

NEXT IAS THE CRUX

June Issue;
2025

Chief Editor

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CMD, NEXT IAS & MADE EASY Group



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Compilation of UPSC relevant news from 1st June to 30th June 2025

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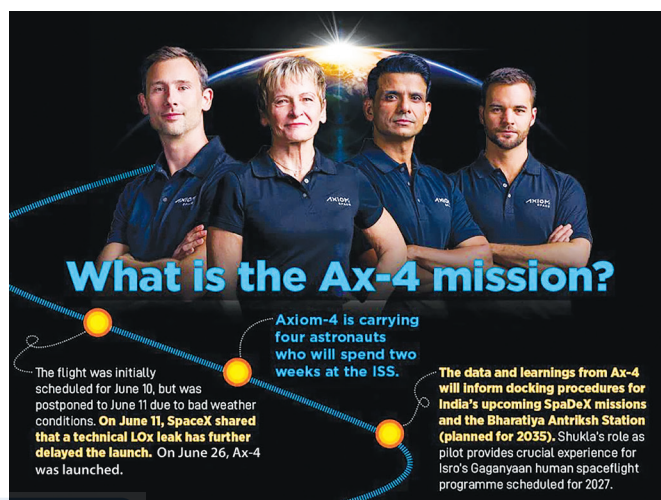
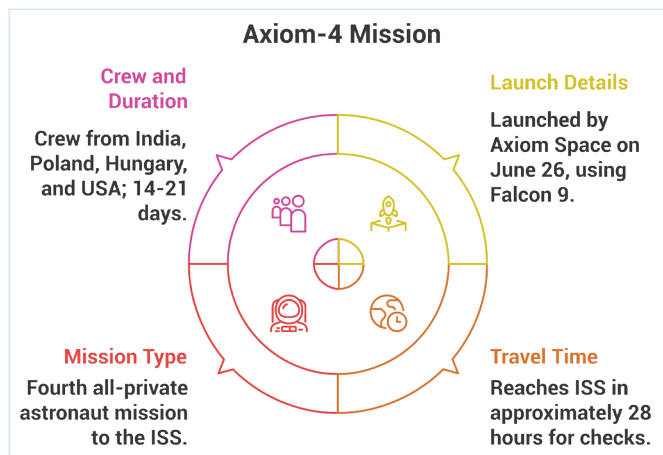
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AXIOM-4 MISSION

Group Captain Shubhanshu Shukla became the first Indian to reach the ISS and only the second Indian in space after Rakesh Sharma (1984).

About



Mission Objectives

- ➔ **Promoting Commercial Space Activities:** Ax-4 aims to demonstrate the potential of **commercial operations in Low Earth Orbit (LEO)**, including space tourism and private research missions. It also supports the long-term goal of building independent commercial space platforms.
- ➔ **Fostering International Collaboration:** With a **multinational crew**, the mission highlights the importance of **global cooperation in space exploration**, encouraging joint research, diplomatic engagement, and knowledge-sharing among nations.
- ➔ **Advancing Space Research:** The mission facilitates a variety of scientific investigations in **microgravity**, covering areas such as **biology, materials science, and Earth observation**. These experiments are expected to offer insights with real-world applications in medicine, sustainability, and technology.

Key Highlights

- ➔ **Spacecraft and Crew Composition:** Ax-4 features a **diverse crew** comprising **professional astronauts, scientists, and private participants**, demonstrating the evolving model of spaceflight beyond traditional government missions.
- ➔ **Mission Activities:** Over an expected **14-day stay** at the ISS, the crew will conduct **research experiments, technology demonstrations, and educational outreach**, expanding the scientific and commercial utility of the ISS.
- ➔ **Towards a Commercial Space Station:** The mission forms part of Axiom Space's broader vision to **develop the world's first private space station**, paving the way for a smooth transition from ISS-based operations to **commercial orbital platforms** in the coming decade.

Significance of Axiom-4 Mission for India

- ➔ **Tardigrade Research:**
 - ♦ ISRO is sending tardigrades, microscopic organisms known for their extreme survival abilities, to study how they respond to microgravity and space radiation.
 - ♦ These organisms help scientists understand cellular damage repair, stress tolerance, and DNA stability—critical knowledge for ensuring astronaut health during long-term space travel.

Tardigrades

- ➔ These are also called **water bears** or **moss piglets**, micro-animals known for their extraordinary resilience to extreme environmental conditions.
- ➔ They can withstand temperatures as low as **minus 272.95 degrees Celsius** or as high as **150 degrees Celsius**; endure ultraviolet radiation of space and pressures of **40,000 kilopascals**.



Importance:

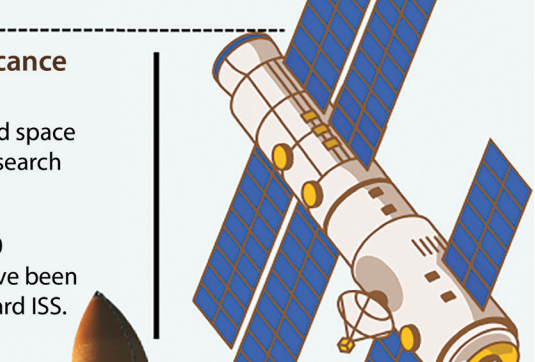
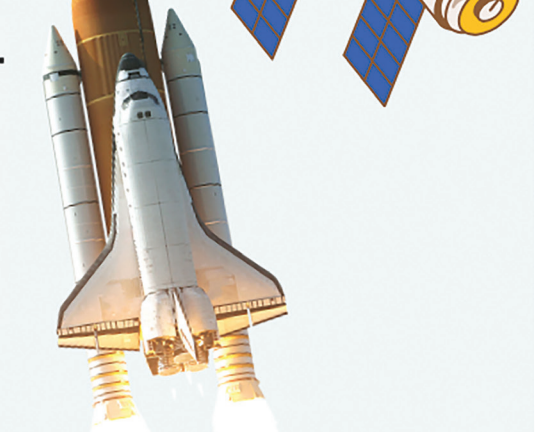
- ➔ **Cryptobiosis:** A survival strategy in which metabolic activity is nearly halted. In case of **anhydrobiosis**, they lose over 95% of body water, enabling survival without moisture.
- ➔ **Protective Proteins:** Tardigrades produce **Cytoplasmic Abundant Heat Soluble (CAHS) proteins**.
 - ♦ These proteins form a glass-like matrix, stabilizing cellular components during stress.

Plant Growth Experiments:

- ♦ Experiments involving Indian crops like wheat and pulses

INTERNATIONAL SPACE STATION

Largest modular space station in low Earth orbit, also the largest human-made structure in space

 Launched on 20 November, 1988 from Kazakhstan	 Mission Life It is expected to operate till 2030.	 Orbit It orbits LEO of earth at an average altitude of 400 km and circles the globe every 90-93 minutes	 Size Weighs almost 450 tonnes
 Agencies Involved USA - NASA EUROPE - ESA JAPAN - JAXA CANADA - CSA RUSSIA - ROSCOSMOS	 Components Station is divided into two sections: The Russian Orbital Segment (ROS), operated by Russia. The United States Orbital Segment (USOS), run by the United States and other countries.	 Significance It serves as a microgravity and space environment research laboratory. More than 3,000 experiments have been conducted aboard ISS.	
 India's mission India plans to have own space station by 2035 which would weigh 20 tonnes. Would orbit an altitude of 400 km above earth, where astronauts could stay for 15-20 days. NASA and ISRO to launch a joint mission to ISS in 2024.	 Notable success Medical discovery- Advancements in osteoporosis treatments and understanding muscle atrophy. Dark matter- Alpha Magnetic Spectrometer (AMS), which is intended to detect dark matter.		

are being conducted to observe how microgravity affects seed germination, root orientation, and nutrient absorption.

- ♦ This research is vital for future plans of space farming and ensuring sustainable life-support systems on the Moon or Mars.
- **Operational Experience for Gaganyaan:**
 - ♦ Provides **real-time crew training insights** ahead of ISRO's **Gaganyaan mission**, scheduled for 2027.
 - ♦ Helps India learn orbital docking, onboard systems handling, and microgravity adaptation.
- **Advancement in Space Medicine:**
 - ♦ Indian experiments include Muscle atrophy analysis, Stem cell growth in microgravity and Space physiology linked to diabetes and cancer research. Supports India's research for long-duration missions (Moon, Mars).
- **Boost to India's Space Diplomacy:**
 - ♦ Enhances India's collaboration with **NASA, Axiom Space, and SpaceX**.
- ♦ Projects India as a capable and trusted partner in **global space missions**.
- **Reaffirming India's Human Spaceflight Capability:** Marks India's **return to crewed space missions** after a **41-year gap**. Builds momentum and public support for **Gaganyaan** and future crewed missions.
- **Exposure to New Technologies:** Introduces ISRO and Indian institutions to **Autonomous docking systems**.
 - ♦ AI-based navigation and safety tools and Cold-chain and biocapsule transport systems.
- **Support for Space Sector Reforms:** Validates the need for private participation, aligned with India's **IN-SPACe** and **Space Policy 2023**.
 - ♦ Encourages Indian startups to contribute to **life sciences, payload integration, and space robotics**.
- **International Branding:** Strengthens India's identity as a **reliable space power**, increasing demand for collaborations, satellite launches, and commercial missions.

IRAN-ISRAEL CONFLICT

Israel launched “Operation Rising Lion”, targeting Iran’s nuclear and military facilities.
In retaliation, Iran responded with “Operation True Promise 3”, firing kinetic vectors at Israeli cities.

Recent Escalation Key Military Operations

- **Operation Rising Lion (Israel):** A series of **coordinated air and drone strikes** aimed at disabling Iran’s nuclear advancement.
 - ♦ Israeli officials have described this operation as an **“existential battle”** to **eliminate Iran’s ability to pose a long-term threat to Israel**.
 - ♦ **Targets included:**
 - ♦ Natanz uranium enrichment facility
 - ♦ Nuclear research centre in Tehran
 - ♦ Military bases in Tabriz
 - ♦ Underground missile storage site in Kermanshah



Shift in Israeli Military Strategy

- Israel appears to have concluded that targeting these proxies individually is not enough to ensure long-term security.
- The new approach targets **the root of the problem — Iran itself**, which supports and sustains the **“Axis of Resistance.”**
 - ♦ **Axis of Resistance** refers to the alliance of Iran-backed groups and states opposing **Western influence and Israeli presence** in the Middle East.
 - ♦ It includes **Iran, Syria, Hezbollah (Lebanon), Hamas (Gaza),** and various **Shia militias in Iraq and Yemen,** united by a common goal to **counter U.S. and Israeli interests** in the region.
- Previous direct confrontations between the two countries in 2024 did not change the strategic balance. However, they revealed that many regional countries **tacitly support Israel's stance against Iran.**

➤ Operation True Promise 3 (Iran):

- ♦ Iran’s **retaliatory operation**, involving kinetic vectors

including ballistic missile attacks on **Jerusalem** and **Tel Aviv**. Aimed at demonstrating Iran’s capacity to respond to direct aggression.

- ♦ Iran’s Parliament has approved a proposal to close the **Strait of Hormuz due to U.S.** strikes on Iranian nuclear facilities, escalating the Iran-Israel conflict.

➤ Operation Midnight Hammer(USA):

- ♦ The United States reportedly attacked **three key nuclear installations** in Iran—**Natanz, Fordow, and Isfahan**.
- ♦ The strikes, known as **Operation Midnight Hammer**, mark the first direct U.S. military intervention targeting Iran’s nuclear infrastructure amid its war with Israel.
- ♦ The operation was coordinated with Israeli forces.
- ♦ These were presented as **defensive actions** to protect American personnel and support Israel.
- ♦ Reflects the **deep strategic alignment between the U.S. and Israel**.

US HAS BOMBED NUCLEAR SITES IN IRAN



Causes Behind the Iran–Israel Conflict

➤ Historical Animosity:

- ♦ Before the **1979 Iranian Revolution**, Iran under Shah Mohammad Reza Pahlavi maintained **covert strategic and economic ties with Israel**, including intelligence cooperation and oil supply.

GBU-57 MASSIVE ORDNANCE PENETRATOR

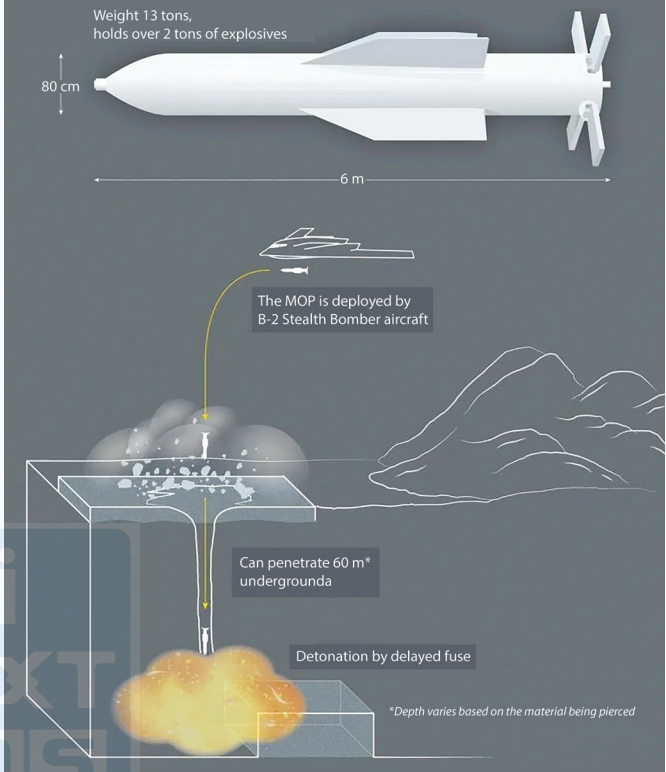
- It is the largest **non-nuclear bomb** in the US inventory.
- Built by **Boeing and guided by GPS**, it is engineered specifically to target deeply buried and hardened bunkers.
- MOP measures **20.5 feet in length and 31.5 inches in diameter, and weighs just under 30,000 pounds**—including 5,300 pounds of high-explosive material.
- The bomb can **burrow more than 200 feet through reinforced concrete before detonating**. Its casing, made from high-performance steel alloy, helps it withstand the **immense impact forces upon penetration**.
- **Any country other than the US**, does not have any non-nuclear weapon systems that can penetrate a site as deep as Fordo.

STRAIT OF HORMUZ

- The Strait of Hormuz connects the **Persian Gulf to the Gulf of Oman** and the Arabian Sea.
- It is **located between Oman and Iran**.
- It provides the only sea passage from the Persian Gulf to the open ocean and is one of the world's most strategically important choke points.
- It serves as the primary export route for Gulf producers such as Saudi Arabia, the United Arab Emirates, Iraq, and Kuwait.
- It handles about 20 million barrels of oil daily—around one-fifth of global supply—and significant LNG volumes.
 - ♦ In 2024–25, it accounted for over a quarter of global seaborne oil trade, making it vital to global energy security.

GBU-57 'BUNKER BUSTER' BOMB

The US-built bomb, also known as the Massive Ordnance Penetrator (MOP), can penetrate deep underground, smashing through rock or concrete, before exploding.



- ♦ The **Islamic Revolution**, led by Ayatollah Khomeini, transformed Iran into a **theocratic Shia Islamic Republic** that declared Israel an **illegitimate state** and a **"Zionist enemy"**.
- ♦ Since then, Iran has institutionalised anti-Israel rhetoric in its **foreign policy, media, and religious discourse**, fueling decades of hostility.
- **Religious and Ideological Divide:**
 - ♦ Iran is rooted in **Shia Islamic ideology**, positioning itself as the **leader of resistance against Western imperialism and Zionism**.
- ♦ Israel, a **Jewish democratic state**, sees itself as a **bastion of Western liberal values** in a predominantly Islamic region.
- ♦ This ideological polarity shapes both countries' **national identities**, creating deep **mutual distrust** and framing their policies through **religious and civilisational lenses**.
- **Support for Anti-Israel Proxies:**
 - ♦ Iran is considered a major patron of groups such as **Hezbollah (Lebanon), Hamas (Gaza), Islamic Jihad, and Shia militias in Iraq and Syria**.

- ◆ These groups are engaged in **direct military confrontation** with Israel, and are often referred to as part of the “**Axis of Resistance**”, a regional alliance led by Iran to counter Israeli and Western presence.
- ◆ Israel sees these actors as **existential threats** and regularly targets their infrastructure in **Lebanon, Gaza, and Syria** through preemptive strikes.

➔ Regional Power Struggle:

- ◆ Iran and Israel are locked in a **zero-sum competition for regional dominance** in West Asia.
- ◆ Iran seeks to expand its **influence through proxy militias** and by supporting **Shia-aligned regimes and movements**, notably in **Iraq, Syria, Yemen, and Lebanon**.
- ◆ Israel, on the other hand, has developed **strategic alliances with Sunni Arab states** like **Saudi Arabia, UAE, Egypt**, and others, especially after the **Abraham Accords**, to counterbalance Iran's influence.
- ◆ Their rivalry is often played out through **covert operations, cyber warfare, and diplomatic maneuvers**.

Joint Comprehensive Plan of Action (JCPOA)

- ➔ JCPOA, commonly known as the Iran nuclear deal, is a landmark diplomatic agreement reached in **2015** between Iran and the **P5+1 countries** — United States, United Kingdom, France, Russia, China, and Germany, along with the European Union.
- ➔ To ensure that **Iran's nuclear program remains peaceful** and to prevent Iran from developing nuclear weapons, in exchange for **lifting economic sanctions**.
- ➔ However In **2018**, the **U.S.** under President Donald Trump **unilaterally withdrew from the JCPOA**.

Main Provisions of the JCPOA:

- ➔ **Uranium Enrichment Limits:** Iran agreed to cap uranium enrichment at 3.67% purity (far below the 90% needed for weapons).
 - ◆ It could only keep 300 kg of low-enriched uranium, down from over 10,000 kg.
- ➔ **Centrifuge Reduction:** Iran agreed to reduce its number of centrifuges from about 20,000 to 6,104, of which only 5,060 could be used for enrichment.
- ➔ **About Fordow:** No uranium enrichment for **15 years**.
 - ◆ **Natanz:** The only site allowed to enrich uranium under strict monitoring.
- ➔ **Heavy Water Reactor at Arak:** Iran had to redesign and rebuild the reactor to prevent plutonium production.
- ➔ **Iran agreed to allow IAEA inspectors** regular and long-term access to its nuclear facilities, including undeclared sites.
- ➔ **Sanctions Relief:** In exchange, UN, U.S., and EU nuclear-related sanctions were lifted, giving Iran access to global markets and frozen assets.

➔ Iran's Nuclear Programme:

- ◆ Israel views Iran's nuclear ambitions as a **direct existential threat**, fearing that a nuclear-armed Iran could alter the regional balance of power irreversibly.
- ◆ Iran maintains that its nuclear programme is **peaceful and civilian in nature**, but has often been accused of **violating safeguards and limiting access to international inspectors**.
- ◆ Israel has **vocally opposed the Joint Comprehensive Plan of Action**, arguing that it provides only temporary restrictions and allows Iran to eventually resume uranium enrichment.
- ◆ Israel has also carried out **covert sabotage missions**, such as cyberattacks (e.g., **Stuxnet**) and targeted assassinations of Iranian nuclear scientists.

Implications for the Region

- ➔ **Arms Race in the Region:** Gulf countries like Saudi Arabia may push for nuclear capabilities, intensifying the regional arms race.
- ➔ **Reconfiguration of Regional Alliances:** Arab states fearful of Iranian aggression may deepen cooperation with Israel.
 - ◆ Regional powers like Turkey may recalibrate their roles to balance influence, while Russia may attempt to exploit the crisis for strategic gains.
- ➔ **Escalation of Proxy Conflicts:** Iran's regional proxies — Hamas, Hezbollah, Houthis, and PMF — may retaliate, opening multiple fronts and turning the war into a wider Middle Eastern conflict.
- ➔ **Destabilization of Fragile States:** Countries like Lebanon, Iraq, Syria, and Yemen could witness a surge in violence, leading to internal political chaos and humanitarian crises.
- ➔ **Maritime Insecurity:** Key shipping routes like the Strait of Hormuz, Bab el-Mandeb, and Eastern Mediterranean may face threats, disrupting global trade and energy supply.
- ➔ **Oil Price Surge:** A direct war involving Iran — a major oil producer — risks disrupting global oil exports, potentially triggering a spike in oil prices and inflation worldwide.
- ➔ **Derailment of Iran Nuclear Deal Talks:** Ongoing efforts to revive the Joint Comprehensive Plan of Action (JCPOA) are likely to collapse, ending hopes for a peaceful nuclear settlement.
- ➔ **Strengthening Iran's Resolve:** Israeli strikes on nuclear facilities may encourage Iran to accelerate its nuclear weapons program under the pretext of national defense.

Iran-Israel Conflict De-escalation

- ➔ **Mutual Avoidance of Full-Scale War:** Both **Iran and Israel sought to avoid a direct, prolonged conflict** that could spiral into a full-scale war with devastating consequences.
 - ◆ Israel's **precision retaliatory strikes** (Operation Rising Lion) were carefully calibrated to **limit escalation**, avoiding mass casualties and Iranian nuclear sites.
 - ◆ Iran's response (Operation True Promise) was similarly limited, largely symbolic, to signal strength without escalating further.

- **Backchannel Diplomacy:** The United States, European Union, and regional actors like Oman and Qatar played behind-the-scenes roles in urging restraint and facilitating dialogue.
 - ♦ **The U.S. in particular**, a close ally of Israel and a negotiating party in Iran's nuclear talks, warned both sides against escalation that could destabilize the entire region.
- **Regional Concerns:** Saudi Arabia, UAE, and other Gulf states, while critical of Iran, feared a war that could spill over and impact oil infrastructure, trade, and internal security.
 - ♦ These countries **pressed for calm**, emphasizing regional economic recovery and the risk of broader sectarian conflict.
- **Domestic Pressures:** In both countries, domestic priorities influenced restraint.
 - ♦ Israel was dealing with **internal political fragmentation** and protests. Iran faced **economic distress and public discontent** amid ongoing sanctions and inflation.
- **Limited Objectives Achieved:**
 - ♦ Israel's strike was aimed at **sending a deterrent signal** after Iran-backed proxies attacked its assets.
 - ♦ Iran, having responded symbolically without major escalation, **signaled it wouldn't be passive**, but also avoided inviting further retaliation.

IRAN-ISRAEL CONFLICT AND IMPACT ON INDIA

The recent escalation in the conflict between Israel and Iran carries significant potential implications for India, particularly in terms of energy security, trade routes, the Indian diaspora, and diplomatic relations.

Key Impacts involves

- **Energy Security:**
 - ♦ **Dependence on Middle Eastern Oil:** India imports over 60% of its crude oil from the Middle East, much of it passing through the vulnerable Strait of Hormuz.
 - ♦ **Rising Oil Prices:** The Israel-Iran conflict has caused oil prices to rise, potentially worsening inflation, widening the current account deficit, and slowing GDP growth.
 - ♦ **Diversification and Reserves:** India is increasing imports from Russia and the US and building strategic oil reserves, but reliance on Hormuz remains a key vulnerability.
- **Trade Routes:**
 - ♦ **Red Sea & Suez Canal Disruptions:** The conflict has worsened attacks on vessels in the Red Sea, disrupting routes crucial for India's trade with Europe and the US.
 - ♦ **Cape of Good Hope Diversion:** Ships are avoiding the Red Sea, taking the longer Cape route, which increases shipping time and export costs for India.
 - ♦ **IMEC Project Risks:** Instability in the Middle East may delay or weaken the India-Middle East-Europe Economic Corridor, affecting India's global connectivity plans.

Indian Diaspora and Remittances

- **Large Gulf-based Population:** Around 8–9 million Indians live in Gulf countries; a wider conflict could threaten their safety and livelihoods.
- **Remittance Risk:** Gulf remittances exceed \$40 billion annually; any crisis could reduce this vital source of income for Indian families and the economy.
- **Evacuation Challenges:** India may need to conduct large-scale evacuations, similar to past operations in Yemen or Ukraine, if the conflict intensifies.

Operation Sindhu

- It is launched by the **Ministry of External Affairs (MEA)**, Govt. of India.
- They were evacuated from northern Iran to Armenia, and flown from Yerevan (Armenian capital) to New Delhi on a special flight.
- India is utilising **safe and open airspace corridors** for evacuation flights, with logistical coordination through **diplomatic channels** in the region.
- In a **planned expansion** of the operation, Indians in Israel will be evacuated via **land borders**, followed by onward air travel from neighbouring countries, given the suspension of flight operations at Israeli airports.

Diplomatic and Strategic Implications

- **Balancing Iran and Israel:** India must carefully navigate its strong ties with both Israel and Iran without damaging either relationship.
- **Strategic Autonomy Pressure:** Rising tensions may test India's neutral foreign policy, especially under Western pressure to distance from Iran.
- **Connectivity and Investment Risks:** India's access to Central Asia via Chabahar and its investments in Israel or the Gulf may face security threats.
- **Pakistan's New Balancing Act with Iran:** Pakistan's actions amid the Iran-Israel conflict reflect a broader strategy to regain regional relevance and re-engage with the US.
- **Pakistan's balancing act involves** vocal non-military support to Iran and leveraging diplomatic tools to remain relevant post-Afghanistan.
 - ♦ Pakistan also sees rhetorical support for Iran as a way to weaken India-Iran ties, especially given India's strategic investments in Iran's Chabahar Port and connectivity projects that bypass Pakistan.

4TH INDIA-CENTRAL ASIA DIALOGUE

Recently, EAM Dr. S. Jaishankar hosted a high-level meeting at 4th edition of the 'India Central Asia Dialogue' to explore economic growth opportunities and strengthen India-Central Asia relations.

Key Highlights of the Meeting

- **Strengthening Financial Cooperation:** EAM highlighted the opening of special rupee vostro accounts by Central Asian banks in Indian financial institutions, facilitating seamless transactions.
 - ♦ It included the potential use of India's UPI for cross-border payments, enhancing financial integration.
- **Boosting Trade & Connectivity:** The Central Asian leaders stressed the importance of diversifying trade baskets to ensure sustainable and predictable economic interactions.
 - ♦ EAM emphasized the need to expand air services and streamline transit procedures, making trade more efficient.
- **Commitment from Central Asian Nations:**
 - ♦ **Kazakhstan** praised India's innovation-driven business community, expressing commitment to deepening economic ties.
 - ♦ **Kyrgyzstan** reaffirmed the strategic partnership between India and Central Asia, highlighting the potential for mutual growth.
 - ♦ **Turkmenistan** described India as a major and promising partner, recognizing its role in shaping a modern geo-economic architecture in Asia.

Significance

Historical and Civilisational Ties:

- India's historical interactions with Central Asia span from the Indus Valley civilization to the Kushan Empire and Silk Road trade, with Buddhism spreading through these routes.
- Dynasties like the Mughals also had Central Asian roots, and the region was long a conduit for cultural and commercial exchange.

Geo-Strategic Cooperation:

- **Strategic Importance for India:**
 - ♦ Central Asia's geographical position at the crossroads of Europe and Asia makes it a **Strategic Gateway to Eurasia**, aligning with Mackinder's **Heartland Theory**, which asserts that control over Central Eurasia is key to global influence.
 - ♦ The region's vast **energy reserves**, coupled with India's ambition to expand its strategic reach amidst the **China-Pakistan nexus** and instability in **Afghanistan**, makes Central Asia critical to India's geopolitical and energy security calculus.
- **India's Connect Central Asia Policy:** Launched in 2012, the Connect Central Asia Policy aims to strengthen political, economic, cultural, and security cooperation.

- ♦ It promotes high-level exchanges, counterterrorism collaboration, development partnerships, and increased connectivity through projects like INSTC.
- **Multilateral Platforms as Strategic Tools:** India engages Central Asia through platforms like the **SCO**, **Heart of Asia-Istanbul Process**, and the **Ashgabat Agreement**. These provide avenues for regional cooperation on security, trade, and connectivity, supporting India's goal of being a stabilizing force in Eurasia.
- **China's Growing Influence in the Region:** China's Belt and Road Initiative (BRI) has strengthened its economic and infrastructural ties with Central Asia.
 - ♦ Projects like the **China-Kazakhstan oil pipeline** and regional connectivity corridors have made China the region's largest trading partner, overshadowing India's limited presence.
- **Multilateral Support and South-South Collaboration:** Central Asian Republics (CARs) have shown strong support for India's bid for permanent membership in the **United Nations Security Council (UNSC)**.
 - ♦ They are also actively engaging with India-led multilateral platforms such as the **International Solar Alliance (ISA)**, **Global Biofuels Alliance (GBA)**, **International Big Cat Alliance (IBCA)**, and the **Coalition for Disaster Resilient Infrastructure (CDRI)**.
 - ♦ Additionally, their participation in the **DAKSHIN** initiative underscores a shared commitment to enhancing **South-South cooperation**.

Heartland Theory

- **Propounded By:** Halford Mackinder, a British geographer and geopolitical theorist, in **1904** in his paper "*The Geographical Pivot of History*."
- **Core Idea:**
 - ♦ The Heartland Theory asserts that **whoever controls the central region of Eurasia (the 'Heartland') controls the world**.
 - ♦ **Heartland:** The central part of Eurasia, stretching from Eastern Europe to Siberia (roughly covering Russia, Central Asia, and parts of Eastern Europe).
 - ♦ **Geopolitical Logic:** The Heartland is rich in resources, landlocked (thus hard to invade), and provides strategic depth.
- **Mackinder's Famous Quote:**
 - ♦ "Who rules East Europe commands the Heartland;
 - ♦ Who rules the Heartland commands the World-Island;
 - ♦ Who rules the World-Island commands the World."



Central Asia

- The **five Central Asian Republics (CARS)** viz *Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan*. These countries attained independence on the **disintegration of the Soviet Union** in 1991.
- All the **5 countries are land-locked**.
- All the five countries are richly endowed with natural and mineral resources.
 - ♦ **Kazakhstan** has huge commercially viable quantities of most minerals like coal, oil, gas, uranium, gold, lead, zinc, iron ore, tin, copper, manganese, chromite, bauxite and several more.
 - ♦ **Turkmenistan** contains the **world's fourth largest reserves of natural gas** while having significant quantities of cotton, uranium, petroleum, salt and sulfur.
 - ♦ **Uzbekistan** is richly endowed with gas, uranium, cotton, silver and gold.
 - ♦ **Tajikistan and Kyrgyzstan** have significant supplies of fresh water. **Kyrgyzstan** has significant reserves of gold, uranium, mercury and lead.
- India's engagement with Central Asia has evolved into a strategic partnership, focusing on **trade, connectivity, security, and cultural exchange**.

Goeconomic Ties:

➔ **Trade:** India–Central Asia trade remains modest at around \$2 billion annually, dwarfed by China's ~\$50 billion.

- ♦ There is untapped potential in pharmaceuticals, IT, agriculture, and services, but logistical bottlenecks and banking constraints inhibit deeper economic integration.

➔ **Connectivity and Infrastructure Development:**

- ♦ India's efforts to reach Central Asia are constrained by Pakistan's blockade and Afghan instability.
- ♦ The International North-South Transport Corridor (INSTC) and Chabahar Port offer alternative routes, but require urgent investment and diplomatic coordination.

➔ **Energy Diplomacy with Central Asia:**

- ♦ India seeks long-term energy security by engaging with Central Asia's oil- and gas-rich economies.
- ♦ Kazakhstan supplies uranium to India, and the TAPI pipeline, though delayed, remains a potential link between Turkmen gas fields and Indian markets.

Defence and Security Cooperation:

- ➔ India conducts joint military exercises like 'Khanjar' with Kyrgyzstan and 'Kazind' with Kazakhstan, aiming to counter terrorism and promote regional security.
- ➔ The region's proximity to Afghanistan makes it vital for India's counter-extremism strategy.

Technology and Digital Diplomacy:

- ➔ India is actively promoting its Digital Public Infrastructure (DPI), including tools from the India Stack, to Central Asian countries, advancing digital governance and service delivery.
- ➔ The launch of the India–Central Asia Digital Partnership Forum in 2025 marked a key milestone in deepening tech-based cooperation.

Soft Power and Cultural Diplomacy:

- ➔ India's soft power resonates in Central Asia through Bollywood, yoga, and education.
- ➔ Thousands of students from the region study in Indian universities, while cultural affinity—rooted in shared Buddhist and Mughal heritage—fosters goodwill.
- ➔ **Development and Capacity Building Cooperation:** India supports Central Asian development through Lines of Credit, ITEC training programs, and hydroelectric projects in Tajikistan.
 - ♦ Plans for a telemedicine and education e-network echo India's Pan-African model and promote regional goodwill.

Challenges

- ➔ **Lack of Direct Physical Access:** India's overland trade with Central Asia is blocked by Pakistan. Alternative routes through Chabahar and INSTC face delays, limiting timely access to the region.

➔ New Great Game and Chinese Strategic Dominance:

- ♦ Central Asia has long been a geopolitical hotspot, historically known as the site of the "Great Game."
- ♦ In contemporary times, this has evolved into the "New Great Game", marked by intense competition among major powers like the USA, Russia, and China to gain strategic and economic influence over the region's vast energy resources.
- ♦ China's extensive BRI infrastructure, energy investments, and \$10 billion aid to SCO members have made it the dominant external player in Central Asia, marginalizing India.

➔ **Security Volatility in Afghanistan:** Instability along Central Asia's southern flank, particularly due to the Taliban's resurgence, threatens regional connectivity and complicates India's outreach through the Chabahar–Zahedan route.

➔ **Trade Barriers and Low Volume:** India–Central Asia trade stands at a modest \$2 billion, far behind China. Non-tariff barriers, weak banking networks, and absence of Free Trade Agreements hamper economic expansion.

➔ **Underdeveloped Connectivity Infrastructure:** The INSTC is incomplete and requires multi-country cooperation and investment. Bureaucratic red tape, lack of digital infrastructure, and weak logistics systems remain bottlenecks.

➔ **Limited Diplomatic and Institutional Presence:** India's footprint in Central Asia is smaller compared to Russia and China. The absence of frequent high-level visits and institutional mechanisms reduces strategic visibility.

➔ **Competing Influence of Russia and Pakistan:** Russia retains historical and military leverage in the region, while Pakistan's alignment with China and outreach to Central Asia complicate India's geopolitical manoeuvres.

Way Forward

➔ **Accelerate Connectivity Projects:** Fast-track the Chabahar–Zahedan railway and operationalize INSTC with Iran, Azerbaijan, and Russia to establish reliable alternative trade routes to Central Asia.

➔ **Enhance Strategic and Defence Ties:** Expand joint training, military exercises, and defence technology cooperation. Build a regular strategic dialogue mechanism to align on regional security concerns.

➔ **Boost Trade and Investment Mechanisms:** Negotiate regional trade agreements or FTAs, reduce non-tariff barriers, and expand the presence of Indian banks in Central Asia for smoother financial transactions.

➔ **Leverage Soft Power Diplomacy:** Increase scholarships, cultural exchanges, and ICCR programs. Expand digital outreach through Hindi, yoga, and Bollywood promotions in Central Asia.

- **Use Multilateral Platforms Effectively:** Push for joint regional projects under SCO and Heart of Asia. Promote India's role in regional connectivity, digital economy, and counterterrorism forums.
- **Focus on Energy and Critical Mineral Cooperation:** Pursue long-term agreements for gas, oil, uranium, and rare earth metals. Support green energy and hydrogen cooperation with Kazakhstan and Uzbekistan.
- **Set Up an Institutional Task Force:** Create a Central Asia Task Force under the Ministry of External Affairs to coordinate policy implementation, monitor projects, and ensure timely execution.
- **Strengthen India–Russia Coordination:** Engage Russia as a strategic partner to reduce China's monopoly in the region and create trilateral initiatives with Central Asia for energy and security.

Additional Information

- **Heart of Asia – Istanbul Process:**
 - ◆ Launched in **2011 in Istanbul**, it is a regional initiative to promote **peace, security, and economic development in Afghanistan** and its surrounding regions.
 - ◆ India is a **founding member** and uses this forum to promote **regional stability, counter-terrorism, and connectivity** projects like **Chabahar Port** and **INSTC**.
 - ◆ It includes **15 participating countries**, 17 supporting countries, and 12 regional and international organizations (like SAARC, SCO, UNODC).
- **Ashgabat Agreement:**
 - ◆ A **multimodal transport agreement** signed in **2011**, aiming to establish an international transport and transit corridor between **Central Asia and the Persian Gulf**.
 - ◆ India **joined in 2018** to enhance connectivity to Central Asia, Iran, and beyond, complementing the **INSTC and Chabahar Port**.
 - ◆ Member countries include **India, Iran, Oman, Turkmenistan, Uzbekistan, and Kazakhstan**.
- **DAKSHIN Initiative:** The **DAKSHIN (Developing Affordable Knowledge Solutions through Holistic and Inclusive Networks)** initiative is India's platform to promote **South–South cooperation** by sharing best practices, affordable technologies, and development models with partner countries, especially in the Global South.
 - ◆ It emphasizes co-development in sectors like health, education, digital innovation, and climate resilience.
- **International North–South Transport Corridor (INSTC):**
 - ◆ A **multi-modal transport network** involving ship, rail, and road, conceived in **2000** to connect **India with Russia and Europe via Iran and Central Asia**.
 - ◆ It reduces freight time between Mumbai and Moscow by up to **40%**, bypassing the longer Suez Canal route.
 - ◆ India uses **INSTC** to gain **direct access to Central Asia** and reduce dependency on Pakistan-controlled routes.



WESTERN GHATS

Karnataka's Minister of Forest, Ecology, and Environment has ordered a study on the carrying capacity of the Western Ghats following landslips in Dakshina Kannada, Kodagu, and other areas during pre-monsoon rains.

Western Ghats

- An example of **Block Mountains** formed as land warped into the Arabian Sea and much older than the Himalayas.
- Known for their unique geomorphic, ecological, and climatic influence on the Indian subcontinent and thus a mountain range of immense global importance.
- Affect monsoon weather patterns and moderate the tropical climate.
- Recognized as one of the **world's eight 'hottest hotspots'** of biodiversity, and a **UNESCO World Heritage site**.
- Pass through the states of Gujarat, Maharashtra, Goa, Karnataka, Tamil Nadu, and Kerala.
- Home to exceptionally high levels of endemism and at least 325 globally threatened species, including plants, mammals, birds, amphibians, reptiles, and fish.

Hottest Hotspots

- Some regions stand out due to their extraordinary concentration of unique species and ecosystems, earning them the designation of biodiversity hotspots.
- There are a total of 36 biodiversity hotspots on Earth, and each of these harbour a remarkable array of flora and fauna, many of which are found nowhere else on Earth.
- However, there are 8 special spots, collectively known as 'hottest hotspots', meaning, these hotspots are a notch higher in popularity than the rest.

- **Note:** Carrying capacity is the maximum population size of a species that an environment can sustainably support over the long term, without degrading the environment.

Earlier Committees

The Gadgil Committee (Western Ghats Ecology Expert Panel, WGEEP) and the Kasturirangan Committee (High-Level Working Group, HLWG) were formed by the Government of India to address the conservation and sustainable development of the Western Ghats.

1. Gadgil Committee (WGEEP, 2010–2011)

Background:

- Formed in 2010 by the Ministry of Environment and Forests (MoEF) under the chairmanship of ecologist Madhav Gadgil.
- **Objective:** To assess the ecological status of the Western Ghats, demarcate ecologically sensitive zones, and recommend measures for conservation under the Environment (Protection) Act, 1986.

Key Recommendations (Submitted in August 2011):

➤ Ecologically Sensitive Zones (ESZs):

- ◆ Classified the entire Western Ghats (129,037 sq km) as an Ecologically Sensitive Area (ESA).
- ◆ **Divided the region into three zones:** ESZ-1 (high sensitivity, ~60% or 77,000 sq km), ESZ-2 (moderate sensitivity), and ESZ-3 (lower sensitivity).
- ◆ Recommended strict restrictions on developmental activities in ESZ-1, including a ban on mining, thermal power plants, large-scale dams, and polluting industries.

➤ Prohibited Activities:

- ◆ No new mining or quarrying in ESZ-1 and ESZ-2; existing mining to be phased out within five years.
- ◆ Ban on genetically modified crops, plastic bags, Special Economic Zones, and new hill stations across all zones.
- ◆ Decommissioning of outdated dams and thermal power plants in ESZ-1.

➤ Governance:

- ◆ Proposed a Western Ghats Ecology Authority (WGEA), a statutory body under the Environment (Protection) Act, to oversee conservation and sustainable development.
- ◆ Advocated a bottom-up approach, empowering local communities (Gram Sabhas) and decentralizing environmental governance.

➤ Other Measures:

- ◆ Phase out chemical pesticides in ESZ-1 and ESZ-2 within 5–8 years.
- ◆ Promote organic farming and sustainable agriculture.
- ◆ Protect biodiversity corridors and regulate tourism to minimize ecological damage.

Criticisms:

- **Impracticality:** The recommendations were seen as overly stringent, potentially halting development and affecting livelihoods in densely populated areas.
- **Lack of Ground-Level Data:** The committee relied on ecological parameters and broad district boundaries, lacking precise village-level mapping, leading to errors in zoning.
- **Resistance from States:** All six states (Gujarat, Maharashtra, Goa, Karnataka, Kerala, Tamil Nadu) opposed the report, citing adverse impacts on agriculture, mining, and infrastructure projects.
- **Farmer Concerns:** Farmers feared eviction and loss of livelihoods due to restrictions on land use.

- **Top-Down Perception:** Despite advocating decentralization, the proposed WGEA was criticized as a centralized authority overriding elected state governments.
- **Energy Sector Impact:** The ban on new dams was seen as detrimental to India's growing energy needs.

Outcome:

- The Gadgil report was deemed too environment-centric and impractical by stakeholders.
- It was shelved, and none of the six states accepted its recommendations.

2. Kasturirangan Committee (HLWG, 2012–2013)

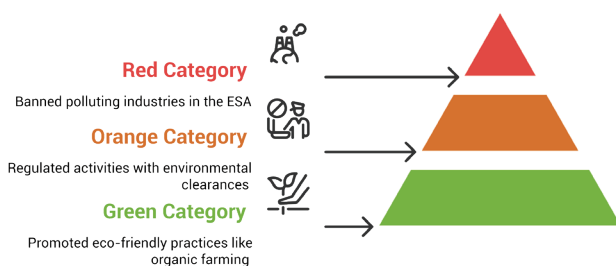
Background:

- Constituted in August 2012 by the MoEF under the chairmanship of K. Kasturirangan, former ISRO chief, to review the Gadgil report in a "holistic and multidisciplinary manner" in response to stakeholder feedback.
- **Objective:** Balance conservation with sustainable development while addressing concerns of local communities and state governments.

Key Recommendations (Submitted in April 2013):

- **Ecologically Sensitive Area (ESA):**
 - ♦ Reduced the ESA to 37% of the Western Ghats (~60,000 sq km), compared to the Gadgil report's 64%.
 - ♦ Excluded densely populated areas, plantations, and agricultural lands, classifying 60% of the Western Ghats as a cultural landscape (human settlements, agriculture) and the remaining as a natural landscape. Identified 1,592 villages across 11 districts as part of the ESA.

Prohibited and Regulated Activities

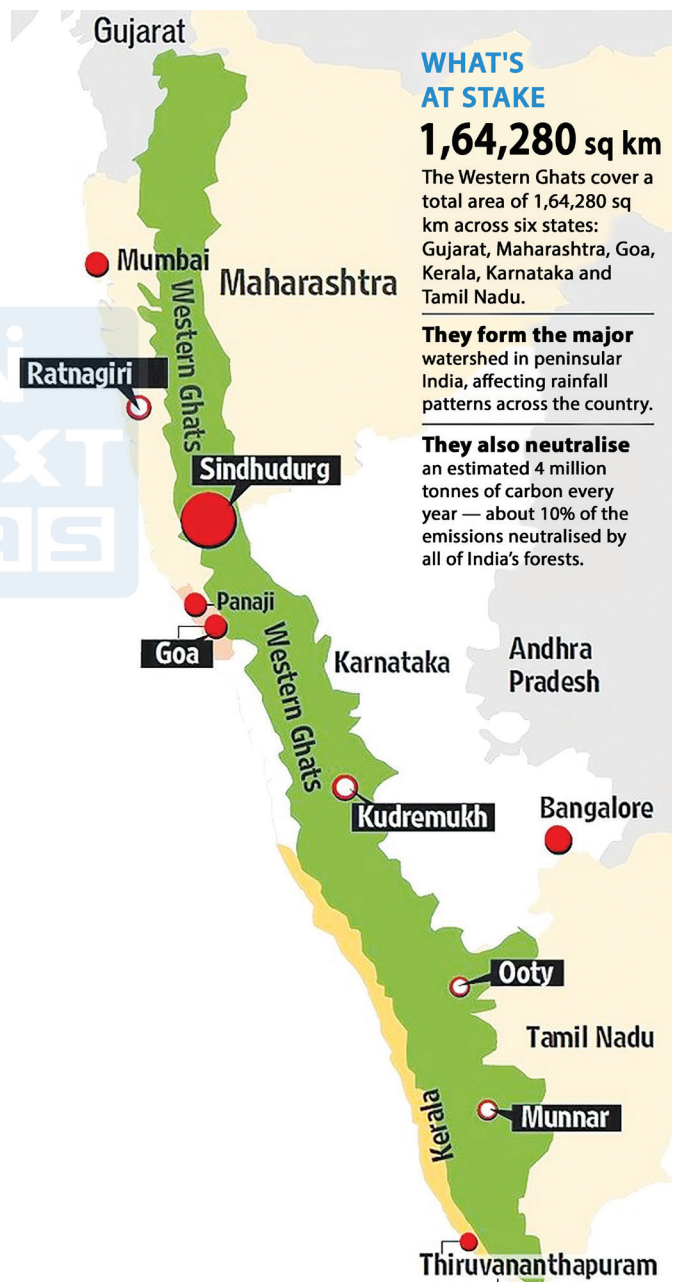


Monitoring and Implementation:

- ♦ Recommended strengthening existing environmental clearance frameworks rather than creating a new authority like the WGEA.
- ♦ Suggested setting up monitoring mechanisms and biological corridors to protect wildlife habitats.
- **Pro-Farmer Approach:** Excluded inhabited areas and plantations from ESA restrictions to safeguard livelihoods.
 - ♦ Emphasized sustainable development and green growth strategies.

Outcome:

- The Kasturirangan report was seen as a more balanced but diluted version of the Gadgil report.
- It faced resistance from states and local communities, and its recommendations remain unimplemented.
- In 2014, the MoEF decided to focus on the Kasturirangan report and shelved the Gadgil report.
- In 2017, the MoEF demarcated 56,285 sq km as ESA, slightly less than the 59,940 sq km recommended by Kasturirangan.



INDIA—JAPAN MARITIME RELATIONS

India and Japan have formally agreed to deepen maritime relations, reaffirming their shared commitment to regional cooperation in the maritime sector.

Key Highlights of Maritime Cooperation

- **Smart Islands:** Japan is helping develop Andaman, Nicobar, and Lakshadweep as smart, green islands using renewable energy and disaster-resilient infrastructure.
- **Port Digitisation:** Both sides will use digital tech to improve port efficiency and cut carbon emissions.
- **Seafarer Skilling:** Japan plans to hire Indian seafarers to meet its maritime labour needs.
- **Shipyard Investment:** Japan's Imabari Shipbuilding aims to set up a new shipyard in Andhra Pradesh to boost India's shipbuilding.
- **R&D Collaboration:** Joint work on clean fuel vessels, automated shipbuilding, and new ship designs with Cochin Shipyard Limited.

