:
  - ◆ Journalism (15 categories)
  - ◆ Books, Drama, and Music (8 categories).
- Each winner receives a certificate and a **US\$15,000 cash** award. The winner in the **public service** category is awarded a **gold medal**.

### First Recipients

- **Herbert Bayard Swope of the New York World** received the first Pulitzer Prize for Reporting for his series titled "Inside the German Empire," which provided an in-depth look into wartime Germany.
- **Gobind Behari Lal:** First from India to win the Pulitzer Prize for journalism in 1937. He was a member of the Ghadar Party in America.

### Winners of 2025

- **Fiction:** James by Percival Everett
- **Drama:** Purpose by Branden Jacobs-Jenkins
- **Biography:** Every Living Thing by Jason Roberts
- **Commentary:** It was awarded to Mosab Abu Toha, for his powerful personal narratives published in **The New Yorker**, detailing the physical and emotional devastation in Gaza during the ongoing Israel–Palestine conflict.

### WORLD FOOD PRIZE 2025

#### Context

*Brazilian microbiologist Mariangela Hungria, has been named the 2025 World Food Prize Laureate.*

#### About

- Hungria developed seed and soil treatments using beneficial bacteria like **rhizobia and Azospirillum brasilense**.
- Her innovations help soybeans fix nitrogen naturally and enhance root growth in crops like corn, improving nutrient and water uptake.

#### World Food Prize

- The World Food Prize is the **foremost international award** recognizing the accomplishments of individuals who have **advanced human development by improving the quality, quantity, or availability of food** in the world.
- The award was **established in 1986** by Nobel Peace Prize laureate **Dr. Norman E. Borlaug**.

- ◆ It is often referred to as the Nobel Prize for Food and Agriculture.
- The \$500,000 award is formally presented at the Laureate Award Ceremony in mid-October, on or around World Food Day.

### INTERNATIONAL BOOKER PRIZE 2025

#### Context

*'Heart Lamp' by Banu Mushtaq, translated from Kannada by Deepa Bhashti, has won the 2025 International Booker Prize.*

#### About the Book

- The book comprises **12 short stories**, originally published in Kannada between 1990 and 2023, that vividly capture the everyday lives of women and girls in Muslim communities in southern India.
- It is the **first book translated from Kannada**—a language spoken by an estimated **65 million people**—and the **first short story collection** to win the International Booker Prize.

#### International Booker Prize

- This **prize** is awarded annually to the best works of **long-form fiction or collections of short stories**, translated into English and published in the **United Kingdom (UK) or Ireland**.
- It recognises the vital role of translators, with the **£50,000 prize** shared equally between the author and the translator.
- **Past Winners: Kairos (2024)** by Jenny Erpenbeck, translated by Michael Hofmann, **Time Shelter (2023)** by Georgi Gospodinov, translated by Angela Rodel, and **Tomb of Sand (2022)** — the **first Hindi novel** to win — by Geetanjali Shree, translated by Daisy Rockwell.

#### Additional Information

- The **Booker Prize** is a separate award given annually for the best novel **written in English**, published in the UK or Ireland.
  - ◆ **2024 Winner: Orbital** by **Samantha Harvey**
- **Past Indian Booker Prize winners:** Arundhati Roy (God of Small Things), Kiran Desai (Inheritance of Loss), and Aravind Adiga (White Tiger).

### JAYANT NARLIKAR

#### Context

*Dr. Jayant Vishnu Narlikar, renowned Indian astrophysicist who proposed an alternative to Big Bang theory passed away. Discharge from the eyes or nose of an infected person.*

## About

- There isn't a commercially available trachoma vaccine, research is ongoing to develop one.
- **Early Life & Career:** Born in Banaras (now Varanasi) and studied at Banaras Hindu University and later at Cambridge University, where he earned accolades like Wrangler and Tyson Medallist.
  - ◆ He worked at Tata Institute of Fundamental Research (1972–1989).
  - ◆ He founded the Inter-University Centre for Astronomy and Astrophysics (IUCAA) in 1988 and served as its Director until 2003.
- **Scientific Contributions:** Remembered for his collaborative work with British astrophysicist Fred Hoyle on the **Hoyle-Narlikar theory**, which supported the **steady-state model of the universe**—an **alternative to the Big Bang theory**.
  - ◆ **Steady-State Theory proposed** that the universe is eternal and unchanging in density, despite its expansion, due to the continuous creation of new matter.
  - ◆ It contrasts with the Big Bang theory, which posits a **singular creation event 13.8 billion years ago**.
  - ◆ He contributed to adapting Einstein's general relativity to accommodate continuous matter creation.
- **Awards:** Padma Bhushan, Padma Vibhushan & Kalinga Award by UNESCO.