Significance of the Maritime Agreement

- **Boost to Indo-Pacific Security:** The partnership strengthens India's strategic presence in the **Indo-Pacific**, especially amid growing Chinese influence. It complements the **QUAD agenda** and **SAGAR (Security and Growth for All in the Region)** vision.
- **Support for Green Shipping:** Collaboration aligns with India's goals under the **Maritime Amrit Kaal Vision 2047**, focusing on **carbon-neutral ports**, **LNG and hydrogen-powered vessels**, and **reduced port emissions**. India aims to cut port emissions by 30% by 2030.

Maritime Amrit Kaal Vision 2047

- **Port Infrastructure Boost:** India plans to develop six mega-port clusters and quadruple port handling capacity to 10 billion tonnes annually by 2047.
- **Green Maritime Goals:** Major ports aim to become carbon-neutral with green hydrogen hubs, electric tugs, and sustainable port operations.
- **Blue Economy & Waterways:** Focus on expanding inland and coastal water transport, Ro-Pax services, and international cruise terminals.
- **Tech & Shipbuilding Push:** Emphasis on digital ports, Maritime Single Window, global shipbuilding leadership, and maritime skilling initiatives.
- **Skill Utilisation and Jobs:** With **1.54 lakh Indian seafarers** (10% of global maritime workforce), India can help meet **Japan's labour shortage** in shipping and shipbuilding, boosting employment and foreign remittances.
- **Infrastructure Development:** Japan's investment in the **greenfield shipyard in Andhra Pradesh** and smart island

projects in **Andaman & Lakshadweep** enhances India's coastal development and shipbuilding capacity—key to **Maritime India Vision 2030**, which targets **doubling port capacity** and **creating 2 million jobs** by 2047.

- **Technology and Innovation Transfer:** Joint R&D with Japan in **clean fuels, AI-driven shipbuilding, and smart port logistics** will enhance India's capabilities.
 - This supports the **Make in India** and **Aatmanirbhar Bharat** missions in the maritime sector.
- **Disaster Resilience and Sustainability:** Japan's support for **disaster-resilient infrastructure** in islands improves India's climate adaptation capacity in coastal zones vulnerable to cyclones and sea-level rise.

Challenges

- **Bureaucratic Delays:** Projects like the smart island initiative and shipyard development may face delays due to **slow environmental clearances**, land acquisition issues, and inter-departmental coordination in India.
- **Financing Constraints:** Large-scale infrastructure such as **greenfield shipyards** or smart port upgrades require significant investment, which may face **budgetary limitations** or **low private sector interest**.
- **Technology Transfer Barriers:** **Intellectual property issues** and reluctance to fully transfer advanced maritime technologies (like clean fuel ship designs) may limit the scope of R&D collaboration.
- **Geopolitical Sensitivities:** China may view deepening India-Japan maritime ties—especially near the **Andaman and Nicobar Islands**—as a threat, potentially escalating tensions in the Indo-Pacific region.
- **Labour & Skilling Mismatch:** Although India has a large pool of trained seafarers, **language barriers, cultural differences**, and **Japan's strict certification standards** may hinder recruitment.
- **Lack of Localised Expertise:** India's maritime sector still lacks strong expertise in **automation, green ship design, and port digitisation**, which can delay the absorption of Japanese technology.

Way Forward

- **Streamline Project Implementation:** Establish a **dedicated coordination cell** to fast-track joint infrastructure projects (like smart islands and shipyards), with single-window clearances and time-bound approvals.

- **Facilitate Technology Transfer:** Negotiate **mutually beneficial agreements** for technology sharing in areas like **green fuels, autonomous vessels, and port digitisation**, while ensuring protection of intellectual property rights.
- **Strengthen Skilling and Certification:** Align India's maritime training standards with **International Maritime Organization (IMO)** norms and **Japanese certification requirements** to make Indian seafarers more employable in Japan.
- **Expand Public-Private Partnerships (PPP):** Encourage **PPP models** in port modernisation, logistics, and shipbuilding to

attract Japanese investment and reduce pressure on public finances.

- **Enhance Maritime R&D Collaboration:** Foster **joint research centres** (e.g., CSL-Japan collaborations) focused on **clean maritime technologies**, automation, and resilient coastal infrastructure.
- **Promote Multilateral Engagement:** Leverage forums like **QUAD, IORA, and Indo-Pacific Economic Framework (IPEF)** to institutionalise India-Japan maritime cooperation and counterbalance regional threats.

OVERVIEW OF INDIA-JAPAN RELATIONS

Historical and Cultural Links

- India and Japan share strong cultural ties through **Buddhism**. Thinkers like **Vivekananda, Tagore**, and **Justice Radha Binod Pal** helped deepen mutual respect.
- **Bodh Gaya**, the place of Buddha's enlightenment, is a major pilgrimage site for **Japanese Buddhists**, symbolizing the deep spiritual and cultural ties between India and Japan.
- **INA & WWII:** Japan supported **Netaji Subhas Chandra Bose's INA** during World War II.
 - ◆ After the war, India signed a **peace treaty in 1952**, waiving reparations as a gesture of goodwill.
- **Symbolic Bond:** Japan, the **"Land of the Rising Sun,"** is seen as a trusted partner and a symbol of shared historical friendship.
- **Skill Development:** Programs like the Technical Intern Training Programme (TITP) and Specified Skilled Worker (SSW) facilitate the supply of skilled Indian manpower to Japan's aging economy.

- ◆ There's a growing focus on co-production of defense equipment, such as the UNICORN mast system.

Geo-Economic Engagement

- **Growing Trade:** Japan's bilateral trade with India totaled US\$ 22.85 billion during FY 2023-24.
- **Investment Target:** Japan aims for five trillion-yen (Rs 3.2 lakh crore) in public and private investment and financing in India by 2027. Japan is the fifth-largest source of FDI in India, with over 1,400 Japanese companies operating there.
- **Comprehensive Economic Partnership Agreement (CEPA):** Signed in 2011, CEPA aims to strengthen bilateral trade, though challenges remain in fully leveraging it.
- **Official Development Assistance (ODA):** Japan has been India's largest bilateral donor since 1958, supporting major infrastructure and development projects.
- **Flagship Projects:** Japan is a crucial partner in major infrastructure projects, notably the Mumbai-Ahmedabad High-Speed Rail (Bullet Train) and metro systems in various Indian cities (e.g., Delhi, Ahmedabad, Bengaluru, Chennai).
- **North-East Development:** Japan actively invests in infrastructure development in India's Northeast region, aligning with India's Act East Policy, focusing on road networks, bridges, and urban infrastructure.
- **Partnership for Quality Infrastructure:** This Japanese model emphasizes high-quality and sustainable infrastructure.

Geo-Strategic Partnership

- **Indo-Pacific Vision:** Both nations share the vision of a "Free and Open Indo-Pacific" (FOIP) and "Indo-Pacific Oceans Initiative (IPOI)," crucial for regional peace, stability, and prosperity.
- **Quadrilateral Security Dialogue (Quad):** India and Japan are key members of the Quad, alongside the United States and Australia, which aims to promote security and stability in the Indo-Pacific.
- **Supply Chain Resilience Initiative (SCRI):** They work together under the SCRI framework to diversify supply chains and reduce reliance on single sources, particularly to counter China's dominance.
- **Defense Cooperation:** This includes joint military exercises (e.g., JIMEX, Dharma Guardian), 2+2 dialogues (ministerial-level discussions), and agreements like the Acquisition and Cross-Servicing Agreement (ACSA) for logistics support.

Science and Technology Cooperation

- **Civil Nuclear Agreement (2017):** Facilitates cooperation in civil nuclear energy.
- **Space Collaboration:** Joint projects like the Lunar Polar Exploration Mission by ISRO and JAXA.
- **Technology Transfer:** Efforts to promote Japanese environmental technologies and sustainable practices in Indian industries.

INDIA-CYPRUS RELATION

Prime Minister Narendra Modi's visit to Cyprus in June 2025 marked the first Indian PM visit in over two decades.

Key Highlights of the Visit

- **Strategic Roadmap:** A five-year strategic roadmap will be developed to steer bilateral cooperation.
 - ♦ Alignment between **Cyprus Vision 2035 and India's Viksit Bharat 2047** — both aiming for inclusive, tech-driven, sustainable development.
- **Economic & Trade Relations:** India-Cyprus-Greece Business & Investment Council launched earlier in 2025.
 - ♦ PM Modi emphasized India-EU Free Trade Agreement (FTA) — target: by end of 2025.
- **Grand Cross of the Order of Makarios III:** PM Modi was awarded Cyprus' highest civilian honour.
 - ♦ Named after **Cyprus' first President**, it is awarded to heads of state and leaders of merit.
- **Political and Diplomatic Cooperation:** India reaffirmed its unwavering support for the **sovereignty, unity, and territorial integrity** of Cyprus, while Cyprus extended strong backing to India's stance on **counter-terrorism**, highlighting mutual trust and alignment on global security concerns.
- **Technological Collaboration:** A Memorandum of Understanding was signed to **introduce India's Unified Payments Interface (UPI)** in Cyprus, which will facilitate **seamless digital transactions**.
 - ♦ There is also scope for establishing a **fintech partnership** between the **Cyprus Stock Exchange and Gujarat's GIFT City**.

Significance

- **Historical Linkages:**
 - ♦ **India and the Republic of Cyprus (RoC)** share a long-standing relationship built on friendship, mutual respect, and cooperation, particularly in international forums.
 - ♦ Diplomatic ties were **established in 1962**, two years after Cyprus gained independence.
 - ♦ The bond was rooted in shared ideals championed by leaders like Archbishop Makarios and Jawaharlal Nehru, both pioneers of the Non-Aligned Movement.
 - ♦ **Cyprus is among the top 10 investors in India** with cumulative investments of USD 14.65 Billion during April 2000 – March 2025.
- **Geostrategic:**
 - ♦ **Strategic Gateway to Europe:** Located at the crossroads of Europe, Asia, and the Middle East, Cyprus serves as a critical transit and logistics hub, especially for India's ambitions under the India–Middle East–Europe Economic Corridor (IMEC).
 - ♦ **Support on Global Platforms:** Cyprus has consistently supported India's bid for permanent membership in the

UNSC and backed the India–US Civil Nuclear Agreement at the Nuclear Suppliers Group (NSG) and IAEA.

- ♦ **Cyprus' EU Presidency (2026):** With Cyprus set to lead the European Council in 2026, its role becomes crucial in pushing forward India–EU Free Trade Agreement (FTA) negotiations.
- ♦ Cyprus has long-standing tensions with Turkey (a vocal ally of Pakistan). India's deepening Cyprus ties subtly counterbalance **Turkish lobbying against India at the OIC and UN**.
- **Geo-Economic:** Cyprus is among the top ten foreign investors in India, with cumulative FDI inflows of around USD 14.65 billion (April 2000–March 2025). It acts as a financial conduit between India and European markets.
 - ♦ Strategically, Cyprus is vital to India as part of the **India–Middle East–Europe Economic Corridor (IMEC)** enhancing its importance in India's efforts to strengthen trade and security ties with Europe.
 - ♦ **Cyprus-India Business Association (CIBA):** In 2005, under the auspices of the Cyprus Chamber of Commerce, the Cyprus-India Business Association (CIBA) was established to strengthen economic ties between RoC and India by promoting trade, investment, and business partnerships.
 - ♦ **Invest India and Invest Cyprus:** In December 2021, Invest India and Invest Cyprus signed an MOU with the intention of enhancing their mutual investments activities and promoting overall business cooperation between Indian and Cypriot companies
- **Maritime and Defence Cooperation:** India and Cyprus signed a Bilateral Defence Cooperation Programme (2025), focusing on maritime security, joint naval exercises, anti-terror cooperation, and cyber defence.
- **Digital and Innovation Collaboration:** With the rise of India's digital diplomacy, Cyprus expressed interest in adopting India's Digital Public Infrastructure (DPI), including UPI and DigiLocker, for Fintech innovation and e-governance.
- **Cultural and Historical Affinity:** Both countries share a deep bond rooted in the Non-Aligned Movement. Leaders like Jawaharlal Nehru and Archbishop Makarios laid the foundation of this partnership. Cultural exchanges, yoga events, and educational cooperation continue to enrich ties.

Challenges in India–Cyprus Relations

- **Limited Bilateral Trade Volume:** Despite strong investment links, bilateral trade is USD 137 million in 2023–24, and largely underutilised in sectors like pharma, engineering goods, etc.

- **Cyprus Question and Turkish Influence:** The unresolved Cyprus dispute (division between Republic of Cyprus and Turkish-occupied North) poses a geopolitical constraint.
 - ♦ India must balance ties cautiously, especially as Turkey has grown vocal against India on issues like Kashmir.
- **Slow Progress on FTA with EU:** Although Cyprus supports the India–EU FTA, broader EU negotiations remain stuck over issues such as data protection, market access, and labour standards.
- **Geopolitical Tensions in Eastern Mediterranean:** Rising friction in the Mediterranean involving Greece, Turkey, and Cyprus makes the region unstable, potentially affecting long-term commercial and maritime cooperation.
- **Strengthen Maritime Linkages:** Leveraging Cyprus' ports under IMEC can help India counterbalance Chinese maritime influence.
 - ♦ India could also consider investing in Cyprus' shipping, port logistics, and shipbuilding sectors.
- **Digital and Green Cooperation:** Expanding the use of India Stack tools in Cyprus and collaborating in green energy, cybersecurity, and digital governance would open new-age cooperation channels.
- **Multilateral Collaboration:** Jointly push UNSC reforms, climate resilience under CDRI (Coalition for Disaster Resilient Infrastructure), and democratic digital governance under DAKSHIN (Developing Assistance for Knowledge Sharing and Human Infrastructure Network).
- **Support Peaceful Resolution of Cyprus Issue:** India must continue to advocate for a peaceful, bi-zonal, bi-communal federation in line with UN Security Council resolutions, reinforcing its position as a responsible global actor.

Way Forward

- **Revive Economic Engagement:** India should encourage greater trade promotion activities, joint business councils, and sector-specific MoUs to diversify exports and improve trade volumes with Cyprus.

Cyprus

- It is an island in the **eastern Mediterranean near Turkey and Syria**, is a **European Union** member despite being geographically in **Asia**.
- It gained independence from **Britain in 1960**, but tensions between its Greek and Turkish communities led to violence and the deployment of UN peacekeepers.
- **In 1974**, a coup by **Greek Cypriots** to unite with Greece prompted a Turkish invasion.
- Although the government in **Nicosia** was restored, Turkish forces remained, and the island's northeast declared itself the Turkish Republic of Northern Cyprus, recognized only by Turkey.



Cyprus Question and India's Stand

- **Colonial Background:** Cyprus was a **British colony until 1960**, when it gained independence. A power-sharing constitution was created between **Greek Cypriots (majority)** and **Turkish Cypriots (minority)**.
- **Ethnic Tensions:** Disputes arose over governance, with **Greek Cypriots favouring Enosis** (union with Greece), and **Turkish Cypriots supporting Taksim** (partition of the island).
- **1974 Coup and Turkish Invasion:** A Greek-backed coup led to Turkey's military **invasion under the 1960 Treaty of Guarantee**, resulting in the occupation of **37% of the island's north**.
- **De Facto Division:** Since 1974, Cyprus remains divided:
 - ♦ **Republic of Cyprus** in the south (EU member, internationally recognised).
 - ♦ **Turkish Republic of Northern Cyprus (TRNC)** in the north, recognised only by Turkey.
- **No Resolution Yet:** Despite UN efforts, a **final political settlement remains elusive**, with issues like territory, governance, and property rights unresolved.

India's Position on the Cyprus Issue

- **Consistent Support for Unity:** India supports the **sovereignty, unity, and territorial integrity** of the Republic of Cyprus.
- **Backs UN Framework:** India advocates for a **peaceful, bi-zonal, bi-communal federation** in accordance with **UN Security Council resolutions** and **international law**.
- **Diplomatic Alignment:** India and Cyprus enjoy **strong diplomatic ties** since 1962, and both cooperate closely in the **UN, Commonwealth**, and other global forums.
- **Recent Reaffirmation:** During PM Modi's 2025 visit to Cyprus, India **reiterated its long-standing support** for a peaceful solution to the Cyprus Question.

INDIAN SPACE SITUATIONAL ASSESSMENT REPORT FOR 2024

ISRO released the Indian Space Situational Assessment Report (ISSAR) for 2024
compiled by ISRO System for Safe and Sustainable Space Operations Management (IS4OM).

Global Scenario

- **Record Number of Launches:** 2024 recorded 261 launch attempts globally — the highest since the space age began — with 254 successful launches that placed 2,963 objects in orbit, including 2,578 operational satellites.
- **Lunar Ambitions Resurface:** Five lunar missions were launched in 2024, indicating renewed global interest in lunar exploration.
- **Space Debris from Break-ups:** Three major on-orbit break-up events occurred in 2024.
 - ♦ A major incident involving **China's Long March rocket (CZ-6A)** contributed ~650 catalogued debris.
 - ♦ Net addition of **702 fragmented objects**, significantly higher than the 69 in 2023.
- **Record Re-entries and Impact of Solar Activity:** 2,095 catalogued objects re-entered Earth's atmosphere.

Indian Scenario

- **Total Launched:** 136 Indian spacecraft in Earth orbit till 2024, including those from private and academic institutions.
- **Operational Satellites:** 22 in Low Earth Orbit (LEO) and 31 in Geostationary Orbit (GEO).
- **Active deep space missions:**
 - ♦ **Chandrayaan-2** Orbiter (CH2O)
 - ♦ **Aditya-L1** at Sun-Earth Lagrange point.
 - ♦ **Chandrayaan-3** Propulsion Module, relocated to a high Earth orbit.
- **Historical Debris:** The PSLV-C3 upper stage, which broke up in 2001, created 371 debris, with 41 pieces still in orbit.
- **Satellite Re-entries:** 31 Indian satellites have decayed so far and 9 re-entered in 2024.

Meaning of Space Situational Awareness

- **Space Situational Awareness (SSA)** refers to the ability to **detect, track, catalogue, and predict the movement of all space objects** — both active (like satellites) and inactive (like debris).
- It involves monitoring space weather, near-Earth objects (NEOs), operational satellites, and **orbital debris** to **ensure safety of space assets**.
- SSA is critical for **collision avoidance, space traffic management, and national security**.

Importance of SSA

- **Protection of Satellites:** SSA helps prevent **collision of satellites** with debris or other satellites, ensuring uninterrupted communication, navigation, and earth observation.
- **National Security:** It allows monitoring of **potential adversary actions in space**, enhancing strategic preparedness.

- **Safe Launches and Re-entries:** Accurate prediction of **launch windows** and **safe re-entry paths** depends on real-time space object tracking.
- **Global Space Governance:** SSA contributes to **international cooperation** and transparent use of space through data-sharing mechanisms.
- **Economic Significance:** With rising investment in the **space economy**, SSA becomes vital to protect multi-billion-dollar satellite infrastructure.

Challenges in SSA

- **Increasing Space Debris:** Growing number of satellites (especially from mega constellations like Starlink) has made low-Earth orbit highly congested.
- **Lack of Global Coordination:** No binding global regulatory framework exists for **space traffic management**.
- **Technological Limitations:** Tracking micro-debris (below 10 cm) is difficult but crucial, as even tiny fragments can damage spacecraft.
- **High Costs:** Developing and operating SSA infrastructure (radars, telescopes, data centers) is **capital-intensive**.
- **Data Sharing Restrictions:** Countries often restrict SSA data for security reasons, affecting **global transparency**.
- **Limited Domestic Capability:** India is still building a robust, independent SSA ecosystem.



Way Forward

- **Strengthen Indigenous Monitoring Infrastructure:** Expand ground-based and space-based surveillance systems like NETRA to ensure real-time tracking of space objects and debris.
- **Promote International Collaborations:** Deepen partnerships with agencies like NASA, ESA, and JAXA for data sharing and coordinated action on space traffic management.
- **Develop Comprehensive National SSA Policy:** Formulate a clear, integrated SSA policy involving ISRO, IN-SPaCe, DRDO, and private players to manage civil and defence needs coherently.

AI DRIVEN BIOMANUFACTURING

As global industries adopt AI for precision bioproduction, India is making visible progress, but faces key challenges in regulatory clarity, infrastructure, and innovation support.

About

- Biomanufacturing uses **living cells and biological systems** to produce goods like **vaccines, enzymes, biofuels, biodegradable plastics**, and **advanced materials**.
 - ♦ It combines **synthetic biology, AI**, and **industrial biotechnology** to serve sectors such as **healthcare, energy, food, and material science**.
- India already produces **60% of the world's vaccines**, earning the title "**Pharmacy of the World**".
- **AI-driven biomanufacturing** refers to the integration of **Artificial Intelligence** with **biological production processes** to enhance the efficiency, precision, and scalability of producing biological products.
 - ♦ It means using AI tools like **machine learning, robotics, and data analytics** to improve the production of items such as **vaccines, enzymes, biofuels, biodegradable plastics**, and **biopharmaceuticals**.

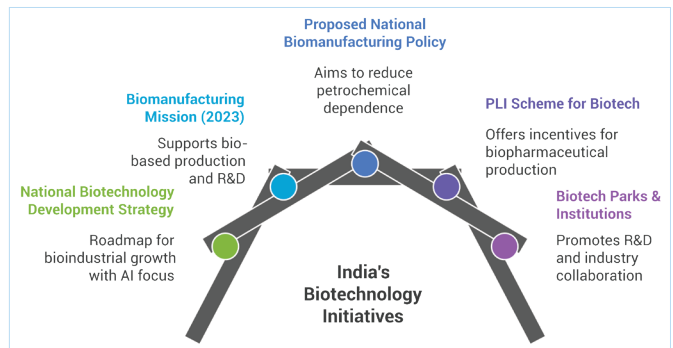
Role of AI in Biomanufacturing

- **Process Optimization:** AI adjusts real-time variables like **temperature, pH**, and **nutrients**, reducing human error and improving yield.
- **Faster Drug Discovery:** AI predicts **protein structures**, simulates molecular interactions, and accelerates **biopharmaceutical development**.
- **Smart Vaccine Design:** AI analyzes genetic sequences to speed up **mRNA vaccine development**, aiding pandemic response.
- **Predictive Maintenance:** AI forecasts **equipment failures**, minimizing plant downtime and ensuring continuous production.
- **Precision Automation:** Robotics guided by AI improve **cell culture, bioassembly**, and **microbial monitoring**.
- **Efficient Logistics:** AI enhances **cold chain management**, predicts **demand fluctuations**, and reduces spoilage.
- **Secure Supply Chains:** AI + Blockchain increases traceability and reduces contamination or fraud in biologics.

Challenges in AI-Driven Biomanufacturing

- **Weak Digital and Data Infrastructure:** AI in biomanufacturing needs **large-scale biological datasets**, fast computing systems, and real-time analytics. India still lacks strong **bioinformatics infrastructure**.
 - ♦ According to the Department of Biotechnology, only a limited number of research institutions have the tools to handle AI-based biological modeling.

- **Gaps in Regulation and Ethics:** There is **no dedicated regulatory framework** for the use of AI in biotechnology.
 - ♦ Ethical concerns—like **data privacy, misuse of genetic data**, and AI-based decision-making in clinical or vaccine development—are not fully addressed in current laws.
- **Low Private Investment in R&D:** AI-driven biomanufacturing requires **high capital** for automation, robotics, and synthetic biology.
 - ♦ While public schemes like **BIRAC** support early-stage research, India spends only **0.7% of GDP on R&D** (Economic Survey 2022–23), which is far lower than countries like the USA (~3%) or China (~2.4%).
- **Unclear Intellectual Property (IP) Laws:** AI-assisted discoveries in biotech raise complex **IPR questions**, such as who owns a product developed using AI algorithms.
 - ♦ India's **Patent Act, 1970**, does not provide clear guidance on AI-generated bioengineering outcomes, creating confusion in patent filings.
- **Skill Gaps and Workforce Shortage:** Biomanufacturing with AI needs experts in **computational biology, machine learning, automation**, and **biotech engineering**.
 - ♦ According to NITI Aayog (2021), **only 3% of India's workforce is formally skilled**, highlighting a major bottleneck for high-tech industries.



Policy Recommendations

- **Dedicated AI-Biomanufacturing Policy:** Develop a unified legal and ethical framework for AI use in biotech.
- **Boost Public-Private Partnerships (PPP):** De-risk R&D, attract FDI, and expand biomanufacturing infrastructure.
- **Increase R&D Funding:** Focus on genomic AI, quantum computing, and AI-driven predictive biology.
- **Develop Regulatory Tech Tools:** Use AI for automated compliance tracking, biosafety, and early detection of research risks.

POST OF DEPUTY SPEAKER

The post of the Deputy Speaker of the Lok Sabha has remained vacant for over six years (since June 2019), raising concerns over erosion of parliamentary conventions in India.

About the Deputy Speaker

- The **Deputy Speaker** is the **second-highest presiding officer** of the Lok Sabha after the Speaker.
- Under **Article 93** of the Constitution, **"The House of the People shall, as soon as may be, choose two members to be Speaker and Deputy Speaker."**
 - ◆ The Constitution does not specify a timeline, but the phrase "as soon as may be" reflects the urgency intended by the framers.

Role and Responsibilities

- As per **Article 95(1)** of the Constitution, the Deputy Speaker performs the duties of the Speaker when the office is vacant or the Speaker is absent.
- During such times, the Deputy Speaker presides over **Lok Sabha proceedings**, and **Joint sittings of Parliament** under **Article 108**, when the Speaker is unavailable.
- The Deputy Speaker ensures **continuity of legislative functioning**, especially during emergencies or sudden Speaker absence.

Election Process

- The Deputy Speaker is **elected by Lok Sabha members** from among themselves.
- The procedure is governed by **Rule 8** of the Rules of Procedure and Conduct of Business in Lok Sabha.
- The election date is fixed by the **Speaker**, making it a discretionary prerogative.
- **By convention (not law)**, the Deputy Speaker is often chosen from the **Opposition**, to ensure bipartisan functioning, though this has not always been followed.

Powers and Privileges

- **While presiding over the House or a joint sitting, the Deputy Speaker:**
 - ◆ Enjoys all powers of the **Speaker** under **Article 95(1)**.
 - ◆ Can exercise a **casting vote** in case of a tie but **cannot vote in the first instance**.
 - ◆ When not presiding, the Deputy Speaker functions as a regular Member of Parliament and may participate in debates and vote on bills.
- **A unique privilege:** If the Deputy Speaker is nominated to a Parliamentary Committee, they automatically become its Chairperson.

Oath and Resignation of Deputy Speaker

- **Oath of Office:** The Deputy Speaker takes an oath or affirmation before entering office, administered by the Speaker of the Lok Sabha, under Article 99 and the Third Schedule of the Constitution.
- **Resignation:** The Deputy Speaker may resign by submitting a written resignation to the Speaker of the Lok Sabha, as per Article 94 of the Constitution.

Removal Process

- Under **Article 94**, the Deputy Speaker **holds office until they cease to be a member of the House or resign**, or until **removed by a resolution** of the House. The removal must be passed by an **effective majority** (i.e. more than 50% of the total strength of the House excluding vacancies).
- A **14-day notice** must be given before moving such a motion.
- The Deputy Speaker cannot preside over the proceedings of the House when their removal is being considered.

Concerns Over Prolonged Vacancy

- **Violation of Constitutional Spirit:** Not electing a Deputy Speaker violates **Article 93**, undermining the principle of constitutional governance.
- **Breakdown of Convention:** Ignoring the unwritten **Opposition-sharing convention** weakens bipartisan parliamentary culture.
- **Legislative Vulnerability:** In the absence of both Speaker and Deputy Speaker, **parliamentary proceedings risk stalling**, especially during emergencies.
- **Erosion of Institutional Checks:** The Deputy Speaker often acts as a **neutral arbiter** and is critical to checking **majoritarian dominance**.
- **Global Democratic Backslide:** Democratic indicators like **legislative balance and opposition space** weaken when constitutional offices remain vacant without reason.
- **Perception of Political Strategy:** Prolonged vacancy may appear as an attempt to **avoid sharing institutional power** with the Opposition.

Way Forward

- **Immediate Election:** The **newly constituted Lok Sabha (2024)** must elect a Deputy Speaker at the **earliest session**, complying with Article 93 in both letter and spirit.
- **Codify Timeline:** Parliament may consider **fixing a time limit** (e.g. 30 days) for electing the Speaker and Deputy Speaker to avoid such delays.

NINTH ANNIVERSARY OF THE PRADHAN MANTRI UJJWALA YOJANA (PMUY)

India marked the ninth anniversary of the Pradhan Mantri Ujjwala Yojana (PMUY), a flagship social welfare scheme ensuring access to clean cooking fuel for marginalized households.

About

- Launched in **2016** by the **Ministry of Petroleum & Natural Gas**, PMUY aims to advance **social equity** by providing **deposit-free LPG connections** to **adult women from Below Poverty Line (BPL) households**, reducing health hazards from traditional fuels and ensuring **basic entitlements**.
- **Eligibility Criteria:**
 - ♦ The scheme prioritizes **vulnerable sections** of society including **SCs, STs, PMAY-Gramin beneficiaries, forest dwellers, and tea garden workers**, ensuring **targeted support to disadvantaged groups**.
 - ♦ Migrant households are allowed self-declaration for address proof, reflecting **flexible inclusion**.
- **Implementation Phases**
 - ♦ **Phase I (2016–2020):** Provided **8 crore LPG connections**, addressing **energy poverty**.
 - ♦ **Phase II (2021 onwards):** Added **1.6 crore connections**, with provisions for **migrant labour households**. As of **March 1, 2025**, PMUY beneficiaries stand at **10.33 crore**, promoting **universal access to clean energy**.

Significance

- **Health Impact (Right to Health & Dignity):** By reducing indoor air pollution, PMUY addresses the **right to health**, especially for rural women and children.
 - ♦ WHO data shows **5 lakh deaths annually** in India from unclean fuels — highlighting the scheme's role in ensuring **environmental justice** and **health equity**.
- **Women Empowerment (Gender Justice):** By freeing women from the drudgery of collecting firewood, PMUY enhances **gender equality** and **women's agency**.
 - ♦ Connections issued in women's names boost **economic empowerment** and **household-level decision-making**.

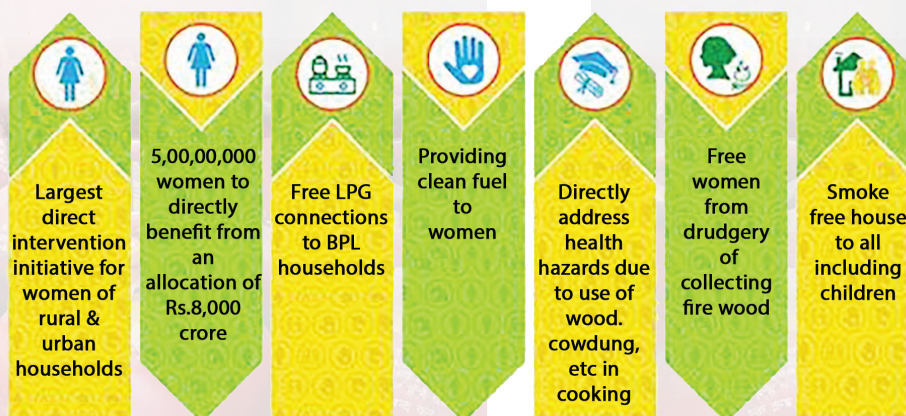
- **Socio-Economic Upliftment (Livelihood & Capability Building):** The scheme allows women to participate in **productive activities**, enabling **inclusive growth**.
 - ♦ It supports **redistributive justice** by ensuring **public provisioning of clean energy** to the poor.
- **Environmental Benefits (Intergenerational Equity):** Cleaner fuels reduce emissions, aligning with **climate justice** principles. Reduced dependence on firewood also helps preserve forests, ensuring **sustainability for future generations**.

Challenges

- **Affordability (Economic Accessibility):** Despite free initial connections, **high refill costs** deter continued use among the poor, affecting **sustainability of access**.
- **Infrastructure Gaps (Last-mile Justice):** Poor **delivery networks** in remote areas undermine **universal access** goals, widening the **urban-rural divide** in energy equity.
- **Administrative Barriers (Access to Entitlements):** **Delays in documentation** and onboarding exclude eligible households, violating the principles of **inclusion** and **procedural justice**.
- **Behavioural Patterns (Awareness & Agency):** Cost-conscious rural households often revert to biomass fuels, indicating the need for **social awareness** and **behavioural transformation**.

Way Forward

- **Improve Delivery Infrastructure:** Set up **more LPG distribution points** in rural India to bridge the **access gap** and deliver on **equity in service delivery**.
- **Subsidize Refills for Vulnerable Groups:** Ensure **refill affordability** for the poor through **targeted subsidies or DBT**, aligning with **affirmative action** principles.
- **Strengthen Awareness Campaigns:** Promote **behavioural change** through IEC campaigns, stressing the **health rights** and **environmental benefits** of LPG usage.



UNITED NATIONS OCEANS CONFERENCE

Recently, the third United Nations Oceans Conference (UNOC), held in Nice, France, concluded with commitments aimed at safeguarding the planet's marine ecosystems.

United Nations Oceans Conference (UNOC)

- **1st UNOC (2017):** In New York, Co-hosted by Sweden and Fiji; To support **SDG 14: Life Below Water**.
- **2nd UNOC (2022):** In Lisbon, Co-hosted by Portugal and Kenya; To emphasize the **need for science-based solutions** and innovative partnerships.
- **3rd UNOC (2025):** In Nice, France, and co-hosted by Costa Rica
 - ♦ **Theme:** Accelerating action and mobilizing all actors to conserve and sustainably use the ocean.

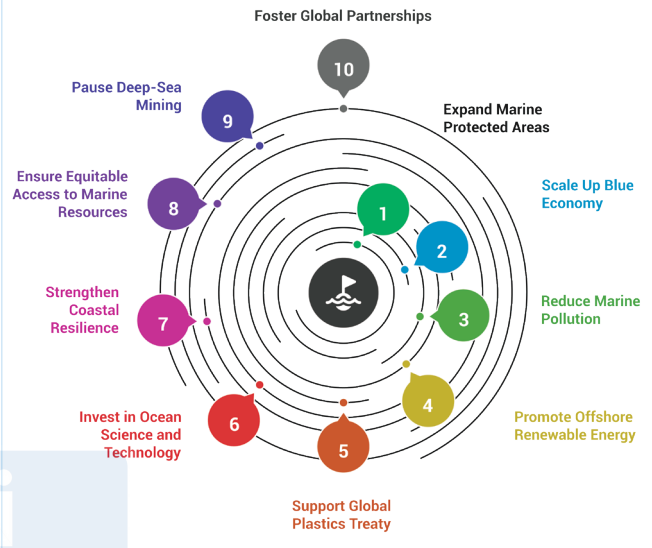
Key Outcomes of the Conference (2025)

- **High Seas Treaty Nears Enforcement:** Fifty-six of the required sixty countries have ratified the **Biodiversity Beyond National Jurisdiction (BBNJ) Agreement** (aka **High Seas Treaty**).
 - ♦ It enables the creation of **marine protected areas (MPAs)** in international waters, regulate marine genetic resources, and mandate environmental impact assessments.
- **Voluntary Commitments and Financial Pledges:** The European Commission **pledged 1 Billion Euro** to support ocean conservation and sustainable fishing.
 - ♦ **French Polynesia** announced plans to establish the **world's largest marine protected area**, covering its entire exclusive economic zone—about five million square kilometers.
- **Global Political Declaration:** Over 170 countries adopted the **Nice Ocean Action Plan**, a political declaration paired with **more than 800 voluntary commitments**.
 - ♦ These range from youth advocacy to deep-sea ecosystem literacy and capacity-building in marine science.
- **Pushback Against Deep-Sea Mining:** A growing coalition of nations called for a precautionary pause on deep-sea mining, citing its potential to irreversibly damage fragile marine ecosystems.

About High Seas

- The high seas refer to areas of the ocean that lie **beyond the jurisdiction of any single country** — specifically, **beyond 200 nautical miles** (about 370 kilometers) from a nation's coastline (*United Nations Convention on the Law of the Sea-UNCLOS*).
 - ♦ These waters are considered part of the global commons.
- The high seas make up **nearly two-thirds of the ocean's surface** and are vital for regulating Earth's climate, supporting marine biodiversity, and sustaining global fisheries.

India's 10 Points Roadmap for Sustainable Ocean Governance



Importance of Oceans

- **Climate Regulation:** Oceans absorb over 25% of global carbon emissions and generate 50% of the oxygen.
 - ♦ They act as Earth's largest carbon sink and heat buffer, helping stabilize the climate.
- **Food Security:** Oceans provide 15% of the animal protein consumed globally. In some developing nations, seafood is the primary protein source for over half the population.
- **Livelihoods and Economy:** More than 3 billion people depend on marine and coastal resources for their livelihoods.
 - ♦ The ocean economy is valued at \$3–5 trillion annually, supporting industries like fisheries, tourism, and shipping.
- **Biodiversity Reservoir:** Oceans host an immense variety of life—from coral reefs to deep-sea ecosystems that are essential for ecological balance and future scientific discoveries.

Key Concerns

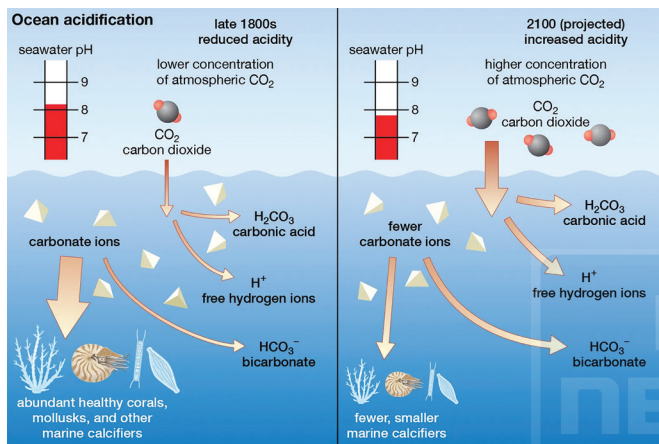
- **Ocean Pollutions:** An estimated 75 to 199 million tons of plastic have already reached the ocean till now. Annually, 8 to 12 million metric tons plastic are added.
 - ♦ **Asia being the largest (81%) contributor** of ocean plastic pollution (largely due to inadequate waste management systems).
 - ♦ About 92% of **microplastics** have been found in 60% of fish consumed by humans annually.
 - ♦ By 2050, plastic in the **ocean is projected to outweigh all fish** if current trends continue.

OCEAN ACIDIFICATION

A recent study has revealed that ocean acidification has breached its planetary boundary, posing grave threats to marine ecosystems and global climate stability.

About

- Ocean acidification refers to the ongoing **decrease in the pH of Earth's oceans**, caused by the **uptake of carbon dioxide (CO₂)** from the atmosphere.
- When CO₂ dissolves in seawater, it forms **carbonic acid**, which lowers ocean pH and reduces calcium carbonate levels – essential for many marine organisms.



Planetary Boundary Breach

- **Planetary boundaries** are thresholds beyond which the Earth's vital systems may no longer maintain a stable environment.
- The study finds that by 2020, the average global ocean conditions had already fallen **20% below pre-industrial calcium carbonate saturation**, crossing the safe threshold for acidification.
- At **200 metres** below the surface, **60%** of global waters had breached the "safe" limit for acidification.

Impacts of Ocean Acidification

- **Calcifying Species Affected:** Corals, oysters, mussels, and pteropods (sea butterflies) are most vulnerable.
 - ♦ Acidification weakens shells and skeletons, reduces reproduction, slows growth, and increases mortality.
- **Fisheries and Livelihoods:** Decline in fish nursery grounds affects food security and economic stability of coastal communities.
- **Tourism Sector:** Coral reef degradation affects tourism and recreational diving industries.
- **Climate Feedbacks:** Damage to ocean ecosystems like plankton may affect carbon sequestration capacity of oceans. This could amplify global warming over time.

- **Social impacts:** Climate-linked migration and livelihood loss may increase geopolitical tensions. Rising unemployment in coastal sectors may trigger social unrest.

Initiatives to Tackle Ocean Acidification

- **Global Ocean Acidification Observing Network (GOA-ON):** GOA-ON is a collaborative international network of 367 members from **66 countries**, aimed at enhancing the monitoring and understanding of ocean acidification across estuarine, coastal, and open ocean systems.
- **UN Decade of Ocean Science for Sustainable Development (2021–2030):**
 - ♦ Proclaimed in **2017** by the United Nations General Assembly, it aims to **reverse the decline the ocean health** through;
 - ♦ Stimulating scientific research, technological innovation, and policy-relevant knowledge.
 - ♦ Supporting countries to achieve **SDG-14 ("Life Below Water")** and broader climate resilience.
- **Intergovernmental Oceanographic Commission (IOC) of UNESCO:** Under its Global Ocean Observing System (GOOS), it supports real-time ocean monitoring including pH and CO₂ measurements.
- **Blue Carbon Initiatives** provides research, policy advice, and financing mechanisms to promote blue carbon strategies globally.
 - ♦ **Blue Carbon** refers to the carbon stored in coastal and marine ecosystems such as mangroves, salt marshes, and seagrasses.

Way Ahead

- **Policy and Governance:**
 - ♦ Mainstream ocean acidification into national climate and ocean policies.
 - ♦ Prioritise **Marine Spatial Planning** and **Integrated Coastal Zone Management**.
- **Local Adaptation and Conservation:** Protect and restore resilient ecosystems, such as mangroves and seagrasses.
 - ♦ Implement **Marine Protected Areas (MPAs)** in regions of high vulnerability.

Concluding Remarks

- Ocean acidification is not just a marine problem, it is a **multi-dimensional crisis** affecting biodiversity, economies, food systems, and climate resilience.
- **Its silent but accelerating pace** demands urgent and coordinated policy responses globally and nationally.

GLOBAL SDG RANKINGS

India has, for the first time, secured a position among the top 100 countries in the Sustainable Development Goals (SDG) Index.

About

- The **Sustainable Development Report (SDR)** reviews progress made each year on the Sustainable Development Goals since their adoption by the 193 UN Member States in 2015.
- This edition also includes **for the first time an assessment of countries which have made the most progress** on the SDGs using a headline **SDG Index (SDGi)**.

Major Highlights

- **Global Commitment through Voluntary National Reviews (VNRs):** 190 out of 193 UN member states have participated in the VNR process since the adoption of Agenda 2030.
- **Regional Trends in SDG Progress:** East and South Asia is the fastest progressing region since 2015.
 - ♦ **Drivers of progress:** Rapid improvements in socioeconomic indicators.
- **Top Performers in SDG Index: Finland, Sweden and Denmark** hold the top three positions.
 - ♦ 19 out of the top 20 performers are European countries.
 - ♦ Challenges remain even for top countries — particularly in climate action and biodiversity goals.
- **India ranked 99th out of 167 nations.**
 - ♦ It places India with a **score of 67** on the SDG Index, a significant improvement from its **109th rank in 2024**.
 - ♦ Since the adoption of the SDGs, India has steadily improved its standing: it ranked **112th in 2023, 121st in 2022, and 120th in 2021**.
- **Among India's neighbours,** China ranks 49th (74.4), Bhutan ranks 74th (70.5), Nepal 85th (68.6), Bangladesh 114th (63.9), and Pakistan 140th (57).
 - ♦ Maritime neighbours Maldives and Sri Lanka stand at 53rd and 93rd places respectively.
- **Global SDG Progress Remains Off-Track:** None of the 17 SDGs are currently on track to be achieved globally by 2030.
 - ♦ Only 17% of SDG targets are on track worldwide.
 - ♦ **Major obstacles:** Conflicts, structural vulnerabilities, limited fiscal space.
- **Notable progress seen in:** SDG 3 (Health): Under-5 and neonatal mortality, SDG-7: Access to electricity, SDG 9: Mobile broadband use and internet access.
- **It identified five areas of significant regression since 2015:** obesity rates (SDG 2), press freedom (SDG 16), sustainable nitrogen management (SDG 2), the Red List Index measuring biodiversity loss (SDG 15), and the Corruption Perceptions Index (SDG 16).

- **UN-Based Multilateralism Index (UN-Mi):** Barbados ranks 1st – most committed to UN-based multilateralism.
 - ♦ **The United States ranks last**, following the withdrawal from Paris Climate Agreement (2025), Exit from World Health Organization (WHO) and Formal opposition to SDGs and Agenda 2030.
- **Fiscal Constraints in Developing Countries:** Around 50% of the global population lives in countries lacking fiscal capacity to invest in sustainable development.
 - ♦ Global public goods (like climate protection, global health, peace) remain underfunded.

Recommendations

- Need for Reform in Global Financial Architecture (GFA) as the current GFA favors wealthy nations with easier capital access.
- Proposes practical reforms to boost and align global financing toward SDGs and public goods.

Sustainable Development Goals (SDGs)

- **Adoption:** The United Nations General Assembly, during its **70th Session in 2015**, adopted the document titled **"Transforming our World: The 2030 Agenda for Sustainable Development."**
 - ♦ This document outlines **17 Sustainable Development Goals (SDGs) and 169 associated targets**.
- The SDGs, also known as the **"Global Goals"**, **came into force with effect from 1st January 2016**.
- **Aim:** The SDGs serve as a **comprehensive blueprint** aimed at **achieving a better and more sustainable future for all**.
- The goals **call for action on addressing global challenges** such as poverty, inequality, climate change, environmental degradation, peace and justice.
- **Applicability:** The SDGs are universal, applying to all nations—developed, developing and least developed countries.
 - ♦ Countries are primarily responsible for following up and reviewing the progress made in implementing the goals and targets at the national level until 2030.
- **Legality:** The SDGs are **not legally binding**, but they have effectively become international obligations and have the potential to reorient domestic spending priorities in countries.
 - ♦ Countries are expected to take ownership and develop a national framework to monitor these goals.

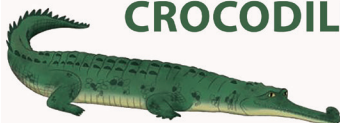
50 YEARS OF CROCODILE CONSERVATION PROGRAMME

India began its Crocodile Conservation programme in 1975, and this year marks 50 years of this initiative.

About

- As per the survey conducted in 1974 (H.R. Bustard), Crocodile populations were **on the brink of extinction**.
- Scientific conservation efforts** were launched with the assistance of the **Food and Agriculture Organization** of the **United Nations**.
- In 1975, three conservation projects were launched in Odisha, each for a specific species - **salt-water crocodiles in Bhitarkanika, gharials in Satkosia and muggar in Similipal**.
- Note:** Odisha is uniquely positioned by hosting wild populations of all three crocodile species.
- Objective:** To protect their natural habitats and rebuild the population quickly through captive breeding.

CROCODILES OF INDIA



GHARIALS

Gavialis gangeticus

Male gharials are easily distinguished due to the presence of a bulb on their snouts, like earthenware pots called gharas. They are used to vocalise and bubbles to attract females. **Habitat:** They are found in clear freshwater river systems, congregating at river bends. **Threats:** Illegal poaching, egg collection, fishing nets, sand mining, prey base depletion, and habitat loss and degradation.

SALTWATER CROCODILE

Crocodylus porosus

The Earth's largest living reptile, saltwater crocodiles have the greatest bite pressure of any animal. Males are much larger than females, weighing even upto 1,000 kgs. **Habitat:** They inhabit coastal brackish mangrove swamps and river deltas. **Threats:** Illegal hunting and habitat loss and degradation.

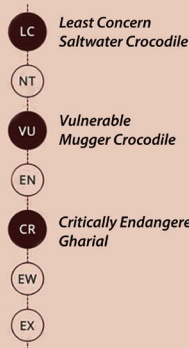


MUGGER CROCODILE

Crocodylus palustris

Also called marsh crocodile, Mugger Crocodiles are one of the most adaptable crocodilian species in India. With the broadest snout of all, they are keystone species of their habitat. **Habitat:** They are found in freshwater habitats including rivers, lakes, marshes, and estuarine. **Threats:** Illegal poaching, egg collection, fishing nets, and habitat loss and degradation.

IUCN STATUS



GLOBAL POPULATION of mature individuals

Gharials 🐊 650
Mugger Crocodiles 🐊 5700-8700
Saltwater Crocodiles 🐊 500,000

Crocodiles Species in India

- India is home to three main kinds of crocodile species – the gharial (*Gavialis gangeticus*), the saltwater crocodile (*Crocodylus porosus*), and the mugger (*Crocodylus palustris*).

Conservation Success

- The saltwater crocodile population has recovered to approximately 2,500 individuals in the wild, with Bhitarkanika

in Odisha holding the largest share, followed by the Andaman and Nicobar Islands and the Sundarbans in West Bengal.

- The mugger crocodile, once severely depleted in numbers, has now reclaimed most of its historical range, with its numbers in the wild estimated at 8,000 to 10,000.
- India holds nearly 80% of the global wild gharial population—an estimated 3,000 individuals.

Gharials (*Gavialis Gangeticus*)

Union Minister for Environment, Forest and Climate Change, launched the Gharial Species Conservation Programme by releasing Gharial hatchlings into the Gerua River at Katarniaghat Wildlife Sanctuary, Uttar Pradesh.

About

Characteristics:

- The name "Gharial" originates from the Hindi word **ghara (pot)**, referring to the **bulbous knob (narial excrescence)** present at the tip of a mature male's snout. Though, this feature is **absent in females**.
- They show **Sexual Dimorphism** means males and females differ significantly in size and appearance.
- Unlike other crocodiles, gharials **feed exclusively** on **warm-blooded species** and **are not man-eaters**.

Habitat Distribution:

- Gharials are strictly **riverine species**, requiring **deep, clear, fast-flowing waters with steep, sandy riverbanks**.
- Mainly found in **Chambal River, Gerua River, Ken River, Yamuna River, Brahmaputra River, Ghaghara River, Bhagirathi-Hoogly River**.

Conservation Status:

- IUCN Status:** Critically Endangered
- It is listed under **Schedule 1** of the Wild Life (Protection) Act, 1972.

Protected Areas for Gharials

- Katarniaghat Wildlife Sanctuary:** Gerua River (Uttar Pradesh)
- National Chambal Sanctuary** spread across MP, UP, and Rajasthan; a key breeding site.
- Son Gharial Sanctuary:** Madhya Pradesh
- Satkosia Gorge Sanctuary:** Odisha
- Gharial Reserves in India:** In Uttar Pradesh, Madhya Pradesh, Rajasthan. Notable protected areas are Chambal Sanctuary, Katarniaghat Wildlife Sanctuary.

CHINESE INFRA PROJECTS IMPACTING BRAHMAPUTRA

India is closely monitoring Chinese infrastructure projects on the Brahmaputra River, particularly hydropower developments, due to their potential impact on downstream regions such as Arunachal Pradesh and Assam.

Brahmaputra River System

- The **Brahmaputra River** originates in the **Kailash ranges** at 5,150m elevation, flows 2,900 km in total, including 916 km in India.
- It originates as **Yarlung Tsangpo** in Tibet.
- Its basin spans across **Tibet (China), Bhutan, India, and Bangladesh**.
- In India, it covers Arunachal Pradesh, Assam, West Bengal, Meghalaya, Nagaland, and Sikkim.
- It enters India near **Gelling** in Arunachal Pradesh.
 - ♦ The river, which is called **Siang in Arunachal**, is joined by many tributaries in Assam as it flows down the plains before entering Bangladesh, where it is called **Jamuna**.



River-Linking Projects:

- ♦ **Manas-Sankosh-Teesta-Ganga Link:** Connects Brahmaputra to Ganga via Sankosh & Teesta.
- ♦ **Jogighopa-Teesta-Farakka Link:** Links Brahmaputra via Jogighopa Barrage to Farakka on Ganga.
- **Host Riverine Island:** It hosts **Majuli**, the world's largest river island, and **Umananda**, the smallest river island in the world, both located in Assam.

Impact of Chinese Dams on Brahmaputra

- **Hydrological Impact:** The Chinese dams may alter natural water flow patterns, affecting seasonal water availability.
 - ♦ **Example: Medog Hydropower Project** (proposed 60,000 MW) near the 'Great Bend' of the Yarlung Tsangpo in Tibet.
 - ♦ A sudden release of water or temporary water retention

can exacerbate floods or worsen dry spells in Arunachal Pradesh and Assam, especially during the lean season.

- **Ecological Disruptions:** Reduced sediment flow, altered flood regimes, and biodiversity loss.
 - ♦ **Example:** The Kaziranga National Park, home to the one-horned rhinoceros, depends on regular flooding of the Brahmaputra for ecological regeneration.
- **Strategic & Geopolitical Risk:** Gives China a perceived upper hand in water diplomacy; potential tool for coercion. Like during the **2017 Doklam standoff**, China withheld hydrological data on the Brahmaputra, which it is obligated to share under a bilateral agreement.
- **Economic Consequences:** Uncertainty in water flow can affect irrigation, agriculture, and hydropower generation downstream.
 - ♦ **Example:** Any disruption in Subansiri and Siang tributaries, where India has planned large hydropower projects (e.g., Lower Subansiri Hydro Project), can delay infrastructure timelines or reduce output.
- **Inter-State Tensions in India:** Unpredictable flow from upstream may aggravate water-sharing conflicts between Indian states.

China's Contribution Vs India's Share

- Multiple expert studies (e.g., by **PK Saxena** and **Teerath Mehra**) indicate that **China contributes only 22–30% of Brahmaputra's annual discharge**.
- 70–78% of the river's flow is generated within India, primarily due to monsoonal rainfall and tributary inflows in Arunachal Pradesh and Assam.
- Hydrologically, China's control over the river's headwaters has limited influence on its overall flow in India.
- Even to address water scarcity, two river-linking projects have been proposed: the **Manas-Sankosh-Teesta-Ganga Link** and the **Jogighopa-Teesta-Farakka Link**.

Way Forward

- India should conduct **detailed scientific studies** and develop an **adaptive strategy** to assess the impact of Chinese projects on the Brahmaputra.
- It must **strengthen diplomatic efforts** to access hydrological data and establish data-sharing protocols with China for early warnings and disaster preparedness.

“We are concerned by the building of large dams over Brahmaputra by China and have expressed our concern to the Govt of India, who will take up this matter with the Chinese Govt.”

—Himanta Biswa Sarma”

MOUNT ETNA

The recent eruption of Mount Etna in Sicily, Italy highlights the dynamic processes beneath the Earth's crust.

About

- A **volcanic eruption** is the **expulsion of gases, rock fragments, and/or molten lava** from within the Earth through a vent onto the Earth's surface or into the atmosphere.
- **Formation of Magma:**
 - ♦ Deep beneath the earth's surface, temperature and pressure are high enough to melt parts of the mantle and crust to form molten rock called magma.
 - ♦ Magma is less dense than surrounding solid rock, so it **rises** through the crust, collecting in underground chambers.
- **Role of Gases and Pressure:** Magma contains volatile compounds like **water vapor, carbon dioxide, and sulfur dioxide**.
 - ♦ Deep underground, these gases are dissolved due to immense pressure.
 - ♦ As magma ascends and pressure reduces near the surface, the gases form bubbles, increasing internal pressure.
- **Eruption Mechanism:**
 - ♦ At **tectonic boundaries** or hotspots (mantle plumes), cracks and faults allow magma to push upward. If gas pressure builds up significantly, it erupts violently, releasing lava, ash, and gases.
 - ♦ If magma is suddenly obstructed, the resulting pressure may also cause **earthquakes or generate seismic waves**.

Volcano Types



Stratovolcanoes

Tall and steep volcanoes that are explosive. Examples include Mount Etna and Mount Fuji.

Broad volcanoes with gentle slopes and fluid lava flows. An example is Mauna Loa in Hawaii.

Shield Volcanoes



Cinder Cone Volcanoes

Small and steep volcanoes formed by a single eruption. An example is Capulin Volcano.

Large depressions formed by major volcanic eruptions. An example is Yellowstone.

Calderas



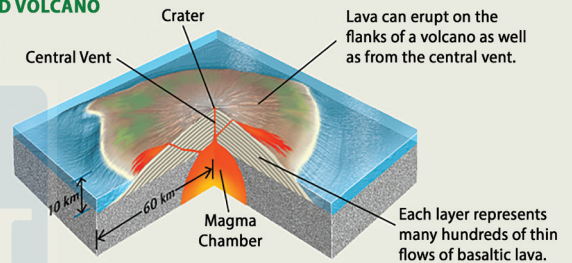
Volcanic Domes

Small, rounded structures formed by slow extrusion of lava. An example is Novarupta Dome in Alaska.

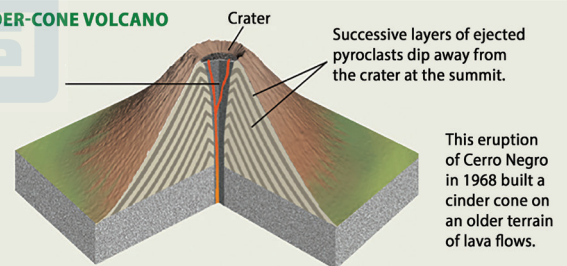
Classification Based on Activity

- **Active volcanoes:** These volcanoes have erupted within the last 10,000 years or are currently erupting.
- **Dormant volcanoes:** These volcanoes have not erupted in a long time (typically since the last ice age, about 12,000 years ago) but are still considered capable of erupting again.
- **Extinct volcanoes:**
 - ♦ These volcanoes are not expected to erupt again.
 - ♦ They may have erupted in the past, but their magma supply has been depleted, and the volcano is no longer considered active.

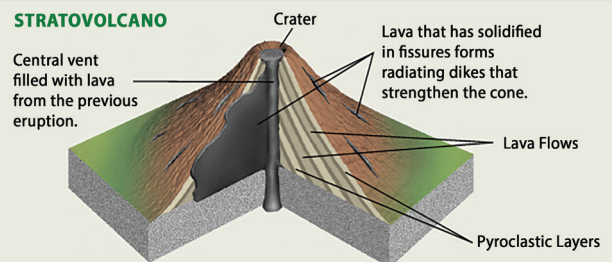
SHIELD VOLCANO



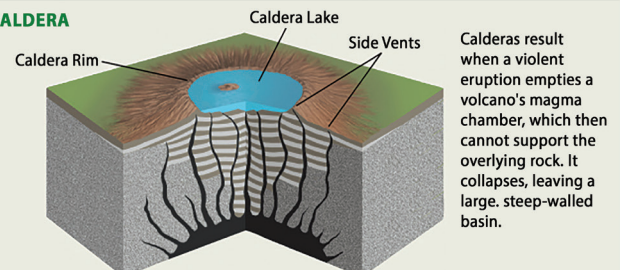
CINDER-CONE VOLCANO



STRATOVOLCANO



CALDERA



ATLANTIC MERIDIONAL OVERTURNING CIRCULATION

Recently, a climate study found that if the Atlantic Meridional Overturning Circulation (AMOC) collapses, Europe could face a dramatic and prolonged winter freeze, even in a world warmed by greenhouse gas emissions.

About AMOC

- It is one of the most powerful and complex systems **driving Earth's climate**.
- It is often likened to a giant **conveyor belt** that transports **warm surface waters** from the tropics northward and **returns cold, dense water** southward at depth.
- It regulates **temperatures across the Atlantic basin** and plays a vital role in **global climate stability, sea-level patterns, and marine ecosystems**.

Working of AMOC

- The AMOC is a key sub-component of the global thermohaline circulation.
- **Warm, salty water** flows **northward** via currents like the **Gulf Stream**. As it reaches higher latitudes, it cools and becomes denser, sinking into the deep ocean and flowing back south.
- It helps **distribute heat and nutrients** across the globe, influencing weather patterns from the Amazon to the Arctic.

Slowing of AMOC and the Tipping Point

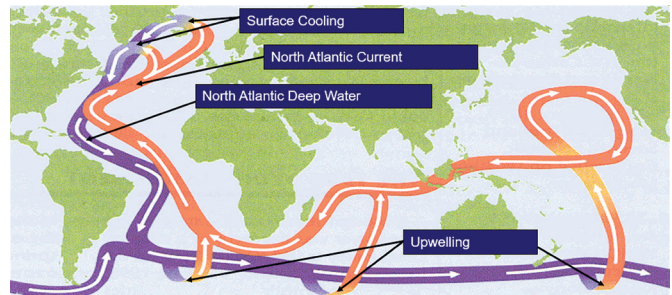
- Recent studies suggest that the AMOC has weakened significantly since the mid-20th century, and is **expected to slow by 18–43% by 2100**.
- It is **primarily driven** by climate change, particularly the **influx of freshwater** from melting Greenland ice, which **disrupts the salinity and density gradients** that power the current.
- AMOC may be **approaching a tipping point**, beyond which its collapse could trigger abrupt and irreversible climate shifts.
- **AMOC** has two potential tipping points — one linked to salt transport feedback and another to deep ocean convection.

Climate Tipping Points

- These are **critical thresholds in Earth's systems**—once crossed, they can trigger **self-reinforcing feedback loops** that lead to **abrupt, irreversible, and potentially catastrophic changes**.
- They occur when a **small change** in temperature or pressure pushes a system — like an ice sheet, rainforest, or ocean current — into a radically different state.

Key Tipping Elements at Risk: Recent assessments have identified at least 16 major Earth system components that are vulnerable to tipping for example

- Greenland and West Antarctic Ice Sheets;
- Atlantic Meridional Overturning Circulation (AMOC);
- Amazon Rainforest Dieback;
- Arctic Permafrost Thaw;



Potential Consequences

- Europe may face colder winters despite global warming, as warm currents fail to reach its shores.
- West Africa could see disrupted monsoon patterns, affecting agriculture and water security. Eastern North America might experience accelerated sea-level rise.
- The Amazon and South Asia could suffer from altered rainfall patterns, increasing drought risk.

Ocean Currents

- Horizontal and vertical components of the circulation system of ocean waters.

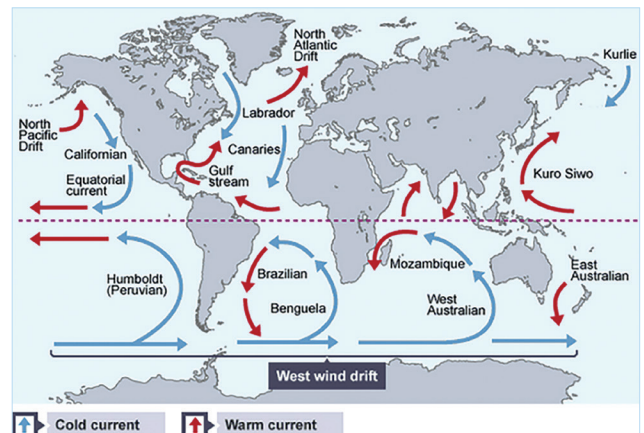
Types

- **Surface Currents:** Surface Circulation
- **Deep Water Currents:** Thermohaline Circulation

Forces

- **Primary:** Solar Heating, Winds, Gravity, Coriolis force
- **Secondary:** Temperature, Salinity & Density Difference

They play major role in controlling the climate and weather patterns around the world which directly or indirectly influence flora and fauna of related reasons along with other things.



GLOBAL DROUGHT OUTLOOK

The Organisation for Economic Co-operation and Development (OECD) has released its latest Global Drought Outlook report, highlighting the increasing frequency, and geographical spread of droughts globally.

About

- Droughts are **periods characterised by a significant hydrological imbalance** in water sources or reservoirs, typically marked by "**drier-than-normal**" weather conditions.
- These periods are primarily driven by low rainfall and can be further **intensified by high temperatures or strong wind**, which accelerate water evaporation, as well as human activities.
- **Classification:**
 - ♦ **Meteorological drought** refers to a prolonged period of low precipitation.
 - ♦ **Agricultural (or ecological) drought** refers to a condition where soil moisture is insufficient to meet the needs of crops and vegetation.
 - ♦ **Hydrological drought** occurs when surface or groundwater water levels drop below average over a prolonged period.

Key Findings

- The global land area affected by drought **doubled between 1900 and 2020**, with **40%** of the planet experiencing increased drought frequency and intensity in recent decades.
- Since 1980, **37%** of global land has experienced significant **soil moisture decline**. Similarly, **groundwater levels are falling** globally, with 62% of monitored aquifers in decline.
- Climate change made the **2022 European drought up to 20 times** more likely and increased the likelihood of the ongoing drought in North America by **42%**.

Causes of Droughts

- **Natural Causes:**
 - ♦ **Climate variability**, such as El Niño and La Niña, affects global weather patterns and can result in prolonged dry spells in some regions.
 - ♦ **Reduced snowfall** and melting glaciers diminish freshwater sources over time.
- **Anthropogenic Causes:**
 - ♦ **Deforestation** and land degradation reduce the soil's ability to retain moisture and disturb the local water cycle.
 - ♦ **Urbanisation** leads to soil sealing, which prevents water infiltration and groundwater recharge.
 - ♦ **Unsustainable agriculture** and over-extraction of groundwater, especially through inefficient irrigation practices, worsen the drought intensity in some areas.

Impacts of Drought

- **Environmental Consequences:** Droughts severely degrade ecosystems such as forests, wetlands, and grasslands, leading to loss of biodiversity and reduction in plant biomass.

- **Economic Consequences:** Droughts also impact hydropower production, industrial operations, and fluvial trade, reducing efficiency and increasing energy and food insecurity.
 - ♦ The economic costs of droughts are rising globally by **3% to 7.5%** annually.
- **Social Consequences:** They contribute to **food insecurity, migration, water scarcity, and livelihood loss**, especially among marginal and vulnerable communities.
 - ♦ Droughts account for only **6%** of natural disasters but cause **34% of all disaster-related deaths**.

Key Recommendations

- **Investment in Drought Resilience:** Every USD 1 invested in drought prevention yields USD 2 to 3 in benefits, with some resilience projects offering up to ten times the return on investment.
- **Ecosystem and Land Use Management:** Ecosystem restoration improves water retention and soil health. Drought-tolerant crops and adaptive farming help secure food systems.
- **Cross-Sectoral Action:** Include energy, transport, infrastructure, and urban planning in drought resilience strategies.
 - ♦ Irrigation efficiency improvements could cut global water use by 76%.

Measures Taken in India

- **Integrated Watershed Management Programme (IWMP):** Promotes soil and water conservation in drought-prone areas.
- **Pradhan Mantri Krishi Sinchayee Yojana (PMKSY):** Aims to enhance irrigation efficiency and ensure "more crop per drop".
- **National Agricultural Drought Assessment and Monitoring System (NADAMS):** Uses satellite data to monitor drought conditions and aid early warning.
- Promotion of **climate-resilient crops** and **contingency crop planning** is being encouraged under the **National Mission on Sustainable Agriculture (NMSA)**.

United Nations Convention to Combat Desertification (UNCCD)

- UNCCD was **established in 1994** to protect and restore the land and ensure a safer, just, and more sustainable future.
- is the **only legally binding framework** set up to address desertification and the effects of drought.
- There are **197 Parties** to the Convention, including 196 country Parties and the **European Union**.

TECH BASED DISASTER MANAGEMENT

Union Home Minister Amit Shah launched three major technology platforms (ICR-ER, NDEM Lite 2.0 and Flood Hazard Zonation Atlas of Assam) to improve the speed and precision of disaster management.

About

- The Integrated Control Room for Emergency Response (ICR-ER), National Database for Emergency Management Lite 2.0 (NDEM Lite 2.0), and the Flood Hazard Zonation Atlas of Assam.
- These tools aim to improve real-time disaster response, coordination, and flood preparedness using satellite data and digital mapping.

India's Disaster Vulnerability

- India has been vulnerable to natural disasters on account of its unique geo-climatic conditions.
 - ◆ Floods, droughts, cyclones, earthquakes and landslides have been a recurrent phenomena.
- Around 58.6% of the country is prone to earthquakes, over 12% is at risk of floods and river erosion, and 68% of cultivable land is susceptible to drought.

India's Disaster Management Approach

- The **Disaster Management Act, 2005** provides for the legal and institutional framework for the effective management of disasters.
- The **National Disaster Management Authority (NDMA)** has prepared the **National Disaster Management Plan (NDMP)** in 2016 and revised it in 2019.
 - ◆ NDMP incorporates national commitments in the domain of Disaster Risk Reduction (DRR) associated with the three major post-2015 Global Frameworks namely, **Sendai Framework for Disaster Risk Reduction (SFDRR)**, **Sustainable Development Goals (SDGs)** and **Paris Agreement on Climate Change**, and **Prime Minister's 10-point Agenda**.

- Government of India has also approved Rs. 1000 Crore **National Landslide Risk Mitigation Programme** which includes implementation of landslide risk mitigation activities / projects in 15 States including the State of Kerala.
- **Aapda Mitra Scheme** has been implemented and 1,00,000 community volunteers have been trained in disaster rescue in 350 multi-hazards disaster prone districts, covering all States/UTs.

Progress

- India has shown **dramatic improvement in outcomes**, e.g., zero casualties during **Cyclone Biparjoy**, compared to 10,000 deaths in the 1999 Odisha super cyclone.
- **Budget allocations significantly increased:** SDRF from ₹38,000 cr to ₹1.44 lakh cr; NDRF from ₹28,000 cr to ₹84,000 cr; overall from ₹66,000 cr to ₹2 lakh cr. A ₹68,000 crore National Disaster Risk Management Fund has been created.
- Launch of **Yuva Aapda Mitra scheme** with ₹470 crore to train 1 lakh volunteers (20% women).
- India's early warning systems, forecasting, and public awareness have improved markedly.
- Environmental conservation was cited as key to long-term disaster mitigation, with India leading initiatives like Mission LiFE, International Solar Alliance, and the Coalition for Disaster Resilient Infrastructure (CDRI).

Issues and Concerns

- Despite improvements in response capacity, there is a critical gap in long-term resilience.
- Disasters in Uttarakhand (2021) and Himachal Pradesh (2024) highlight the need for recovery efforts that empower communities and build resilient infrastructure.
- Over-reliance on central agencies can weaken local capacities.
- **Environmental sustainability is often overlooked** during relief operations, leading to long-term issues like pollution and resource contamination.

Way Forward

- India's disaster management framework has certainly come a long way, evolving into a comprehensive system that spans prevention, mitigation, preparedness, response, recovery and reconstruction phases.
- With India's long coastline vulnerable to cyclones and tsunamis, integrating ecosystem-based disaster risk reduction (DRR) into policy is essential. Nature-based solutions, such as **mangrove plantations** and wetland restoration, offer both protective and ecological benefits.



FLASH FLOODS

Over 50,000 people were affected after a flash flood in the Subarnarekha River, which led to water entering several villages in Balasore (Baleshwar) district of Odisha.

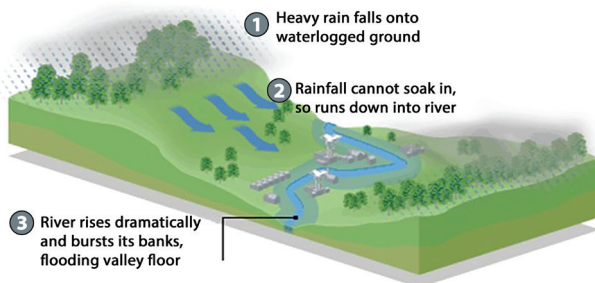
About

- Flash Floods are highly localized events of short duration with a very high peak and usually have less than six hours between the occurrence of the rainfall and peak flood.

Causes

- Intense Rainfall:** Heavy and concentrated rainfall over a short duration is the primary trigger.
- Glacial Lake Outburst Floods (GLOFs):** Sudden release of water from glacial lakes due to melting or avalanches.
- Cloudbursts:** Localised, extremely heavy downpours (e.g., in hilly regions like the Himalayas).
- Tropical Cyclones & Storms:** Sudden heavy rains from cyclonic systems (e.g., during monsoon or pre-monsoon).
- Hilly Terrain:** Steep slopes cause fast runoff, leading to sudden water accumulation in valleys.
- Encroachment of Riverbanks:** Reduces river capacity, causing spillover during sudden inflows.
- Climate Change:** Increases the frequency and intensity of extreme weather events, including cloudbursts and erratic rainfall.

Flash Flooding How Flash Floods Occur



Scenario In India

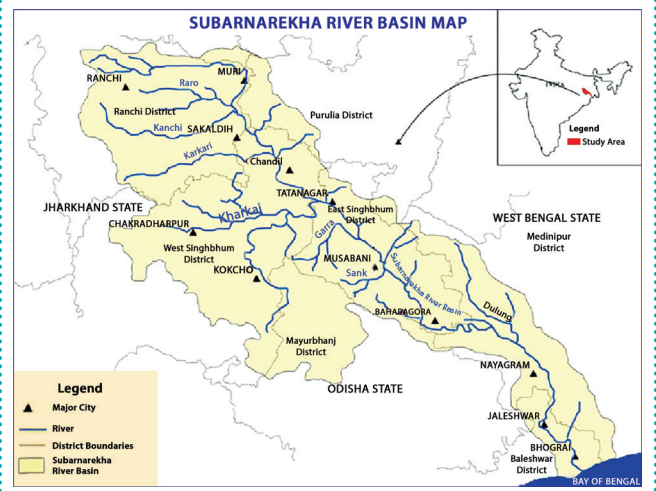
- In India, flash floods are **often triggered by cloudbursts** and are common in Himalayan regions, where glacial lake overflows are increasing due to glacier melt.
- These floods are frequently accompanied by landslides, especially in mountainous areas with steep slopes and unstable soil.
 - Flash floods have also been witnessed in cities like Chennai and Mumbai.
 - Depression and cyclonic storms in the coastal areas of Orissa, West Bengal, Andhra Pradesh, and others also cause flash floods.

Impacts of Flash Flood

- Flash floods develop suddenly, often catching people off-guard and posing serious risks to life and property.
- They have wide-ranging health impacts, from immediate deaths and injuries to long-term physical and mental health issues.
- Most flood-related deaths result from drowning, followed by trauma, electrocution, and other causes.
- Health problems include infections, chemical exposure, respiratory issues, hypothermia, and disrupted healthcare services due to power outages.
- Floods increase the risk of water-borne diseases and vector-borne diseases.

Subarnarekha River

- Origin:** Near Nagri village, Ranchi district, Jharkhand, on the Chotanagpur Plateau.
- Course:** It is an **east flowing river** that flows through **Jharkhand, West Bengal, and Odisha** before emptying into the Bay of Bengal.
 - It drains into the Bay of Bengal near Talsari in Odisha.
- Major tributaries:** Kharkai, Roro, Kanchi, Harmu Nadi, Damra, Karu, Chinguru, Karakari, Gurma, Garra, Singaduba, Kodia, Dulunga and Khaijori.
- Important Towns on the River:** Ranchi, Jamshedpur, Ghatshila (Jharkhand), and Baleshwar (Odisha).
- Hundru Falls:** A major waterfall where the river drops from a height of 98 metres near Ranchi.

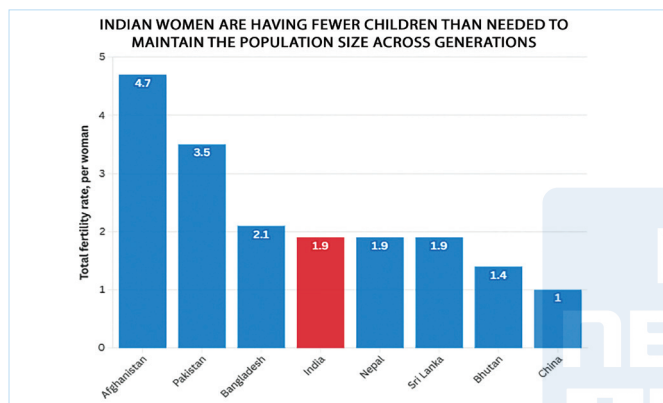


STATE OF WORLD POPULATION, 2025

United Nations Population Fund (UNFPA) has released a Report titled
“State of the World Population, 2025: The Real Fertility Crisis.”

India's Status as per the 2025 Report

- **Current Population Status:** India is the world's most populous country with **146.39 crore** people, surpassing **China (141.61 crore)**. The population of India is expected to peak at **170 crore** before beginning to decline in approximately **40 years**.
- **Decline in Fertility Rate:** Total Fertility Rate is now **1.9**, below the replacement level of **2.1**. Among the states that had fertility rates higher than national average were **Bihar (2.98)**, **Meghalaya (2.9)**, **Uttar Pradesh (2.35)**, **Jharkhand (2.26)**, and **Manipur (2.2)**.



- **Demographic Composition:**
 - ♦ **Working-age population** (15–64 years): 68%
 - ♦ **Children** (0–14 years): 24%
 - ♦ **Youth** (10–24 years): 26%
 - ♦ **Elderly** (65+ years): 7% (expected to rise)

What is the “Real Fertility Crisis”?

- The real fertility crisis lies not in **overpopulation or underpopulation**, but in the inability of individuals to achieve their reproductive goals.
- It calls for **reproductive agency**—the freedom to make informed choices regarding sex, contraception, and family planning.

Total Fertility Rate (TFR)

- 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.

Reasons for Population Decline

- **Access to Reproductive Healthcare:** Contraceptive use and maternal health services have expanded.
- **Female Education & Empowerment:** Increased female literacy and workforce participation delay childbirth.

- **Urbanization:** Urban lifestyles reduce family size due to cost and space constraints.
- **Economic Uncertainty:** Rising cost of living and job instability discourage large families.

Significance of the Population Decline

- **Population Stabilization:** A TFR of 2.0 indicates India is approaching population stabilization, which can ease pressure on natural resources, public services, and the environment.
- **Improved Maternal health:** Fewer childbirths per woman, coupled with delayed age of marriage, lead to reduced maternal mortality, better child care, and healthier families.
- **Women Empowerment:** Lower fertility rates reflect higher education levels, workforce participation, and greater autonomy among women, leading to better social and economic outcomes.

Concerns

- **Ageing Population:** A rise in the elderly population will increase the dependency on the working population, demanding increased focus on pension, healthcare, and social welfare systems. *Example:* Italy, Germany, Japan, etc.
- **Potential for Skewed Sex Ratios:** In certain areas, fertility reduction without tackling gender bias can exacerbate sex-selective practices, leading to imbalanced sex ratios.
- **Demographic Imbalance:** States with vast fertility differences, potentially leading to interstate migration, cultural shifts, and resource strain in low-TFR states.

Global Scenario

- **In Japan** the median age is over **48 years**. This has led to prolonged economic stagnation, shrinking workforce, and increased public spending on pensions and healthcare.
- **China's one-child policy**, enforced from 1979 to 2015, significantly lowered the birth rate, leading to a rapidly aging population.
- **South Korea** has one of the **world's lowest fertility rates, at 0.75 as of 2024**.

Concluding Remarks

- India stands at a **demographic crossroads**, as the focus shifts from **population control to reproductive rights and demographic balance**.
- India must prepare for a future that balances economic productivity, social support systems, and individual reproductive choices.

GENDER INCLUSION IN ARMED FORCES

Recently, the first batch of 17 female cadets graduated alongside over 300 male counterparts from the National Defence Academy (NDA) in Pune.

Women in Indian Armed Forces

Early Contributions:

- ♦ **World War I:** Women were primarily recruited as nurses in the British Indian Army, filling gaps left by male doctors.
- ♦ **World War II:** Women's roles expanded with the formation of the **Women's Auxiliary Corps**, allowing them to serve in administrative and communication roles.
 - ♦ The **Rani of Jhansi Regiment**, led by **Subhash Chandra Bose's Azad Hind Fauj**, was a pioneering **all-female combat unit** that actively fought alongside the **Imperial Japanese Army**.

Post-Independence Struggles and Progress:

- ♦ After independence, women were **largely restricted to medical roles**. It wasn't until 1958 that they **received regular commissions** in the Indian Army Medical Corps.
- ♦ Over the decades, women gradually entered **non-medical branches**, including **logistics, engineering, and legal services**.

Combat Roles and NDA Entry:

The 1990s saw a significant shift, with women being inducted into the Indian Air Force as pilots.

- ♦ The Supreme Court of India, in 2021, ruled **in favor of women's entry** into the NDA, allowing them **to train alongside male cadets** for permanent commissions.

National Defence Academy (NDA)

- The **NDA**, widely known as the **'cradle of leadership'**, has **traditionally been an all-male institution**.
- However, following a **Supreme Court directive in 2021**, the academy **opened its doors to female cadets**, allowing them to join the **148th NDA course in 2022**.
 - ♦ The **first batch of 17 female cadets** joined the NDA, undergoing rigorous training alongside their male counterparts.

Recent Contribution

- **Combat and Leadership Roles:** Women officers have actively participated in Operation Sindoor, contributing to India's defense strategies.
 - ♦ **Colonel Sofiya Qureshi and Wing Commander Vyomika Singh** led key operations, showcasing women's leadership in military engagements.
- **Naval Achievements:** Lieutenant Commanders Dilna K and Roopa A completed the **Navika Sagar Parikrama II**, a circumnavigation expedition covering 25,600 nautical miles over eight months.

- ♦ Their journey demonstrated endurance and resilience, reinforcing the role of women in maritime defense.

Arguments Favoring Women in Defense Sector

- **Gender Equality in Armed Forces:** Allowing women into NDA promotes inclusivity and equal opportunities in defense services.
- **Expanding Talent Pool:** Women bring diverse skills and perspectives, strengthening the military's operational effectiveness.
- **Successful Integration in Other Countries:** Many nations, including the US, UK, and Israel, have successfully integrated women into combat roles.
- **Breaking Stereotypes:** Women's participation challenges traditional gender roles and inspires future generations.

Arguments Against the Women in Defense Sector

- **Physical Training Differences:** Critics argue that physiological differences may require modifications in training programs.
- **Operational Challenges:** Concerns exist about logistical adjustments, including infrastructure and deployment conditions.
- **Combat Readiness:** Some believe that integrating women into frontline combat roles may require additional policy adaptations.
- **Cultural and Social Resistance:** Traditional mindsets may pose challenges in acceptance and integration within military ranks.

Key Steps Incorporating Women in Defense Sector

- **Agnipath Scheme (2022):** It introduced Agniveers, a short-term military recruitment program that included women for the first time.
 - ♦ It aims to modernize the armed forces while providing young recruits with military training and career opportunities.
- **Supreme Court Ruling (2020):** It ruled in favor of **granting Permanent Commission to women officers** in the Indian Army.
 - ♦ It emphasized gender equality and rejected stereotypes that questioned women's ability to serve in command roles.
- **Kargil Review Committee (1999):** It recommended the **expansion of women's roles** in the armed forces, and suggested that women be inducted into non-combat roles in logistics, engineering, and intelligence.
- **Parliamentary Standing Committee on Defence:** It advocated for equal opportunities for women in the defense sector, and recommended infrastructure improvements to accommodate female officers in training academies.

BONDED LABOUR IN INDIA

The recent death of nine-year-old Venkatesh, taken as 'collateral' for his mother's unpaid debt vividly illustrates the harsh realities and enduring challenges of bonded labour in India, despite its legal prohibition.

What is Bonded Labour?

- Bonded labour, also known as **debt bondage**, refers to a situation where a person is forced to work under coercion due to debt, advance payments, or inherited social obligations, often without defined limits or fair wages. It's **not just an economic issue, it's a structural denial of human dignity**.

Current Landscape and Statistics

- **Prevalence:** As of 2021, an estimated **11 million people** in India were living in modern slavery, the highest number globally.
- **Rescue and Rehabilitation Efforts:** Between April 2024 and January 2025, approximately 250 bonded labourers were rescued in India.
 - ◆ However, in the fiscal year 2023-24, only 468 bonded labourers were rehabilitated against an annual target of **1.3 million**, highlighting significant gaps in implementation.
- **Dominant Social Groups Affected:** Studies consistently show that over 80% of bonded laborers are from historically marginalized Scheduled Caste (SC), Scheduled Tribe (ST), and Other Backward Class (OBC) communities, underscoring the deep-rooted social discrimination.

estimated cases and actual rescues is a stark indicator of this failure.

- **Unregulated Informal Sector:** The informal economy, employing 90% of India's workforce, operates with minimal legal or social protections, creating fertile ground for exploitative practices like bonded labor.
- **Policy Gaps:** A concerning issue is the denial of the existence of bonded labor by some state governments, which delays rehabilitation and legal action.
 - ◆ For *instance*, Maharashtra reportedly omitted bonded labor from its 40-point program post-Emergency.

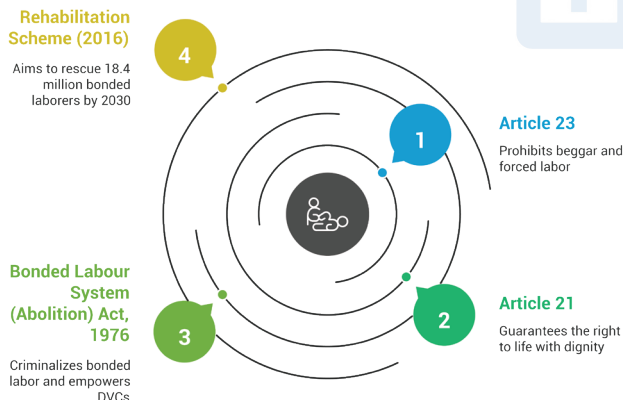
Challenges in Eradication

- **Underreporting:** Many cases go unreported due to fear, lack of awareness, or social stigma.
- **Inadequate Rehabilitation:** Even when victims are rescued, they often do not receive the full benefits entitled to them, hindering their reintegration into society.
- **Intergenerational Bondage:** Debt obligations are sometimes passed down, trapping families in cycles of servitude.

Way Ahead

- **Strengthen Legal Enforcement:** Establish Special Task Forces at the district level to monitor, identify, and raid bonded labour operations.
 - ◆ Ensure strict implementation of the Bonded Labour System (Abolition) Act, 1976, with mandatory FIRs, time-bound trials, and real penalties.
 - ◆ Recognise bonded labour as organised crime, and treat employers as traffickers where applicable.
- **Standard Operating Procedures (SOPs) and State Action Plans:**
 - ◆ Mandate every state to adopt a comprehensive SOP for identification, rescue, rehabilitation, and post-rescue support.
 - ◆ Ensure regular surveys (as directed by Supreme Court) to map prevalence of bonded labour, especially in high-risk sectors.
- **Robust Rehabilitation Framework:**
 - ◆ Strengthen the **Central Sector Scheme** for Rehabilitation of Bonded Labourers by:
 - ◆ Disbursing immediate financial relief within **30 days** of rescue.
 - ◆ Linking beneficiaries with livelihood schemes (MGNREGA, PMKVY) and land/housing entitlements (PMAY-G).
 - ◆ Ensure issuance of Release Certificates even posthumously to enable families to access compensation and justice.

Legal Framework Against Bonded Labor



Persistence of Bonded Labour in India

- **Poverty and Indebtedness:** Extreme poverty often forces families to take small advances for survival, trapping them in long-term cycles of debt bondage.
- **Caste-Based Discrimination:** Marginalized communities, particularly Scheduled Castes and Scheduled Tribes, are disproportionately affected due to systemic social inequalities.
- **Lack of Enforcement and Data:** Weak implementation of the 1976 Act and inadequate monitoring severely hinder effective rescue and rehabilitation efforts. The vast disparity between

RETHINKING ALCOHOL PROHIBITION

India has recorded one of the highest rates of heavy episodic alcohol drinking, with lakhs needing clinical and social support.

Present Status

- Alcohol and alcoholic beverages contain ethanol, which is a psychoactive and toxic substance with dependence-producing properties.
 - ♦ Alcohol has been widely used in many cultures for centuries, but it is associated with significant health risks and harms.
- The safe level of alcohol consumption is zero, yet **23% of Indian men and 1% of women consume alcohol (NFHS-5).**

Reasons for Consumption

- Alcohol use is influenced by a complex mix of **biopsychosocial, commercial, and policy factors.**
- **Biologically**, some people are genetically prone to addiction, while psychologically and socially, stress relief, peer pressure, and media portrayals normalize drinking.
- **Commercially**, the industry targets new and younger consumers with diverse products, surrogate advertising, promotions, and strategic placements, often amplified by social media.
- **Easy access** is ensured through widespread liquor store locations and attractive packaging, while pricing makes alcohol affordable for both rural lower-income groups and urban middle classes.
- **Policy-wise**, the alcohol industry heavily influences regulation, resisting stricter laws by highlighting its revenue contributions, and circumvents advertising bans through covert marketing tactics.

Impacts of Alcohol Consumption

- **Health Impact:** Alcohol use significantly increases risks of injuries, mental illness, non-communicable diseases like cancer, and is linked to aggression, crime, suicides, and risky behavior.
- **Economic Impact:** While states earn heavily through excise duty (~₹2.5 lakh crore annually), the social cost of alcohol outweighs this gain, according to NITI Aayog estimates.
 - ♦ Workplace absenteeism, job loss, and decreased efficiency are major outcomes.
- **Social Impact:** NCRB reports reveal a high correlation between alcohol use and cases of domestic abuse, marital rape, and child neglect. Easy availability, peer pressure, and glorification on social media have led to a rise in underage drinking, particularly in metros.

Regulation Status

- Alcohol regulation in India falls under **State jurisdiction**, granting each State authority over legislation, excise taxes, supply chain, licensing and manufacturing, sale and consumption restrictions, prohibition, and pricing.

- Some States like **Bihar, Gujarat, Mizoram, and Nagaland enforce prohibition**, while others like **Andhra Pradesh promote alcohol sales with policies such as affordable pricing and marketing traditional beverages.**

Various Policies

- Alcohol was initially excluded from India's **2012 National Policy on Narcotic Drugs and Psychotropic Substances** but was later included in the **2021-22 National Action Plan for Drug Demand Reduction** under **Nasha Mukta Bharat Abhiyan.**
- The **National Mental Health Policy (NMHP) 2014** recognised the role of alcohol in mental illness and suicide prevention and suggested the need for a specific action plan.
- The **National Health Policy (NHP) 2017** mentioned **curbing alcohol use through higher taxation.**
- The **National Suicide Prevention Strategy (NSPS) 2022** identified alcohol as a **major risk factor for suicides**, advocating for a national alcohol control policy and measures to limit alcohol accessibility.
- The **National Action Plan and Monitoring Framework for Prevention and Control of Noncommunicable Diseases (NMAP) 2017-2022** also echoed the call for a national alcohol policy.

Issues and Concerns

- The national policies address specific issues like drunk driving or supply-chain regulation but India currently lacks a comprehensive, unified national alcohol regulation policy.
- The efforts to reduce alcohol demand and supply are fragmented across various Central ministries and States.
- The GST Act excludes liquor from sales tax, leaving alcohol taxation largely to States, often under vague excise policies.

Way Forward

- Regulating alcohol in India is urgent but complex due to its ties with State revenues, social norms, and politics.
- A comprehensive, evidence-based, and equitable systems approach is needed.
- **Key measures include**
 - ♦ **Pricing alcohol to deter misuse** without encouraging illicit liquor, earmarking health taxes for public health
 - ♦ **Restricting alcohol availability** in daily environments,
 - ♦ **Regulating digital and influencer-driven** advertising, enforcing plain packaging and warning labels,
 - ♦ **Increasing public awareness** of alcohol's health risks, and using AI to control online alcohol content and misinformation.
 - ♦ A unified National Alcohol Control Policy is essential to prioritize public health over profits.

EXPANSIONARY POLICIES

India is currently witnessing a rare phase where both fiscal and monetary policies are expansionary.

About

- Expansionary monetary and fiscal policies are both tools that governments and central banks use respectively to stimulate economic activity, but they employ different mechanisms.
- Expansionary monetary policy involves increasing the money supply and lowering interest rates to encourage borrowing and spending.
- Expansionary fiscal policy involves increasing government spending or cutting taxes to boost aggregate demand.

Key Policies Adopted Recently

- While this approach aims to revive aggregate demand in a slowing economy, it also brings the **risk of inflation, policy misalignment, and fiscal stress**.
- In **Union Budget 2025–26**, ₹11.21 lakh crore earmarked for infrastructure, agriculture, MSMEs, and digital connectivity (strong emphasis on capital expenditure).
- **Income Tax cuts** announced were intended to **boost consumption** during a slowdown.
- RBI cut the **repo rate to 5.5%** to encourage borrowing and investment amid slowing growth.
- The **RBI's dual mandate** — price stability and growth — has led to:
 - ♦ Rate cuts to encourage borrowing.
 - ♦ Inflation targeting, with retail inflation falling to 4.6% in 2024–25.
 - ♦ Liquidity support for financial institutions and NBFCs.

Issues & Challenges

- **Lack of Policy Coordination:** If both policies work together without coordination, it might overheat the economy causing inflation. Despite these policies, growth is still slow, credit growth is weak, and unemployment is rising.
- **Muted Demand Response:** People are not spending much, even with tax cuts. This challenges the Rational Expectations Theory (core to inflation targeting)
- **Widening Fiscal Deficit Risk:** If growth doesn't rise, tax revenue will fall, **leading to a fiscal deficit**. To plug the gap, the government may have to cut welfare spending, hurting vulnerable groups.
- **Rising Inequality and Weak Wages:** Corporate profits rising, but real wages stagnant. Expansion policies may benefit capital more than labour.

Past Precedents

- **The New Deal (1930s):** By the **United States**, in response to the Great Depression.

- **Post-2008 Global Financial Crisis:** By Central Banks and US Federal Reserve; Slashed **interest rates to near zero** and introduced **quantitative easing** — buying government securities to inject liquidity into the economy.
- In **India**, RBI **slashed the repo rate** from 9% in 2008 to 4.75% by April 2009.
- **Japan's Abenomics (2012–2020):** Three-pronged strategy:
 - ♦ Monetary easing by the Bank of Japan;
 - ♦ Fiscal stimulus through government spending; and
 - ♦ Structural reforms to revive Japan's stagnant economy.
- **COVID-19 Pandemic Response (2020–2021):**
 - ♦ Massive **fiscal stimulus packages** — direct cash transfers, unemployment benefits, and business loans — while **central banks cut interest rates** and expanded asset purchases to cushion the economic blow.
 - ♦ **India** rolled out the **Aatmanirbhar Bharat Abhiyan**, a ₹20 lakh crore package

Benefits of Expansionary Policies in India

- **Boosts Aggregate Demand:** Expansionary fiscal policies like tax cuts and increased public spending raise disposable incomes and consumption. Similarly, lower interest rates encourage borrowing and investment.
- **Supports Employment:** Government-funded infrastructure projects and MSME support schemes can generate jobs, especially in rural and informal sectors, reducing unemployment during downturns.
- **Encourages Private Investment:** Lower borrowing costs and improved consumer sentiment can incentivize businesses to invest in capacity expansion, innovation, and hiring.
- **Stabilizes Financial Markets:** Liquidity injections by the RBI and credit guarantees for NBFCs and banks help maintain financial stability and prevent credit crunches.
- **Short-Term Economic Relief:** During emergencies like the COVID-19 pandemic, direct cash transfers and food security measures provided immediate relief to vulnerable populations.