- **Headquarters:** Montreal, Canada
- **Seat:** Lausanne, Switzerland

## Do You Know?

- The Global Anti-Doping Intelligence and Investigation Network (GAIIN) is a WADA-led initiative to strengthen global anti-doping systems by building capability (skills, expertise in intelligence and investigations) and capacity (resources, networks, infrastructure) among National Anti-Doping Organizations (NADOs), law enforcement, and partners.
- Launched in 2024, GAIIN expands the success of WADA's European Intelligence and Investigation (I&I) Capability and Capacity Building Project (2022–2024) to create a worldwide network combating doping in sports.
- It focuses on detecting Anti-Doping Rule Violations (ADRVs), especially non-analytical violations (e.g., trafficking, cover-ups), to protect clean sport and athletes' health.

## WORLD ANTI-DOPING AGENCY (WADA)

### Context

*National Anti-Doping Agency (NADA) India with support from the Ministry of Youth Affairs & Sports, hosted the World Anti-Doping Agency (WADA) Intelligence & Investigations (I&I) Workshop in New Delhi.*

## About

- This workshop was part of the **Capability and Capacity Building Project**, a key initiative focused on strengthening **WADA's Global Anti-Doping Intelligence and Investigations Network (GAIIN)**.
- It brought together intelligence and investigations experts from across the globe to share knowledge, strengthen cooperation, and enhance the global anti-doping system.

## World Anti-Doping Agency (WADA)

- WADA is a **Swiss private law, not-for-profit Foundation**. WADA was established in **1999** as an international independent agency to lead a collaborative worldwide movement for doping-free sport.
- It was created as a result of a joint initiative by the **International Olympic Committee (IOC)** and various governments.

## MT. MAKALU

### Context

*Indo-Tibetan Border Police (ITBP) successfully climbed Mt. Makalu (8,485 m) during its first-ever twin summit expedition to Mt. Makalu and Mt. Annapurna, both in Nepal.*

## Mt. Makalu

- It is 20 km east of Everest in the Khumbu region and is the **fifth highest mountain in the world**.
- It lies in the **Makalu Barun National Park** and is known for its perfect pyramid shape with four sharp ridges.

## Past Expeditions

- Mt. Makalu was first attempted by an American team in 1954 but was successfully summited on May 15, 1955, by **French climbers Lionel Terray and Jean Couzy**.
- It has never been summited in true winter conditions. The first Nepali to summit it was Ang Chepal Sherpa in 1978.



### Toxic Heavy Metal Pollution

- Between **14 percent** and **17 percent** of the world's agricultural soils (About **242 million hectares**) exceed safe thresholds for at least one hazardous metal.
- This contamination affects an estimated **900 million to 1.4 billion** people living in high-risk regions.

### India's Record Cargo Movement on Inland Waterways

- India has achieved a record of **over 145 million tonnes of cargo movement on inland waterways in 2024-25**.
- The number of National Waterways increased from **5 to 111**, with the **operational length growing from 2,716 km (2014-15) to 4,894 km (2023-24)**.

### World Bank's Poverty and Equity Briefs (PEBs)

- India's extreme poverty dropped significantly from **16% in 2011-12 to 2.3% in 2022-23**

### Corporate Social Responsibility (CSR)

- Corporate Social Responsibility (CSR) spending by listed companies rose by **16% to Rs 17,967 crore in FY 2023-24**, driven by an **18% increase in average net profits**.

### IMD Report (2024):

- 2024 was the **warmest year since 1901**.
- The last 12 years have consistently been warmer than earlier decades.

### India's MSME Sector

- It is a key driver of India's industrial economy, with **5.93 crore** registered enterprises **employing over 25 crore people**.
- In **2023-24, MSME-related products contributed 45.73% to India's total exports**.

### Bilateral Trade between UK-India

- India was Britain's **11th largest trade partner in 2024** and accounted for **2.4%** of total UK trade.
- India's exports to the UK were worth **\$34 billion (£25.5 billion) in 2024**, and UK exports to India amounted to **\$22.8 billion (£17.1 billion) in 2024**.

### Bilateral Trade between India-New Zealand

- Total merchandise trade between the two countries has reached **USD 1.3 billion in financial year 2024-25**, registering a strong growth of **48.6%** over the previous financial year.

### India Semiconductor Mission

- India imported **₹1.71 lakh crore** worth of semiconductors in 2024. Nearly **38%** came from China.

- Export Opportunities:** India's semiconductor market is projected to grow from **\$22 billion (2019) to \$110 billion by 2030**. Expected to account for **10%** of global chip consumption, driven by demand in smartphones, 5G, EVs, AI, IoT.

### India's Port Sector

- India has **13 Major Ports** and **217 Non-major (Minor/Intermediate) Ports**.
- Handles **95%** of India's trade by volume and **70%** by value between 2014-15 and 2023-24, major ports increased their annual cargo-handling capacity by **87.01%**.
- India is the **16th-largest maritime nation**. India has outlined investments of **US\$ 82 billion in port infrastructure projects by 2035** to bolster the maritime sector.