Rational Expectations Theory

- The theory posits that **individuals base their decisions on three primary factors:** their **human rationality**, the **information available** to them, and their **past experiences**.
- The theory suggests that people's current expectations of the economy are, themselves, able to influence what the future state of the economy will become.
- This precept contrasts with the idea that government policy influences financial and economic decisions.

CONTEMPT OF COURT VIS-A-VIS LAW PASSED BY PARLIAMENT OR STATE LEGISLATURE

Context

While closing the 2007 Salwa Judum case, the Supreme Court recently clarified that any law passed by Parliament or a State Legislature cannot be treated as contempt of court, unless and until declared unconstitutional by a court of law.

Key Observations of the Supreme Court

- **Legislative Competence:** State legislatures and Parliament enjoy **plenary powers** to enact laws under their respective jurisdictions.
- **Contempt Not Attributed to Lawmaking:** Enacting a law, even if it appears to contradict a court ruling, does **not amount to contempt** unless done in **deliberate defiance** of a binding judgment.
- **Doctrine of Separation of Powers:** The judiciary affirmed that courts must respect the domain of the legislature, and vice versa, in keeping with the principles of **constitutional democracy**.
- **Judicial Review:** The validity of laws passed by legislatures can only be adjudicated by **constitutional courts**, and unless struck down, such laws carry the **force of law**.

About Contempt of Court

Definition: Contempt of court refers to any act or omission that obstructs the administration of justice or lowers the dignity or authority of the judiciary.

Types of Contempt (Defined under the Contempt of Courts Act, 1971)

- **Civil Contempt [Section 2(b)]:** Wilful disobedience to any judgment, order, direction, or decree of a court, or wilful breach of an undertaking given to a court.
- **Criminal Contempt [Section 2(c)]:** Any publication or act that scandalizes or lowers the authority of a court, Prejudices or interferes with judicial proceedings, Obstructs the administration of justice in any other manner.

Power to Punish for Contempt

- **Supreme Court:** Under **Article 129**, the Supreme Court is a **court of record** and has the power to **punish for its own contempt**.
- **High Courts:** Under **Article 215**, every High Court is also a **court of record** with similar powers to punish for **contempt of itself**.

- **Article 142(2):** Authorizes the Supreme Court to **make orders for contempt** of itself, **subject to any law** made by Parliament (i.e., the Contempt of Courts Act, 1971).

Roles of the Attorney General and Solicitor General

- **Grant of Consent:** Under Section 15 of the Contempt of Courts Act, 1971, a private individual must obtain the written consent of the Attorney General or Solicitor General to initiate criminal contempt proceedings in the Supreme Court.
- **Discretionary Power:** The AG and SG are not obligated to give reasons for granting or refusing consent.

SWACHH SURVEKSHAN GRAMEEN (SSG) 2025

Context

Union Minister of Jal Shakti Shri C R Patil launched Swachh Survekshan Grameen (SSG) 2025.

About

- It is a nationwide rural sanitation survey by the Department of Drinking Water and Sanitation (DDWS), Ministry of Jal Shakti.
- It is India's largest sanitation survey. The first Swachh Survekshan was conducted in 2016, in which 73 cities were evaluated and Mysuru was ranked first in the country.

Features

- It will conduct a comprehensive assessment of rural sanitation, with a strong focus on sustaining the achievements of the **Open Defecation Free (ODF) Plus Model under the Swachh Bharat Mission-Gramin (SBM-G)**.
- The survey will involve sampling village evaluations and detailed surveys of households and public spaces to measure cleanliness across various parameters.
- **Key areas of assessment** include the operational status of Plastic Waste Management Units (PWMUs), Faecal Sludge Management (FSM) plants, and
 - GOBARDhan plants, along with citizen feedback and the evaluation of Swachhata Green Leaf Rating (SGLR) sites.

The Swachh Bharat Mission (Grameen) [SBM(G)]

- It was launched on 2nd October 2014 to eliminate open defecation in rural India by providing toilet access to all rural households.
 - ♦ By 2nd October 2019, the mission had achieved 100% sanitation coverage, constructing over 10 crore Individual Household Latrines (IHHLs) and declaring all villages Open Defecation Free (ODF).
- Phase-II of SBM(G) was initiated on 1st April 2020, focusing on sustaining ODF status and implementing Solid and Liquid Waste Management (SLWM) to transition villages to ODF Plus (Model) status by 2025-26.
 - ♦ The ODF Plus progress is tracked through three categories: Aspiring, Rising, and Model.

- **Mobile Market:** The telecom subscriber base increased from 1 billion to 1.2 billion.
- **Affordability:** Call rates reduced from ₹0.50/minute to ₹0.003/minute. Data prices in India have dropped dramatically—from ₹287 per GB to just ₹9 per GB—making it one of the cheapest globally at just 11 cents per GB, compared to the global average of \$2.49.

Key Policy Initiatives of GOI

- **Prime Minister's WiFi Access Network Interface (PM-WANI)** was launched by the Department of Telecommunication in 2020.
 - ♦ The scheme aims to enhance the **proliferation of public WiFi hotspots** to create robust digital communications infrastructure in the country, especially in rural areas.
- **BharatNet Project:**
 - ♦ **Phase I:** Connected **2.14 lakh** Gram Panchayats with 7 lakh km of optical fibre.
 - ♦ **Phase II:** Target to connect remaining 2.64 lakh Gram Panchayats, totaling connectivity for 3.8 lakh villages.
 - ♦ **Investment:** ₹1.39 lakh crore (\$16.9 billion) – world's largest public-sector connectivity program.
- **Technology Upgrades in BharatNet II:** Use of MPLS routers (better redundancy) instead of GPON.
 - ♦ Shift from linear to ring topology for uninterrupted service.
 - ♦ Mandating **10-year maintenance** by implementation agencies.
 - ♦ Setting up a **central Network Operating Centre**.
- **Telecom Manufacturing and Export:** From 80% mobile imports to exporting ₹1.75 lakh crore worth of phones.
 - ♦ The transformation has been driven by the **Production-Linked Incentive (PLI) Scheme**, which has attracted over ₹4,000 crore in investments, facilitated exports worth ₹16,000 crore, and created around 25,000 jobs.

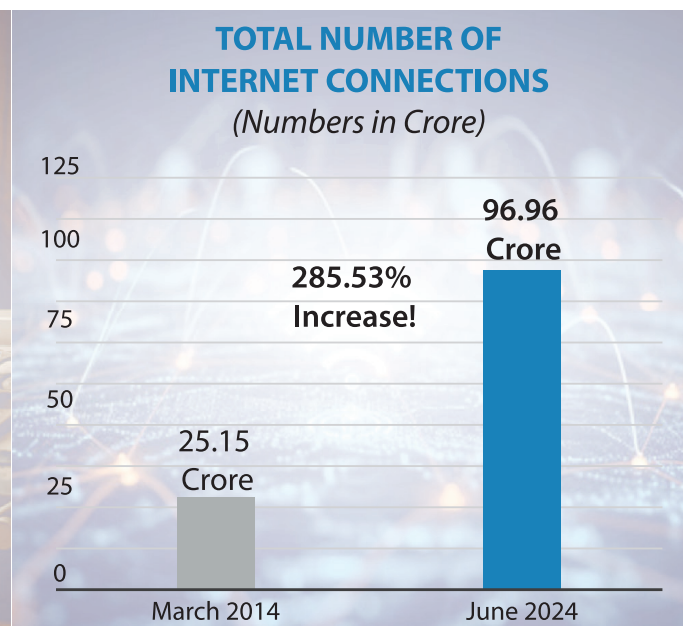
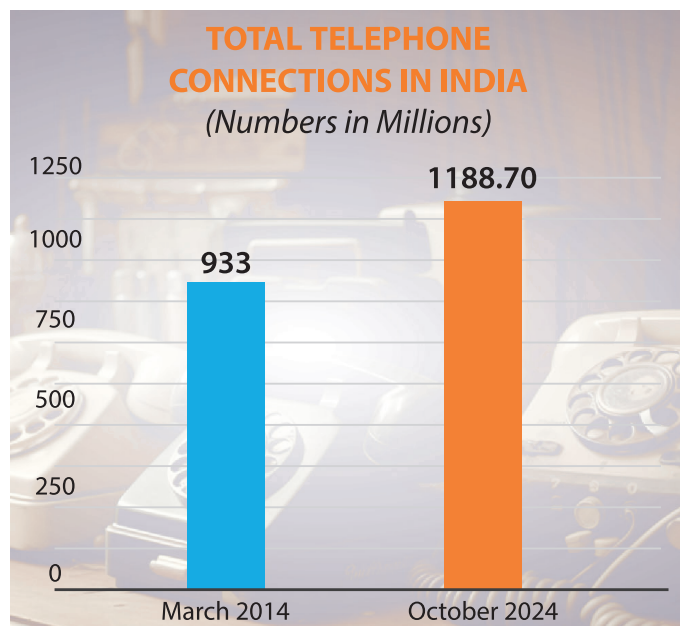
INDIA WILL HAVE 1 BILLION INTERNET USERS BY THIS FISCAL YEAR

Context

The Minister of Communications announced at the India Mobile Congress (IMC) 2025 that India's Internet user base is set to touch 1 billion by the end of FY26. The theme of the IMC 2025 is "Innovate to Transform".

Growth of India's Telecom and Internet Sector

- **Internet Penetration Surge:** Internet users in India have risen from 250 million (2014) to 974 million, a nearly fourfold increase in a decade.
- **Broadband Subscribers:** Subscribers with speeds >2 Mbps rose from **66 million** in 2014 to **940 million**.



- **Bharat 6G Alliance:** It is a collaboration between India's domestic industry, academia, research institutions, and standards organisations.
 - ♦ The alliance aims to build a national action plan for 6G, ensuring that India remains at the forefront of technological innovation in the coming decades.

Significance

- **Digital Governance Backbone:** Enables delivery of digital services like e-governance, telemedicine, and online education to rural areas.
- **Inclusive Growth:** Empowers the digitally underserved, especially rural and remote regions.
- **Global Leadership:** India's telecom affordability and scale, position it as a model for developing nations.
- **Economic Multiplier:** Internet and telecom expansion enhances productivity, innovation, and investment.

NAKSHA INITIATIVE

Context

The Ministry of Rural Development launched the second phase of the NAKSHA (National geospatial Knowledge-based land Survey of urban HABitations) programme.

About NAKSHA

- NAKSHA is implemented under the **Digital India Land Records Modernization Programme (DILRMP)**.
- **Phase I: Pilot Implementation and Survey Operations**
 - ♦ **About:** It was announced in the **2024-25 Budget** to standardise record-keeping, simplify processes and bring transparency in land transactions.
 - ♦ **Coverage:** Initiated across 152 Urban Local Bodies (ULBs) in 26 states and 3 Union Territories, targeting cities with an area less than 35 sq km and a population under 2 lakhs. Cover the entire urban area in the country within a period of 5 years.
 - ♦ **Technological Integration:** Employed aerial surveys, drone technology, and Web-GIS platforms for high-precision mapping.
- **Phase II: Capacity Building and Skill Enhancement**
 - ♦ Under this training programme, **304 ULB-level and district officers** have been nominated from **157 Urban Local Bodies (ULBs)**.
 - ♦ These officers will undergo hands-on training in leveraging modern geospatial technologies for effective urban property surveys.
 - ♦ The training aims to equip ULB officers and field staff with the **technical and practical skills** required to oversee high-accuracy land surveys under the NAKSHA programme.

Needs of NAKSHA-like Programme

- **Fragmented Land Records System:** India has a state-specific, inconsistent system of land record-keeping, often using outdated manual records causing ownership disputes, legal uncertainty for buyers, investors, and institutions.
- **Land Disputes and Litigation:** Over 66% of civil cases in Indian courts are land/property-related. Lack of digitised, tamper-proof land maps is a key cause.
- **Urbanisation & Infrastructure Push:** As per the 2023-24 Economic Survey, nearly 40% of India's population is expected to be living in urban areas by 2030. Streamlining land and property record systems is essential for the planned development of cities.
- **Boost to Agrarian Reforms:** Digitised Khasra maps linked with land records can support: easy credit access, crop insurance schemes, PM-KISAN & other DBT initiatives.
- **Disaster Risk and Climate Resilience:** A geotagged mapping system helps in climate resilience planning.

ANNOUNCEMENT OF CENSUS DATES

Context

The Union government announced that the much delayed Census 2021 will be held in two phases beginning October 1, 2026 and March 1, 2027.

About

- The census, typically conducted **every ten years** to update the **National Population Register (NPR)**, was scheduled for **2021** but had to be postponed due to the Covid pandemic.
- The **delimitation of constituencies** for the Lok Sabha and State Legislative Assemblies is to be carried out on the basis of the first Census after **2026**.
- This will be **India's first digital Census** and will be the **first Census since 1931** to capture granular caste data, beyond the broader classifications of Scheduled Castes (SCs) and Scheduled Tribes (STs) that have been enumerated in every post-Independence Census.

Census in India

- **A census is a survey of the population** of an area that includes collecting details of a country's demographics including **age, sex and occupation**.
- **History:** Under **W.C. Plowden**, the Census Commissioner of India, the first synchronous decennial (every ten years) census was conducted in **1881**.
 - ♦ **Independent India's first census** was held in **1951** and since then it has happened in the first year of every decade.
- **The Constitution mandates** that enumeration is carried out but the **Census of India Act of 1948** does not specify its timing or periodicity.

- The population census is conducted by the **Office of the Registrar General and Census Commissioner of India** under the **Ministry of Home Affairs**.

Caste Census

- A caste Census involves collecting data on the population size and socio-economic conditions of various caste groups.
- First detailed caste Census conducted in 1871-72 across major regions like Bengal and Madras.
 - ◆ However arbitrary classification led to confusion, as noted by W. Chichele Plowden in the 1881 Census report.
- **1931 Caste Census:** It identified 4,147 castes, exposing challenges like different identities claimed by the same caste in different regions.
- **Post-Independence:** 2011 Socio-Economic and Caste Census (SECC) identified over **46.7 lakh castes/sub-castes** with significant errors.

Need for the Census

- **Informed Policy Making:** The Census provides detailed socio-economic data, helping the government make informed decisions on issues like education, healthcare, housing, employment, and infrastructure.
- **Evaluating Development Progress:** Comparing census data over decades helps assess the effectiveness of past policies, guiding future strategies.
- **Environmental Planning:** The Census provides insights into human settlements and demographic pressures, supporting environmental sustainability efforts.
- **Electoral Reforms and Delimitation:** Census data directly impacts the delimitation of constituencies, ensuring fair representation in Parliament and State Legislatures.

C CARES VERSION 2.0

Context

The Ministry of Coal announced the launch of a new version of web portal (C CARES Version 2.0) to streamline the provident fund (PF) and pension disbursement.

C CARES Version 2.0 Portal

- It streamlines PF/Pension disbursement for coal workers by unifying workers, management, and Coal Mines Provident Fund Organisation (CMPFO) on a single digital platform.
- It allows claims to be tracked in real-time, thus reducing settlement time to fulfil the objective of providing social security to the workers.
- It is developed and designed by the Centre for Development of Advanced Computing (C-DAC).

Benefits

- It enhances transparency, accountability, and efficiency by enabling real-time claim tracking and faster settlements, ensuring better social security for coal sector workers.
- It is a step towards Prime Minister Narendra Modi's vision of 'Minimum Government, Maximum Governance' through digital India.

Coal Mines Provident Fund Organisation (CMPFO)

- It is an autonomous organization under the aegis of the Ministry of **Coal**. It was established in 1948 for administering Provident Fund and Pension schemes for the purpose of providing social security to the coal sector workers.
- It is presently rendering services to about 3.3 lakh Provident Fund subscribers and 6.3 lakh pensioners of coal sector.

INDEX CARDS

Context

The Election Commission has streamlined a technology-driven system to generate Index Cards and various statistical reports after the conduct of the elections.

About

- Earlier, this information was manually filled at the Constituency level using various statutory formats in Physical Index Cards.
- It is a **non-statutory, post-election Statistical Reporting Format** developed as a suo moto initiative by the Election Commission of India (ECI) to promote accessibility of election-related data at the constituency level for all stakeholders.
- It is designed to disseminate data across multiple dimensions—such as candidates, electors, votes polled, votes counted, party-wise and candidate-wise vote share, gender-based voting patterns, regional variations, and performance of political parties.

S MAHENDRA DEV APPOINTED NEW CHIEF OF EAC-PM

Context

Economist S Mahendra Dev has been appointed as Chairman of the Economic Advisory Council to the Prime Minister (EAC-PM), replacing current head Suman Bery.

About EAC-PM

- It is an independent body constituted to give advice on **economic** and related issues to the Government of India, specifically to the **Prime Minister**.

- **Functions:** It includes analyzing economic or other issues referred by the Prime Minister, addressing macroeconomic matters, providing advice, and undertaking any additional tasks requested by the Prime Minister.
 - ♦ These tasks can be initiated by the Council itself or on referral.

ECINET App

Context

Due to the alleged discrepancies in the voter turnout data, the Election Commission of India has introduced a new streamlined and tech-driven system to provide such data.

About

- The new one-stop platform, ECINET, will integrate and reorient over 40 of ECI's existing mobile and web applications.
 - ♦ It will have an aesthetic User Interface (UI) and a simplified User Experience (UX) by providing a **singular platform for all electoral-related activities**.
- The **Presiding Officer** of each polling station will enter the **turnout figures** on the **new ECINET app every two hours** on polling day in order to reduce the time lag.
 - ♦ This will be automatically aggregated at the constituency level.
- **Need for the App:** Previously, voter turnout data were collected manually by Sector Officers and relayed to Returning Officers (ROs) through phone calls, SMS, or messaging apps.
 - ♦ The **polling percentage trends** were often updated hours later due to physical records arriving late leading to delays.
- **Significance of the App:** Now, approximate voter turnout will be updated faster and more accurately on the Voter Turnout app.
 - ♦ While Form 17C under Rule 49S remains the official record, this tech-driven process aims to **improve transparency, timeliness, and public trust**.

SUPREME COURT RULING ON NARCO TEST

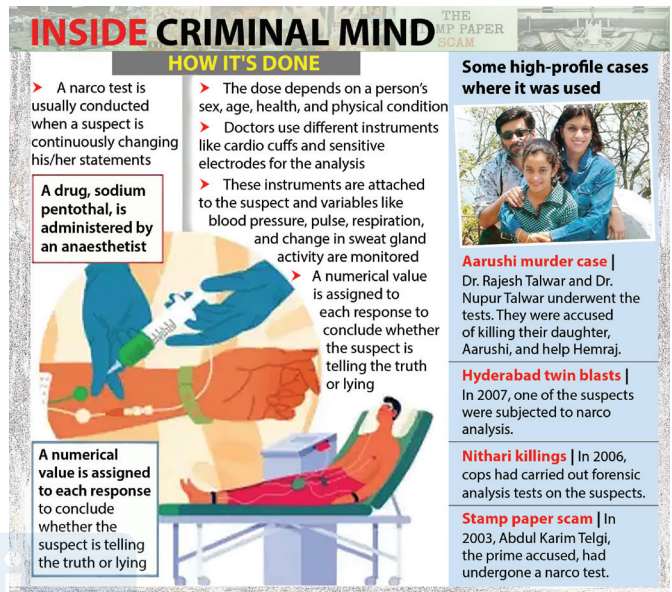
Context

The Supreme Court has ruled that narco-analysis tests cannot be conducted on accused persons without their free and informed consent, reaffirming that such practices violate fundamental rights under the Indian Constitution.

About Narco-Analysis

- It involves the injection of a drug called **sodium pentothal** into the accused, inducing a hypnotic or sedated state.

- The assumption is that a subject in such a state is **less inhibited** and is more likely to divulge information.
 - ♦ Because the drug is thought to weaken the subject's resolve to lie, it is often referred to as a **"truth serum."**



Supreme Court Ruling

- The Court held that the use of involuntary narco-analysis:
 - ♦ **Violates Article 20(3):** Protection against self-incrimination.
 - ♦ **Violates Article 21:** Right to life and personal liberty, including the right to privacy.
- The Court emphasized that technological advancement in investigation cannot override constitutional protections.
- **Earlier in 2010, the SC** in the case of **Selvi v. State of Karnataka** ruled that no lie detector tests should be administered **"except on the basis of consent of the accused"** in accordance with the fundamental right against self-incrimination as enshrined under **Article 20(3)** of the Constitution.

SOCIAL PROTECTION COVER IN INDIA RISES TO OVER 64% IN 2025: ILO

Context

According to the latest data from International Labour Organization's (ILO) ILOSTAT, India's social security coverage in 2025 stood at 64.3 per cent, up from 19 per cent a decade ago.

Key Findings

- India now ranks **second in the world** in social security coverage, providing protection to more than **94 crore of its citizens**.

- Nearly **two out of three people** in India are now covered under at least one social security benefit — which roughly translates into **950 million people**.
- India is also the **first country globally** to update its 2025 social protection coverage data in the ILOSTAT database, reinforcing its leadership in digital governance and transparency in welfare systems. These include schemes like Atal Pension Yojana, Kisan Samman Nidhi, MGNREGA, Janani Suraksha Yojana and PM POSHAN, among others.

Meaning of Social Security

- Social security refers to the protection provided by society to individuals and households to ensure access to healthcare and guarantee income security in situations such as old age, unemployment, sickness, maternity, and invalidity.

Key Initiatives in India for Social Protection

- **Pradhan Mantri Shram Yogi Maan-Dhan Yojana (PM-SYM):** To provide old age protection and social security to unorganized sector workers (e.g., street vendors, rickshaw pullers, construction workers, domestic workers).
- **Pradhan Mantri Jeevan Jyoti Yojana (PMJJBY):** To provide affordable life insurance cover.
- **Atal Pension Yojana (APY):** To provide a guaranteed pension for unorganized sector workers.
- **Ayushman Bharat (Pradhan Mantri Jan Arogya Yojana - PMJAY):** To provide health insurance coverage to the poorest and most vulnerable sections of society.
- **Public Distribution System (PDS) / National Food Security Act (NFSA):** To ensure food and nutritional security by providing subsidized food grains.
- **Pradhan Mantri Awaas Yojana – Gramin (PMAY-G):** To provide "Housing for All" by ensuring a pucca house with basic amenities to all houseless households and those living in kutcha and dilapidated houses in rural areas.

PERFORMANCE GRADING INDEX (PGI) 2.0 REPORT

Context

The Ministry of Education released the latest assessment of the PGI 2.0 report for 2023-24.

About

- The PGI was introduced in **2017**, and the ministry **revamped it as PGI 2.0 in 2021**.
- It is an **assessment of school education along six domains** – learning outcome and quality, access, infrastructure and facilities, equity, governance processes, teacher education, and training.

- The latest report, covering the years **2022-23 and 2023-24**, draws data from the National Achievement Survey 2021, the Unified District Information System for Education Plus (UDISE+), and information on the mid-day meal programme (PM-POSHAN).
- PGI grades the districts into ten grades viz., **Highest achievable Grade is Daksh**, which is for Districts **scoring more than 90% of the total points** in that category or overall.
 - ♦ The lowest grade in PGI-D is called **Akanshi-3** which is for scores upto 10% of the total points.

Score to Grade Mapping

Scores (% of total points)	Score Range	Grade
91% to 100%	941–1000	Daksh
81% to 90%	881–940	Utkarsh
71% to 80%	821–880	Atti-Uttam
61% to 70%	761–820	Uttam
51% to 60%	701–760	Prachesta-1
41% to 50%	641–700	Prachesta-2
31% to 40%	581–640	Prachesta-3
21% to 30%	521–580	Akanshi-1
11% to 20%	461–520	Akanshi-2
Up to 10%	401–460	Akanshi-3

Findings

- The highest scorer was **Chandigarh**, followed by Punjab, and Delhi.
- Kerala, Gujarat, Odisha, Haryana, Goa, Maharashtra, and Rajasthan also scored in the 581-640 range.
- The state that scored the lowest was Meghalaya (417.9). Just above it were Arunachal Pradesh (461.4), Mizoram (464.2), Nagaland (468.6), and Bihar (471.9).

NATIONAL INTERNET EXCHANGE OF INDIA

Context

The National Internet Exchange of India (NIXI) recently turned 20.

About

- NIXI is a **not-for-profit organisation** set up in 2003 under the Ministry of Electronics and Information Technology (MeitY).
- NIXI has played a key role in ensuring that India's internet remains local in routing, robust in performance, and ready for future demands.
- It currently operates **77 Internet Exchange Points (IXPs)** across the country, which help domestic traffic stay within India's borders — reducing latency, increasing speed, and enhancing security.

- ➔ Through its IRINN division, it is guiding India's transition to IPv6, which will be essential as the country moves deeper into the era of connected devices, AI, and quantum computing.

Role & Significance

- ➔ Acts as the silent pillar behind India's booming digital economy — from UPI at kirana stores to digital classrooms in tribal belts.
- ➔ Strengthens India's ambition of becoming a \$5 trillion digital economy. Aligns with goals like Digital India, Bhashini, and localised internet ecosystems.

ESTIMATES COMMITTEES OF PARLIAMENT

Context

A two-day national conference of Estimates Committees of Parliament and state/UT legislative bodies is being held in Mumbai to mark the 75th anniversary of the Committee on Estimates.

About

- ➔ **The Committee on Estimates**, is a Parliamentary Committee constituted in **1950** on the recommendation of **John Mathai**, the then finance minister.
- ➔ It consists of **30 members**, elected every year by the **Lok Sabha from amongst** its Members.
 - ♦ The **Rajya Sabha has no representation** in this committee.
- ➔ **Estimates Committee** is the largest parliamentary committee in India.
- ➔ **The Chairperson** of the Committee is appointed by the **Speaker** from amongst its members. **A Minister cannot be elected** as a member of the Committee and if a member becomes a Minister, they cease to be on the Committee.
- ➔ The term of office of the Committee is one year.
- ➔ **The functions of the Estimates Committee are:**
 - ♦ To report what economies, improvements in organisation, efficiency or administrative reform, consistent with the policy underlying the estimates may be effected;
 - ♦ To suggest alternative policies in order to bring about efficiency and economy in administration; and
 - ♦ To examine whether the money is well laid out within the limits of the policy implied in the estimates.

50 YEARS OF NATIONAL EMERGENCY

Context

India marked 50 years of the 1975 National Emergency, a 21-month period during which civil liberties were suspended, and mass arrests were carried out.

Constitutional Provisions for National Emergency

- ➔ **Grounds for Proclamation:** As per **Article 352**, a National Emergency can be declared by the President if the security of India or any part is threatened by **War and External aggression** (External Emergency) or **Armed rebellion** (Internal Emergency)
 - ♦ Internal disturbance was substituted with **Armed rebellion** by the **44th Amendment Act, 1978**.

Procedure and Safeguards

- ➔ **Cabinet Advice Requirement:** The 44th Amendment Act mandates written recommendation by the Council of Ministers before the President can proclaim Emergency.
- ➔ **Parliamentary Approval:** Approval needed by **both Houses within one month**. If Lok Sabha is dissolved, Emergency continues until **30 days** after reconstitution, provided Rajya Sabha has approved.
- ➔ If approved by both the Houses of Parliament, the **emergency continues for six months**, and can be extended to an indefinite period with an approval of the Parliament for every six months.
- ➔ Every resolution approving the proclamation of emergency or its continuance must be passed by either House of Parliament by a **special majority**, that is,
 - ♦ A majority of the total membership of that house, and
 - ♦ A majority of not less than two-thirds of the members of that house present and vote.
- ➔ **Revocation:** The **President can revoke** Emergency by a subsequent proclamation.
 - ♦ Further, the President must revoke a proclamation if the **Lok Sabha passes a resolution** disapproving its continuation.

Effect on Fundamental Rights

- ➔ **Article 358:** Automatic Suspension of **Article 19**;
 - ♦ Applies only during Emergency due to **war or external aggression (not armed rebellion)**
 - ♦ Fundamental Rights under Article 19 cease automatically without need for separate order.
- ➔ **Article 359:** Suspension of enforcement (not the rights themselves) of other Fundamental Rights, **excluding Articles 20 and 21**; The President may issue a separate order and Parliament must approve such orders.
- ➔ In **Minerva Mills Case (1980)**, the Supreme Court ruled that the validity of Emergency proclamation is **subject to judicial review**, if it is Malafide, Based on extraneous/irrelevant facts, or Perverse in nature.

Historical Instances of National Emergency in India

Grounds	Duration
External aggression (China)	1962-1968
External aggression (Pakistan)	1971-1977
Internal disturbance	1975-1977

INTERNATIONAL ORGANISATION FOR MEDIATION (IOMED)

Context

China asks Nepal to join its International Organisation for Mediation (IOMed).

About

- It is a **China-led global initiative**, formally launched on May 30, 2025, in **Hong Kong**.
- It is positioned as an **alternative dispute resolution forum** aimed at resolving international conflicts through **mediation**, rather than **arbitration** or **litigation**.
- At its inception, the IOMed saw participation from 33 founding member countries, many of them developing nations from Africa, Latin America, Southeast Asia, and Central Asia regions where China's BRI has already been established.
- The convention promotes mediation based on key **international norms: sovereign equality, non-interference in internal affairs**, and peaceful resolution of disputes.

Reasons behind China favour IOMed

- **Undercut Western-led institutions:** Like the International Court of Justice or Permanent Court of Arbitration, which China views as extensions of the U.S.-European influence.

- **Promotes China's model of "Asian-style diplomacy":** That emphasizes consensus, informality, and face-saving negotiations.
- **Advances the Global Security Initiative (GSI) and Global Civilization Initiative (GCI):** China's diplomatic branding campaigns that push "multipolarity" and "civilizational harmony" as alternatives to the liberal international order.

ASIAN DEVELOPMENT BANK (ADB)

Context

Asian Development Bank (ADB) has pledged \$10 billion in financial assistance to support India's urban development and metro rail network expansion.

About

- **Mission:** The ADB supports inclusive, resilient, and sustainable growth across Asia and the Pacific.
- **Membership:** Established in 1966 with 31 members, it has expanded to 69 members, with 50 from within Asia and the Pacific and 19 from outside the region.
- **Headquarters:** Manila, Philippines.
- **Largest Shareholders (as of 31 December 2023):** Japan and the USA (each 15.6%), China (6.4%), India (6.3%), and Australia (5.8%).

COMPARISON

Negotiation	Mediation	Arbitration	Litigation
Voluntary	Usually Voluntary	Usually Voluntary	Not Voluntary
Enforceable as Contract	Enforceable as Contract	Binding	Binding, subject to Appeal
No third-party neutral	Neutral appointed by parties to control process not decision	Neutral agreed by parties to impose decision	Impose decision
Informal	Informal & flexible model	Meant to be less formal but now more rigid	Formal
No set rules on how to negotiate, may focus on past	No set rules on how to negotiate, may focus on future	Set rules with parties presenting evidence, focus on past	Each party present evident and arguments, focus on past
Mutually acceptable agreement	Mutually acceptable agreement	Impose decision	Impose decision
Private	Private	Private	Public
Parties may or may not be involved in negotiation	Parties present & free to engage fully	Parties may attend but participate only as witness	Parties may attend but participate only as witness

ECONOMIC AND SOCIAL COUNCIL (ECOSOC) OF THE UNITED NATIONS

Context

Recently, India was elected to the Economic and Social Council of the United Nations for the period from 2026-28.

About

- Established in **1945 by the UN Charter** as one of the six principal organs of the **United Nations**.
- It is the **United Nations' main body** for coordinating and reviewing policies on economic, social, and environmental issues, as well as overseeing the implementation of global development goals.
- It serves as a **central platform for UN system activities** in these fields, supervises subsidiary and expert bodies, and fosters debate and innovation on sustainable development.
- It has **54 Members**, elected by the General Assembly for **overlapping three-year terms**.

INTERNATIONAL INSTITUTE OF ADMINISTRATIVE SCIENCES (IIAS)

Context

India has won the Presidency of the International Institute of Administrative Sciences (IIAS) for the 2025–2028 term.

About

- It is a global federation comprising **31 Member Countries**, **20 National Sections**, and **15 Academic Research Centres**, collaborating on scientific research in public administration.
- **Key member countries** include India, Japan, China, Germany, Italy, Korea, Saudi Arabia, South Africa, Switzerland, Mexico, Spain, Qatar, Morocco, and Indonesia, among others.
 - ♦ **India** has been a Member State of the IIAS since **1998**, represented by the **Department of Administrative Reforms and Public Grievances**.
- It is **not a formally affiliated body of the United Nations**, it actively engages with the UN's work in the field of public administration.
 - ♦ It maintains a close working relationship with the United Nations, and participates in the UN's Committee of Experts on Public Administration (CEPA) and the UN Public Administration Network (UNPAN).

UNSC's COUNTER-TERRORISM COMMITTEE

Context

Pakistan's appointment to key UNSC's counter-terrorism body has caused concern in India, especially following recent terror incidents and military tensions.

About UN CTC

- It was established by **UN Security Council resolution 1373 (2001)**, which was adopted unanimously on 28 September 2001 in the wake of the 11 September terrorist attacks in the **United States**.
- It comprises all **15 Security Council** members and it monitors countries' implementation of measures such as criminalizing terrorism financing, freezing terrorist assets, denying support and safe haven to terrorists, and promoting international cooperation.
- The **Resolution 1624 (2005)** expanded its scope to include criminalizing incitement to terrorism and promoting intercultural dialogue.

MONACO MARINE CONFERENCE

Context

Recently, India and Norway reaffirmed their commitment to strengthening cooperation in marine planning, Arctic research, and the Blue Economy at the Monaco Marine Conference (MCC).

About

- It is an international event focused on sustainable ocean management and the blue economy, co-hosted by India and Norway.
- It emphasizes the importance of collaboration between nations, particularly in areas like Marine Spatial Planning (MSP), Arctic research, and the blue economy.

Key Highlights

- **Marine Spatial Planning (MSP):**
 - ♦ India aims to scale Marine Spatial Planning (MSP) across its coastline reinforcing its leadership in sustainable ocean management.
 - ♦ **MSP** is a science-based framework for optimizing ocean resources, protecting biodiversity, and ensuring coastal livelihoods, **under the Indo-Norwegian Integrated Ocean and Research Initiative**.
 - ♦ It has already yielded visible outcomes, particularly through **pilot projects in Puducherry and Lakshadweep**.

- **India-Norway Marine Pact:** Both nations emphasized the importance of joint research in polar sciences and ocean sustainability.
 - ◆ Norway, with **70% of its exports originating** from its maritime industry, is a recognized expert in the **Ocean Economy**.
- **SAHAV Portal:** It is a GIS-based decision support system, recognized as a Digital Public Good.
 - ◆ It was introduced to mark **World Ocean Day (i.e. 8th June)**.

similar resolution in December 2024.

- **India recognised Palestine in 1988**, and is among 147 of 193 UNGA countries that have already recognised the Palestinian state.
 - ◆ India is committed to supporting a Two-State solution where the Palestinian people can live freely in an independent country within secure borders, with due regard to the security needs of Israel.

GAZA CEASEFIRE RESOLUTION

Context

The UN General Assembly overwhelmingly adopted a resolution demanding an immediate, unconditional, and lasting ceasefire in Gaza,

About

- It was introduced by Spain and passed overwhelmingly with 149 votes in favor, urging protection of civilians and humanitarian aid access in Gaza.
- The Gaza conflict has resulted in over 55,000 deaths, with the UN and humanitarian agencies warning of famine and a worsening humanitarian crisis.

Key Elements of the Resolution

- It calls for an **immediate, unconditional, and permanent ceasefire** by all parties, along with the release of hostages held by Hamas and other groups.
- It urges **full implementation of UN Security Council Resolution 2735**, including troop withdrawal, prisoner exchanges, and the return of displaced persons.
- It reaffirms the **obligation to uphold international humanitarian and human rights laws**, condemns the use of starvation and aid denial as war tactics, and demands unrestricted humanitarian access across Gaza.
- It also calls for the **humane treatment and release of arbitrarily detained individuals**, the return of remains, and highlights the request for an advisory opinion from the International Court of Justice on Israel's legal obligations.
- The resolution demands the **lifting of the blockade on Gaza**, insists on accountability from Israel, and emphasizes the protection and respect for UN personnel, humanitarian workers, and medical staff.

India's Position

- India abstained from a recent UN General Assembly resolution calling for a ceasefire in Gaza, marking the fourth such abstention in three years.
 - ◆ This reflects a shift in India's stance, as it had supported a

THE 51ST G7 SUMMIT

Context

Prime Minister Modi held productive exchanges with G7 leaders on key global challenges during the G-7 Outreach Summit at Kananaskis in Canada.

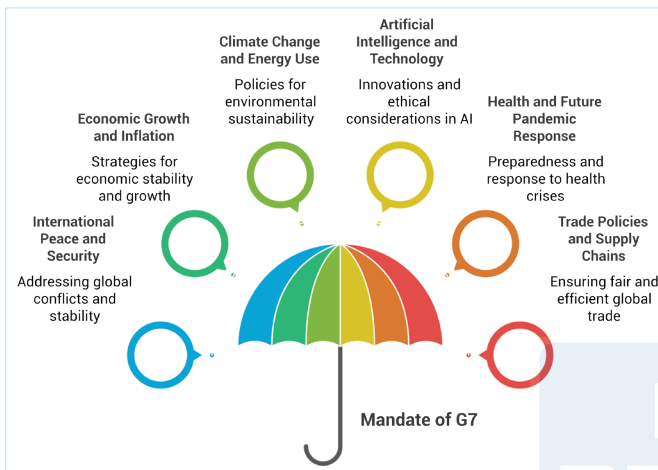
About

- This year's **G-7 Outreach Summit**, being hosted by Canada, is **themed around three core pillars** of "protecting our communities around the world", "building energy security and accelerating the digital transition" and "securing the partnerships of the future".
- In 2025, G7 partners are marking **50 years of partnership and cooperation**.
- This was the PM Modi's **sixth consecutive participation in the G-7 Summit**.
- He addressed a Session on '**Energy Security**: diversification, technology and infrastructure to ensure access and affordability in a changing world'
 - ◆ Ensuring affordable, reliable and sustainable energy is India's priority.
- India highlighted the **priorities of the Global South**.

Group of Seven (G7)

- The G7 is an **informal grouping of 7** of the world's advanced economies and the European Union.
- Its members **meet annually** at the G7 Summit to **discuss global economic and geopolitical issues**.
- The G7 was founded in **1975** in response to the **oil crisis**, France, Germany, Italy, Japan, the United Kingdom and the United States formed the **Group of Six**.
 - ◆ Canada joined in 1976, forming the G7.
 - ◆ These countries represent about 10% of the world's population and nearly 30% of the global economy by GDP.
 - ◆ The European Union has observer status, and is excluded from the rotating chairmanship.
 - ◆ With the inclusion of Russia in 1998, the group temporarily became the G8.

- ♦ In 2014, the group returned to the G7 format.
 - ♦ Russia's membership was suspended in March 2014 in response to its annexation of Crimea
- **Mandate:** The topics at the G7 Summit **change every year**, depending on what's happening in the world. Some common areas include:
 - The changing agenda and thematic priorities of the G7 are determined by the **respective presidency**.
 - ♦ Decisions are usually taken by consensus.



About

- The resolution passed with 116 votes in favour, 51 against, and 6 abstentions.
- It urges all states to refrain from using unilateral economic, financial, or trade measures that violate international law or the UN Charter.

About UCMs

- UCMs refer to **sanctions or restrictions** imposed by individual states or regional groups without authorization from the **UN Security Council**.
- It often targets state economies, limiting access to essential goods, technology, finance, and development aid.
- They are seen as **politically motivated tools** that breach sovereignty and multilateral norms.

INDIA AND CROATIA RELATIONS

Context

India and Croatia have agreed to develop a long-term defence cooperation plan.

Major Highlights

- Both sides agreed to develop a long-term Defence Cooperation Plan including:
 - ♦ Joint military training.
 - ♦ Personnel exchanges.
 - ♦ Industry-level defence partnerships.
 - ♦ Emphasis on cooperation in cybersecurity and defence production.
- **MoUs Signed on** Agriculture, Cultural Exchange, Science & Technology and setting up of an ICCR Chair of Hindi in Zagreb.
- **India-EU FTA:** India and Croatia have discussed the long-pending India-EU Free Trade Agreement.
 - ♦ Croatia has reiterated its strong support for the early conclusion of the FTA.
- **Investment:** Commitment to enhance investment in Croatia's critical industries, including pharmaceuticals, agriculture, information technology, clean technology, digital technology, and semiconductors.
- **Academic and cultural exchanges:** Academic institutes from both countries would carry out joint research projects.
 - ♦ The two sides finalised a five-year plan for cultural exchange programs, institutionalising the people-to-people connections.
- **Enhanced mobility and diplomatic engagement:** India and Croatia would "soon" sign a mobility agreement to facilitate the movement of people between the two countries.
 - ♦ This agreement is expected to boost tourism, educational exchanges, and business cooperation.

Significance of G7

- **Economic Influence:** Comprises the world's most advanced economies with major share in global GDP and trade.
- **Global Impact of Decisions:** Decisions influence global trade, financial stability, climate action, and humanitarian efforts.
- **Crisis Coordination Platform:** Serves as a forum for joint response to crises like pandemics, wars, and economic shocks.
- **Symbol of Multilateralism:** Reinforces international cooperation and a rules-based global order.
- **Leadership on Global Issues:** Sets the agenda on key global challenges like climate change, digital economy, and global health.
- **Bridge Between Democracies:** Strengthens political and economic ties among like-minded democratic nations.

INTERNATIONAL DAY AGAINST UNILATERAL COERCIVE MEASURES

Context

The United Nations General Assembly has adopted a resolution declaring December 4 as the International Day Against Unilateral Coercive Measures, starting in 2025.

- **Space and Academic Collaboration:** Joint work in space ventures announced.

- ♦ India to share its space expertise with Croatia.

Significance of the Engagement

- **Evolving European Strategy:** PM Modi's visit reflects India's expanding European outreach beyond traditional Western partners.
 - ♦ The focus is on **newer EU members like Croatia** that influence the EU's consensus-driven decision-making.
- **Importance of Croatia in India's Strategic Vision:** Croatia's neutral stance on major global conflicts and tech cooperation willingness align with India's values.
 - ♦ Minimal dependence on China and skepticism toward BRI make Croatia ideal for India's vision of democratic, sustainable development.
- **Eastern & Central Europe Access:** Croatia shares borders with Hungary, Slovenia, Bosnia & Herzegovina, and Serbia.
 - ♦ Strengthening ties offers a **gateway to Central European markets and emerging sectors**.
 - ♦ Enhances India's regional presence in the Balkans and Central Europe.
- **Maritime and Logistics Significance:** Croatia is located on the eastern Adriatic coast, a key maritime gateway to Europe. Strategic for India amid Red Sea/Suez disruptions and global supply chain rebalancing.
- **Role in India–Middle East–Europe Economic Corridor (IMEC):** Croatia viewed as a critical node in the IMEC trade corridor.
 - ♦ Offers alternative trade routes to Central and Eastern Europe bypassing traditional Western European ports.
- **Influence in EU and NATO:**
 - ♦ Croatia is a full member of the EU and NATO, increasing its institutional weight.
 - ♦ Provides India with indirect access to European regulatory systems and policy debates.
 - ♦ Supports India's FTA with EU; valuable for overcoming FTA negotiation roadblocks.
- **Diplomatic Alignment and Multilateral Support:** Croatia supports India's UNSC permanent membership bid.
 - ♦ India's position on Jammu and Kashmir (non-interventionist approach).
 - ♦ Acts as a predictable and consistent partner, unlike some larger EU countries.

Background of NPT

- It is one of the most widely adhered-to arms control agreements **signed in 1968** and entered **into force in 1970**.
 - ♦ It was **extended indefinitely in 1995**.
- **Membership Provisions (Two Categories):**
 - ♦ **Nuclear-Weapon States (NWS):** These are the **five countries** that had tested nuclear weapons **before January 1, 1967** — United States, Russia, China, France, and the United Kingdom.
 - ♦ **Non-Nuclear-Weapon States (NNWS):** All other signatories **agree not to pursue nuclear weapons** and **to accept IAEA safeguards** on their nuclear activities.
- **NPT established a three-pillar framework:**
 - ♦ **Non-Proliferation:** NWS agreed not to transfer nuclear weapons or assist NNWS in acquiring them.
 - ♦ **Disarmament:** All parties committed to pursuing negotiations toward nuclear disarmament.
 - ♦ **Peaceful Use of Nuclear Energy:** To access nuclear technology for peaceful purposes under IAEA safeguards.
- **Withdrawal Clause (Article X of NPT):** It allows **any state to exit** if it determines that **'extraordinary events'** have jeopardized its supreme national interests, provided **it gives three months' notice to other signatories** and the **UN Security Council (UNSC)**.

Other Important Nuclear Disarmament Treaties

- **Strategic Arms Reduction Treaty (START I & II), 1991–1993:** These were signed between the USA and the Soviet Union (later Russia), aimed to reduce deployed strategic nuclear warheads.
- **Comprehensive Nuclear-Test-Ban Treaty (CTBT), 1996:** It bans all nuclear explosions for both civilian and military purposes. It has not entered into force due to the non-ratification by the USA, China, India, and Pakistan.
- **Treaty on the Prohibition of Nuclear Weapons (TPNW), 2017:** It is the **first legally binding** international agreement to comprehensively prohibit nuclear weapons. It **entered into force in 2021**, though none of the nuclear-armed states have joined.
- **New START Treaty, 2010:** It limits the number of deployed strategic nuclear warheads and delivery systems.

NUCLEAR NON-PROLIFERATION TREATY (NPT)

Context

Recently, Iran's Foreign Ministry has confirmed that its Parliament is drafting legislation to withdraw from the Non-Proliferation of Nuclear Weapons (NPT) Treaty.

Present Status

- A total of 191 States have joined the Treaty, including the five nuclear-weapon States.
- **India, Pakistan, South Sudan and Israel never joined** the treaty, however they are **known or believed to** possess nuclear weapons.
- **North Korea** joined the NPT in 1985 but **withdrew in 2003**.

India's Approach NPT

- India's position on the Treaty has **remained consistent since the treaty's inception** in 1968.
- India's **primary objection** lies in the treaty's division of the world into nuclear '**haves**' and '**have-nots**'.
- India's refusal to sign was based on '**enlightened self-interest and considerations of national security**', as highlighted by former Prime Minister Indira Gandhi in Parliament.

SCO DEFENCE MINISTERS' MEETING

Context

India has refused to sign a joint declaration at the Shanghai Cooperation Organisation (SCO) Defence Ministers' meeting in Qingdao, China.

About

- India is not satisfied with the language of the joint document and there was no mention of cross-border terrorist activities specially recent Pahalgam Terror attack.
- The refusal to endorse the document resulted in the conclave ending without a joint communique.

About SCO

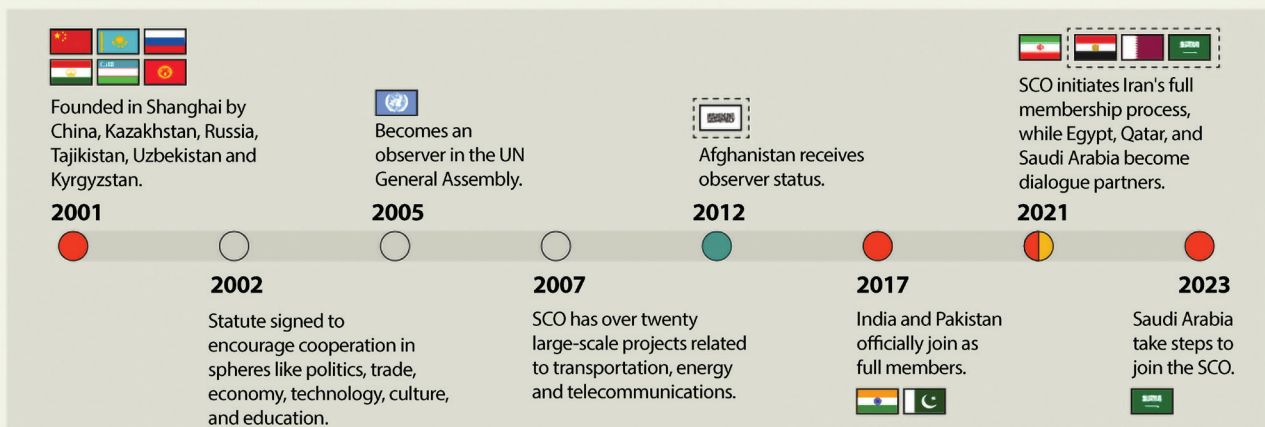
- **Shanghai Five** emerged in **1996** from a series of border demarcation and demilitarization talks between **4 former USSR republics and China**.
 - ♦ Kazakhstan, China, Kyrgyzstan, Russia and Tajikistan were members of the Shanghai Five.
 - ♦ With the accession of **Uzbekistan** to the group in **2001**, the Shanghai Five was renamed the SCO.
- **Objective:** To enhance regional cooperation for efforts to curb terrorism, separatism, and extremism in the Central Asian region.

- **Members:** China, Russia, India, Pakistan, Iran, Belarus and the four Central Asian countries of Kazakhstan, Kyrgyzstan, Tajikistan, Uzbekistan.
 - ♦ India became a full member in **2017** and assumed the rotating **chairmanship in 2023**.
 - ♦ Member countries contribute around **30 per cent of the global GDP** and about **40 percent of the world's population**.
- **Language:** Russian and Chinese.
- **Structure:**
 - ♦ The supreme decision-making body of the SCO is the Council of Heads of States (CHS) which meets once a year.
 - ♦ **The Organization has 2 standing bodies** — the Secretariat in Beijing and the Executive Committee of the Regional Anti-Terrorist Structure (RATS) in Tashkent.

Significance for India

- **Regional Security:** The SCO serves as a platform for addressing security concerns, including terrorism, separatism, and extremism, which are critical issues for India.
 - ♦ Through SCO's Regional Anti-Terrorist Structure (RATS), India collaborates on intelligence sharing and counter-terrorism efforts.
- **Balancing China and Pakistan:** While both are SCO members, the forum allows India to assert its position and prevent the formation of anti-India narratives.
- **Energy Security:** Central Asia is rich in oil, gas, and uranium. SCO membership allows India to strengthen energy ties with these countries.
- **Economic Cooperation:** The organization facilitates economic collaboration among member states, which enhance trade and investment opportunities for India, particularly with Central Asian countries.
- **Central Asia:** The **SCO is especially important for India** because its membership and focus emphasize **Central Asia**—a region where **India is keen to ramp up ties**.

SCO TIMELINE



*The process of elevating Belarus's status within the organization to that of a member state commenced in 2022.

Source: Incrementum, Shanghai Cooperation Organization. United Nations

NSO's REPORT ON AGRICULTURE

Context

The National Statistics Office (NSO), MoSPI released the annual publication of "Statistical Report on Value of Output from Agriculture and Allied Sectors (2011-12 to 2023-24)".

About

- It is a comprehensive document which provides **detailed tables on values of output of Crop, Livestock, Forestry & logging and Fishing & aquaculture sectors** of Agriculture & allied activities from **2011-12 to 2023-24** at both current and constant (2011-12) prices.

Key Highlights

- **Overall Growth:** Gross Value Added (GVA) at current prices **grew by 225%**, from ₹ 1,502 thousand crore in 2011-12 to ₹ 4,878 thousand crore in 2023-24.
 - ♦ **Gross Value of Output (GVO)** at constant prices increased by **54.6%**, from ₹1,908 thousand crore to ₹ 2,949 thousand crore.

Sectoral Contribution to GVO (2023-24, at Constant Prices)

Sector	Contribution to GVO	Notable Trends
Crop sector	₹ 1,595 thousand crore (54.1%)	Largest contributor
Livestock	₹ 919 thousand crore	Fastest growing
Forestry	₹ 227 thousand crore	Moderate growth
Fishing & Aquaculture	Share rose to 7.0% (from 4.2%)	Rapidly rising

- **Crop Sector Details:** Cereals + Fruits & Vegetables contributed **52.5%** of total crop GVO, **Paddy & Wheat** contributed 85% of cereal GVO.
- **Top Cereals GVO States (2023-24):** Uttar Pradesh, Madhya Pradesh, Punjab, Telangana, and Haryana collectively contributed 53% of cereal GVO.
- **Condiments & Spices:** Top State Madhya Pradesh (19.2%) followed by Karnataka (16.6%) and Gujarat (15.5%).
- **Livestock Sector:** GVO rose from ₹488 to ₹919 thousand crore.
 - ♦ Milk is dominant but share decreased from 67.2% to 65.9%.
 - ♦ Meat share has increased from 19.7% to 24.1%.

- **Fishing & Aquaculture:** Contribution increased from **4.2% in 2011-12 to 7.0% in 2023-24**.

- ♦ The **share of inland fish** has decreased from 57.7% to 50.2% whereas, the share of marine fish has increased from 42.3% to 49.8% during 2011-12 to 2023-24.
- ♦ Significant shifts in GVO (at constant prices) in Fisheries has been observed in the two major contributing States of **West Bengal and Andhra Pradesh**.

Importance Agriculture and Allied Sectors

- **Contribution to GDP and GVA:** The sector contributed around **18% to India's Gross Value Added (GVA) in 2023-24**.
- **Employment Generation:** It is the largest employer in the country. About 45% of India's workforce is engaged in agriculture and allied activities (as per Periodic Labour Force Survey - PLFS 2022-23).
- **Food Security:** Ensures food security for over 1.4 billion people through production of cereals, pulses, vegetables, fruits, dairy, fish, and livestock products.
 - ♦ Key to successful implementation of the Public Distribution System (PDS) and food subsidy schemes.
- **Contribution to Exports:** India is among the top exporters of rice, spices, marine products, cotton, tea, coffee, and buffalo meat.
- **Rural Development and Poverty Alleviation:** Drives rural income growth, supports rural infrastructure, and boosts consumption.
- **Strategic and Political Importance:** Plays a critical role in political stability due to its impact on inflation, rural distress, and food prices.
 - ♦ Agriculture often features centrally in policy debates, budget allocations, and election manifestos.

INDIA'S TRADE DEFICIT

Context

India's trade deficit narrowed to \$6.6 billion in May 2025, a 30% decline compared to 2024, driven by lower oil prices and stronger service exports.

Key Points

- Total exports rose 2.8% to \$71.1 billion, with services exports up 9.4% to \$32.4 billion. However, merchandise exports fell 2.2% to \$38.7 billion, mainly due to falling global oil prices.

- Non-petroleum exports grew 5.1%. Merchandise imports declined 1.7%, though non-petroleum imports rose 10%.
- Overall, total imports dropped by 1% in May 2025.

Trade Deficit

- It occurs when a country's imports exceed its exports, resulting in a negative trade balance.
- It includes both goods and services and serves as a key macroeconomic indicator.
- Persistent trade deficits can lead to currency depreciation, job losses, and increased foreign borrowing.

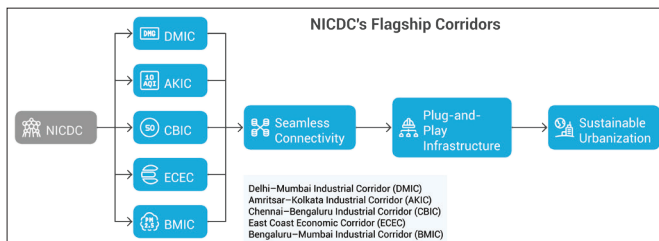
NICDC-LED INDUSTRIAL NODES

Context

The Union Minister of Commerce & Industry chaired a high-level review meeting to assess the progress of NICDC-led industrial nodes in Andhra Pradesh under various industrial corridors.

About

- The National Industrial Corridor Development Corporation (NICDC) is an initiative under the Ministry of Commerce & Industry.
- It is dedicated to **developing next-generation industrial smart cities** aimed at boosting manufacturing, attracting investments, generating employment, and enhancing India's global economic competitiveness.



- **Andhra Pradesh** is the only state in the country to host industrial nodes under three separate Industrial Corridors.

FASTAG-BASED ANNUAL PASS

Context

The Minister of Road Transport and Highways announced a FASTag-based annual pass priced at Rs 3,000 for "hassle-free-highway travel".

About

- The FASTag-based passes will be **effective from August 15** and **valid for one year or 200 trips, whichever comes earlier.**

- Passing through one toll plaza will be counted as one Trip.

FASTag

- FASTag is an **electronic toll collection system** managed by the National Payments Corporation of India (NPCI) and the National Highways Authority of India (NHAI).
- It uses **Radio Frequency Identification (RFID) technology** to communicate with scanners installed at toll plazas.
- Once the car crosses a toll plaza, the requisite toll amount is automatically deducted from a bank account or a prepaid wallet linked to the FASTag.

REVERSE FLIPPING

Context

The Securities and Exchange Board of India (SEBI) has approved a series of reforms aimed at improving the ease of doing business and reverse Flipping Support.

About

- Reverse flipping refers to the practice where a company that had previously incorporated or shifted its headquarters to a foreign jurisdiction (often for tax or regulatory reasons) moves its domicile back to its home country, particularly India.
- **How does it work?**
 - The parent company abroad transfers ownership, assets, or control to an Indian entity.
 - The Indian subsidiary (which was earlier just an operational arm) became the main holding company.
 - This may involve shifting Intellectual Property (IP), data, and key functions to India.
 - **For example:** PhonePe incorporated in 2015 in India flipped its structure to Singapore in 2016 and shifted back its domicile to India in 2022.

Why Do Startups Flip in the First Place?

Initially, many Indian startups "flip" to foreign jurisdictions because:

- Easier access to global venture capital.
- Simplified regulations around stock options, fundraising, or acquisitions.
- Favorable tax regimes.
- Ease of listing on foreign stock exchanges.

Significance of Reverse Flipping?

- Reflects confidence in India's economic and regulatory ecosystem.
- Tied to broader goals like Atmanirbhar Bharat, ease of doing business, and capital market reforms.
- Important for innovation, job creation, and domestic capital mobilisation.

QR CODES ON ROADS

Context

Recently, the Union Ministry of Rural Development (MoRD) asked states to attach QR codes on all maintenance information display boards for roads built under the Prime Minister Gram Sadak Yojana (PMGSY).

About

- ➔ The aim is to **get public feedback about the quality and maintenance of roads.**
- ➔ The citizens' **feedback photos** will be integrated with the **relevant Routine Inspection.**
- ➔ **Artificial Intelligence and Machine Learning** will be employed to analyse these photographs to advise on **Performance Evaluation (PE) marks.**
 - ♦ All programs implementing units, while giving PE marks, shall be responsible for checking these photos.

Prime Minister Gram Sadak Yojana (PMGSY)

- ➔ PMGSY was launched in **2000** to improve **rural infrastructure through road construction.**
- ➔ **Funding:** Starting as a totally Centrally Sponsored Scheme, the funding pattern was modified **from 2015-16 to 60:40** between the Centre and states (except for northeastern and Himalayan states where it is 90:10).
- ➔ **Since the scheme was launched,** a total road length of 8,36,850 km has been sanctioned, of which **7,81,209 km has been completed.**
- ➔ **A total of 62,500 km of road length** is proposed to be constructed **from 2024-25 to 2028-29.**

HOUSEHOLD INCOME SURVEY

Context

The Ministry of Statistics and Programme Implementation (MoSPI) will conduct the first-ever Household Income Survey in 2026.

About

- ➔ This will be **India's first comprehensive, nationwide survey** focused entirely on household income, including both rural and urban segments.
- ➔ **Lead Agency:** Conducted by the **National Sample Survey Office (NSSO)** under the Ministry of Statistics & Programme Implementation (**MoSPI**).
- ➔ **Technical Expert Group (TEG):** It was constituted by MoSPI under the Chairmanship of **Dr. Surjit S. Bhalla.**

➔ Mandate of TEG:

- ♦ Finalize definitions, concepts, survey tools, and sampling methods,
- ♦ Adopt best practices from countries like the US, Australia, Canada, and South Africa to address prior underreporting,
- ♦ Guide estimation methods, data quality protocols, result finalization, and publication timelines,
- ♦ Incorporate digital tools to capture technology-driven impacts on wages and income.

Significance of the Household Income Survey

- ➔ **First Accurate Mapping of Income Distribution:** Despite decades of data on consumption, poverty, and employment, India lacks official statistics on household income levels and distribution.
 - ♦ The survey fills a critical gap, enabling policymakers to **understand income inequality, inter-regional disparities, and the actual spread of economic growth.**
- ➔ **Targeting of Welfare Schemes:** The government can more effectively design and implement **subsidies, social protection, and direct benefit transfers,** moving toward evidence-based and inclusive policymaking.
- ➔ **Analysis of Technology Impact:** The survey will assess how digital platforms, gig work, automation, and informal employment influence household earnings, an area underexplored by existing datasets.
- ➔ **Benchmark for Fiscal and Tax Policy:** It can provide a realistic **baseline for taxation policies, income slabs, and fiscal redistribution** strategies by capturing actual income flows across sectors and classes.
- ➔ **International Comparability:** Countries like the USA, Australia, and South Africa regularly conduct income surveys.

IFFCO's FIRST OVERSEAS NANO FERTILISER PLANT

Context

Indian Farmers Fertiliser Cooperative (IFFCO) is setting up its first overseas nano fertiliser Plant in Brazil. It will be producing 4.5 million litres of nano-fertilisers annually.

Nano Fertilizer

- ➔ A nano fertilizer is a type of fertilizer that contains nutrient particles in nanometer size (typically less than 100 nanometers).
- ➔ These fertilizers are designed to deliver nutrients to plants more efficiently, due to their small size, high surface area, and better absorption.
- ➔ India became the first country to approve and commercialize Nano Urea, developed by IFFCO (Indian Farmers Fertiliser Cooperative Limited) in 2021.

ROBUST DATA ECOSYSTEM

Context

NITI Aayog released the third edition of its quarterly insights series Future Front, titled "India's Data Imperative: The Pivot Towards Quality."

About

- ➔ This report underscores the **urgent need for robust data quality** to fortify **digital governance, cultivate public trust, and ensure efficient service delivery**.
- ➔ India's digital infrastructure (UPI, Aadhaar, Ayushman Bharat) has scaled massively.
 - ◆ However, as platforms mature, **quality of data has become a national imperative**.
 - ◆ **A single error (wrong digit, mismatched name)** can cause serious issues: halted pensions, subsidy misdelivery, or inflated welfare costs.

Need for Robust Data Ecosystem

- ➔ **Fiscal Leakage:** Errors and duplication lead to 4–7% annual welfare overspending.
- ➔ **Policy Distortion:** Inconsistent or outdated data causes misdirected schemes and delays.
- ➔ **Erosion of Trust:** Citizens lose faith due to mismatched records and claim rejections.

Core Challenges Identified



Systemic Design Flaws

Incentives prioritize speed over accuracy.

Fragmentation

Silos and incompatible formats hinder integration.

Lack of Accountability

Legacy tech lacks validation, audit trails.

Outdated Systems

No clear data custodianship.

Rushed Execution

Quantity-focused targets compromise quality.

Low Expectations

80% accuracy considered "good enough" in many systems.

Structural Recommendations

- ➔ **Institutionalising Ownership:** Designate data custodians at national/state/district levels.

- ◆ Make quality a shared responsibility—programme heads, IT teams, field staff.
- ◆ Ensure a single point of accountability for maintaining data integrity end-to-end.
- ➔ **Incentivising Data Quality:** Go beyond speed; reward accuracy and completeness.
 - ◆ Track indicators like error rates, completion levels and timeliness.
 - ◆ Integrate these into programme reviews as a measure of delivery strength, not just audit compliance.
- ➔ **Ensuring Interoperability:** Enable systems to securely exchange data across platforms, departments, and time horizons.
 - ◆ Essential for preserving public data value.

DIGITAL PAYMENT INTELLIGENCE PLATFORM

Context

Major public and private sector banks are collaborating to develop the Digital Payment Intelligence Platform (DPIP) as a Digital Public Infrastructure (DPI) under the guidance of the Reserve Bank of India (RBI).

About

- ➔ It **aims to strengthen fraud risk management** by enabling real-time data sharing and intelligence gathering to detect and prevent fraudulent digital transactions.
- ➔ The institutional framework is being jointly developed by public and private banks, recognizing fraud as a shared threat.

Additional Information

- ➔ Digital Public Infrastructure (DPI) refers to foundational digital systems that are accessible, secure, and interoperable, supporting essential public services.
- ➔ In India, DPI has been instrumental in transforming the digital economy, much like traditional infrastructure for industrial growth.

Need and Purpose

- ➔ Cybercrime, particularly digital financial fraud, is a growing threat in India, affecting millions and causing massive financial losses.
- ➔ RBI's FY25 report highlights a threefold rise in bank frauds to ₹36,014 crore from ₹12,230 crore in FY24.
 - ◆ Public sector banks reported ₹25,667 crore in frauds (mainly in loans/advances).
 - ◆ Private sector banks saw the highest number of frauds in digital payments (card/internet).

- The DPIIP is thus a proactive step to secure India's growing digital financial ecosystem.
 - ♦ It will tackle the **rising digital payment frauds** and aims to **enhance fraud detection and prevention** through real-time data sharing and intelligence gathering.

REVISED PSL GUIDELINES

Context

The RBI has relaxed Priority Sector Lending (PSL) norms for Small Finance Banks (SFBs).

Small Finance Banks (SFBs)

- **About:** They are operational under the regulation of the RBI in India, under the purview of the apex bank's **Banking Ombudsman Scheme, 2006**, as amended from time to time.
 - ♦ SFBs are registered as **public limited companies** under the **Companies Act, 2013** and governed by **Banking Regulations Act, 1949; RBI Act, 1934**.
 - ♦ They are subject to **RBI's prudential norms** for commercial banks, including CRR and SLR.
- **Objectives:** SFBs aim to provide savings vehicles and credit to underserved sectors like small businesses, farmers, micro-industries, and the unorganized sector through cost-effective, technology-driven operations.

Additional Information

- Priority sector lending (PSL) is an **RBI-mandated policy requiring banks** to allocate a **fixed portion of their loans to key sectors** that face credit shortages but are crucial for inclusive economic growth.
- It comprises loans to agriculture, MSMEs, export credit, education, housing, social infrastructure, renewable energy, weaker sections and other segments.
 - ♦ In March 2025, the RBI had issued **revised PSL guidelines for banks, enhancing limits for loans** such as housing and education, even as the PSL target for urban cooperative banks (UCBs) was brought down from 75 per cent to 60 per cent.

Key Changes Announced by RBI

- PSL loans target for SFBs has been lowered to 60 per cent of their loans from 75 per cent earlier from the current financial year.
- The **additional component (35 per cent) of PSL** will be reduced to 20 per cent, thereby making the overall PSL target as 60 per cent of ANBC (adjusted net bank credit) or Credit Equivalent of Off-Balance Sheet Exposures (CEOE), whichever is higher from financial year 2025-26 onwards.

- **SFBs will continue to allocate 40 per cent** of their ANBC or CEOBE, whichever is higher, to different sub-sectors under PSL as per the extant PSL prescriptions, while the balance 20 per cent can be allocated to any one or more sub-sectors under the PSL where the bank has competitive advantage.

BIHAR'S FIRST NUCLEAR POWER PLANT

Context

Bihar is set to host its first nuclear power plant, making it one of the first six states to benefit from the Government of India's National Nuclear Energy Mission.

About

- The announcement comes as part of a broader push to diversify India's energy mix, strengthen regional energy security, and integrate advanced technologies like **Small Modular Reactors (SMRs)**.
- The Government has also approved a **1,000 MW battery storage capacity project** in Bihar, aimed at enhancing grid stability and supporting renewable energy integration.
- The government will provide **viability gap funding of Rs 18 lakh per MW** for this initiative.
- **Proposed Site:** Rajauli in Nawada district
- The **first six states** selected for India's National Nuclear Energy Mission to install new nuclear power plants are Bihar, Gujarat, Rajasthan, Tamil Nadu, Haryana, and Karnataka, according to multiple sources.

Nuclear Energy Mission

- **Capacity Target:** 100 GW by 2047 (Current capacity: 8 GW).
- **Small Modular Reactors (SMRs):** ₹20,000 crore allocation for R&D and indigenous SMR development.
 - ♦ **Goal:** Five operational SMRs by 2033.
- **Private Sector Participation:** Proposed amendments to key legislations:
 - ♦ **Atomic Energy Act, 1962:** Framework for nuclear energy development and regulation.
 - ♦ **Civil Liability for Nuclear Damage Act, 2010:** Ensuring compensation mechanisms for nuclear incidents.
- **Capacity Expansion:** 10 new reactors (totaling 8 GW) under construction across Gujarat, Rajasthan, Tamil Nadu, Haryana, Karnataka, and Madhya Pradesh.
 - ♦ **Approval for a 6x1208 MW** nuclear plant in Andhra Pradesh in collaboration with the USA.
- **Nuclear Partnerships:** Collaboration with the private sector to develop Bharat Small Reactors (BSRs) and Bharat Small Modular Reactors (BSMRs).

INDIA'S FIRST MARITIME NBFC

Context

The Union Minister of Ports, Shipping & Waterways (MoPSW) inaugurated SMFCL.

Sagarmala Finance Corporation Limited (SMFCL)

- It was formerly known as Sagarmala Development Company Limited.
- It is a Mini Ratna, Category-I, Central Public Sector Enterprise and has been formally registered as a Non-Banking Financial Company (NBFC) with the Reserve Bank of India (RBI).
- It is India's first NBFC in the maritime sector.

Additional Information

- A Non-Banking Financial Company (NBFC) is a company registered under the **Companies Act, 1956 or 2013**
- It is primarily engaged in financial activities like loans, advances, and investments in securities.
- It excludes companies whose main business is agriculture, industry, trade in goods or services, or real estate.
 - ♦ Companies that collect deposits under various schemes are classified as Residuary NBFCs.
- **Banks and NBFCs differ** in key ways despite both engaging in lending and investments:
 - ♦ NBFCs cannot accept demand deposits.
 - ♦ NBFCs are not part of the payment and settlement system and cannot issue cheques.
 - ♦ Deposit insurance facility of Deposit Insurance and Credit Guarantee Corporation (DICGC) is not available to depositors of deposit taking NBFCs.

Importance of SMFCL

- It is aligned with the **Maritime Amrit Kaal Vision 2047** and aims to bridge financing gaps and offer tailored financial solutions for ports, MSMEs, startups, and maritime institutions.
- It will support strategic areas like shipbuilding, renewable energy, cruise tourism, and maritime education, helping to drive economic growth and logistics efficiency.
- The launch marks a key step in making India a global maritime power, creating a dedicated financial ecosystem for inclusive and sustainable maritime development.

INTERNATIONAL POTATO CENTRE

Context

The Centre cleared a proposal to set up the South Asia regional centre of the Peru-based International Potato Center (CIP) in India.

About

- The CIP-South Asia Regional Centre (CSARC) will come up in Agra, Uttar Pradesh.
- **Objective:** To increase food and nutrition security, farmers income, and job creation by improving potato and sweetpotato productivity, post-harvest management and value-addition.
- **China set up its regional CIP centre eight years ago** known as the **China Center for Asia Pacific (CCCAP)** serving the entire **East Asia and the Pacific region**.

Potato Cultivation

- India is the **world's second top producer and consumer of potato**; in 2020, it saw a production of 51.30 million tonnes.
- **At the top is China**, with its potato output in 2020 at 78.24 million tonnes. Together, the two countries account for **over one-third of the global potato production (359.07 MT)**.
- Among the states in India, Uttar Pradesh and West Bengal lead the production, followed by Bihar.

OPERATION DEEP MANIFEST

Context

Under the Operation Deep Manifest, India's Directorate of Revenue Intelligence (DRI) made a major breakthrough by seizing 1,115 metric tonnes of Pakistani-origin goods, illicitly routed via Dubai.

About

- After the Pahalgam Terror Attack, India imposed a total ban on direct or indirect import/transit of Pakistani-origin goods even if routed through third countries like UAE, Singapore, etc.
- Total bans serve as economic deterrents and signal India's zero-tolerance stance.
- The case highlights risks of **"grey routing"**—where goods of hostile origin are rerouted through benign intermediaries.

SPREE SCHEME

Context

In the 196th meeting, the Employees' State Insurance Corporation (ESIC) re-launched this scheme for 2025 with the objective of expanding ESI coverage across the country.

About

- **Genesis:** Originally introduced in 2016, **SPREE (Scheme to Promote Registration of Employers/Employees)** has facilitated the registration of over 88,000 employers and 1.02 crore employees.

- **Objective:** It aims to bring unregistered employers and left-out workers (including contractual and temporary staff) under the ESI Act.
- **Duration:** The renewed SPREE scheme will be open from July 1st to December 31st, 2025.
- **Benefit:** By focusing on voluntary compliance rather than penalisation, the scheme will seek to ease the litigation burden, encourage formal registration, and foster improved engagement and goodwill among stakeholders.

Amnesty Scheme – 2025

- The Corporation also approved **Amnesty Scheme – 2025**, a **one-time dispute resolution window from October 1, 2025 to September 30, 2026** aimed at reducing litigation and promoting compliance under the ESI Act.

VARIABLE RATE REVERSE REPO AUCTION

Context

Recently, the Reserve Bank of India conducted a 7-day Variable Rate Reverse Repo (VRRR) auction to manage liquidity, receiving and accepting Rs. 84,975 crore in bids against a notified amount of Rs. 1 lakh crore.

Variable Rate Reverse Repo (VRRR)

- It is a short-term tool under **RBI's Liquidity Adjustment Facility**.
- It used to absorb surplus liquidity at market-driven rates.
- It helps the RBI maintain monetary stability and control short-term interest rate volatility, reflecting its ongoing focus on effective liquidity management.

INDIA REPORTS CURRENT ACCOUNT SURPLUS

Context

According to the Reserve Bank of India (RBI), India's current account balance recorded a more than expected surplus of \$13.5 billion in Q4 (January-March) of FY25.

About

- The **Current Account Balance (CAB) surplus is higher than expected** is underscored by the fact that India Ratings and Research (Ind-Ra) had estimated it at around 7 billion (0.7 per cent of GDP) in the reporting quarter.
- The **Current Account Balance** is a key component of a country's Balance of Payments (BoP) and reflects its **transactions with the rest of the world in goods, services, income, and transfers**.
- The **Current Account** comprises trade in goods, trade in services, primary income (investment income), and secondary income (transfers and remittances).

- A **surplus** in the current account occurs when **inflows exceed outflows**.

CAB Surplus Significance

Strong External Position

A CAB surplus indicates a robust external economic standing.

Strengthens Reserves

Surplus contributes to the growth of foreign exchange reserves.

Improves Confidence

A surplus enhances the confidence of investors in the economy.

DHRUVA INITIATIVE

Context

The Department of Posts has released a comprehensive policy document titled **DHRUVA (Digital Hub for Reference and Unique Virtual Address)**, aimed at establishing a national Digital Address Digital Public Infrastructure.

About

- **About:** DHRUVA is a Digital Public Infrastructure (DPI) project being developed by the Department of Posts (DoP) in India. Its primary goal is to provide a unique digital address for every home in India.
- **Objectives:** To establish address information management as a foundational public infrastructure. To enable effective governance, inclusive service delivery, and enhanced user experience through accurate address sharing.

Structural Components of DHRUVA

- **Digital Postal Index Number (DIGIPIN):** A 10-digit alphanumeric code assigned to a 4x4 metre grid over India's landmass using latitude-longitude coordinates.
 - ♦ Each DIGIPIN uniquely identifies a physical location, thus eliminating ambiguity and duplication in address data.
- **Digital Address Layer:** A user-centric and consent-based layer built over the DIGIPIN, allowing users to create custom labels for their address (e.g., "Home", "Office", "Warehouse"). It integrates descriptive elements (landmarks, floor numbers, house names) while retaining precise geospatial tagging.

MODIFIED INTEREST SUBVENTION SCHEME

Context

The Union Cabinet approved the continuation of the **Interest Subvention (IS) component under the Modified Interest Subvention Scheme (MISS) for the financial year 2025-26**.

About

- MISS is a **Central Sector Scheme** aimed at ensuring the availability of **short-term credit** to farmers at an affordable interest rate through **Kisan Credit card (KCC)**.
- **Under the Scheme:**
 - ♦ Farmers received short-term loans of up to **Rs.3 lakh** through **Kisan Credit Cards (KCC)** at a subsidized interest rate of **7%**, with **1.5% interest subvention** provided to eligible lending institutions.
 - ♦ Additionally, farmers repaying loans promptly are eligible for an incentive of up to **3%** as **Prompt Repayment Incentive (PRI)** effectively reducing their interest rate on KCC loans to **4%**.
 - ♦ For loans taken exclusively for animal husbandry or fisheries, the interest benefit is applicable up to **Rs.2 lakh**.

Key highlights of Agriculture Credit

- **Institutional credit disbursement** through KCC increased from Rs.4.26 lakh crore in 2014 to **Rs. 10.05 lakh crore** by December 2024.
- **Overall agricultural credit flow** also rose from Rs.7.3 lakh crore in FY 2013-14 to **Rs.25.49 lakh crore in FY 2023-24**.
- Digital reforms such as the launch of the **Kisan Rin Portal (KRP)** in August 2023 have enhanced transparency and efficiency in claim processing.

CABINET APPROVES HIKE IN MSP FOR Kharif CROPS

Context

The government has increased the Minimum Support Prices (MSP) of Kharif Crops for Marketing Season 2025-26.

About

- The highest absolute increase in MSP over the previous year has been recommended for nigerseed (Rs. 820 per quintal) followed by Ragi (Rs. 596 per quintal), Cotton (Rs. 589 per quintal) and Sesamum (Rs. 579 per quintal).
- It is the minimum rate at which farmers sell their crops to the government.
- This price prevents farmers from market fluctuation and offers stability and income security.
- The **Commission for Agricultural Costs and Prices (CACP)**, established in 1965, recommends MSPs after considering multiple factors.
 - ♦ The final decision on MSP is made by the **Cabinet Committee on Economic Affairs**, which is chaired by the Prime Minister.

AIZAWL JOINS NATIONAL RAILWAY NETWORK

Context

In a major boost for connectivity in the North-East, Mizoram's capital Aizawl is now linked to the national railway network via the Bairabi-Sairang line.

About the Bairabi-Sairang Line

- The **51.38-km railway project** extends rail services from Bairabi in Kolasib district—**Mizoram's only previous railhead**—up to Sairang, a satellite town of Aizawl, around 20 km from the city.
- This development makes Mizoram the **fourth North-Eastern state** to have its capital connected by rail, after **Assam, Tripura, and Arunachal Pradesh**. Earlier, trains could only reach up to **1.5 km** inside Mizoram.
- The Bairabi-Sairang line is part of a larger push by the Ministry of Railways to connect **all North-East state capitals** and improve regional infrastructure.
- This milestone is expected to bring greater economic opportunities, improve transport access, and strengthen integration between the **North-East and the rest of India**.

DEEPER CONNECTIVITY IN NORTHEAST



INDIA PUSHES FOR WTO REFORMS

Context

India raised concerns and proposed reforms at a mini-ministerial WTO meet in Paris (2025), attended by 25 member nations.

India's 3-Pronged Reform Agenda

- It aims to strengthen the multilateral trading system, revive WTO's functioning, and protect the interests of developing economies.

- **Tackle Non-Tariff Barriers (NTBs):** NTBs like sanitary and phytosanitary (SPS) measures, technical barriers to trade (TBT) & arbitrary standards are increasingly used to block exports from developing countries. India wants stricter oversight and transparency.

- ♦ **Example:** Indian mangoes and basmati rice often face SPS-related rejections in EU and U.S. markets.

- **Curb Non-Market Economy Distortions:** Address the impact of national economies with heavy state control—primarily China—that distort global trade through practices such as subsidies, dumping, and lack of transparency.

- ♦ **Example:** India's steel and solar industries have been impacted by cheap Chinese imports, prompting safeguard duties and anti-dumping cases.

- **Revive the Dispute Settlement System:** WTO's appellate body has been paralyzed since 2009 due to U.S. blockade of judge appointments. India calls for full restoration of a binding, impartial dispute resolution system.

- ♦ **Example:** India's disputes with the U.S. on steel tariffs and ICT product tariffs remain unresolved due to the appellate body deadlock.

Relevance of World Trade Organization



Dispute Resolution

Manages trade tensions among major powers.

Rule-Making

Regulates emerging sectors like e-commerce.

Level Playing Field

Protects developing nations' interests.

Trade Facilitation

Standardizes procedures for smoother trade.

Need for Structural Change

- Rising protectionism, trade wars (U.S.-China) bypassing WTO norms.
- Initiatives like Investment Facilitation for Development (IFD) are backed by 128 countries, but lack consensus. India fears fragmentation and dilution of multilateralism.
- Permanent solution for public foodgrain stockholding still pending since Bali 2013.

CHENAB AND ANJI RAIL BRIDGES

Context

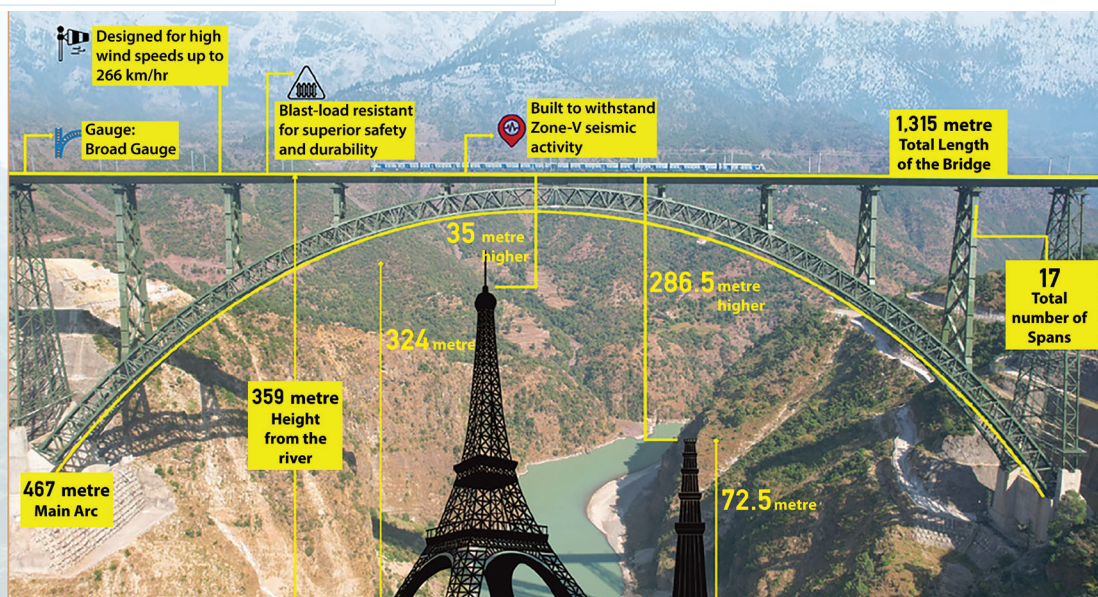
Prime Minister Narendra Modi inaugurated the Chenab and Anji rail bridges in J&K, marking a historic moment for infrastructure and connectivity in the region.

About

- The Chenab Rail Bridge, situated **359 meters** above the Chenab River, is the world's highest railway arch bridge.
- It is a **1,315-metre-long** steel arch bridge engineered to withstand seismic and wind conditions.
- A key impact of the bridge will be in enhancing connectivity between **Jammu and Srinagar**. It will take just about **3 hours** to travel between **Katra and Srinagar**.

Anji Khad Rail Bridge

- The Anji Khad Bridge, India's first cable-stayed railway bridge, is located in the Reasi district, spanning 473 meters across the Anji River, a tributary of the Chenab.
- The bridge is part of the Udhampur-Srinagar-Baramulla Rail Link project.
- The bridge will enhance connectivity to the Kashmir Valley, playing a crucial role in improving trade, travel, and defense logistics in the area.



RECOVERING SILVER FROM E-WASTE

Context

Researchers in Finland have developed a green chemical process that uses natural fatty acids found in cooking oils to recover silver from electronic waste (e-waste).

About

- This innovation emerges amid a global surge in silver demand and **escalating e-waste challenges**, especially in countries like India.
- E-waste refers to the **discarded electronic and electrical devices** that have reached the **end of their lifespan** or become obsolete due to rapid technological changes, including computers, phones, TVs, and other equipment.
- India ranks as the **third-largest producer of electronic waste** globally, following China and the United States.
- According to the **World Silver Survey 2024**, industrial applications account for over **50%** of total silver demand.
 - ♦ Yet, only around **15%** of silver is currently recycled, causing significant loss of a non-renewable, high-demand resource.

Silver Recovery Using Cooking Oils

- The traditional Silver extraction process generates **toxic waste** leading to high environmental and health risks.
- The new method used **organic unsaturated fatty acids** like **linolenic and oleic acids**, commonly found in sunflower, groundnut, olive, and other vegetable oils.
- These are combined with **30% hydrogen peroxide** to form a green solvent, which can dissolve silver under mild conditions.
- **Ethyl acetate**, a safer alternative to harsh chemicals, is used in a second step to separate and recover the silver.

INTERNATIONAL BIG CAT ALLIANCE

Context

At its first assembly, the International Big Cat Alliance (IBCA) endorsed Environment Minister Bhupender Yadav as President of the coalition.

About

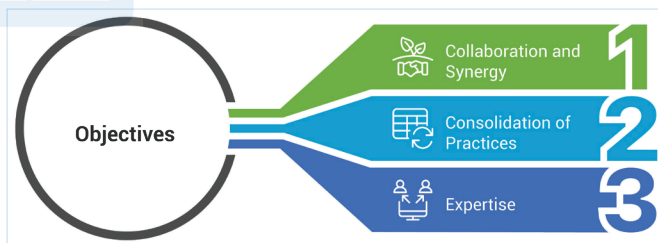
- The **Assembly**, which is the **apex body of the IBCA**, was attended by a **Ministerial delegation** from **9 countries**, viz.,

Bhutan, Cambodia, Kazakhstan, Liberia, Suriname, Somalia, Republic of Guinea, Eswatini and India ratifying decisions taken by the IBCA.

- The ratification of the **headquarter agreement** signed by IBCA with India enabled the body to establish its **headquarters and other offices** in India.

The International Big Cat Alliance (IBCA)

- It is a **treaty-based intergovernmental organization**, launched by India on the **50th anniversary of Project Tiger** (April 2023)
- An initiative of the National Tiger Conservation Authority, Ministry of Environment, Forest and Climate Change.
- It became a legal entity after **five countries**—Nicaragua, Eswatini, India, Somalia, and Liberia—had signed the Framework Agreement to formally become members of the IBCA; currently it is a coalition of **95 range countries**.
- The IBCA primarily **aims for conservation of seven big cats** namely **Tiger, Lion, Leopard, Snow Leopard, Cheetah, Jaguar and Puma**.
- The initiative seeks to **foster international collaboration** for the sustainable future of big cats, as well as underscores India's leadership and commitment to global wildlife conservation.



BONN CLIMATE CHANGE CONFERENCE

Context

The annual Bonn Climate Change Conference concluded in Germany, with over 5,000 government delegates and stakeholders in attendance.

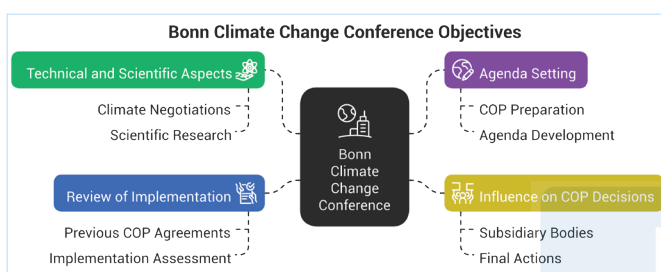
Bonn Climate Change Conference

- It is a key annual mid-year meeting under the **UN Framework Convention on Climate Change (UNFCCC)**, known as the **Sessions of the UNFCCC Subsidiary Bodies (SBs)**.
- Alongside the COP, it is one of the main UNFCCC climate summits.

- It brings together members of the Subsidiary Bodies, Indigenous representatives, international organisations, scientists, and civil society to support the implementation and review of climate agreements.

Additional Information

- The Bonn meeting is led by two permanent UNFCCC Subsidiary Bodies, the Subsidiary Body for Implementation (SBI) and the Subsidiary Body for Scientific and Technological Advice (SBSTA).
- The SBI reviews how UNFCCC decisions are implemented and facilitates support for developing countries. The SBSTA provides scientific advice and connects the IPCC's research with COP policymakers.



This Year's Agenda

- A key topic at the Bonn Conference is the **Global Goal on Adaptation (GGA)**, aimed at setting a unified global target for climate adaptation, similar to the 1.5°C goal for mitigation.
- Though introduced in the 2015 Paris Agreement, significant progress was only made at COP28 in Dubai, where a framework for defining adaptation goals was adopted.

REVISED GREEN INDIA MISSION PLAN

Context

Union Environment Minister Bhupender Yadav released the revised Green India Mission (GIM) document for 2021-2030 period.

The National Mission for a Green India

- The National Mission for a Green India (GIM) was launched in 2014 as one of the eight core missions under India's National Action Plan on Climate Change (NAPCC).
 - The mission aims to **protect, restore, and enhance forest and tree cover** in India while **addressing the challenges** of climate change through both adaptation and mitigation strategies.
 - The **Green India Mission** is being implemented over a **10-year period** from 2021 to 2030.
 - A portion of the plantation activities has already been completed.

- If the current trend of over **2 million hectares of annual tree plantation** continues, it could cover another **12 million hectares between 2025 and 2030**.

- Key Objectives and Targets:** One of the primary objectives of the mission is to **increase forest and tree cover on five million hectares** of forest and non-forest land.

- Additionally, the mission seeks to **improve the quality of forest cover on another five million hectares**.
- The mission also contributes to India's climate commitments by aiming to create an additional carbon sink of 2.5 to 3 billion tonnes of CO₂ equivalent, as part of its Nationally Determined Contributions (NDCs) under the Paris Agreement.

Revised Projections and Area Requirements

- According to the Forest Survey of India (FSI), if all planned restoration activities are implemented, India could potentially achieve a carbon sink of 3.39 billion tonnes of CO₂ equivalent.

- To meet this goal, the mission would need to increase forest and tree cover over an estimated 24.7 million hectares of land.

- Micro-Ecosystem Approach in Vulnerable Landscapes:** The mission proposes a 'micro-ecosystem' approach to address ecological restoration in vulnerable landscapes.

- These landscapes include the **Aravallis, Western Ghats, arid regions of Northwest India, mangroves, and the Indian Himalayan Region**.

- The approach involves **region-specific restoration practices** that are tailored to the ecological needs of each area.

- Key Strategies for Implementation:** Restoration will be carried out through the **recovery of open forests, agroforestry, and plantation on degraded lands**.

- Tree plantations will also be undertaken on **wastelands, along railway lines, and national highways** to increase green cover.

- The FSI has identified that the greatest potential for creating additional carbon sinks lies in **restoring forests that have been degraded in the last 15 to 20 years**.

Mission Governance Structure

- The **National Governing Council** of the Mission will be chaired by the **Union Environment Minister**.
- The **National Executive Council** will be headed by the **Secretary, Ministry of Environment**.
- The Directorate will be supported by a team of experts and secretarial staff.

Progress Made So Far

- Field-level interventions under the mission began in the **year 2015-16**.
- By **2020-21**, a total of **11.22 million hectares** of land had been brought under various plantation and restoration activities.

WORLD DAY TO COMBAT DESERTIFICATION & DROUGHT

Context

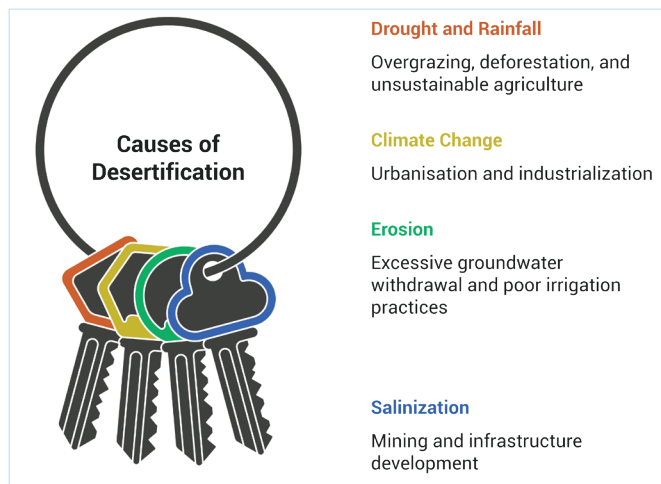
Recently, India joined the global community in observing the World Day to Combat Desertification and Drought, reaffirming its commitment to sustainable land management and climate resilience.

About

- It was established by the **United Nations General Assembly** in **1994**, observed **annually on June 17**.
 - It highlights the urgent need for sustainable land management and global action against desertification.
- Theme (2025):** 'Restore the Land. Unlock the Opportunities'

Desertification

- UNCCD (United Nations Convention to Combat Desertification)** defines land desertification as "land degradation in arid, semi-arid and dry sub-humid areas resulting from various factors, including climatic variations and human activities."
- Land degradation is accelerating, costing the global economy \$878 billion annually. Africa and Asia are worst affected, with the Sahel, Middle East, and Central Asia being major hotspots.
- According to **ISRO's Desertification and Land Degradation Atlas (2021)**, 29.7% of India's Total Geographical Area (TGA) is undergoing desertification or land degradation.



Impacts of Desertification

- Environmental:** Decline in soil fertility, biodiversity, and groundwater recharge.
 - Intensification of climate change via reduced carbon sequestration.
 - Increased frequency of dust storms and sand encroachment.