### Green Shipping

- Global Emissions:** The shipping industry emits around **1 billion tonnes** of GHG annually, accounting for about **2.8%** of global emissions
- Future Projections:** Emissions may increase by **50-250%** by 2050 if unchecked.

### FDI

- As per the RBI, the **Net foreign direct investment (FDI) into India** crashed by more than **96% to just \$353 million** in 2024-25 as compared to the previous year.
- In 2024-25, Indian companies invested a total of **\$29.2 billion in other countries, 75% higher** than the previous year.
- Gross FDI **remained elevated** in FY25, with **13.7%** year-on-year (Y-o-Y) growth to clock **\$81 billion** worth of flows.
- Singapore, Mauritius, the UAE, the Netherlands, and the United States (US) accounted for more than **75% of the flows**.

### Global Forest Watch

- India lost **18,200 hectares (ha)** of primary forest in 2024 compared to **17,700 hectares** in 2023.
- Tropical primary forest loss:** **6.7 million hectares** lost globally – nearly double 2023's figures.

### India's Lion Population

- As per the **16th Lion Population Estimation**, India has reported a **32% increase** in its lion population between 2020 and 2025.
- The total number of Asiatic lions has risen from **674 in 2020 to 891 in 2025**.
- Habitat Distribution:** **55.78%** of lions are located in forested areas, **44.22%** reside in non-forested landscapes.



# Test Yourself

## Objective Questions

Visit: [www.nextias.com](http://www.nextias.com) for monthly compilation of Current based MCQs

## Mains Questions

### GS PAPER-I

1. Urban flooding is increasingly disrupting cities across India. Examine the causes and suggest nature-based and urban planning solutions. **(15 Marks, 250 Words)**

2. The Human Development Report 2025 by UNDP highlights regional disparities in progress. Discuss the limitations of HDI as a measure of development and suggest improvements. **(15 Marks, 250 Words)**

3. The Indian monsoon remains a crucial determinant of rural livelihoods and the national economy. Examine its variability in recent years and implications for agricultural planning. **(10 Marks, 150 Words)**

### GS PAPER-II

4. The Non-Aligned Movement (NAM), though a product of the Cold War, continues to shape India's multilateral engagements. Critically assess its relevance in current geopolitics. **(15 Marks, 250 Words)**

5. The Jal Jeevan Mission aims to provide functional tap water connections across rural India. Assess its achievements and the challenges of implementation. **(15 Marks, 250 Words)**

6. India's growing engagement in the Arctic region reflects a shift in strategic geography. Discuss the drivers and implications of India's Arctic policy. **(15 Marks, 250 Words)**

7. The Presidential reference under Article 143 of the Constitution allows advisory jurisdiction. Examine its constitutional significance and judicial limitations. **(10 Marks, 150 Words)**

### GS PAPER-III

8. Psychological warfare has become a key element of modern conflict. Analyze its use during Operation Sindoor and suggest counter-strategies. **(15 Marks, 250 Words)**

9. India becomes the world's fourth-largest economy in nominal terms. Reflect on the historical trajectory of India's economic rise post-liberalization. **(10 Marks, 150 Words)**

10. The PLFS data shows India's unemployment rate has dropped to 5.1% while women's labour force participation has increased. Evaluate the structural factors behind this shift. **(15 Marks, 250 Words)**

11. India's trade deficit widened to \$8.65 billion. Examine the underlying structural factors and their implications on India's macroeconomic stability. **(15 Marks, 250 Words)**

12. India's farm trade is deeply impacted by Free Trade Agreements (FTAs) with developed economies. Evaluate the pros and cons of proposed FTAs with the United States, European Union, and United Kingdom. **(15 Marks, 250 Words)**

13. Natural farming is being promoted as a sustainable alternative to chemical-intensive agriculture. Discuss its ecological and economic viability. **(10 Marks, 150 Words)**

14. The National Action Plan on Climate Change (NAPCC) needs urgent re-strategizing. Assess its effectiveness and suggest reforms in light of India's net-zero targets. **(15 Marks, 250 Words)**

15. India's inland waterways are seeing increased cargo movement. Evaluate the benefits and challenges of developing National Waterways for freight logistics. **(10 Marks, 150 Words)**

16. The Fourth Global Coral Bleaching Event is a stark warning of marine ecosystem collapse. Discuss its impact on biodiversity and India's coastal economy. **(10 Marks, 150 Words)**

17. The entry of Starlink into India's telecom sector could transform rural internet access. Critically examine the regulatory and national security implications. **(15 Marks, 250 Words)**

18. Operation Sindoor marked a doctrinal shift in India's security strategy. Analyze its military, diplomatic, and psychological outcomes. **(15 Marks, 250 Words)**

19. Drone warfare is redefining the battlefield. Discuss India's use of drones in counterterror operations and challenges in indigenous development. **(15 Marks, 250 Words)**

20. India's air defence systems have evolved to meet diverse threats. Evaluate the structure, readiness, and future needs of India's layered air defence network. **(15 Marks, 250 Words)**