- Economic:** Reduced agricultural productivity and livelihood loss for farmers and pastoralists.
 - Increased rural poverty, food insecurity, and migration pressures.
 - Huge costs on restoration and irrigation infrastructure.
- Social:** Distress migration and resource-based conflicts.
 - Erosion of traditional knowledge and indigenous land management systems.
- Geopolitical:** Desertification contributes to transboundary tensions over water, land, and food security, particularly in fragile ecosystems like the Sahel or Indo-Gangetic plains.

India's Efforts

- National Action Plan on Climate Change (NAPCC):** National Mission on Sustainable Agriculture and Green India Mission address land degradation.
- National Afforestation Programme:** Through the **National Mission for a Green India (GIM)** and **Forest Fire Protection & Management Scheme (FFPM)**, India supports states in afforestation and forest conservation.
 - Compensatory afforestation under **Compensatory Afforestation Fund Management and Planning Authority (CAMPA)** is used to increase forest cover.
- Desert Development Programme (DDP):** Targets arid zones with integrated watershed management.
- Mangrove and Coastal Ecosystem Protection:** India implements annual **Management Action Plans** for conserving mangroves and coral reefs across coastal states and UTs under the **National Coastal Mission**.

International Frameworks

- UN Convention to Combat Desertification (UNCCD):** India has been a party since 1996; hosted COP-14 in 2019 in New Delhi.
- Bonn Challenge:** It is a global goal to bring 150 million hectares of degraded and deforested landscapes into restoration by 2020 and **350 million hectares by 2030**.
 - India pledged to restore 13 million hectares of degraded land by 2020 and an **additional 8 million hectares by 2030**.
- 2030 Agenda (SDG 15.3):** Committed to achieving Land Degradation Neutrality.

BAN ON SINGLE-USE PLASTIC

Context

The Kerala High Court has imposed a ban on single-use plastics in hilly tourist destinations and regulated the use of plastic bottles at large gatherings such as weddings and government events.

About

- **Single-use plastic** refers to any disposable plastic item which is designed to be used only once before it is thrown out or recycled and includes plastic forks and knives, plastic shopping bags, plastic coffee cup, lids, plastic water bottles, styrofoam, plastic take out containers and plastic straws.

India's Efforts in Tackling Plastic Waste

- The court clarified that the ban does not apply to the non-woven polypropylene bags with a thickness of 60 GSM (grams per square metre) and above.
- **Extended Producer Responsibility (EPR):** The Indian government has implemented EPR, making plastic manufacturers responsible for managing and disposing of the waste generated by their products.
- **Plastic Waste Management (Amendment) Rules, 2022:** It prohibits manufacture, import, stocking, distribution, sale and use of plastic carry bags having thickness **less than 120 microns**.
- **Swachh Bharat Abhiyan:** It is a national cleanliness campaign, which includes the collection and disposal of plastic waste.
- **Plastic Parks:** India has set up Plastic Parks, which are specialized industrial zones for recycling and processing plastic waste.
- **The Indian judiciary,** under **Article 21** of the Constitution (Right to Life), has proactively engaged in cases of environmental degradation.

IBAT ALLIANCE

Context

Integrated Biodiversity Assessment Tool (IBAT) Alliance doubled its investment in biodiversity data from 2023 to 2024.

About

- **Founded:** In 2008 at the IUCN World Conservation Congress.
- It is a collaboration of four major global conservation organisations like BirdLife International, Conservation International, IUCN (International Union for Conservation of Nature) & UNEP-WCMC (United Nations Environment Programme World Conservation Monitoring Centre).
- **Mission:** To provide data, tools, and guidance that help organizations act on biodiversity-related risks and opportunities.
- **Mandate:** IBAT data help monitor progress towards international biodiversity goals, including those outlined in the Kunming–Montreal Global Biodiversity Framework (adopted in Dec 2022)
- **Headquarters:** The UK

ENERGY TRANSITION INDEX (ETI)

Context

India ranked 71 on the World Economic Forum (WEF)'s Energy Transition Index (ETI) 2025, dropped from rank 63 in 2024.

Key Findings

- Sweden, ranked first in the Index followed by Finland, Denmark and Norway.
- China topped the "Emerging Asia" category.

About ETI

- The ETI is a tool developed by the **WEF, an international non-profit for public-private cooperation** set up in 1971 to quantify the yearly progress of nations in energy transition.
- The energy transition means moving from high carbon-emitting fuels such as coal to what are generally considered cleaner and renewable fuels such as solar power.
- It is based on 43 indicators from various global data sources.

GREEN DATA CENTRE

Context

Uttar Pradesh Chief Minister and Union Minister for Science & Technology, laid the foundation stone for a state-of-the-art Green Data Centre in Sahibabad, Ghaziabad.

About

- A **Green Data Centre** is a facility **designed to house computer systems and associated components** (like storage and networking) **while minimizing environmental impact** through energy efficiency, sustainable practices, and the use of renewable resources.
- It is set up through a **collaboration between Central Electronics Limited (CEL) (a PSU under the Ministry of Science & Technology) and ESDS.**
- **Purpose:** Strengthen India's digital self-reliance and infrastructure.
- **Sustainability Features:** Energy-efficient technologies and renewable energy sources.
 - ♦ Smart cooling systems, reflective roofing, rainwater harvesting.
 - ♦ Designed to minimize environmental impact and support 200 high-density racks per floor.
 - ♦ Tier III/TIA/Uptime-compliant for high availability and disaster resilience.

- The Green Data Centre is **expected to attract startups, enterprises, and government agencies**, while generating skilled jobs and fostering local innovation.

Central Electronics Limited (CEL)

- Established in **1974** to commercialize indigenous technologies.
- Developed **India's first solar cell in 1977**, and **India's first solar panel in 1978** and installed **India's first solar power plant in 1992**.
- Awarded **Mini Ratna status** recently.

SARISKA TIGER RESERVE

Context

A plan drawn up to rationalise the boundary of Sariska Tiger Reserve's Critical Tiger Habitat (CTH) may offer a lifeline to over 50 marble and dolomite mines that were closed following a Supreme Court order.

About

- If approved, the new boundaries **would exclude degraded peripheral areas**, moving mining operations outside the prohibited one-kilometre zone.
- **Sariska Tiger Reserve or Sariska National Park** is one of the biggest and most renowned Tiger reserves in Northern India.
 - ♦ The park is located in the **Alwar district of Rajasthan**.
- **Sariska Tiger reserve** used to be the hunting ground for the princely state of Alwar. But after Independence, The Sariska Forest was first notified as a **Wildlife Reserve in 1955**.
 - ♦ **1978**: It was declared as the 11th Tiger Reserve by the Government of India.
 - ♦ **1982**: The Sariska Wildlife Sanctuary was designated as Sariska National Park.

DHOLE (ASIATIC WILD DOG)

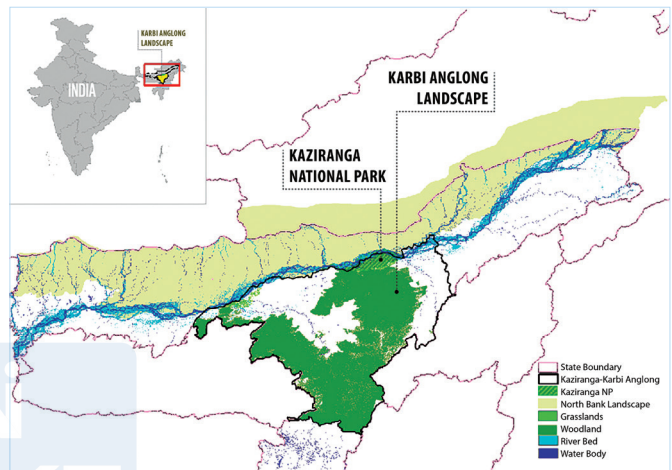
Context

*The Dhole, or Asiatic wild dog (*Cuon alpinus*), once thought locally extinct, was recently seen in Assam's Kaziranga-Karbi Anglong Landscape (KKAL), according to the Wildlife Institute of India (WII).*

About

- The last confirmed sighting of dholes in northeast India was reported from Nagaland in 2011.
- **Social Behaviour**: Highly social; typically form packs of up to 30 but may hunt alone or in pairs depending on prey availability.
- **Lifespan**: 10–13 years in the wild; up to 16 years in captivity.

- **Threats**: Major threats include habitat loss, prey depletion, persecution, disease, and competition with other predators — causing population fragmentation.
- **Distribution**: Now restricted to parts of Central and Eastern Asia, including India, Nepal, Bhutan, Bangladesh, China, Myanmar, Indonesia, Thailand, and Malaysia.
- **Conservation Status**: It is included in CITES – Appendix II
 - ♦ Dholes are classified as **endangered** on the IUCN Red List.



GLOBAL WARMING AND GLACIAL LOSS

Context

According to a new study published in the journal Science, If the world gets warmer by 2.7°C due to the current trajectory of climate policies, only 24% of the world's present-day glaciers will remain.

About

- They are essentially **large and thick masses of ice** that are formed on land due to the accumulation of snow over centuries.
- They hold **70 per cent of the Earth's freshwater**, currently encompassing around **10 percent** of the planet's land area.

Key Findings

- **Massive Glacier Loss**: The study cautioned that even if temperatures stopped rising today, the world's glaciers would still lose **39%** of their mass, compared to 2020 levels, and that would lead to a **sea level rise of 113 mm**.
- **Disproportionate Impact on Some Regions**: Glaciers in Scandinavia, the Rockies in Western Canada and the US, and the European Alps are particularly vulnerable.
- **High Sensitivity to Incremental Warming**: For every **0.1°C increase** in global temperature between 1.5°C and 3°C, there is a **2% global glacier loss**, with steeper regional impacts.

- **Hindu Kush Himalaya Under Threat:** The study estimates that only **25% of ice will remain** in the Hindu Kush Himalayan region at 2°C warming. This region feeds key river systems—Ganga, Indus and Brahmaputra—vital to South Asia.

Impact

- **Water Security in South Asia:** Himalayan glaciers serve as perennial sources for India's major rivers.
 - ♦ Their depletion threatens agricultural output, drinking water supplies, and hydroelectric generation, particularly during the dry season.
- **Sea-Level Rise and Coastal Risk:** The glacier melt contributes to global sea-level rise, endangering coastal populations, particularly in low-lying nations like the Maldives and coastal Indian cities.
- **Ecosystem Disruption:** Glacial melt impacts mountain biodiversity, alpine ecosystems, and can lead to **glacial lake outburst floods (GLOFs)**.
- **Socioeconomic Consequences:** Loss of water sources may lead to climate-induced migration, conflict over resources, and increased poverty in already vulnerable regions.

Initiatives

- **Paris Agreement 2015,** aims to limit global warming to well below 2°C, preferably to 1.5°C, above pre-industrial levels.
- **High Mountain Summit (WMO):** Recognizes mountains and glaciers as climate sentinels and promotes early warning systems and enhanced data sharing.
- **International Cryosphere Climate Initiative (ICCI):** Established in **2009** as a result of the **COP-15**, it is a network of senior policy experts and researchers that works with governments and organizations. It creates and implements initiatives designed to preserve the Earth's cryosphere.
- **National Mission for Sustaining the Himalayan Ecosystem (NMSHE)** is a government initiative aimed at addressing climate change and its impacts on the Himalayan region.
- **The Arctic Council:** It is a forum for Arctic countries to collaborate on environmental protection, sustainable development, and climate change mitigation in the Arctic region.
- **Global Ice Monitoring Initiatives** like the World Meteorological Organization's **Global Cryosphere Watch (GCW)** and the European Space Agency's **CryoSat mission** use satellite-based remote sensing to monitor changes in glaciers and ice sheets.

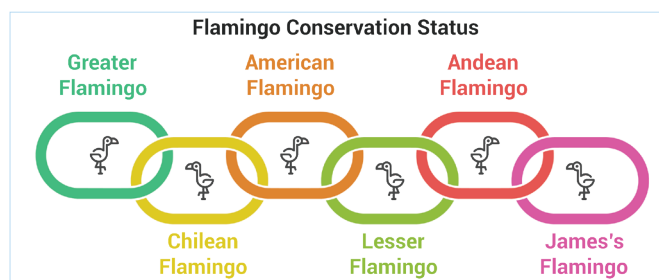
FLAMINGOS

Context

Recently, Flamingos have arrived in large numbers at the Chhaya pond in Porbandar town of Gujarat.

About

- They are known for their **striking pink feathers, long legs, and graceful necks**, though **they hatch with dark grey downy feathers**.
- They are **highly social animals** that often **live in large colonies**, occasionally assembling in groups that number in the thousands.
- **Habitat:** They live in a **wide variety of habitats** such as lagoons, estuaries, coastal and inland lakes, and mudflats.
 - ♦ These habitats often have harsh conditions, **including very salty water**.



- **Greater flamingos** usually **migrate to India** from **Israel, Afghanistan, and Pakistan**. The greater flamingo is the **State bird of Gujarat**.
- **Lesser flamingos** migrate from **Siberia** to **Mumbai** via the **Rann of Kutch** in Gujarat.

AMAZON RAIN FORESTS

Context

The recent release of the book "How to Save the Amazon", completed posthumously in honor of British journalist Dom Phillips, brings renewed global attention to the significance and fragility of the Amazon Rainforest.

Amazon Rain Forests

- **Location:** The region belongs to **nine nations** of the **South American** continent.
 - ♦ It is bounded by the **Guiana Highlands** to the north, the **Andes Mountains** to the west, the **Brazilian central plateau** to the south, and the **Atlantic Ocean** to the east.
- **Area Covered:** The majority of the forest, 60%, is in **Brazil**, followed by **Peru** with 13%, **Colombia** with 10%, and with minor amounts in **Bolivia, Ecuador, French Guiana, Guyana, Suriname and Venezuela**.
- **Climate:** Hot and humid climate with temperatures of **26-30°C** throughout the year.
 - ♦ There are no periodic seasons.
 - ♦ The precipitation ranges from 2,000 mm to 10,920 mm annually.
- **Tribes:** Yanomamo, Kayapo, Akuntsu, Matses, Tupi etc.

- **Fauna:** Anaconda, Jesus lizard, howler monkey, golden lion tamarin, jaguar, sloth, spider monkey, Amazon River dolphin, toucan and the scarlet macaw, poison dart frog and the glass frog.
- **Flora:** Moist broadleaf tropical rainforest like myrtle, laurel, palm, acacia, rosewood, Brazil nut, rubber tree, mahogany and Amazonian cedar.

Significance of the Rainforests

- **Lungs of the planet:** Rainforests generate about **20%** of the world's oxygen and its trees play a key role in reducing pollutant levels.
- **Fight climate change:** They act as a crucial buffer in the global fight against climate change as it holds tremendous capacity to store carbon.
- **Medicinal Properties:** Many of these plants contain bioactive compounds capable of treating diseases that are not yet curable, especially cancer.

Threat to the Forests

- **Climate Change:** Due to climate change the forests are witnessing various challenges like changes in rainfall patterns, pollution etc.
- **Deforestation:** The size of the Amazon forest shrank dramatically as a result of settlers' clearance of the land to obtain lumber and to create grazing pastures and farmland.
- **Wildfires:** It causes threat to the survival of ecosystems and biodiversity. The 2019 forest fires in the region have led to widespread devastation in the region.

GLOBAL TEMPERATURE TO BREACH 1.5°C

Context

The World Meteorological Organisation (WMO) has released the 'Global Annual to Decadal Climate Update (2025-2029)'.

Key Temperature Projections

- **2024:** The year 2024 was not only the **hottest year** on record but also the **first year to breach 1.5°C** above the 1850–1900 baseline.
- **2025–2029:** There is a **70% chance** that the **average global temperature for the 2025-2029 period** will exceed pre-industrial levels by **more than 1.5°C**.
 - ♦ **80% chance** of at least **one of the next 5 years** surpassing 2024 temperature.
 - ♦ **86% chance** that **at least one year** will cross the 1.5°C threshold.
 - ♦ **Average global temperature** predicted to be **between 1.2°C and 1.9°C** higher than avg. for 1850-1900.

- ♦ **Predicted precipitation patterns for May-Sep 2025-2029 to be wetter than average.**
- ♦ **1% chance** of at least one year **exceeding 2°C** of warming in the next five years.

Regional Climate Outlook

- **South Asia:** Expected to continue with **wetter-than-usual years** (except 2023), and this trend is expected to continue between **2025 and 2029**, although some seasons might still be dry.
- **Arctic:** Projected warming of **~2.4°C** over winters—**3.5x faster** than global average over the next five winters (November to March).
 - ♦ **Sea ice** is likely to shrink even more between 2025 and 2029 in parts of the Arctic like the **Barents Sea, Bering Sea and Sea of Okhotsk**.
- **Regional anomalies (2025–2029):**
 - ♦ **Wetter:** Sahel, Northern Europe, Alaska, Northern Siberia.
 - ♦ **Drier:** Amazon region.
- **India:** India received above-normal rainfall during the monsoon season in four of the past five years.
 - ♦ IMD predicts above-normal monsoon rainfall in 2025.

Paris Agreement

- It is a **legally binding international treaty** on climate change, adopted in **2015**, at the **COP21** to the United Nations Framework Convention on Climate Change (UNFCCC).
- It aims to **limit global warming to below 2 degrees Celsius** above pre-industrial levels, with efforts to **limit the increase to 1.5 degrees Celsius**.
- The 1.5°C limit is a goal, not a legal boundary.
 - ♦ A **permanent breach** implies **long-term warming over 20–30 years**, not a single year.
- The Paris Agreement emphasizes **nationally determined contributions (NDCs)** and encourages all countries to take climate action.
 - ♦ Countries must **review and update their NDCs every five years** to enhance their efforts and increase ambition over time.
 - ♦ **180 of the 195 UNFCCC** countries are yet to submit their next round of NDCs for 2031-35 before the **30th Conference of the Parties (COP30)**.

World Meteorological Organization

- It is an **intergovernmental organization** with a membership of **193 Member States** and Territories established in **1950**.
- It is the **specialised agency of the United Nations** for **meteorology** (weather and climate), operational hydrology and related geophysical sciences.
- It is headquartered in **Geneva**.
- Its supreme body is the **World Meteorological Congress**.

IMPACT OF IRON AEROSOL ON OCEAN

Context

Recent studies have highlighted the critical role of iron aerosols, largely originating from anthropogenic industrial emissions in East Asia, in influencing marine ecosystems.

About

- An aerosol is a suspension of fine solid particles or liquid droplets in a gas, most commonly air.
- These particles are typically small, often less than 1 micrometer in diameter, allowing them to remain suspended for extended periods.
- Aerosols can be natural, like fog or volcanic ash, or human-made, like the particles from burning fossil fuels.
 - ♦ They play a significant role in atmospheric processes, impacting climate, visibility, and air quality.

Key Points of the Study

- During spring, **strong westerly winds transport these airborne particles** across the North Pacific, depositing **iron into the surface ocean waters**.
- This anthropogenic contribution accounts for approximately 39% of surface ocean iron content during springtime, significantly boosting phytoplankton productivity, especially north of the **Transition Zone Chlorophyll Front (TZCF)** — a **natural divide between nutrient-rich and nutrient-poor waters**.
- The **surge in iron availability stimulates phytoplankton blooms**, which in turn **accelerate nitrate consumption**, pushing marine systems more rapidly toward nitrogen limitation.
- This leads to faster **depletion of nutrients and a consequent expansion of nutrient-poor zones**, threatening marine biodiversity and productivity.
- The situation is worsened by climate change, as **ocean warming and stratification reduce vertical nutrient mixing**.

Planktons

- Plankton are tiny organisms that drift in oceans, seas, and freshwater bodies. They are categorized into two main types:
 - ♦ **Phytoplankton:** These are microscopic plants, primarily algae, that **perform photosynthesis** and are crucial for **producing oxygen and serving as the base of aquatic food webs**.
 - ♦ **Zooplankton:** These are small animals or the larval stages of larger animals. They feed on phytoplankton and other zooplankton.
- They are important for nutrient cycling and serve as food for many marine species, including fish and whales.

Plankton Bloom

- A **plankton bloom** refers to a **sudden increase in the population of plankton**—both phytoplankton and zooplankton in aquatic ecosystems.

BUILDING-INTEGRATED PHOTOVOLTAICS

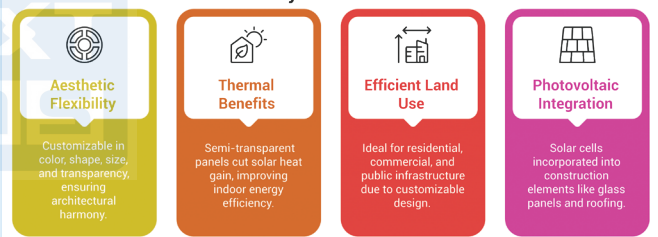
Context

Recently, it has been observed that India has the potential to scale-up Building-Integrated Photovoltaics (BIPV) adoption due to its strong manufacturing base and commitment to sustainability.

About

- Building-Integrated Photovoltaics (BIPV) refers to the **integration of photovoltaic (solar) cells** into the **building envelope** — including glass panels, rooftops, railings, façades, and cladding.
- These **systems replace conventional materials and simultaneously generate electricity**, effectively turning buildings into power generators.

Key Features



Importance for India

- BIPVs are crucial for India's urban future due to limited rooftop space and growing population.
- They allow efficient use of building surfaces like façades and balconies for solar power generation, especially in high-rises.
 - ♦ For *example*, a south-facing façade can produce nearly four times more power than a rooftop system.
- Sunlight is absorbed by **these cells and converted into electricity**, feeding directly into the building's power system.
- The panels help **reduce heat ingress, cutting down on air-conditioning demand**.
- BIPVs can also benefit homes without rooftop access, as seen in Germany, where balcony solar panels significantly cut electricity bills.

Challenges

- BIPV adoption in India has been limited by high initial costs, policy gaps, inadequate technical capacity, and reliance on imports.

- Low awareness, lack of dedicated incentives, and absence of clear standards also pushed BIPV out of early building-design considerations.

Way Forward

- With an **estimated potential of 309 GW** in existing buildings and vast urban growth ahead, prioritizing BIPV is key for India's clean energy goals, requiring strong policy, innovation, and market support.
- India could increase subsidies (similar to Seoul's 80% cost support), expand existing solar schemes to include BIPV for commercial and industrial sectors, and embed BIPV requirements in building codes.
- Pilot projects, public-private partnerships, and boosting local manufacturing through incentives and R&D are vital.
- Financial models like Renewable Energy Service Companies and long-term power agreements can improve viability.

FLU GAS DESULPHURISATION (FGD)

Context

A high-powered committee of experts has recommended doing away with a decade-long policy of mandating equipment, called Flu Gas Desulphurisation (FGD) units, in all coal-fired Thermal Power Plants (TPP).

Committee's Findings

- SO₂ levels in ambient air across the country are around 10-20 micrograms/cubic metre, well below India's air quality norms of 80;
- Stack heights and climatic conditions in India naturally disperse SO₂ emissions, limiting local air quality threats.
- Indian coal is low in sulphur; SO₂ levels in cities near plants with operational FGD units do not differ significantly from those without these units.

About Flu Gas Desulphurisation (FGD)

- **Definition:** Flue Gas Desulphurisation is a set of technologies used to remove sulphur dioxide (SO₂) from the exhaust flue gases of fossil-fuel power plants—especially coal-based thermal power stations.
- **Introduction:** FGD are mandated by the Ministry of Environment, Forest and Climate Change (MoEFCC) via a **notification in 2015**.
 - ♦ Required all thermal power plants to install **FGD units by 2018**, though deadlines have been **extended to 2027–2029**, in a phased manner based on location and capacity.
- **Working:** Flue gases are passed through a scrubber where they contact a slurry of **limestone (CaCO₃)**. SO₂ reacts with CaCO₃ to form calcium sulphite, which is then **oxidized to calcium sulphate dihydrate (gypsum)**.

- ♦ Electrostatic precipitators (ESPs) and Selective Catalytic Reduction (SCR) units are used to remove fly ash and NO_x, respectively, before FGD treatment.
- **Challenges:** High capital cost, Water intensive

ARAVALLI GREEN WALL PROJECT

Context

The Prime Minister launched the Aravalli Green Wall project to combat the threat of desertification.

About

- It is a **flagship initiative** launched by the **Ministry of Environment, Forest and Climate Change (MoEFCC)** to combat land degradation.
- The project aims to establish a **5-km-wide green buffer** along the entire **700-km stretch of the Aravalli Range** (one of the oldest in the world), which runs through **Gujarat, Rajasthan, Haryana, and Delhi**.
- By planting trees along the Aravalli hill range, the green belt that is being planned from **Porbandar in Gujarat to Panipat in Haryana** would assist in restoring degraded land.
- It will serve as a barrier for dust from the western Indian deserts.
- The idea was influenced by the 2007 implementation of **Africa's "Great Green Wall"** project, that runs from **Senegal in the west to Djibouti in the east**.
- The project directly contributes to India's commitments under various international conventions, including the **United Nations Convention to Combat Desertification (UNCCD)**, the **Convention on Biological Diversity (CBD)**, and the **United Nations Framework Convention on Climate Change (UNFCCC)**.



WORLD ENVIRONMENT DAY 2025

Context

World Environment Day is celebrated every year on June 5, is a global initiative to raise awareness and drive action for environmental protection.

Background

- **1972:** First UN Conference on the Human Environment in Stockholm, Sweden, with the **theme of 'Only One Earth'**.
 - ♦ It resulted in the adoption of the **Stockholm Declaration** and the **Action Plan for the Human Environment**.

- ♦ The **United Nations Environment Programme (UNEP)** designated 5th June of every year as World Environment Day in 1973 to encourage global participation in addressing environmental challenges.

World Environment Day 2025:

- ♦ **Host Country:** Republic of Korea
- ♦ **Theme:** #BeatPlasticPollution, emphasizing the urgent need to tackle plastic waste and its devastating impact on ecosystems.

TWO NEW RAMSAR SITES ADDED

Context

On World Environment Day 2025 two wetlands from Rajasthan—Khichan and Menar—were designated as new Ramsar Sites, taking India's total sites to 91.

About

- ➔ Now **Rajasthan** now has **four Ramsar sites**, while **Tamil Nadu** continues to lead with the **highest number (20 sites)** in India.
- ➔ The **Ramsar Convention's definition for wetlands includes:** "areas of marsh, fen, peatland or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, including areas of marine water the depth of which at low tide does not exceed six metres".
- ➔ **Human-made wetlands:** Fish and shrimp ponds, farm ponds, irrigated agricultural land, salt pans, reservoirs, gravel pits, sewage farms and canals.

What is the Ramsar Convention?

- ➔ The Ramsar Convention is one of the oldest **inter-governmental accords** signed by member countries to preserve the ecological character of their wetlands of international importance.
- ➔ It was signed on **February 2, 1971** in **Ramsar, Iran** and came into force in 1975.
 - ♦ India became a signatory to the **Ramsar Convention in 1982**.

Newly Designated Ramsar Sites in Rajasthan

- ➔ **Menar Wetland, Udaipur:** A freshwater monsoon wetland complex comprising:
 - ♦ **Three ponds:** Braham Talab, Dhand Talab, and Kheroda Talab
 - ♦ **Seasonal agricultural lands** that flood during monsoon.
 - ♦ **Biodiversity:** White-rumped vulture, Long-billed vulture, Indian flying foxes.
- ➔ **Khichan Wetland (Phalodi) Jodhpur:** Located in the northern **Thar Desert**. It comprises; **Ratri Nadi (river)**, **Vijaysagar Talab (pond)**, **Riparian zones** and **scrublands**.

- ♦ **Biodiversity:** It supports **150+ bird species** and is notable for migratory **demoiselle cranes** with over **22,000 individuals** arriving each winter.

EnviStats INDIA 2025

Context

The Ministry of Statistics and Programme Implementation (MoSPI) has released the 8th edition of EnviStats India 2025, offering a detailed statistical assessment of India's environmental landscape.

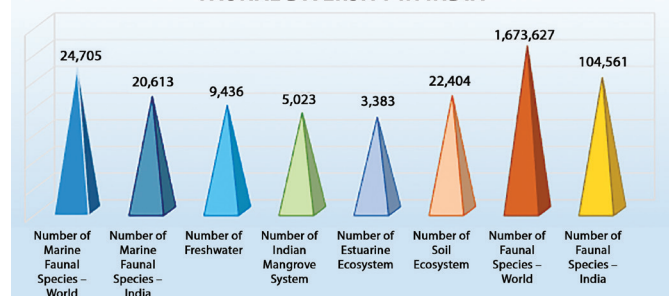
About

- ➔ Launched in 2018, EnviStats India is an annual publication prepared by the National Statistics Office (NSO).
- ➔ It follows the UN's Framework for the Development of Environment Statistics (FDES) 2013, ensuring global comparability and standardisation.
 - ♦ A comprehensive and integrative framework developed by the **United Nations**.
 - ♦ Offers a structured approach to collect, compile, and present environment statistics at the national level.
- ➔ The report is a critical tool for policymakers, environmentalists, and researchers, covering data across a wide spectrum of environmental domains.

Key Highlights of the Publication

- ➔ The annual mean temperature increased from **25.05°C in 2001** to **25.74°C in 2024**.
 - ♦ Similarly, the annual minimum and maximum temperature rose from **19.32°C to 20.24°C** and **30.78°C to 31.25°C** respectively, during the same period.
- ➔ The annual rainfall data from 2001 to 2024 highlights significant year-to-year variability influenced by monsoon patterns. Despite this variability, the data does not indicate any clear long-term upward or downward trend in total annual rainfall
- ➔ Globally, there are 2,47,605 marine faunal species, while India accounts for 20,613.

FAUNAL DIVERSITY IN INDIA



- Inland fish production has increased from 61.36 lakh tonnes in 2013-14 to 139.07 lakh tonnes in 2023-24, possibly indicating inland aquaculture and freshwater fisheries.
- The Environment Sustainability Sector shows the highest expenditure share as **Rs. 2433.24 crore in 2021-22**.
- The Conservation of Natural Resource Sector shows an upward trend and the Agro-Forestry Sector exhibits the lowest expenditure among the three sectors: **Agro-Forestry, Conservation of Natural Resources, and Environment Sustainability**.

DISASTER RESILIENT INFRASTRUCTURE

Context

The Prime Minister Shri Narendra Modi addressed the International Conference on Disaster Resilient Infrastructure 2025.

International Conference on Disaster Resilient Infrastructure 2025

- It brings together governments, organizations, institutions, the media, and infrastructure stakeholders to strengthen the global discourse on disaster and climate-resilient infrastructure.
- It is being hosted in **Europe for the very first time**.
- It is aligned with the United Nations Office for Disaster Risk Reduction (UNDRR) Global Platform on Disaster Risk Reduction (GPDRR) in Geneva, and third U.N. Oceans Conference (UNOC3).
- The theme, **'Shaping a Resilient Future for Coastal Regions'**, highlights the vulnerability of coastal areas and islands to natural disasters and climate change.
 - ♦ Recent events like **Cyclone Remal** in India and Bangladesh, **Hurricane Beryl** in the Caribbean, **Typhoon Yagi** in South-east Asia, **Hurricane Helene** in the United States, **Typhoon Usagi** in Philippines and **Cyclone Chido** in parts of Africa.
 - ♦ Such disasters caused damage to lives and property.

Key Points

- Prime Minister Narendra Modi recalled India's experiences with past disasters, such as the **1999 super-cyclone** and the **2004 tsunami**, noting the country's progress in building cyclone shelters and a tsunami warning system.
- He praised the **Coalition for Disaster Resilient Infrastructure's (CDRI)** work with **25 Small Island Developing States** and welcomed the African Union's involvement.
 - ♦ He outlined **five key priorities**: integrating disaster resilience in education, creating a global digital repository of best practices, ensuring innovative financing for developing

nations, supporting Small Island Developing States, and strengthening early warning systems.

- **African Union joins India's Coalition for Disaster Resilient Infrastructure** at international conference on disaster infrastructure.

Coalition for Disaster Resilient Infrastructure (CDRI)

- It was **launched in 2019** by the Government of India with **United Nations Office for Disaster Risk Reduction** support.
- It is a global partnership of governments, UN agencies, development banks, the private sector, and academia.

54	163	\$21.52
Members	Projects	Funding

- Its goal is to **enhance the resilience of infrastructure** to climate and disaster risks, supporting sustainable development and the achievement of the SDGs.
- It helps countries strengthen both existing and future infrastructure in line with the SDGs, Paris Agreement, and Sendai Framework.

WILDLIFE PROTECTION ACT (WLPA)

Context

The Kerala government has urged the Union Ministry of Environment, Forests and Climate Change to amend the Wildlife (Protection) Act, 1972, so it can be allowed to kill wild animals that foray into human habitats.

Kerala's Demands to the Union Government

- **Amend WLPA, 1972** to allow culling of "man-eating" or dangerous wild animals without excessive procedural delays.
- **Declare Wild Boars as Vermin under Section 62** of the Act, permitting their hunting in designated areas for a limited time.
- **Remove Bonnet Macaques from Schedule I**, thus allowing wildlife authorities to take direct action like capture and relocation.

Reasons for increase in Human-Wildlife Conflict

- **Degraded Habitats**: Deforestation, developmental activities, and agricultural expansion have shrunk and fragmented wildlife habitats.
- **Rise in Certain Animal Populations**: Explosion in the population of wild pigs and monkeys, especially bonnet macaques, has worsened the conflict.
- **Human Activities**: Grazing of cattle in forest areas and changes in cropping patterns attract wild animals.
- **Ecological Imbalances**: Decline in top predator species due to historical hunting policies has led to an unnatural increase in herbivorous species.

The Wild Life (Protection) Act, 1972

The **Wildlife Protection Act (WPA), 1972** of India categorizes species into six schedules, each providing different levels of protection.

➤ Schedule I:

- ♦ **Protection:** Highest level; hunting/trade strictly prohibited
- ♦ **Examples:** Bengal Tiger, Snow Leopard
- ♦ **Penalty:** 3–7 years imprisonment, ₹ 25,000+ fine

➤ Schedule II:

- ♦ **Protection:** High; some exceptions with permission
- ♦ **Examples:** Indian Cobra, Jackal, Owls
- ♦ **Penalty:** Up to 3 years imprisonment/fine up to ₹1 lakh

➤ Schedule III:

- ♦ **Protection:** Moderate; regulated hunting/trade
- ♦ **Examples:** Nilgai, Wild Pig
- ♦ **Penalty:** Up to 3 years/fine

➤ Schedule IV:

- ♦ **Protection:** Similar to Schedule III
- ♦ **Examples:** Vultures, Flamingos
- ♦ **Penalty:** Same as Schedule III

➤ Schedule V:

- ♦ **Protection:** Vermin; hunting allowed
- ♦ **Examples:** Rats, Crows, Fruit Bats
- ♦ **Penalty:** Minimal or none

➤ Schedule VI:

- ♦ **Protection:** Rare/endemic plants; license required
- ♦ **Examples:** Red Vanda, Pitcher Plants
- ♦ **Penalty:** Fines/legal action

Procedure to declare Vermin:

- **State Government's Request:** A state government can request the Central Government to declare a wild animal as vermin if it is causing significant issues like property damage, crop damage, or posing a threat to human life or livestock.
- **Central Government Notification:** The Central Government can, by notification, declare a wild animal (except those in Schedule I and Part II of Schedule II) as vermin for a specific area and time period.
- **Loss of Protection:** Once declared vermin, the animal loses its protection under the Wildlife Protection Act and can be hunted or culled without penalty.

Concerns

- **Ecological Disruption:** Mass culling creates vacuum in the food chain and affects predator-prey balance.
- **Risk to Non-target Species:** Traps for wild boars have caught tigers and leopards in states like Karnataka.
- **Lack of Data:** Many decisions are made without comprehensive data on species population, crop damage, or conflict hotspots.

➤ Ethical Concerns:

- ♦ **Sanctity of Animal Life:** Unjustified or mass culling raises moral concerns about the right to life of wild animals.
- ♦ **Species Discrimination:** Labelling certain animals as 'vermin' can lead to systemic extermination based on human convenience, not ecological necessity.
- ♦ **Welfare Violations:** Lethal traps and inhumane killing methods often cause unnecessary suffering to both target and non-target species.

30X30 TARGET

Context

A new report has revealed that the world needs to invest \$15.8 billion annually to meet the 30x30 target.

About

- The 30x30 target is **one of 23 goals** outlined in the **Kunming-Montreal Global Biodiversity Framework**, adopted by 196 countries in 2022, to halt and reverse nature loss.
- It aims to conserve and manage at least 30 per cent of terrestrial, inland water, marine, and coastal areas through protected areas (PA) and other effective area-based conservation measures (OECMs) by 2030.
- The 30x30 target is more ambitious than its predecessor **Aichi Target 11**, which aimed for the protection of **17% of land and 10% of coastal and marine areas**.

ECO-SENSITIVE ZONE

Context

A municipal solid-waste incinerator set up in Gangotri (Uttarkashi, Uttarakhand) within the Bhagirathi Eco-Sensitive Zone (BESZ) has triggered criticism among environmental activists.

About

- Eco-Sensitive Zones (ESZs) are areas notified by the **Ministry of Environment, Forests and Climate Change (MoEFCC)** under the **Environment (Protection) Act, 1986**.
- ESZs are designated areas around protected areas like national parks and wildlife sanctuaries.
- Their primary purpose is to **protect the fragile ecosystems** of these protected areas by regulating human activities in the surrounding areas.
- The extent of ESZ can go up to **10 km** around the protected area. In exceptional cases, even beyond 10 km.
- **Activities in ESZs are classified as:**

- ♦ **Prohibited:** Commercial mining, setting up of major hydroelectric projects, setting up of polluting industries (red category).
 - ♦ **Regulated:** Construction, tourism, tree felling, vehicular traffic.
 - ♦ **Permitted:** Agriculture, organic farming, local community use.
- ➔ In June 2022, the Supreme Court of India mandated that all national parks and wildlife sanctuaries within protected forests must have a minimum Eco-Sensitive Zone (ESZ) of 1 km.

CLIMATE-RESILIENT FARM PONDS

Context

In Rajasthan's Amber block, climate-resilient farm ponds in Kukas village aim to conserve 10 crore litres of monsoon run-off, ensuring sustainable irrigation for farmers.

About

- ➔ Climate-resilient farm ponds are **water bodies designed to collect and store rainwater**, enhancing water security and promoting climate-resilient agriculture, especially in areas with limited water resources or erratic rainfall patterns.
- ➔ These are around 10-foot deep, plastic-lined water retention structures, built on 5% of individual farmers' land, and surrounded by protective fencing.

EMPEROR PENGUINS

Context

Climate change is causing Antarctic sea ice to melt early, threatening the survival of Emperor Penguins.

Emperor Penguin (*Aptenodytes Forsteri*)

- ➔ It breeds at about 54 colonies around Antarctica, with the largest colonies in the **Ross Sea and Weddell Sea**.
- ➔ It is the **biggest in the 18 species of Penguin** found today, and one of the largest of all birds.
- ➔ It is uniquely adapted to survive harsh conditions, with temperatures plunging to a bone-chilling -50°C and winds reaching up to 200 km/h.
- ➔ They are threatened by climate change, which reduces sea ice concentration, thickness, and duration, influenced by factors like wind and ocean conditions.
- ➔ **IUCN Red List Status** is Near Threatened

Penguin

- ➔ They are a group of aquatic flightless birds. Every year the 25th of April is observed as World Penguin Day.
- ➔ Live primarily in the Southern Hemisphere with only one species, the Galapagos penguin, found north of the equator.

FOREST RIGHTS ACT, 2006

Context

Recently, the Union Ministry of Tribal Affairs has sanctioned the establishment of 324 district-level FRA cells and 17 state-level FRA cells under the Dharti Aba Janjatiya Gram Utkarsh Abhiyaan to 'facilitate' implementation of Forest Rights Act, 2006.

What Are FRA Cells?

- ➔ FRA Cells are **State and District-level administrative units** created under the **Dharti Aba Janjatiya Gram Utkarsh Abhiyaan (DAJGUA)** to accelerate the implementation of the **Forest Rights Act, 2006 (FRA)**.
- ➔ These cells are **not created under the FRA 2006 legislation**, but under an administrative scheme by the Ministry of Tribal Affairs.
- ➔ The newly established FRA cells aim to facilitate the implementation of the **FRA, particularly in districts and states** where a **large number of claims remain pending**.
- ➔ These cells also aim **to assist claimants and Gram Sabhas** in preparing paperwork for FRA claims, managing data efficiently, and streamline administrative processes.
- ➔ These also aim to accelerate the disposal of pending claims, especially those delayed even after **District Level Committee (DLC)** approval.
- ➔ These cells will **not interfere with decisions** made by the Gram Sabha, Sub-Divisional Level Committees (SDLCs), District Level Committees (DLCs), or State government departments.

Current Status

- ➔ About **14.45% of the 51.11 lakh FRA claims** across 21 states and union territories remain **pending**.
- ➔ **Least FRA Pendency:** Chhattisgarh, Madhya Pradesh, Maharashtra, and Jharkhand
 - ♦ However, in **Assam (over 60%)**, and in **Telangana (around 50.27%)** claims are pending.
- ➔ The **highest number of district FRA cells** sanctioned so far has been in **Madhya Pradesh**, followed by Chhattisgarh, Telangana, Maharashtra, Assam, and Jharkhand.

About the Forest Rights Act (FRA), 2006

- ➔ It is officially known as the **Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006**.
- ➔ It was enacted to recognize the **rights of Scheduled Tribes and Other Traditional Forest Dwellers (OTFDs)** over forest land.
- ➔ It ensures that **Scheduled Tribes (STs) and other traditional forest dwellers** can **legally access and manage forest resources** while contributing to biodiversity conservation.
- ➔ It impacts an estimated 150 million forest-dwelling people, 40 million hectares of land, and 1,70,000 villages.

Concerns Over New FRA Cells

- **Parallel Governance:** Creation of FRA cells outside the statutory FRA framework may lead to a dual structure, diluting accountability.
- **Lack of Legal Backing:** The FRA cells have no statutory authority, unlike SDLCs and DLCs.
- **Potential Duplication:** May lead to bureaucratic overlap, blurring of accountability

BLUE NDC CHALLENGE

Context

France and Brazil launched a landmark international initiative Blue Nationally Determined Contributions (NDC) Challenge.

About

- It urges countries to embed ocean-centric actions into their climate plans, known as Nationally Determined Contributions (NDCs).
- The challenge aims to dramatically scale up ocean-focused climate action ahead of the 30th Conference of Parties (COP30) to the United Nations Framework Convention on Climate Change (UNFCCC) in Belem, Brazil.
- The initiative is supported by **various organizations** like Ocean Conservancy, the Ocean & Climate Platform, the World Resources Institute (through the Ocean Resilience and Climate Alliance - ORCA), and WWF-Brazil.

Significance of Oceans in Climate Action

- **Carbon Sequestration:** Oceans absorb over 25% of global CO₂ emissions and 90% of excess heat generated by human activity, making them critical in mitigating climate change.
- **Blue Carbon Ecosystems:** Coastal ecosystems like mangroves, seagrasses, and salt marshes **store carbon at a rate up to five times higher than terrestrial forests.**
- **Biodiversity:** Oceans are home to a vast diversity of life forms, and protecting marine ecosystems is essential for maintaining biodiversity, which in turn ensures the resilience of the ecosystem to climate impacts.
- **Livelihood and Food Security:** Oceans support over 3 billion people worldwide who depend on marine resources for food, livelihoods, and economic activities.

Initiatives for Ocean Conservation

- **Ocean Cleanup Project:** Launched in 2013, The Ocean Cleanup is a non-profit organization focused on developing advanced technologies to remove plastic pollution from the ocean.

- **United Nations Decade of Ocean Science for Sustainable Development (2021-2030):** Aims to promote ocean science as a key tool for sustainable development, environmental protection, and climate action.
- **High Seas Treaty (Agreement on Biodiversity Beyond National Jurisdiction - BBNJ Agreement):** Adopted in 2023, this landmark legally binding agreement aims to protect marine biodiversity in international waters.
- **Blue Carbon Initiatives:** It refers to the carbon captured by coastal and marine ecosystems such as mangroves, seagrasses, and salt marshes.

NEW SPECIES OF JUMPING SPIDER

Context

*Researchers in southern India have discovered a new species of jumping spider, **Spartaeus karigiri**, marking the first time the genera **Spartaeus** and **Sonoita**.*

Jumping Spiders

- They belong to the Salticidae family which is the largest spider family with over 5,000 species.
- They are small to medium-sized spiders known for their dense iridescent scales and large front median eyes.
- They inhabit **diverse environments**, from vegetation and rocky areas to buildings, and are active daytime hunters relying on their keen eyesight to catch prey like ants and fruit flies.
 - ♦ They occur worldwide, except for Greenland and Antarctica.
- Unlike many spiders, **they don't spin webs** for trapping prey but **use silk as an anchor line and create silken retreats for molting or resting.**

New Species: **Spartaeus Karigiri**

- The study found male spiders hiding in rocky crevices in Karnataka's Karigiri region and females guarding eggs, with additional specimens spotted in Tamil Nadu.
- It marks the first time that the genera **Spartaeus** and **Sonoita** (specific groups within a subfamily) have been found in India.
 - ♦ It was previously known only from Southeast Asia and Africa.
- These findings increase India's **Spartaeinae** spider count to 15 species across 10 genera, highlighting the country's rich but still largely unexplored spider biodiversity.

Additional Information

- The research also identified **Sonoita cf. lightfooti** in Karnataka, raising questions about its origin.
- Additionally, the study clarified that **Marpissa gangasagarensis** is the same species as **Phaeacius fimbriatus**, resolving a longstanding taxonomic confusion.

'GREEN ARABIA' HYPOTHESIS

Context

New research supports the 'Green Arabia' hypothesis, showing that the Arabian Peninsula experienced several humid phases over the last 8 million years.

About

- The Green Arabia hypothesis proposes that the Arabian Peninsula, now a desert, experienced periods of significantly wetter and greener conditions over the past 8 million years, potentially acting as a corridor for human and animal migration between Africa and Eurasia.
- This challenges the traditional view of Arabia as a consistent barrier to migration due to its arid climate.
- These wet periods, confirmed by **mineral cave formations (speleothems)**, turned the **desert into a lush landscape**, allowing animals and early humans to migrate between Africa and Eurasia.

Arabia Peninsula

- It is a piece of land in **southwestern Asia**. It is the original homeland of the Arab people. It is also the birthplace of the religion of Islam.
- It also includes Saudi Arabia, Kuwait, Oman, Qatar, the United Arab Emirates, Yemen, Bahrain, and parts of Jordan and Iraq.
- It is bordered by the Red Sea, Gulf of Aden, Arabian Sea, Gulf of Oman, and Persian Gulf.
- The Arabian Desert covers almost all of the peninsula.
- The recent findings challenge the belief that Arabia was always barren and suggest it played a key role in human evolution and migration.
 - ♦ This research also offers insights into how climate change has shaped, and could again shape, human history.

TAIWAN STRAIT

Context

Taiwan detected 50 Chinese military aircraft around the island, days after a British naval vessel sailed through the sensitive Taiwan Strait.

About Taiwan Strait

- **Location:** The Taiwan Strait also known as the **Formosa Strait** or the **Tai-hai (the Tai Sea)** separates mainland China (Fujian Province) from the island of Taiwan.
 - ♦ It connects the **South China Sea to the East China Sea** and is a vital shipping lane.
 - ♦ It is approximately **180 kilometers** wide at its narrowest point.
- **Geopolitical Tensions:** China views Taiwan as a renegade province and asserts its claim over the island and the strait.



COOK ISLANDS

Context

New Zealand had suspended millions of dollars in aid to the Cook Islands over concerns about the latter's deepening ties with China.

About

- **Political Status:**
 - ♦ A self-governing nation in free association with New Zealand. It was formerly a dependent New Zealand colony from 1901 to 1965.

- ♦ Citizens of the Cook Islands are also citizens of New Zealand.

Administrative Centre:

- ♦ **Avarua**, located on the island of **Rarotonga**.

Geography:

- ♦ Situated in **Polynesia, Oceania**, in the South Pacific Ocean.
- ♦ Located **northeast of New Zealand**, between **American Samoa** and **French Polynesia**.
- ♦ It comprises **15 islands**, formed by **volcanic activity**, with a total land area of approximately **236.7 sq km**.



ENHANCED ROCK WEATHERING TECHNIQUE

Context

Enhanced Rock Weathering method is gaining traction as tech companies, airlines, and fashion brands seek to buy carbon credits from ERW projects to offset their own emissions, making it a potentially lucrative business.

About

- It is a climate change mitigation technique to take carbon out of the air and store it in rocks.
- This method accelerates the natural process of weathering by **spreading finely ground quick-weathering rocks** like basalt on farmland and thus **helps capture carbon dioxide** from the atmosphere by converting it into stable forms like bicarbonate and limestone.
- It offers additional benefits such as **improving soil health** and **potentially preventing downstream CO₂ emissions** by neutralising acidic runoff.
- It is one of several "carbon removal" techniques that target Carbon Dioxide (CO₂), the most important climate-warming greenhouse gas humans have been adding to the atmosphere.

Risks

- ERW is generally considered safe as it accelerates a natural process, but some rocks may contain toxic heavy metals, and handling fine rock dust requires protective gear.
- The main concern is inaccurate measurement of carbon capture, which could lead to overestimated carbon credits.
- If companies offset emissions based on inflated ERW figures, it may result in a net increase in atmospheric CO₂.

LUXOR

Context

Egyptian archaeologists have discovered three ancient tombs in the Dra Abu al-Naga necropolis in Luxor, dating back to the New Kingdom period (1550–1070 BC).

Luxor and discovery of tombs

- It is located on the **east bank of the Nile River in Egypt**.
- It is home to numerous historic landmarks, including the Luxor Temple, Karnak Temples, the Valley of the Kings and Queens, and several funerary temples and noble tombs.



QATAR

Context

Iran launched missile attacks on the al-Udeid Air Base in Qatar and the Ain al-Assad base in Iraq in retaliation for U.S. strikes on Iranian nuclear facilities.

Qatar (Doha (Al-Dawhah))

- It is an independent emirate on the **west coast** of the **Persian Gulf**.
- It shares a border with eastern **Saudi Arabia** where the peninsula connects to the mainland and is north and west of the **United Arab Emirates**.
 - ♦ The island country of Bahrain lies some 25 miles (40 km) northwest of Qatar.

- The **economy of Qatar** is based largely on the production and export of petroleum and natural gas.



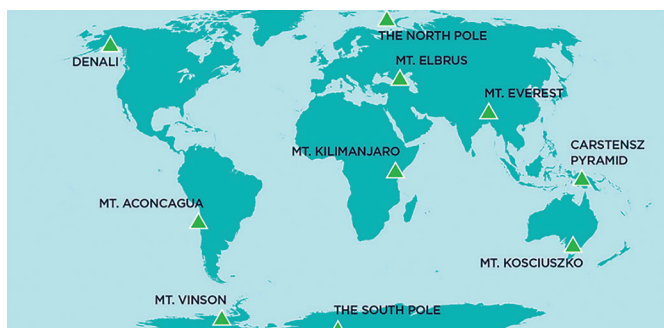
SEVEN SUMMITS

Context

Hyderabad teenager Vishwanath Karthikey Padakanti has become the youngest Indian and the second youngest person in the world to complete the legendary 7 Summits challenge.

About

- The Seven Summits are defined as the highest peaks on each of the seven continents; it ranks among the most prestigious in global mountaineering.
- The **seven mountain peaks** are Mt. Everest (Asia), Mt. Kilimanjaro (Africa), Mt. Elbrus (Europe), Mt. Aconcagua (South America), Mount Kosciuszko (Australia), Mt. Vinson (Antarctica) and Mt. Denali (North America).
 - ♦ Some people define 'continent' differently leading to an alternate 'seventh summit' i.e. **Australia: Mount Kosciuszko or Australasia: Carstensz Pyramid.**
- **Mount Everest in Asia is the tallest** of the seven, while **Mount Kosciuszko in Australia is the shortest.**
 - ♦ **The Descending order of Summits:** Mount Everest, Aconcagua, Denali, Mount Kilimanjaro, Mount Elbrus, Vinson Massif, Carstensz Pyramid and Mount Kosciuszko.



Additional Information

- **Jordan Romero**, an American mountaineer, became the **youngest person** in the world to complete the Seven Summits upon climbing **Vinson Massif** in December 2011, at the age of 15 years, 5 months, and 12 days. He broke the previous record held by George Atkinson.
- **The first person** to complete the Seven Summits was Richard Bass, an American businessman and mountaineer, in 1985.

PARAGUAY

Context

Paraguay President Santiago was on a state visit to India.

About

- It is a **landlocked country** in South America.
- It is bordered by Argentina to the south and southwest, Brazil to the east and northeast, and Bolivia to the northwest.
- Geographically, the **Tropic of Capricorn** passes through Paraguay.
- Paraguay is a member of **MERCOSUR**, the South American trade bloc that includes Brazil, Argentina, and Uruguay.
- India has a **Preferential Trade Agreement (PTA)** with **MERCOSUR**, and Paraguay is keen to enhance trade, investment, and technology exchanges under this framework.



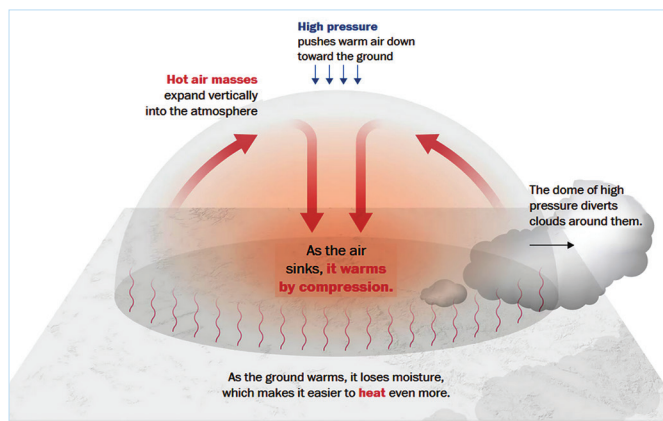
HEAT DOME

Context

A recent study has highlighted that nearly 76% of India's population is at high to very high risk from extreme heat, which may be attributed to the Heat Dome Effect.

About

- A Heat Dome is a meteorological phenomenon in which a **high-pressure system traps hot air underneath it**, acting like a lid or dome over a region.
- The trapped air becomes increasingly hotter, and the system can persist for days or even weeks, leading to prolonged heatwaves.



Reasons Behind the Heat Dome Formation

- **Climate Change:** Rising global temperatures increase the frequency and intensity of such high-pressure systems.
- **Jet Stream Anomalies:** A weakened or meandering jet stream can cause heat domes to remain stationary for extended periods.
- **Urban Heat Island Effect:** Amplifies heat in cities due to concrete structures and lack of vegetation.

Government Measures

- **National Action Plan on Climate Change (NAPCC)** with missions like National Mission on Sustainable Habitat and National Water Mission.
- **Heat Action Plans (HAPs)** adopted by cities like Ahmedabad and states like Odisha.
- **IMD Heatwave Alerts** and early warning systems.

HODEIDAH PORT

Context

Israel conducted its first-ever naval strike on Yemen's Hodeidah Port.

About

- **Location:** Yemen's Hodeidah Port is situated on the western coast of Yemen, along the **Red Sea** on the **Tihāmah** coastal plain.
- **Significance:** Hodeidah Port is the **largest and most vital seaport for Yemen**, facilitating the import of essential goods, including humanitarian aid, fuel, and commercial imports.



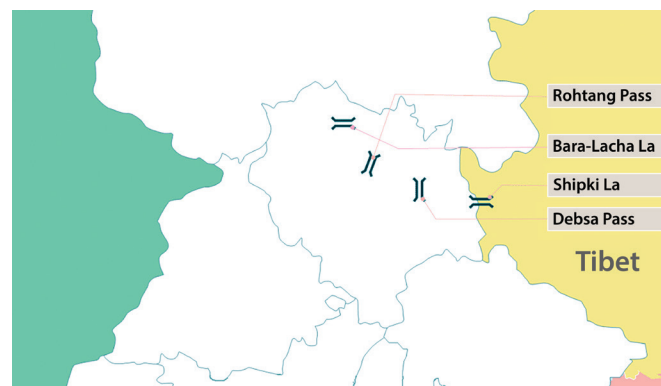
SHIPKI LA

Context

Recently, the Chief Minister of Himachal Pradesh launched border tourism activities at Shipki-La.

About

- **Location:** A high-altitude motorable **mountain pass (3,930 m)** in Kinnaur district, Himachal Pradesh, on the India-China border.
- **Strategic & Cultural Significance:**
 - ♦ Situated on the **ancient Silk Route**, blending geopolitical importance, cultural heritage, and Himalayan landscapes.
 - ♦ Historically served as a **trade route between India and Tibet**, until it was **closed for trade in 2020**.
 - ♦ The **Sutlej River** (Tibetan name: **Langqen Zangbo**) enters India through this pass.
- **Kailash Mansarovar Yatra Potential:** Shipki La has been proposed by the Himachal Pradesh government as the **easiest route for the Kailash Mansarovar Yatra**, pending approval from the Centre.



GOVERNMENT NOTIFIES INTER-SERVICES ORGANISATIONS (COMMAND, CONTROL AND DISCIPLINE) RULES, 2025

Context

The Ministry of Defence recently notified the Inter-Services Organisations (Command, Control & Discipline) Rules, 2025, under the Inter-Services Organisations (ISO) Act, 2023.

Background

- ➔ The ISO Act, 2023 was enacted to enable smoother functioning of **joint defence structures** like Joint Commands and **Inter-Service Establishments**.
- ➔ The newly notified rules, effective from May 27, 2025, operationalise the Act by specifying how command and disciplinary powers will be **exercised within Inter-Service Organisations**.

Objectives of the Rules

- ➔ **Enhance Unified Command:** Ensure smooth command and control within Joint Services Commands.
- ➔ **Faster Disciplinary Action:** Enable quick disposal of cases and avoid procedural duplication.
- ➔ **Strengthen Jointness:** Build interoperability between the Army, Navy, and Air Force through legal and administrative cohesion.

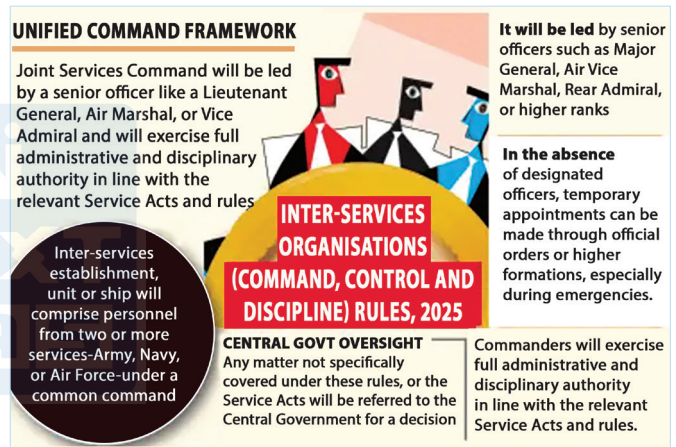
ISO Act, 2023 – Structural Provisions

- ➔ **Constitution of ISOs:** The Central Government is empowered to create ISOs like Joint Commands, composed of personnel from at least two services.
- ➔ **Superintendence:** Overall authority remains with the Central Government, which can issue directions in national security or public interest.
- ➔ **Commanding Officer (CO):** The Act provides for a CO to lead any unit, ship, or establishment within an ISO framework.

Key Provisions of the ISO Rules, 2025

- ➔ **Empowerment of Commanders:** The Commander-in-Chief (CiC) of a Joint Services Command (JSC), the Officer-in-Command (OiC) of Inter-Service Establishments, and the Commanding Officer (CO) of Inter-Services Units will have full disciplinary and administrative powers over all personnel posted or attached, regardless of their parent service.

- ➔ **Retention of Service Acts:** While authority is delegated, the original service rules (Army Act, Navy Act, Air Force Act) still apply to individuals, maintaining service-specific identities.
- ➔ **Residuary Powers:** Any matter not explicitly covered under these rules or the Act will be escalated to the Central Government for resolution.
- ➔ **Chain of Command:**
 - ♦ If the CiC, OiC, or CO is absent or on leave, a replacement will be notified officially.
 - ♦ In emergencies, higher formations can appoint interim officers until formal notification.



ELECTRIC HANSA (E-HANSA)

Context

India has initiated the process to develop Electric Hansa (E-Hansa), a next-generation two-seater electric trainer aircraft.

About

- ➔ The **Electric Hansa (E-HANSA)** trainer is an aircraft developed by **CSIR-National Aerospace Laboratories (NAL)**.
- ➔ The E-HANSA is part of the **larger HANSA-3 (NG) trainer aircraft program**, which is designed to be a **cost-effective and indigenous option** for pilot training in India.
- ➔ India's E-Hansa aircraft will also mark a key step toward **India's green aviation goals** and use of **green or clean energy fuel in running aircrafts**.
- ➔ It is expected to **cost significantly less than imported alternatives**.

ANDAMAN & NICOBAR COMMAND

Context

Lt Gen Dinesh Singh Rana assumed charge as the 18th Commander-in-Chief of the Andaman & Nicobar Command (CINCAN).

About

- The Andaman and Nicobar Command (ANC) is the **first integrated theatre command** in India with **headquarters at Port Blair** and set up in **2001**.
- It integrates the **Army, Navy, Air Force and Coast Guard** to safeguard national interests in the **strategically vital Indian Ocean Region**.
- It is headed by a Commander-in-Chief Andaman and Nicobar Command (CINCAN), a **rotational post among three services (Army, Navy, Air Force)**.
 - ♦ Typically held by a Lieutenant General, Vice Admiral, or Air Marshal.

FIBRE OPTIC DRONES

Context

Russia has deployed fibre optic First-Person-View (FPV) drones in Ukraine since spring 2024.

About

- They are similar to regular UAVs but use ultra-thin glass cables for navigation instead of radio waves.
- This makes them **immune to electronic interception or jamming** since **signals** travel through the cable, ensuring secure and high-quality video transmission.
- They have a range of 15 to 30 kilometers depending on their equipment sophistication.
- They offer longer battery life, higher accuracy, and reliable operation in challenging environments like forests, cities, or inside buildings.

ARMY SUCCESSFULLY TESTS RUDRASTRA

Context

Rudrastra is India's new indigenous Vertical Takeoff and Landing drone, successfully tested by the Indian Army.

About Rudrastra

- It is a **hybrid Vertical Takeoff and Landing (VTOL)** drone developed by Solar Aerospace and Defence Limited (SDAL).

- It is capable of vertical takeoff like a helicopter and long-range flight like an aircraft.
- It is Designed for precision anti-personnel strikes, it can hit targets over 50 km away and has a full range of 170 km.
- It is Ideal for deep strikes on enemy camps or artillery and offers the Army a powerful stand-off weapon with no risk to soldiers.

Desi Drones for Cross-Border Strikes



Drones being developed for cross-border strikes to take down enemy artillery positions

Trials conducted at Pokhran firing range

Drones demonstrate ability to take down targets at a range of over 50 km

Drones can relay back live video and return to the launch position in automated mode

Army looking to acquire drones in significant numbers

Rudrastra has demonstrated a total range of 170 km, which included loitering over the target area and an endurance of close to an hour-and-a-half



Importance

- It can take off vertically, fly long distances, carry out precision strikes deep across borders, and return autonomously—offering a smart, risk-free way to engage enemies without deploying soldiers on the ground.

SIPRI ANNUAL REPORT 2025

Context

The Stockholm International Peace Research Institute (SIPRI) launched its annual assessment of the state of armaments, disarmament and international security for 2025.

Major Findings

- **Global Nuclear Trends (2025):**
 - ♦ **Total nuclear warheads:** 12,241.
 - ♦ **Military stockpiles (operational/potential):** 9,614.
 - ♦ **Deployed:** 3,912.
 - ♦ **High alert (ballistic missiles):** ~2,100, mostly U.S. and Russia.
- **India has 180 nuclear stored warheads** as of January 2025, while Pakistan has an estimated 170.
- **China has 600 nuclear warheads** as of January 2025, of which 24 are deployed warheads or those placed on missiles or located on bases with operational forces.

World Nuclear Forces, January 2025

Country	Military Stockpile			Total Inventory
	Deployed Warheads	Stored Warheads	Total (Military Stockpile)	
USA	1,770	1,930	3,700	5,177
Russia	1,718	2,591	4,309	5,459
UK	120	105	225	225
France	280	10	290	290
China	24	576	600	600
India	–	180	180	180
Pakistan	–	170	170	170
N. Korea	–	50	50	50
Israel	–	90	90	90
Total	3,912	5,702	9,614	12,241

➤ **Expansion and Modernisation:** Nearly all of the nine nuclear-armed states—the United States, Russia, the United Kingdom, France, China, India, Pakistan, North Korea and Israel—continued intensive nuclear modernization programmes in 2024.

- ♦ **India** slightly expanded its nuclear arsenal in 2024 and continued development of new nuclear delivery systems with enhanced capabilities.
- ♦ **Pakistan** continued development of new delivery systems, accumulated more fissile material, indicating intent to expand its arsenal.
- ♦ **China** accelerated expansion of its nuclear arsenal, It added ~100 warheads annually since 2023.

➤ **Military Expenditure:** Global spending reached \$2.7 trillion in 2024, a 9.4% increase.

- ♦ **Top spenders:** USA (\$997 billion), China (\$314 billion).
- ♦ **Top importers:** Ukraine, India, Qatar, Saudi Arabia, Pakistan.
- ♦ **Top exporters:** USA (43%), France (9.6%), Russia (7.8%).

The Main Suppliers and Recipients of Major Arms, 2020–24

Global Share		Global Share	
Supplier	Exports (%)	Recipient	Imports (%)
1. USA	43.0	1. Ukraine	8.8
2. France	9.6	2. India	8.3
3. Russia	7.8	3. Qatar	6.8
4. China	5.9	4. S. Arabia	6.4
5. Germany	5.6	5. Pakistan	4.6

Issues

➤ **Global Trend:** The era of nuclear arsenal reduction is **coming to an end**.

➤ **Lack of Commitment:** No major nuclear power is **fully committed to nuclear disarmament**. All 9 nuclear-armed states are **investing in modernisation**.

➤ **China's Expansion:** Rapidly growing nuclear stockpile. May reach **1,000 warheads** in the next **7–8 years**.

➤ **Modernisation Trends (2024):** Use of **MIRVs** (Multiple Independently targetable Re-entry Vehicles), **Canisterisation** of missiles and **AI-based command and control systems increased in recent times**.

➤ **Russia & USA:** Together hold ~90% of global nuclear weapons. Both are undergoing extensive modernisation of arsenal expansion.

➤ **New Nuclear Aspirants:** Growing debates in East Asia, Europe, and the Middle East. Thus, there is potential for new nuclear states to emerge.

SIPRI

➤ SIPRI is an **independent international institute** dedicated to research into conflict, armaments, arms control and disarmament. It is based in Stockholm.

➤ It was established in **1966**, SIPRI provides **data, analysis and recommendations**, based on open sources, to policymakers, researchers, media and the interested public.

➤ **Funding:** It was established on the basis of a decision by the Swedish Parliament and receives a substantial part of its funding in the form of an annual grant from the **Swedish Government**.

- ♦ The Institute also seeks financial support from other organizations in order to carry out its research.

BARAK MAGEN

Context

The Israeli Navy achieved a major defense milestone by successfully intercepting eight Iranian UAVs using the 'Barak Magen' aerial defense system.

About

➤ The Barak Magen system is the naval variant of the **Barak MX family** developed by **Israel Aerospace Industries (IAI)**.

➤ **It integrates advanced radar with vertical missile launchers and multiple interceptor types:** MRAD (short/medium range), LRAD (mid/long range), and ER (extended range).

➤ Barak Magen complements Israel's existing systems (**Iron Dome, David's Sling, Arrow, plus future laser Iron Beam**), adding a powerful naval tier to national defense.

➤ It is engineered to provide full-spectrum protection against a variety of modern airborne threats including Unmanned Aerial Vehicles (UAVs), cruise missiles, shore-to-sea projectiles and even certain classes of ballistic munitions.

INS NILGIRI

Context

INS Nilgiri arrived at Visakhapatnam port to join the Eastern Naval Command's Sunrise Fleet.

About

- It is built by Mazagon Dock Shipbuilders Limited (MDL), Mumbai, and Garden Reach Shipbuilders and Engineers (GRSE), Kolkata as a follow-on to the **Shivalik class**.
 - ♦ It is the first indigenously built Project 17A stealth frigate.
 - ♦ **Project 17A Frigates** are the follow-on class of Project 17 (Shivalik Class) Frigates, with improved stealth features, advanced weapons and sensors and platform management systems.
- It is designed for blue-water operations and is equipped for anti-air, anti-surface, and anti-submarine warfare.
- It is a multi-mission ship which operates in deep seas and handles conventional and unconventional threats.

Additional Information

The other six ships of this class — Himgiri, Taragiri, Udaygiri, Dunagiri, and Vindhyagiri — are at various stages of construction at MDL, Mumbai, and GRSE, Kolkata.

EUNAVFOR

Context

The Indian Navy and the European Union Naval Force (EUNAVFOR) are planning to hold joint exercises.

About

- The exercise will see participation by **Spanish Navy Ship** ESPS Reina Sofia and **Italian Navy Ship** ITS Antonio Marceglia from EUNAVFOR and **ships and aircraft from the Indian Navy**.

Significance of the Collaboration

- The exercise reflects the shared interest in protecting lawful trade and countering non-traditional threats, including piracy, smuggling, and Illegal, Unreported and Unregulated (IUU) fishing.

Additional Information

- The Maiden Indian Navy - European Union Naval Force (EUNAVFOR) **Exercise in Gulf Of Aden** was held in **2021**.
- **EUNAVFOR Operation ATALANTA** is the EU's pioneering naval operation, launched in **December 2008**. Its primary area of operation is the Western Indian Ocean and the Red Sea.

EXERCISE NOMADIC ELEPHANT

Context

The Indian Army is going to have the 17th edition of the India-Mongolia Joint Military Exercise NOMADIC ELEPHANT at Ulaanbaatar, Mongolia.

About

- Exercise NOMADIC ELEPHANT is an **annual bilateral military exercise** conducted alternately in **India and Mongolia** since **2006**. The last edition of the same exercise was held in Meghalaya, India in 2024.
- The **aim of the exercise** is to enhance interoperability between the two forces while employing a joint task force in **semi conventional operations** in semi urban/ mountainous terrain under **United Nations mandate**.

EXERCISE SHAKTI-2025

Context

The 8th edition of Exercise Shakti-2025, a bilateral joint military exercise between India and France is going to be held at La Cavalerie, France.

About

- Exercise **SHAKTI** is a biennial Indo-French joint military exercise, launched in **2011**. The **7th edition** was held in May 2024 in **Meghalaya, India**.
- The aim of the exercise is to enhance the joint military capability of both sides to undertake multi-domain operations in a sub-conventional scenario under **Chapter VII** of the **United Nations Mandate**.

Additional Information

- Exercise **VARUNA** is a bilateral naval exercise between the **Indian Navy** and the **French Navy**.
- Exercise **GARUDA** is a joint air exercise between the **Indian Air Force (IAF)** and the **French Air and Space Force (FASF)**.



MEASLES DISEASE

Context

Measles has seen a dramatic decline in global mortality rates since its introduction of the measles vaccine; an estimated 9 crore (90 million) deaths have been prevented worldwide.

About Measles

- Measles is a **highly contagious viral disease**, which affects mostly children.
- **Transmission:** It is transmitted via droplets from the nose, mouth or throat of infected persons.
- **Symptoms** usually appear 10–12 days after infection, including high fever, runny nose, bloodshot eyes, and tiny white spots on the inside of the mouth.
- **Complications:** Pneumonia, encephalitis, blindness, and death, especially in children with poor nutrition or immune deficiency.
- **Prevention:** Community-wide vaccination is the most effective way to prevent measles.
 - ♦ **John Enders** developed the first effective measles vaccine in **1963**, from the '**Edmonston-B'** strain.

CHOLERA

Context

A cholera outbreak has killed many people in the war-torn Sudan.

About

- It is a **serious diarrheal illness** caused by ingesting food or water contaminated with the **bacterium *Vibrio cholerae***.
- It remains a significant global public health concern, reflecting deep social and economic inequalities.
- **Symptoms:** Cholera typically causes sudden, severe watery diarrhea that can lead to death within hours if not treated.
- **Effect:** A 2024 World Health Organisation (WHO) report noted that cholera deaths have shown an uptick in recent years and attributed the cause to climate change and poor sanitation.
- **Preventing** cholera and other waterborne diseases relies heavily on access to clean water, adequate sanitation, and proper hygiene.

- While most cholera cases involve mild to moderate diarrhea and **can be treated effectively with Oral Rehydration Solution (ORS)**, the illness can escalate quickly.

ZOONOTIC OUTBREAKS

Context

As per the Integrated Disease Surveillance Program (IDSP), zoonotic outbreaks significantly increased over the years, particularly post-pandemic.

Meaning

- **Zoonotic Disease** refers to a disease that spreads from animals to humans.
- These diseases are caused by **viruses, bacteria, parasites, or fungi** that are naturally transmitted between vertebrate animals and people.

Key Findings of the Study

- **Prevalence of Zoonotic Outbreaks:** Over 8% (583 out of 6,948) of the reported outbreaks were zoonotic (spread from animals to humans).
- **Peak Seasonality:** Zoonotic outbreaks consistently peaked during the months of June, July, and August.
- **Leading Zoonotic Diseases:** Japanese encephalitis accounted for the largest share (29.5%) then Leptospirosis (18.7%) & scrub typhus (13.9%).
- **Geographical Distribution:** The Northeast part of India contributed the highest proportion (35.8%) of zoonotic disease outbreaks followed by the southern region (31.7%) & western region (15.4%).

Initiatives Taken to Combat Zoonotic Diseases

- **Integrated Disease Surveillance Programme (IDSP)** was launched in 2004 to track epidemic-prone diseases.
- **The National One Health Mission** envisioned under the Department of Biotechnology aims to integrate animal health, human health, and environment monitoring.
- **National Centre for Disease Control (NCDC) (Zoonosis Division)** conducts outbreak investigations and develops standard treatment protocols for zoonotic diseases like JE, leptospirosis, brucellosis, and rabies.

BharatGen LAUNCHED

Context

The Union Minister of State (Independent Charge) for Science & Technology launched 'Bharat Gen'.

About

- It is India's first government-funded **multimodal Large Language Model (LLM)** designed for 22 Indian languages.
- It integrates text, speech, and images to provide ethical, inclusive, and region-specific AI solutions.
- It is developed under the **National Mission on Interdisciplinary Cyber-Physical Systems** and led by IIT Bombay's TIH Foundation.
 - ♦ It is supported by the **Department of Science and Technology (DST)** and brings together a robust consortium of leading academic institutions, experts, and innovators.
- It aims to revolutionize AI development across India's linguistic and cultural spectrum.

Importance

- It has potential to revolutionize healthcare, education, agriculture, and governance by enabling AI-powered solutions like telemedicine that allow doctors to communicate in patients' native languages, enhancing healthcare access and trust in remote areas.

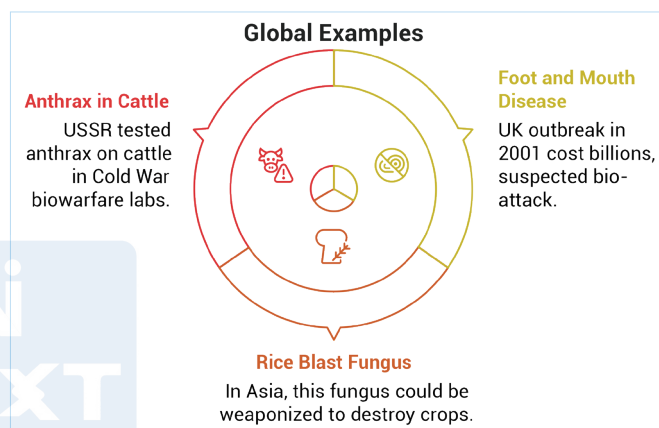
Multimodal Large Language Model (LLM)

- MLLMs are deep learning models capable of interpreting and generating information from multiple data sources.
- A Multimodal Large Language Model (MLLM) merges the reasoning capabilities of Large Language Models (LLMs), for instance GPT or LLaMA-3, with the ability to receive, reason, and output with multimodal information.
- MLLMs are crucial in advancing artificial intelligence due to their ability to process and integrate multiple data types such as text, images, audio, and video.

- This pathogen not only reduces crop yields and quality but also contaminates grains with harmful mycotoxins, posing significant risks to both animal and human health.

About Agro-Terrorism

- Agro-terrorism is the intentional **use of biological agents** such as plant pathogens, pests, or contaminants to attack a **country's agricultural infrastructure**.
- It targets food production systems with the aim of causing economic devastation, food insecurity, and public panic.
- Agro-terrorism is attractive to hostile actors because it is low-cost, difficult to detect, and capable of triggering far-reaching economic and social damage.



Global Conventions

- **Biological Weapons Convention (BWC) (1972):** It bans the development, production, acquisition, transfer, stockpiling, and use of biological and toxin weapons.
- **United Nations Security Council Resolution 1540:** UNSCR 1540 obliges all UN member states to prevent non-state actors from acquiring nuclear, chemical, and biological weapons.
- **Interpol's Bioterrorism Prevention Program:** Interpol works with member countries to enhance law enforcement capabilities in preventing and responding to bioterrorism.

PATHOGEN FUSARIUM GRAMINEARUM

Context

*Two Chinese nationals had been charged in the US for allegedly smuggling an agricultural pathogen *Fusarium graminearum* into the United States.*

About

- It is an ascomycete fungus responsible for **Fusarium head blight (FHB)**—a devastating disease affecting cereal crops such as wheat, barley, maize, oats, and rice. It produces **Vomitoxin (Deoxynivalenol)**, harmful to humans and livestock.

AI RAM INITIATIVE

Context

The UNESCO Regional Office for South Asia, in collaboration with the IndiaAI Mission and Ikigai Law, organized the 5th and final Stakeholder Consultation on AI Readiness Assessment Methodology (RAM) in India.

About

- It aims to develop an **India-specific AI policy** report that maps strengths and offers actionable recommendations for the ethical and responsible adoption of AI across sectors.

- The AI RAM acts as a **diagnostic tool to support governments** in strengthening regulatory and institutional capacity in AI.

Significance of the Initiatives

- Aligns with the **INDIAai Mission**, launched with over **₹10,000 crore** funding.
- Prioritises the "Safe and Trusted AI" pillar focused on:
 - ♦ Ethical AI development,
 - ♦ Indigenous governance frameworks,
 - ♦ Self-assessment guidelines,
 - ♦ Capacity-building for AI innovation.

DEMAND FOR COMPULSORY LICENSING FOR RARE DISEASE

Context

A growing number of rare disease patients in India are urging the government to invoke the compulsory licensing provision under the Indian Patents Act, 1970.

About

- Compulsory licensing is a legal tool under **Section 84 of the Indian Patents Act, 1970**, which allows the government or any third party to manufacture a patented product or use a patented process **without the consent of the patent owner** in certain conditions.
- It aims to protect public health and access to affordable medicines.
- A **compulsory license in India** can be granted **three years** after a patent is issued if:
 - ♦ The patented invention is not available to the public at a reasonable price.
 - ♦ The reasonable requirements of the public are not being satisfied.
 - ♦ The invention is not being worked on in the territory of India.

Legal Policy Landscape

- **Patent Law Amendments:** India's 1970 Patents Act originally allowed only **process patents**, enabling generic drug manufacturing.
 - ♦ Hence, India became the **"pharmacy of the world"** by producing affordable medicines.
- **Safeguards Against Monopoly Abuse:** India's law includes **anti-evergreening provisions (Section 3(d))** to prevent companies from extending monopoly through minor modifications.
 - ♦ It also allows for **pre- and post-grant opposition** to patents.

TRIPS Agreement and Flexibilities

- India became a member of the **World Trade Organization (WTO)** and was required to align its intellectual property laws with the **TRIPS Agreement (Trade-Related Aspects of Intellectual Property Rights)**, which came into effect in **1995**. The TRIPS Agreement provides for the **Compulsory Licensing (CL)**.
- **India amended its Patents Act in 2005**, allowing for both product and process patents in the pharmaceutical sector.
 - ♦ These patents are now valid for a period of **20 years** from the date of filing.
- **The Doha Declaration** on TRIPS and Public Health (2001) further clarified that:
 - ♦ Countries may issue a compulsory license in the interest of **public health emergencies**, although the presence of an emergency is **not a mandatory condition**.
 - ♦ Each country has the **sovereign right to determine the grounds** on which it can issue a compulsory license.
 - ♦ The patent holder must be compensated through the payment of **"adequate remuneration,"** the amount of which is to be determined by the issuing country based on the economic value of the license.
- A **waiver in 2003**, later made permanent in **2017**, allowed countries to **import affordable drugs produced under CL** from other nations.

Rare Diseases

- Rare diseases, also known as **orphan diseases**, are conditions that occur infrequently within a population.
- **They are characterized by three key markers:** Total number of people with the disease, Prevalence and Availability / Non-availability of treatment options.
- **WHO** defines a rare disease as a condition that affects a small percentage of the population, typically fewer than 1 in 1,000 to 2,000 people.

Initiatives taken for rare diseases in India:

- **National Policy for Rare Diseases (NPRD), 2021:** It was launched in **2021**, under which financial assistance up to Rs 50 lakh is provided to patients receiving treatment at an identified Centre of Excellence (CoE).
- The Health Ministry has opened a **Digital Portal for Crowdfunding & Voluntary Donations** with information about patients and their rare diseases. Donors can choose the CoE and patient treatments they wish to support.
- Each **Centre of Excellence (CoE)** also has its own **Rare Disease Fund**, which is used with approval from its governing authority.
- The Department of Pharmaceuticals has launched the **Production Linked Incentive (PLI) Scheme** for Pharmaceuticals, offering financial incentives to selected manufacturers for **domestic production of orphan drugs**.

INTERNATIONAL ASSOCIATION OF MARINE AIDS TO NAVIGATION AND LIGHTHOUSE AUTHORITIES (IALA)

Context

India, as the Vice President of the IALA, actively participated in the 2nd Session of the IALA Council, held in Nice, France.

About

- **Established:** In 1957, originally as the International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA).
- **Headquarters:** Based in Saint-Germain-en-Laye, near Paris, France.
- **Members:** IALA currently has 39 members.
- **Status:** Transitioned from a Non-Governmental Organisation (NGO) to an Intergovernmental Organisation (IGO) in August 2024, following ratification by 30 states through a Convention.
- **Objective:** IALA aims to improve safety at sea, reduce marine accidents, and protect the marine environment by developing common practices, technical standards, and recommendations for maritime navigation.

INDIA'S RARE EARTH MAGNETS CRISIS

Context

Amidst China's export curbs on rare earth magnets, India's automobile sector are raising alarms over potential production disruptions.

About

- Rare earth magnets are powerful permanent magnets made using rare earth elements, including **17** different elements from the periodic table. The two main types are **Neodymium (Nd-Fe-B)** and **Samarium Cobalt (SmCo)** magnets.
- Despite the name, rare earth elements are not geologically rare but are **difficult to extract economically** due to their dispersed occurrence and the environmental cost of mining.

Importance of Rare Earth Magnets

- **In Electric Vehicles (EVs),** Rare earth magnets are essential in;
 - ♦ Permanent Magnet Synchronous Motors (PMSMs), the core of EV propulsion systems.
 - ♦ Ensuring high torque density, energy efficiency, and reduced size of EV motors.
- **In Internal Combustion Engine (ICE) Vehicles:** Power steering systems, Electric windows, Windshield wipers and Cooling fans and sensors.

- **Defense:** Guidance systems, missile actuators, radar systems.
- **Consumer Electronics:** Smartphones, speakers, hard drives.

Availability of Rare Earth Magnets

- China controls over **85%** of global rare earth magnet production, and dominates the supply chain from mining to refining to magnet manufacturing.
- **India,** despite having rare earth reserves (especially in **monazite sands in Kerala, Tamil Nadu, Odisha**), lacks;
 - ♦ Advanced refining capabilities
 - ♦ Downstream magnet manufacturing industry
 - ♦ R&D and private sector participation

DNA IDENTIFICATION

Context

After the Air India Boeing 787 Dreamliner crash in Ahmedabad, authorities are using DNA analysis to identify the remains of those killed in the accident.

About

- With the exception of identical twins, **every person has a unique DNA** that is present in nearly every cell of their body.
- DNA identification is the gold standard for identifying human remains, especially after **mass fatality events** in which bodies might not be easy to identify otherwise.

Challenges in DNA Identification

- **DNA Degradation:** It begins immediately after death and affects analysis accuracy.
- **Factors Impacting Degradation:**
 - ♦ **Tissue type:** Soft tissues degrade faster than hard tissues (bones, teeth).
 - ♦ **Environmental conditions:** DNA survives better in cold and dry conditions than in hot and humid ones.
 - ♦ **Sample Collection Timeline:** Delays can further degrade DNA.

Preservation of DNA Samples

- Samples have to be **collected as soon as possible**, and once collected, stored in a **cool and dry environment**.
- They should ideally be **frozen at minus 20 degrees Celsius**, or, in the case of soft tissues (skin, muscles, etc.), they may be stored in **95% ethanol**.

Methods of DNA Analysis

- **Reference DNA is needed to match unidentified remains.**
 - ♦ **Ideal sources:** Parents and children (share 50% of DNA).
 - ♦ **Other possible sources:** Maternal or paternal relatives depending on the method used.
- **Depending on the quality of the collected DNA,** scientists can choose between a number of different methods of analysis.

- **Short Tandem Repeat (STR) Analysis:** Its basis is the short repeating DNA sequences.
 - ♦ **STRs are typically found on nuclear DNA** which is located within the nucleus of a cell.
 - ♦ **Use:** High variability among individuals makes STR ideal for identification.
 - ♦ **Limitation:** Requires well-preserved nuclear DNA.
- **Mitochondrial DNA (mtDNA) Analysis:** Found in mitochondria (outside the nucleus), this method is used when nuclear DNA is degraded or unavailable.
 - ♦ mtDNA is passed down by the mother, unchanged, to all her children. This means that samples from a person's remains can be matched with the maternal line of inheritance.
 - ♦ **Advantage:** Easier to recover from degraded samples due to multiple copies per cell.
- **Y-Chromosome STR Analysis:** Analyses STRs on the Y chromosome.
 - ♦ **Inheritance:** Passed from father to son.
 - ♦ **Application:** Matches possible with any paternal line male relative (e.g., father, brother, paternal uncle).
- **Single Nucleotide Polymorphism (SNP) Analysis:** It is based on the variation at a single base (A, C, G, T).
 - ♦ It is applied when DNA is highly degraded.
 - ♦ **Sources for reference:** Victim's personal items like toothbrushes or hairbrushes.
 - ♦ **Limitation:** Less effective than STR analysis.

WHA'S LANDMARK RESOLUTION ON SKIN DISEASES

Context

The World Health Assembly has unanimously adopted a resolution declaring skin diseases a global public health priority.

About

- Skin diseases include all conditions that irritate, clog or damage your skin, as well as skin cancer.
- They are among the most visible health conditions, often leading to stigma, discrimination, and emotional distress.
- They affect **1.9 billion people worldwide**, especially in **low- and middle-income countries (LMICs)**.
- They are now recognised for their deep social, psychological, and economic impacts.

Features of Resolution

- It is jointly sponsored by **Côte d'Ivoire, Nigeria, Togo, and Micronesia**, and others, supported by the International League of Dermatologic Societies (ILDS), the world's largest alliance of dermatology organizations marks a pivotal moment in recognising skin diseases as a global public health priority.

- It calls attention to **low awareness, poor surveillance, and limited health worker training**, despite most skin diseases being manageable at the primary care level with proper support.
- It seeks to **integrate skin health into national health agendas**, improve funding, strengthen frontline dermatologic care, and combat stigma.
- It urges coordinated national action to improve financing, diagnostics, medicine access, integration with other health programmes, and research.

World Health Assembly (WHA)

- **About:** WHA is the supreme decision-making body of the WHO.
 - ♦ Composed of delegates from all 194 WHO Member States.
 - ♦ Meets annually in May, usually at the WHO headquarters in Geneva.
- **Established:** The World Health Assembly (WHA) was established in 1948, along with the World Health Organization (WHO).
- **Headquarters:** The WHA and WHO share the same headquarters in Geneva, Switzerland.
- **Functions:**
 - ♦ Determines WHO's policies and priorities.
 - ♦ Approves the biennial programme budget.
 - ♦ Reviews and adopts international health regulations, conventions, and treaties.
 - ♦ Discusses major global health issues such as pandemics, vaccine equity, UHC, and climate-related health risks.

EXTREME HELIUM (EHe) STARS

Context

Indian astronomers have discovered singly-ionized germanium (Ge II) in a rare class of stars known as Extreme Helium (EHe) stars, specifically in the star A980.

About

- EHe stars are **rare hydrogen-deficient stars** that are primarily composed of helium with trace amounts of other elements.
- **Only a few dozen such stars** have been discovered.
- The most accepted formation theory suggests they result from the merger of two white dwarfs:
 - ♦ One helium-rich, the other carbon-oxygen-rich.
- EHe stars are cool, low-gravity objects that defy normal stellar chemical profiles.

Significance of Germanium Detection

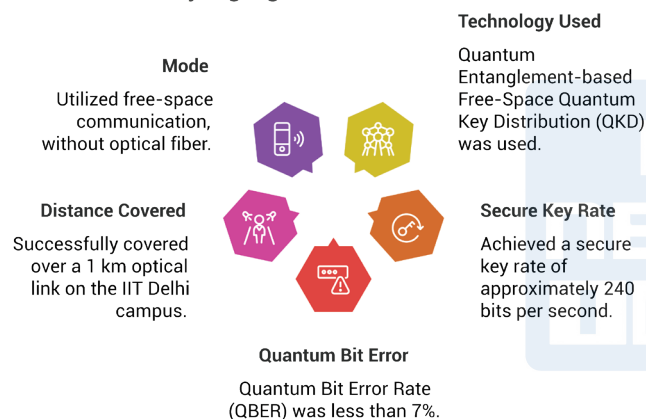
- Germanium is a heavy element that forms via the s-process (slow neutron capture) — common in the Asymptotic Giant Branch (AGB) phase of stellar evolution.
- The presence of Ge implies prior synthesis through stellar nucleosynthesis, possibly before the white dwarf merger.

QUANTUM COMMUNICATION

Context

India has achieved a significant milestone in quantum communication by successfully demonstrating quantum entanglement-based secure communication over free space.

Key Highlights of Demonstration



Meaning of Quantum Communication

- Quantum communication uses principles of quantum physics, particularly quantum entanglement, to enable ultra-secure information transfer.
 - ♦ **Quantum Entanglement:** A phenomenon where two entangled particles, even if separated by large distances, remain linked — measuring one instantly reveals the state of the other.
- **Security Principle:** Any eavesdropping attempt disturbs the entangled quantum state, thereby **instantly revealing intrusion**, making the system **intrinsically secure**.

Quantum Key Distribution (QKD)

- **Definition:** QKD enables secure exchange of cryptographic keys using **photons (light particles)** governed by quantum laws.
- **Entanglement-based QKD:** More robust than conventional methods as it allows secure communication **even with untrusted or compromised devices**.

Applications

- Defence and military communications
- Banking and financial sector encryption
- Secure government and strategic sector data networks
- Telecommunication infrastructure security

Global Comparison

- **China:** Pioneered satellite-based quantum communication nearly a decade ago. Operational 4,600 km quantum communication network since 2021.
- **Europe, US, and Canada:** Demonstrated **free-space QKD over distances >100 km** since 2005.
 - ♦ Focused on ground-based and satellite-linked secure quantum channels.
- **India:** Has made early strides, but still lags behind global leaders in long-distance and satellite-based QKD demonstrations.
 - ♦ Current achievement marks an important technological stepping stone.

CANDIDA TROPICALIS

Context

'Candida tropicalis' has been found using chromosome alterations to resist common anti-fungal drugs such as fluconazole and voriconazole.

About

- *Candida tropicalis* is a fungal pathogen causing serious infections, especially in India.
- Associated with high mortality (55–60%).
- Treated using azole antifungals like fluconazole and voriconazole.
- Recent rise in drug-resistant infections has raised major public health concerns.

Anti-fungal Drugs

- Anti-fungal drugs are medications used to treat fungal infections (mycoses) in humans, animals, and plants.
- They target the fungal cell wall or cell membrane, or interfere with DNA/RNA synthesis.

NOVO NORDISK'S WEGOVY

Context

Danish pharma giant Novo Nordisk launched its weight loss drug Wegovy as a once-a-week injection in India.

About

- The **delivery device will contain four doses**. The 0.25 mg, 0.5 mg and 1 mg doses will be priced at Rs 17,345 a month, translating to a weekly cost of Rs 4,366.
- Wegovy is made of **semaglutide, a GLP 1A receptor agonist**, which mimics the naturally occurring hormone GLP-1, responsible for regulating blood sugar, reducing appetite and slowing down gastric emptying.
- It is approved for weight loss but only if you are above a certain weight called morbid obesity.
 - ♦ Morbid obesity, also known as class III obesity, is a severe, life-threatening form of obesity.
 - ♦ Body Mass Index (BMI) ≥ 40 kg/m².
- Studies have shown that people on Wegovy lost nearly 15% of their body weight on average.

THE FIRST QUANTUM COMPUTING VALLEY OF INDIA

Context

The first Quantum Computing Valley of India will be launched in Amaravati, Andhra Pradesh by January 2026.

About

- The park is designed to employ lakhs of professionals, supporting research, innovation, and industrial growth.
- It will be accessible to states, government bodies, and institutions across India. The goal is to ensure quantum technology benefits all of human society.
- The project aligns with the National Quantum Mission (NQM).
- **Focus:** Productivity enhancement and wealth creation via quantum technologies.

Significance of Quantum Valley in India

- **Tech Sovereignty:** Strengthens India's self-reliance in next-gen technologies like quantum computing, sensing, and communication.
- **Global Competitiveness:** Positions India among global leaders in the quantum race alongside the US, China, and EU.
- **R&D Boost:** Promotes cutting-edge research and innovation by integrating academia, startups, and industry.
- **National Security:** Enhances secure communication, quantum cryptography, and surveillance for defence and cyber protection.
- **Economic Growth:** Unlocks new high-tech sectors, creating skilled jobs and attracting investments.
- **Scientific Collaboration:** Encourages international tie-ups and knowledge-sharing in frontier science.

National Quantum Mission (NQM)

- The government approved the NQM in **2023** from **2023-24 to 2030-31**.
- **Aim:**
 - ♦ To seed, nurture and scale up **scientific and industrial R&D** and create a vibrant & innovative ecosystem in Quantum Technology (QT).
 - ♦ This will accelerate QT led economic growth, nurture the ecosystem in the country and make India one of the leading nations in the development of **Quantum Technologies & Applications (QTA)**.
- The Mission objectives include developing intermediate-scale **quantum computers with 50-1000 physical qubits in 8 years** in various platforms like superconducting and photonic technology.
- **Significance:** NQM has the potential to elevate the country's Technology Development ecosystem to a level of global competitiveness.
 - ♦ The Mission would greatly **benefit various sectors** including communication, health, financial, energy with applications in drug design, space, banking, security etc.
 - ♦ The Mission will also provide a **huge boost to National priorities** like Digital India, Make in India, Skill India and Stand-up India, Start-up India, Self-reliant India and SDGs.

MOST COMMONLY USED CANCER DRUGS

Context

A major investigation revealed that commonly used chemotherapy drugs failed quality tests after being shipped to over 100 countries.

About

- Cisplatin, oxaliplatin, cyclophosphamide, doxorubicin, methotrexate and leucovorin — are the most commonly used drugs in the chemotherapy treatments.
- These drugs work by targeting cancer cells while minimising harm to normal cells, but also cause severe side effects like kidney damage, immune suppression, and heart risk.

Chemotherapy

- Chemotherapy is a drug treatment that uses powerful chemicals to kill fast-growing cells in the body.
- Chemotherapy drugs can be used alone or in combination to treat a wide variety of cancers.
- Though chemotherapy is an effective way to treat many types of cancer, chemotherapy treatment also carries a risk of side effects.

'NAVYA' INITIATIVE

Context

The Ministry of Women and Child Development (MWCD), in collaboration with the Ministry of Skill Development and Entrepreneurship (MSDE) launched the NAVYA initiative.

About

- It is a pilot initiative aimed at skilling girls aged 16–18 years (with at least a Class 10 education) in non-traditional job roles.
- It aims to empower adolescent girls with skills, confidence, and opportunities, contributing to India's vision of Viksit Bharat@2047 and a self-reliant, inclusive future.
- It is being Implemented in 27 districts across 19 States, including Aspirational districts and North-Eastern States, reflecting an inclusive, targeted approach.
- It will leverage existing schemes like Pradhan Mantri Kaushal Vikas Yojana (PMKVY) and PM Vishwakarma.

GI TAGGED KOLHAPURI CHAPPALS

Context

Italian luxury fashion brand Prada has come under fire in India after featuring leather flat sandals, priced at approximately Rs 1.2 lakh, that closely resemble traditional Kolhapuri chappals.

About

- **Kolhapuri chappals**, known for their **handcrafted leather design**, are traditionally made by artisan communities in **Maharashtra** and have been in **use since at least the 12th century**.
- Kolhapuri chappals received **Geographical Indication (GI) status in 2019**, recognising their cultural and regional significance.
- **Kala mitti application**: A traditional black mud sticky paste (kala mitti) is applied temporarily to hold the layers in place.
- **Chaprega (decorating the surface)**: Artisans create front and back designs using punches and hammers.
 - ◆ Small metal tools are used to **stamp traditional patterns like elephants, birds, and geometric borders**.
- The chappals are **polished in natural or dyed colours** such as brown, tan, mustard, etc.

GLOBAL GENDER GAP REPORT 2025

Context

Recently, the World Economic Forum (WEF) released its 19th edition of Global Gender Gap Report 2025.

Global Overview

- **Overall Gender Parity**: The world has closed 68.5% of the gender gap, a marginal improvement from the previous year.
- **Top Performers**: **Iceland** remains the **most gender-equal country** for the **16th consecutive year**, achieving over 90% parity.
 - ◆ Other top-ranking nations include Finland, Norway and the United Kingdom etc.

India's Performance

- **Overall Rank**: India slipped to **131st out of 148 countries**, with a parity score of 64.1%. India's rank 129th in 2024.
- **Economic Participation**: Improved slightly to 40.7%, with a rise in estimated earned income parity from 28.6% to 29.9%.
- **Educational Attainment**: Scored 97.1%, reflecting strong gains in literacy and higher education enrollment.
- **Health and Survival**: Showed modest improvement in sex ratio at birth and healthy life expectancy.
- **Political Empowerment**: Declined, with women's representation in Parliament dropping from 14.7% to 13.8%, and ministerial roles falling from 6.5% to 5.6%, marking a **continued decline from the 2019 peak of 30%**.

Regional Insights

- **South Asia**: India ranks below Bangladesh (24), Nepal (125), and Sri Lanka (130), but above Maldives (138), Bhutan (119) and Pakistan (148).
- **Europe**: Leads globally with 76.3% parity, surpassing North America.
- **Middle East and North Africa**: Remains the furthest from parity at 62.6%.

Key Concerns Highlighted in Report

- **Time to Full Parity**: At the current pace, it will **take 123 years** to close the global gender gap, highlighting the need for accelerated efforts.
- **Economic Disparities**: Despite progress, women still earn less than men, with significant wage gaps.
- **Regional Inequalities**: Certain regions, particularly South Asia and the Middle East, continue to lag behind in gender parity, facing structural and cultural barriers.

BONALU FESTIVAL

Context

The Bonalu festival's first main puja for the Ashada month began at the Goddess Jagadambika Ammavaru temple inside the Golconda Fort.

About

- Bonalu is an **annual Hindu Festival** where **Goddess Mahakali** is worshipped.
- It is **celebrated** in the **twin Cities Hyderabad and Secunderabad** and other parts of Telangana state, India.
- **History:** Bonalu began in the 19th century after a plague outbreak in Hyderabad.
 - ◆ As a mark of gratitude for divine protection, people started **offering Bonam** (from Telugu Bhojanalu, meaning meals) to Goddess Mahakali annually.
- The festival is **observed** during the **Ashada month** (June–July), marking the onset of the monsoon season.
- In **2014**, Bonalu was declared the **state festival of Telangana** after its formation as a separate state.

WORLD REFUGEE DAY 2025

Context

20th June is observed as World Refugee Day.

About

- This international day is designated by the **United Nations to honour refugees around the globe**.
- It was first observed globally on **20 June 2001**, to mark the **50th anniversary of the 1951 Convention on the Status of Refugees**.
 - ◆ Formerly known as **Africa Refugee Day**, it was changed when the United Nations General Assembly declared it an **international day in 2000**.
- The **theme for this year** is **"Solidarity with Refugees"**, which urges people to move beyond words and take meaningful steps to support those forced to flee.

Forced Displacement and Migration

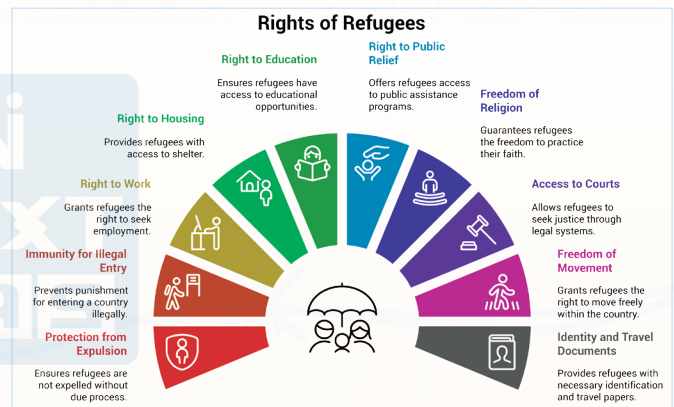
- **Refugee:** According to the **1951 UN Convention**, refugees are individuals **living outside their countries of origin** who are in **need of international protection** because of feared persecution, or a serious threat to their life, physical integrity or freedom in their country of origin.
 - ◆ Refugees have legal permission to remain in the host country and may have access to health care, education and welfare benefits.

Latest UNHCR data on Displacement

- **By the end of 2024**, 123.2 million people were forcibly displaced worldwide.
- **Refugee Returns:** In the past year, 1.6 million refugees returned to their countries of origin. 92% of these returns were concentrated in just four countries: Afghanistan, Syria, South Sudan and Ukraine.

1951 Refugee Convention and its 1967 Protocol

- It contains a **number of rights** and also highlights the **obligations of refugees towards their host country**.
- The cornerstone of the 1951 Convention is the **principle of non-refoulement**. According to it, a refugee should not be returned to a country where he or she faces serious threats to his or her life or freedom.
 - ◆ This protection may not be claimed by refugees who are reasonably regarded as a danger to the security of the country, or convicted for serious crimes.



- A refugee becomes entitled to other rights the longer they remain in the host country, which is based on the recognition that the longer they remain as refugees, the more rights they need.

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.

OFFICIAL LANGUAGE

Context

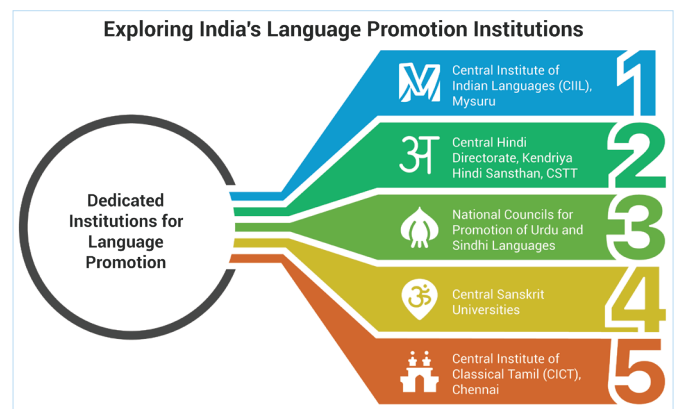
The Department of Official Language recently celebrated its golden jubilee, marking 50 years since its establishment in 1975.

About

- India's linguistic diversity is not just a cultural asset — it is a foundational pillar of its national identity, democratic ethos, and inclusive development.
- **Cultural and Civilizational Heritage:** Census 2011 recognised **121 languages** and **over 1,600 mother tongues** are used throughout India.
 - ♦ The **Indus Valley script, Brāhmī, and Kharosthī** are among the earliest writing systems, reflecting India's long-standing literary traditions.
 - ♦ India has **eleven recognized classical languages**, i.e. **Tamil, Sanskrit, Telugu, Kannada, Malayalam, Odia** and recently added **Marathi, Pali, Prakrit, Assamese, and Bengali**.
- **Constitutional and Legal Recognition:** In India, there is no national language. **Article 343** of the Indian constitution, on the other hand, expressly states: The Union's official language will be Hindi in Devanagari script.
- The **Constitution of India** recognizes **22 scheduled languages** under the **Eighth Schedule**, affirming the equal status and promotion of regional languages.
 - ♦ **Article 350A** mandates that states provide **primary education in the mother tongue** for children from linguistic minority groups.
 - ♦ The Constitution guarantees the right to conserve one's language and culture as a **Fundamental Right (Article 29 and 30)**.
 - ♦ **Article 343** designates **Hindi in Devanagari script** as the official language of the Union, while **allowing the continued use of English**.
 - ♦ **Article 344** provides for the constitution of a Commission and a Committee on Official Language to review and recommend on the progressive use of the Hindi language for official purposes.
 - ♦ **Article 345** grants State Legislatures the authority to adopt any one or more languages used in the State or Hindi as the official language(s) of that particular State.

Importance of Language & Policy Support

- **Multilingualism as a Way of Life:** Most Indians grow up speaking two or more languages.
 - ♦ **Multilingualism** fosters intercultural understanding, social cohesion, and cognitive development, especially among children.
- **Education and Empowerment:** The **National Education Policy (NEP) 2020** promotes mother tongue-based education **up to Grade 5** and **preferably till Grade 8**, wherever possible.
 - ♦ **Competitive exams** like JEE, NEET, and CUET are **now offered in 13 Indian languages**, expanding access to higher education.
 - ♦ **Digital platforms** like DIKSHA and SWAYAM provide e-learning content in over 130 Indian languages, bridging the digital divide.
 - ♦ **DIKSHA** hosts textbooks and learning resources in 33 Indian languages and Indian Sign Language.
 - ♦ **SWAYAM** offers translated engineering content in 11 Indian languages.
- **Digital Inclusion and Innovation:** Under the **Digital India initiative**, mobile phones sold in India since 2017 **must support all Indian languages**, enabling broader access to e-governance and e-commerce.
 - ♦ **Projects like Bhashini** aim to develop AI tools for Indian languages, ensuring that technology serves all linguistic communities.
- **Safeguarding Endangered Languages:** India has **lost 50 languages in the past five decades**, and many tribal and minority languages remain at risk.



- ♦ Initiatives like the **Bharatiya Bhasha Anubhag** and the **Ek Bharat Shreshtha Bharat campaign** aim to foster linguistic appreciation and unity among youth.

NONIA REBELLION

Context

*Union Minister for Agriculture paid tributes to freedom fighter **Buddhu Nonia** at his centenary celebrations in Patna and acknowledged the Nonia community's contributions in Nonia Rebellion.*

About

- The Nonias were **traditional salt makers**, and they also had expertise in producing **Shora (saltpetre)** — an essential ingredient in making gunpowder.
- The Nonia Rebellion refers to a series of uprisings by the Nonia community between **1778 and 1800 in Bihar**, particularly in the districts of **Saran, Vaishali, and Purnia**.
- It was a **grassroots movement** against the British East India Company's exploitative revenue policies, and oppression by local zamindars.

About Buddhu Nonia

- Buddhu Nonia was a freedom fighter from the Nonia community in Bihar.
- He actively **participated in the Salt Satyagraha** movement led by Mahatma Gandhi.
- He began making salt as an act of civil disobedience and was deceitfully arrested and thrown into a boiling salt cauldron—an act that turned him into a martyr of the freedom movement.

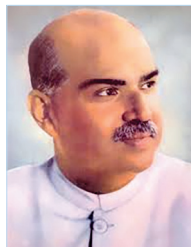
DR. SYAMA PRASAD MUKHERJEE

Context

*Prime Minister Narendra Modi paid tributes to Bharatiya Jana Sangh's founding president **Syama Prasad Mukherjee** on his death anniversary.*

About

- He was born on 6th July 1901 in Calcutta.
- He was a multifaceted personality —patriot, educationist, parliamentarian, statesman, and humanitarian.
- He inherited a legacy of erudition and nationalism from his father, Sir Ashutosh Mukherjee, an esteemed Vice-Chancellor of Calcutta University and Judge of the Calcutta High Court.



Major Contributions

- He excelled academically and served as the **youngest Vice-Chancellor of Calcutta University**, promoting Indian languages and education.

- He was **initially involved with Congress** and later joined the **Hindu Mahasabha**, becoming its **acting president** and advocating for complete Indian independence.
- As Finance Minister in Bengal, he **opposed colonial interference** and contributed to famine relief efforts.
- Post-independence, he served as **Industries and Supply Minister** in Nehru's Cabinet helping establish key industrial institutions before parting up with Nehru on **Liaquat-Nehru Pact** and founded the Bharatiya Jan Sangh in 1951 with the help of RSS.
- He was Known as "**The Lion of Parliament**," he was a powerful orator championing national unity, **especially the integration of Jammu and Kashmir**.

Legacy

- He died in detention in Kashmir on 23 June, 1953 and is remembered for his patriotism, leadership, and dedication to India's unity.

ANANTAPADMANABHA TEMPLE

Context

Recently, an antique lamp from the 15th century has been discovered in the Anantapadmanabha temple.

About

- Anantapadmanabha temple is situated at Perdur in Udipi district of Karnataka.
- The antique lamp is a unique artifact featuring rare **Shaiva and Vaishnavite sculptures**, reflecting the rituals of both sects.
- According to a **stone inscription** in the temple's inner prakara, the lamp was **donated in 1456 A.D. by Basavannaras Baga**.
- The lamp has two sculpted faces depicting Puranic stories: **First face (Shaiva theme)** and **Second face (Vaishnava theme)**
- This lamp is considered a rare and significant cultural and religious artifact.



SREE NARAYANA GURU & GANDHI DIALOGUE

Context

PM Modi inaugurated the centenary celebration of the historic conversation between Sree Narayana Guru and Mahatma Gandhi at Vigyan Bhawan in New Delhi. The dialogue was held on March 12, 1925, at Sivagiri Mutt in Kerala.

About

- The conversation between Sree Narayana Guru and Mahatma Gandhi is remembered for its **deep engagement with key issues** of the time;
 - ◆ Vaikom Satyagraha
 - ◆ the question of religious conversions
 - ◆ the principle of non-violence
 - ◆ the abolition of untouchability, and
 - ◆ the upliftment of marginalised communities.

Views of Sree Narayana Guru and Mahatma Gandhi

Issue	Sree Narayana Guru	Mahatma Gandhi
Religious Conversions	Opposed conversions; stressed reform within Hinduism.	Opposed conversions; supported Hindu Varna System.
Non-Violence	Practical approach; supported it but not absolute.	Treated non-violence as a core, universal principle.
Untouchability	Denied any religious basis; demanded total abolition.	Called it a sin; sought gradual reform from within.
Upliftment of Marginalised	Emphasized education and economic self-reliance.	Focused on moral upliftment and spiritual dignity.

Vaikom Satyagraha

- **Cause:** The movement was initiated against the **practice of untouchability**.
 - ◆ In Vaikom in the **erstwhile Travancore princely State**, members of the lower castes, particularly Dalits, were denied the right to walk on roads leading to the Vaikom Shiva Temple.
- **Leadership:** It was led by **T.K. Madhavan, K. Kelappan**, and other prominent leaders.
 - ◆ Mahatma Gandhi also supported the cause, sending his advice, although he did not physically participate in the protests initially.
 - ◆ **E.V. Ramasamy Periyar**, a prominent social reformer and leader of the Self-Respect Movement, also lent support to the movement.

About Sree Narayana Guru

- **Sree Narayana Guru** was a **philosopher, spiritual leader and social reformer** in India.
- He led a reform movement against the injustice in the **caste-ridden society** of Kerala in order to promote **spiritual enlightenment and social equality**.

- He founded institutions like the **Sharada Mutt at Sivagiri** to promote education, spirituality, and social upliftment.
- His slogan, **"One Caste, One Religion, One God for All,"** is a cornerstone of his philosophy and a widely recognized saying in Kerala.
- **Important work:** **Daiva Dasakam, Nivritti Panchakam,** and **Atmopadesa Satakam.**

Legacy of the Dialogue

- The Gurus' decisive stance spurred **Gandhi to prioritize the Harijan mission** in India's freedom struggle.
- Their meeting reinforced the principle that true **social upliftment demands peaceful protest**.
- The emphasis on **education and economic progress** became central to both reformers' visions.

AMBUBACHI MELA

Context

Thousands of devotees have arrived in Assam for the Kamakhya Temple's annual Ambubachi Mela.

About

- The festival is held during the **monsoon season**, typically in June, at the Kamakhya Temple — a revered shrine dedicated to **Goddess Kamakhya**, an incarnation of **Goddess Parvati**.
- The festival is associated with **fertility**, the onset of the monsoon, and the widespread historical belief across cultures that portrays the Earth as a fertile woman. The name 'Ambubachi' itself translates to **water flowing**.

Kamakhya Temple

- Located atop the **Nilachal Hills** in Guwahati, Assam, it is one of the **oldest and most revered among the 51 Shakti Peethas** in India.
- The main shrine is surrounded by individual temples dedicated to the **Ten Mahavidyas**: Kali, Tara, Sodashi, Bhuvaneshwari, Bhairavi, Chhinnamasta, Dhumavati, Bagalamukhi, Matangi and Kamalatmika.
- The present structure of the temple was **rebuilt in 1565 CE** by utilizing the ruins of an earlier **11th–12th century stone temple**.
- Architecturally, the temple had been modelled out of a combination of two different styles, namely, **the traditional nagara or North Indian and Saracenic or Mughal**.
 - ◆ Thus, being an unusual combination which came into its existence on this famous sakti shrine of India, it has been named as the **Nilachala Style of Architecture**.

INTEGRAL HUMANISM

Context

2025 marks the 60th anniversary of Pandit Deendayal Upadhyaya's philosophy of 'Integral Humanism'.

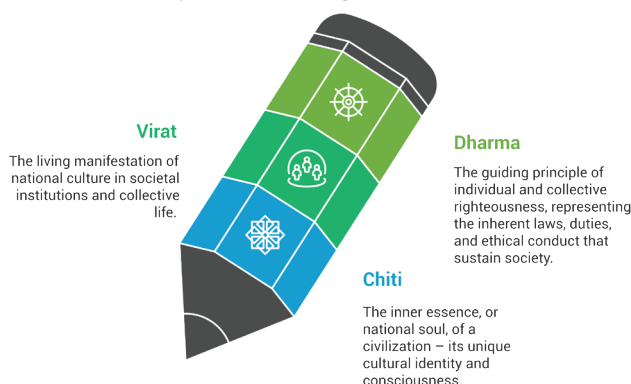
About

- In the post-colonial search for an indigenous philosophy of governance, Pandit Deendayal Upadhyaya (1916–1968) introduced the **doctrine of Integral Humanism (Ekatma Manav Darshan) in 1965.**
- This ideology aimed to balance **material progress with spiritual upliftment and redefine development** from an Indian civilisational perspective.

What is Integral Humanism?

- It emphasizes the balanced and integrated **development of human beings, encompassing not just material well-being** but also mental, intellectual, and spiritual aspects.
- Upadhyay argued that Western ideologies tended to focus solely on material **desires (Kama) and wealth (Artha)**, neglecting the **moral duties (Dharma) and spiritual liberation (Moksha)**, which he considered essential for true human happiness and fulfillment.
- Upadhyay critiqued **both capitalism for its unchecked individualism and potential for exploitation**, and **Marxist socialism** for its suppression of individual liberty and its purely materialistic worldview.
- The philosophy places the human being at the core of all development models. Policies and governance should be designed to serve the **well-being and dignity of every individual, ensuring a dignified life for all.**

Components of Integral Humanism



Contemporary Relevance of Integral Humanism

- **Participatory Governance:** Integral Humanism calls for orderly, decentralised, and value-driven governance, rooted in local traditions and customs.

- **Self-Reliant Economy (Swadeshi):** Emphasises decentralised development, village-centric models, and sustainable livelihoods, aligning with Gandhian ideas of Gram Swaraj.
- **Antyodaya & Policy Making:** Upholds the principle of 'Sarvodaya through Antyodaya' – upliftment of the last person in the queue. Welfare must not be a mere state policy but a moral imperative.
- **Sustainable Development & Environmental Justice:** Advocates deep ecological respect — balanced use of labour, resources, and capital — ensuring dignity and sustenance for future generations.
- **Cultural Preservation:** Calls for reviving India's heritage, language, arts, and civilisational wisdom, not as nostalgia, but as guiding lights for future innovation.
- **Global Relevance:** Offers an alternative to exploitative capitalism and rigid communism. Has echoes in **Global South development paradigms** and **Gross National Happiness (Bhutan).**
- **Ethical Values:** Promotes compassion, restraint, and harmony over conflict or competition.
- Reflects Indian value systems — Vasudhaiva Kutumbakam, Sarvodaya, Ahimsa.

KHEER BHAWANI FESTIVAL

Context

The Kheer Bhawani festival, an annual celebration held on Jyeshtha Ashtami, is celebrated at the Kheer Bhawani temple in Ganderbal, Jammu and Kashmir.

About

- The original temple was built by **Maharaja Pratap Singh around 1912.** It was later embellished and **renovated by Maharaja Hari Singh.**
- It is dedicated to **Goddess Ragnya Devi**, an incarnation of Goddess Durga.
- Both the temple and the festival derive their name from the **sweet dish 'kheer'**, which is distributed as prasad (a religious offering) to devotees.

PRE-HARAPPAN SETTLEMENTS

Context

Pre-Harappan Coastal Settlements have been discovered in the Kachchh region of Gujrat.

Findings of the study

- The study by the researchers of the Indian Institute of Technology Gandhinagar (IITGN), has uncovered

archaeological evidence that pushes back the human presence in this region by at least 5,000 years prior to the arrival of Harappans.

- **Early Human Settlement in Kachchh:** The study suggests that early communities inhabited a mangrove-dominated landscape and relied on shell species, naturally adapted to such environments, as a significant food source.
 - ♦ The **presence of stone tools** (for cutting, scraping, and splitting) and tool-making cores indicates the existence of semi-permanent or settled communities.
- **Pre-Harappan Culture with Regional Linkages:** The findings suggest a cultural continuity and regional interaction among early coastal communities from:
 - ♦ **Las Bela and Makran regions** (now in Pakistan), and
 - ♦ **The Oman Peninsula**, indicating similar subsistence and survival strategies.
- This challenges the long-held belief that urbanisation in Kachchh emerged solely under the influence of the **Sindh-based Harappan culture**, suggesting instead a more complex and indigenous developmental trajectory.

POSON POYA FESTIVAL

Context

Sri Lanka is celebrating the sacred Poson Poya festival, marking the historic arrival of Buddhism over 2,000 years ago.

About

- Observed on the **June full moon**, the festival commemorates the **first sermon** preached by **Arahat Mahinda**, son of Emperor Ashoka, to King Devanampiyatissa at Mihintale.
- Thousands of devotees gather at the **Mihintale Hill** and other sacred sites such as **Anuradhapura**, which are central to the celebrations in Sri Lanka.

SANT KABIR DAS

Context

The Prime Minister paid tribute to Sant Kabir Das on his birth anniversary (11th June).

Sant Kabir Das

- **Early Life:**
 - ♦ He was a 15th-century Indian poet and mystic.
 - ♦ He was born in Kashi (Varanasi), though details of his life are largely based on legends and scattered sources like the Bijak and Adi Granth Sahib.

- ♦ It is said to have been born to a **Brahmin widow** and later adopted by Nima, the wife of a **Muslim weaver** Niru.
- ♦ He developed a **deep spiritual inclination** and sought initiation under the saint **Ramananda**.

Teaching and Belief:

- ♦ His philosophy was shaped by elements of **Upanishadic non-dualism, Islamic monism, and the Bhakti tradition**.
- ♦ He strongly **rejected caste discrimination**, idol worship, and empty rituals, emphasizing devotion, inner truth, and moral living instead.
- ♦ He preached in a **mix of local dialects**—Hindi, Bhojpuri, Punjabi, Urdu, and Persian—making his couplets accessible yet rich in mystical symbolism.
- ♦ He Influenced figures like Guru Nanak and movements like the Kabir Panth.
- ♦ He is **revered in Hinduism, Sikhism, and Sufism** and his verses continue to inspire with their focus on inner truth and enlightenment.

Contributions:

- ♦ He is known for his simple and profound couplets, "Kabir ke Dohe," which are rich in mystical symbolism and everyday metaphors.
- ♦ The **Kabir Bijak** is preserved by the Kabirpanth (the path or sect of Kabir) in Varanasi and elsewhere in Uttar Pradesh and North India.
- ♦ **Kabir Granthavali** is associated with the **Dadupanth** in Rajasthan, and many of his compositions are found in the **Adi Granth Sahib**.

UNESCO 'CREATIVE CITY OF GASTRONOMY'

Context

A proposal for Creative City Lucknow under the category Gastronomy for Awadhi Cuisine has been submitted to the World Heritage Centre recently.

UNESCO Creative Cities Network (UCCN)

- The UNESCO Creative Cities Network (UCCN) is a **global network of cities** that recognize culture and creativity as drivers of sustainable urban development.
 - ♦ UCCN was created in **2004**.
- The network focuses on **seven creative fields**: Crafts and Folk Art, Design, Film, Gastronomy, Literature, Media Arts, and Music.

Indian Cities in UCCN

- India currently has eight cities recognized by UNESCO as part of the Creative Cities Network.
- **The network currently includes;**
 - ♦ **Jaipur and Srinagar** (Crafts and Folk Arts),

- ♦ **Varanasi, Chennai and Gwalior** (Music),
- ♦ **Mumbai** (Film),
- ♦ **Hyderabad** (Gastronomy),
- ♦ **Kozhikode** (Literature).

SERVANTS OF INDIA SOCIETY

Context

Tensions have resurfaced between Pune's Gokhale Institute of Politics and Economics (GIPE) and the Servants of India Society (SIS) over control of a joint bank account and allegations of financial misconduct.

About

- The 'Servants of India Society' was founded by **Gopal Krishna Gokhale** at Fergusson hill in **June 1905** in Pune district of Maharashtra along with three associates named **Natesh Appaji Dravid, Gopal Krishna Deodhar and Anant Vinayak Patwardhan**.
- It aimed to create a group of selfless, dedicated workers committed to national service.
 - ♦ Members took vows of renunciation and focused on education, social welfare, and uplifting the underprivileged, including rural and tribal communities.
- It aimed to promote the welfare of the Indian people by engaging in various social and educational activities
- It played a key role in uniting diverse groups and contributing to social integration during the Indian Independence movement.

Gopal Krishna Gokhale

- He was born on May 9, 1866, in Maharashtra and was a prominent Indian liberal political leader and social reformer during the Independence Movement.
- He was influenced by **Western political thought** and the **social work of Justice M.G. Ranade**.
- He was leader of the Indian National Congress and he advocated for Indian self-rule and social reform.
- He was a prominent moderate thinker who advocated a liberal political approach and gradual social progress.
 - ♦ He supported British rule in India, believing it had initiated the country's modernisation.
 - ♦ He argued that continued British presence would help India progress in industry, education, commerce, and politics, eventually leading to self-governance.
- He mentored **Mahatma Gandhi** as well as **M.A.Jinnah** and played a key role in the **Morley-Minto Reforms**.
 - ♦ Known for his scholarly speeches and economic insights, he passed away on February 19, 1915.

DECODING INDUS VALLEY SCRIPT

Context

The Archaeological Survey of India (ASI) will host a three-day international brainstorming conference in August on ways to decipher the Indus Valley script.

About

- The Indus Valley Civilisation was discovered more than a 100 years ago in 1921 at Harappa, and was formally announced to the world in 1924 by John Marshall, the then Director-General of the ASI.



Indus Script

- 'The Indus Script' remains **undeciphered** till day.
 - ♦ This script has attracted and fascinated a number of archaeologists, epigraphists, scientists, and many others who have made sincere attempts to solve its riddles.
 - ♦ Most examples of this script have been found on **Harappan seals and their impressions**.
 - ♦ Other objects that preserved this script are **metal and terracotta tablets, copper objects, pottery, etc.**
- **Nature of the Script:** Consists of signs and symbols, many resembling **human and animal figures, plants, or tools**.
 - ♦ Most inscriptions are very **short—typically 4–5 signs long**; the longest is about 26 characters.

Attempts at Decipherment

- Various methods using **computer analysis, comparative linguistics, and frequency analysis** have been attempted.
- Due to the lack of a bilingual inscription (like the Rosetta Stone), decipherment is extremely difficult.
- So far Archaeologists haven't been able to find any bilingual records running into at least a couple of sentences.
 - ♦ Hence they refrain from making any claims on deciphering the script.

Archaeological Survey of India (ASI)

- ASI is the premier organization for the **archaeological research and protection of the cultural heritage** of the nation under the **Ministry of Culture**.
- Maintenance of ancient monuments and archaeological sites and remains of national importance is the prime concern of the ASI.
- It regulates all archaeological activities in the country as per the provisions of the **Ancient Monuments and Archaeological Sites and Remains Act, 1958**. It also regulates the Antiquities and Art Treasure Act, 1972.

ADI KARMYOGI PROGRAMME

Context

The Ministry of Tribal Affairs launched the Adi Karmayogi Programme.

About

- **Launched by:** Ministry of Tribal Affairs
- **Aim:** To capacitate nearly 20 lakh stakeholders involved in tribal welfare delivery, including bureaucrats, block officials, and frontline workers.
- **Focus Areas:** The program will focus on improving outcomes in critical areas such as:
 - ◆ Healthcare gaps (with special attention to Sickle Cell Disease)
 - ◆ School staffing shortages
 - ◆ Poor access to public services in tribal belts
- **Connection to Mission Karmayogi:** While 'Adi Karmayogi' is specifically for tribal affairs, it aligns with the broader 'Mission Karmayogi' (launched in 2020) by aiming to build a future-ready civil service through capacity building, training, and performance enhancement—especially focusing on officials working in tribal areas.

GOA ACHIEVES FULL FUNCTIONAL LITERACY UNDER ULLAS

Context

Goa has become the second state after Mizoram to achieve the status of a fully literate state under the ULLAS - Nav Bharat Saaksharta Karyakram (New India Literacy Programme).

About

- It is a **centrally sponsored scheme** implemented from **2022-2027**.
- The scheme, aligned with NEP 2020, targets adults (**aged 15 years and above**) who can't go to school.
- **It has five components:** Foundational Literacy and Numeracy, Critical Life Skills, Basic Education, Vocational Skills and Continuing Education.
- **The vision of the ULLAS Scheme** is to make India **Jan Jan Saakshar** and is based on the spirit of **Kartavya Bodh** and is being implemented on volunteerism.

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.

SAHITYA AKADEMIYUVA AND BAL PURASKAR

Context

The Sahitya Akademi has announced the names of 23 writers for its Yuva Puraskar and 24 for the Bal Puraskar for 2024.

About

- **Sahitya Akademi**, India's National Academy of Letters, is the Central institution for literary dialogue, publication and promotion in the country and the only institution that undertakes literary activities in **24 Indian languages**, including English.
- It was inaugurated by the Government of India on 12 March 1954.
- **Status:** Set up by the Government of India, it functions as an **autonomous organization**, registered as a society on **7 January 1956** under the **Societies Registration Act, 1860**.
- **Each winner receives:** A casket with an engraved copper plaque and ₹50,000 cash prize.

ADAMYA

Context

Recently, 'Adamyia' was inducted into the Indian Coast Guard (ICG) in Goa.

About

- It is the first Fast Patrol Vessel (FPV) under the eight-FPV project at Goa Shipyard Limited (GSL).
- It is the first vessel of its class in the ICG fleet to feature Controllable Pitch Propellers (CPPs) and indigenously developed gearboxes, providing superior maneuverability, enhanced operational flexibility at sea.

Features

- It is equipped with **cutting-edge technology** and includes a 30mm CRN-91 gun, two 12.7mm stabilized remote-controlled guns with fire control systems, an Integrated Bridge System (IBS), Integrated Platform Management System (IPMS), and Automated Power Management System (APMS).
- These advanced features significantly boost the ICG's ability to carry out missions with greater precision, speed, and efficiency across India's vast maritime boundaries.

Importance

- 'Adamyā' showcases India's advancing shipbuilding prowess and aligns with the vision of Aatmanirbhar Bharat.
- These FPVs will strengthen the ICG's fleet as force multipliers, ensuring rapid response capabilities for maritime law enforcement, coastal patrol, search and rescue missions, and safeguarding the Exclusive Economic Zone (EEZ).

INTERNATIONAL DAY OF YOGA

Context

On the occasion of International Day of Yoga on June 21, 2025, the Archaeological Survey of India, in collaboration with the Ministry of Ayush, is set to host Yoga Sessions across 81 centrally protected monuments.

About

- This year marks the **11th International Day of Yoga**.
- **Theme 2025:** "Yoga for One Earth, One Health", aligning yoga with sustainability and global well-being.
- **The word "Yoga"** is derived from the Sanskrit word 'yuj' meaning "to join" or to **unite, symbolizing the union of body and consciousness**.
 - ♦ It is an ancient physical, mental and spiritual practice that originated in India.
- **PM Yoga Awards 2025:** The PM Yoga Awards recognise excellence in promoting and practicing Yoga.
 - ♦ **4 Awards:** 2 National and 2 International.
 - ♦ Each winning individual and organisation **receives ₹25 lakh, a trophy, and a certificate**.

Additional Information

Some of the iconic locations hosting the Yoga Day celebrations includes UNESCO World Heritage Sites such as Charaideo Maidam in Assam, Rani Ki Vav and Dholavira in Gujarat, Hampi and Pattadakal in Karnataka, Khajuraho Group of Monuments and Sanchi Stupa in Madhya Pradesh, Sun Temple at Konark in Odisha, Elephanta Caves in Maharashtra, and the Brihadisvara Temple at Thanjavur in Tamil Nadu.

Background of International Day of Yoga

- On **December 11, 2014**, the **United Nations** proclaimed **June 21 as the International Day of Yoga**.
- The draft resolution establishing the International Day of Yoga was **proposed by India and was endorsed by a record 175 member states**.
- The date of **June 21 was chosen as it is the Summer Solstice**, the longest day of the year in the Northern Hemisphere.
 - ♦ This day represents a **symbolic harmony between nature and human wellness** and is important in many cultures.

SAHITYA AKADEMI PURASKAR

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GLOBAL TOBACCO EPIDEMIC

Context

WHO has released the 10th edition of its Global Tobacco Epidemic Report, assessing progress in tobacco control since the launch of the MPOWER strategy in 2008.

Tobacco Consumption

- The report notes significant global progress, with over 6.1 billion people now protected by at least one of the six MPOWER measures.
- Tobacco use claims over seven million lives a year, predominantly in low- and middle-income countries.
- India is the **world's second-largest tobacco** producer after China.
- India is the **4th largest producer of Flue Cured Virginia (FCV) tobacco** in the world after China, Brazil and Zimbabwe.
- Tobacco use is a major risk factor for Non-Communicable Diseases (NCDs) in India, such as cancer, heart disease, and respiratory illnesses, accounting for over 1.35 million deaths each year.
- Significant progress has been made to reduce tobacco use in countries with the highest burden of tobacco consumption over the last two decades.
 - ◆ Key strategies include the **Framework Convention on Tobacco Control (FCTC)** and the **six proven World Health Organization (WHO) MPOWER** tobacco control measures to reduce tobacco use.



- ◆ High-incidence antigens are present in nearly all humans, so the lack of one, as in this case, is extremely rare and medically significant.

New System

- For a blood group to be considered a new system, **it must fulfill several criteria:**
 - ◆ it should be genetically determined, inherited, identifiable via serological or molecular techniques, and have an associated antibody — criteria that EMM-negative meets.
- The identification of the EMM-negative blood type adds to the **previously known 47 blood group systems**, making it the **48th globally recognised system in transfusion science**.

International Society of Blood Transfusion (ISBT)

- ISBT was founded in **1935**, making it one of the oldest organisations in transfusion medicine.
- **Headquarters of ISBT:** Amsterdam, Netherlands.
- **Functions:** It is a global scientific society that works to promote the sharing of knowledge and best practices in the field of blood transfusion medicine.
 - ◆ ISBT is internationally recognized for developing and maintaining the standardised blood group terminology system.

GWADA NEGATIVE

Context

*France's national blood agency, the **Établissement Français du Sang** or **French Blood Establishment (EFS)**, has identified a completely new blood group system, now officially recognised by the **International Society of Blood Transfusion (ISBT)**.*

About

- It is named **EMM-negative** and colloquially dubbed "**Gwada negative**" in reference to the **Guadeloupean origin of the woman who carries it**. As of June 2025, **only one person** in the world is known to possess this blood type, making it the rarest ever recorded.
- **Gwada negative** is the informal name given to the **newly classified EMM-negative blood group system**, officially registered by ISBT as **ISBT042**.
 - ◆ It is defined by the **absence of the EMM antigen**, which is normally found on red blood cells and is considered a high-incidence antigen.

PRIME MINISTERS MUSEUM AND LIBRARY

Context

*PM Modi chaired the **47th Annual General Meeting of the Prime Ministers Museum and Library (PMML) Society at Teen Murti Bhawan in New Delhi**.*

About

- **Origin:** It is housed at **Teen Murti Bhawan**, the former official residence of India's first Prime Minister, **Jawaharlal Nehru**.
 - ◆ Originally known as the **Nehru Memorial Museum and Library (NMML)**, it was established in **1964** after the death of **Jawaharlal Nehru**.
 - ◆ On **June 27th 1964**, the Teen Murti Bhawan was converted into the **Nehru Memorial Museum and Library (NMML)**.
 - ◆ Renamed in **2021** as the Prime Ministers Museum and Library to honour the contributions of all Indian Prime Ministers.
- **Design:** The Teen Murti Bhawan, which houses the PMML, was designed by British architect **Robert Tor Russell** in **1929–30**.
- **Objectives:** To preserve, document, and disseminate the legacy and contributions of all **Prime Ministers of India**.
 - ◆ To act as a premier institution for research in modern Indian history.

Bonded Labour in India

- As of 2021, an estimated 11 million people in India were living in modern slavery, the highest number globally.
- Between April 2024 and January 2025, approximately 250 bonded labourers were rescued in India.
- In the fiscal year 2023-24, only 468 bonded labourers were rehabilitated against an annual target of 1.3 million.
- Over 80% of bonded labourers are from historically marginalized Scheduled Caste (SC), Scheduled Tribe (ST), and Other Backward Class (OBC) communities.

Senior citizens in India

- According to Census 2011, India has approximately 103 million elderly citizens, accounting for 8.6 per cent of the population.
- Population projections estimate 20% of the country will be senior citizens by 2047.

Refugees

- By the end of 2024, 123.2 million people were forcibly displaced worldwide.
- In the year 2024, 1.6 million refugees returned to their countries of origin.
- 92% of these returns were concentrated in just four countries: Afghanistan, Syria, South Sudan and Ukraine.

Global Temperature

- The year 2024 was not only the hottest year on record but also the first year to breach 1.5°C above the 1850–1900 baseline.
- There is a 70% chance that the average global temperature for the 2025–2029 period will exceed pre-industrial levels by more than 1.5°C.

Global Warming and Glacial Loss

- If the world gets warmer by 2.7°C due to the current trajectory of climate policies, only 24% of the world's present-day glaciers will remain.
- Glaciers hold 70 per cent of the Earth's freshwater, currently encompassing around 10 percent of the planet's land area.

Carbon Sequestration

- Oceans absorb over 25% of global CO₂ emissions and 90% of excess heat generated by human activity

India's Trade Deficit

- India's trade deficit narrowed to \$6.6 billion in May 2025, a 30% decline compared to 2024.

- Total exports rose 2.8% to \$71.1 billion, with services exports up 9.4% to \$32.4 billion.

Potato Cultivation

- India is the world's second top producer and consumer of potato; in 2020, it saw a production of 51.30 million tonnes.
- At the top is China, with its potato output in 2020 at 78.24 million tonnes.
- Together, the two countries account for over one-third of the global potato production (359.07 MT).

MSMEs

- Globally, MSMEs represent the most dominant segment of the business ecosystem, accounting for nearly 90% of enterprises and over 50% of total employment.
- In India, MSMEs are contributing around 30% to the GDP and over 45% to the country's exports.

Agriculture Credit

- Institutional credit disbursement through KCC increased from Rs.4.26 lakh crore in 2014 to Rs. 10.05 lakh crore by December 2024.
- Overall agricultural credit flow also rose from Rs.7.3 lakh crore in FY 2013-14 to Rs.25.49 lakh crore in FY 2023-24.

Nuclear Energy Mission

- Capacity Target:** 100 GW by 2047 (Current capacity: 8 GW).
- Small Modular Reactors (SMRs):** `20,000 crore allocation for R&D and indigenous SMR development.
 - Goal:** Five operational SMRs by 2033.

India's Startup Ecosystem

- India with 30,000+ tech startups, making it the 3rd largest startup ecosystem in the world after the US and China.
- The number of DPIIT-recognised startups has grown from around 500 in 2016 to 1,59,157 as of January 2025.
- India is ranked fourth after the US, UK and China in terms of total funding to tech startups
 - At present, the country has over 1.4 lakh startups. India minted six new unicorns in 2024 alone.

Importance Agriculture and Allied Sectors

- Contribution to GDP and GVA:** 18% to India's Gross Value Added (GVA) in 2023–24.
- Employment Generation:** Largest employer in the country with 45% of India's workforce is engaged in it.
- Food Security:** Ensures food security for over 1.4 billion people.



Test Yourself

Objective Questions

Visit: www.nextias.com for monthly compilation of Current based MCQs

Mains Questions

GS PAPER-I

1. The global bleaching of coral reefs marks the fourth such event in recent decades. Examine the causes and assess its impact on biodiversity and coastal livelihoods. **(15 Marks, 250 Words)**
2. Declining birth rates in advanced Indian states signal a shift in demographic trends. Analyse the implications for policy planning and social infrastructure. **(10 Marks, 150 Words)**
3. Urban flooding has become a recurring challenge in Indian cities. Evaluate the key reasons and suggest nature-based solutions for resilience. **(15 Marks, 250 Words)**
4. India's growing dependence on rare earths for clean tech industries underscores resource vulnerabilities. Discuss the strategic importance of rare earths for India. **(10 Marks, 150 Words)**

GS PAPER-II

5. The continued vacancy of the Deputy Speaker post in the Lok Sabha highlights institutional weaknesses. Discuss its constitutional significance and consequences. **(10 Marks, 150 Words)**
6. India-Japan maritime partnership has broadened significantly under the Maritime Amrit Kaal Vision. Analyse its strategic and economic implications. **(15 Marks, 250 Words)**
7. The Indo-Central Asia Dialogue reflects a deepening regional engagement. Critically analyse the opportunities and constraints for India in Central Asia. **(15 Marks, 250 Words)**
8. The Supreme Court's ruling on the power to modify arbitral awards has sparked debate. Examine the judgment and its implications for arbitration in India. **(15 Marks, 250 Words)**
9. Unified Payments Interface (UPI) is emerging as India's tool for digital diplomacy. Examine its impact on India's soft power and global fintech leadership. **(10 Marks, 150 Words)**
10. Operation Sindhu and India's response to West Asian tensions reflect its evolving diaspora and strategic evacuation policy. Discuss. **(15 Marks, 250 Words)**

GS PAPER-III

11. India's growing emphasis on drone warfare requires regulatory, ethical, and strategic frameworks. Examine the opportunities and challenges in this context. **(15 Marks, 250 Words)**
12. AI-driven biomanufacturing is being seen as a new frontier in health and clean tech. Evaluate India's preparedness and constraints in this field. **(15 Marks, 250 Words)**
13. Space Situational Awareness (SSA) has become essential for national security and satellite safety. Discuss India's capabilities and challenges in SSA. **(15 Marks, 250 Words)**
14. The rise in food inflation due to climate anomalies like heatwaves and delayed monsoons demands policy reform. Examine key strategies for food security. **(10 Marks, 150 Words)**
15. Net FDI in India slumped by 96% in FY25. Critically evaluate the underlying causes and suggest measures to revive investor confidence. **(15 Marks, 250 Words)**
16. The emergence of Green Municipal Bonds (GMBs) offers new avenues for climate finance. Discuss their scope and regulatory challenges in India. **(10 Marks, 150 Words)**
17. India's rise as the 4th largest economy in nominal terms marks a milestone. Analyse the key drivers and structural challenges of this trajectory. **(15 Marks, 250 Words)**
18. India's record cargo movement through inland waterways reflects its logistics shift. Examine the factors enabling this transformation and its long-term impact. **(15 Marks, 250 Words)**
19. Supreme Court's warning on Bitcoin's use for hawala raises legal and regulatory concerns. Evaluate the implications for India's crypto policy framework. **(15 Marks, 250 Words)**
20. The Fourth Global Coral Bleaching event is a climate red flag. Analyse India's response mechanisms and international commitments toward ocean conservation. **(10 Marks, 150 Words)**