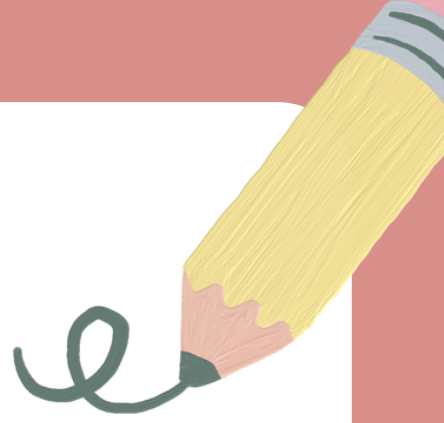
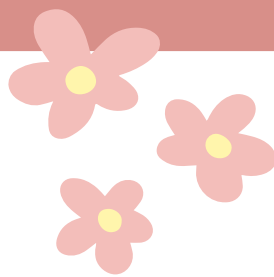
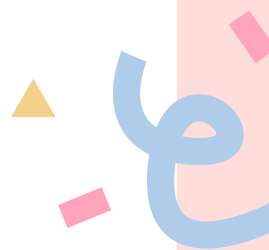




# Current Pulse



— Monthly magazine —



# Right to vote

Recently demands were raised to recognise Right to vote as a fundamental right.

## About Right to Vote in India

- It is a **Constitutional Right**.
- **Related Constitutional Provisions:**
  - **Article 325:** No person to be ineligible for inclusion in electoral roll on grounds of religion, race, caste or sex.
  - **Article 326:** Elections to Lok Sabha and State Legislative Assemblies on the basis of adult suffrage (above 18 years of age).
- **Related Sections under Representation of the People Act (RPA)**
  - **Section 62 in RPA, 1951:** It deals with right to vote and specifies restrictions such as voting in no more than one constituency, disallowance in case of confinement in a prison etc.
  - **Section 16 of RPA, 1950:** It specifies disqualifications for registration in an electoral roll.

## Key judgements

- **People's Union of Civil Liberties case (2003):** Right to vote is statutory, but freedom of voting is a fundamental right (Article 19(1)(a)).
- **Anoop Baranwal vs UoI (2023):** Recognised it as a constitutional right rather a statutory or fundamental right

# Right to Legal Representation

Faizabad Bar Association resolved not to represent the accused in the Ayodhya Ram Temple embezzlement case.

## Right to Legal Representation

- **Article 22 (Fundamental Right):** No arrested person shall be denied the right to consult and be defended by a legal practitioner of their choice.
- **Article 39A (Directive Principle):** The State must ensure that no citizen is denied access to justice due to economic or other disabilities.
- **Key Judgements:**
  - **Sheikh Mukhtar Case (2020):** The Supreme Court recognized the **right to a fair trial as an integral part of Article 21** (Right to Life and Personal Liberty).
  - **Kuldeep Agarwal Case (2019):** "Special circumstances" can justify an individual advocate refusing a case, but not a Bar Association doing so collectively.
  - **M. Rafi v. State of Tamil Nadu (2010):** All Bar Association resolutions that collectively deny legal representation to specific accused persons are null and void.

# Insurance Surety Bonds (ISBs)

**Coal Blocks Allocation (Amendment) Rules, 2026** enabled the use of Insurance Surety Bonds (ISBs) in place of Performance Bank Guarantees (PBGs).

- The reform currently covers **coal blocks allocated under the Mines and Minerals (Development and Regulation) Act, 1957**, later proposed to be extended to coal blocks allocated under the **Coal Mines (Special Provisions) Act, 2015**.

## Insurance Surety Bonds (ISBs) & Performance Bank Guarantees (PBGs)

- **Insurance Surety Bonds (ISBs):** A financial guarantee issued by an insurance company that compensates the government if the contractor or allocatee fails to meet contractual obligations.
- **Performance Bank Guarantees (PBGs):** A bank-issued guarantee ensuring that a project developer fulfils contractual obligations; if the developer defaults, the government can recover the guaranteed amount from the bank.

# 16th India-Japan Annual Summit held in New Delhi

## Key-Outcomes of the Summit

- **Joint Declaration on Economic Security:** Includes key sectors like semiconductors, critical minerals, information and communication technology, including AI, clean energy etc.
- **Next Generation Mobility Partnership Framework:** Accelerate investment in mobility sectors including rail, automotive and road infrastructure, aviation, etc.
- **Biogas Initiative:** Supports the establishment of 1,000 biogas and organic fertilizer plants in India.
- **First India-Japan defence co-development project:** Naval Radio Antenna project
- **Other cooperation areas:** Pharma through Active Pharmaceutical Ingredients (APIs), internet registry operations, geology and mineral exploration, etc.

## Significance of India-Japan Relations

- **Infrastructural development:** E.g., **Mumbai-Ahmedabad High Speed Rail (MAHSR) project**, which is being implemented with Japanese technical and financial assistance.
- **Foreign Investment:** Japan is the **fifth-largest** source of Foreign Direct Investment (FDI) into India and accounts for 6% of total FDI into India.
- **Economic relations:** E.g., India- Japan Comprehensive Economic Partnership Agreement (CEPA) came into effect from **2011**.
- **Strategic Alignment:** E.g., both countries are part of QUAD Initiative
- **Space Exploration:** ISRO and Japan's space agency, JAXA, are collaborating on the Lunar Polar Exploration Mission.

## I-2SEA Submarine Cable System (SCS)

*A consortium comprising **Microsoft, Singtel, Tata Communications, and Lightstorm** has announced the construction of the 3,600 km long **I-2SEA submarine cable system connecting India, Malaysia, and Singapore.***

- It is expected to become operational in 2029.

### About I-2SEA Submarine Cable System (SCS)

- It is **designed** to support the growing demand for AI training and inference, hyperscale cloud services, GPU infrastructure, and enterprise connectivity.
- It will connect Machilipatnam (Andhra Pradesh) and South Chennai (Tamil Nadu) in India, Kuala Lumpur (Malaysia), Singapore.

### About Submarine Cable System

- They are **fibre optic cables** laid on the **ocean floor** that **connect countries** across the world to **provide internet and telecommunications**.
  - Optical fibres are used to **transmit information** as **light pulses**.
  - It works based on a principle called '**total internal reflection**'-where the **light in a fibre-optic cable** travels through the **core (hallway)** by **constantly bouncing from the cladding (mirror-lined walls)**.
- These "**invisible highways**" **transmit between 95% and 99% of all international data traffic**.
- **United Nations General Assembly (UNGA) in 2010** had described the Submarine cable as **critical communication infrastructure**.
- **Major Challenges to SCS:** Risks from accidental or deliberate damage (e.g., anchoring) Environmental factors like earthquakes, Ageing infrastructure, etc.

# Indus Waters Treaty to remain suspended: India

India has reiterated that the Indus Waters Treaty will remain suspended until Pakistan credibly and irreversibly ends its support for cross-border terrorism.

- India had put the Treaty under abeyance post Pahalgam terrorist attack in April 2025.
- About Indus Waters Treaty
- **Signed:** On 19 September 1960 at Karachi between India and Pakistan, with the World Bank (IBRD) as a signatory/facilitator.
  - Came into force with retrospective effect from 1 April 1960.
  - **Rivers Covered:**
    - **Eastern Rivers (Ravi, Beas and Sutlej):** Allocated to India for unrestricted use.
    - **Western Rivers (Indus, Jhelum and Chenab):** Allocated to Pakistan.
      - India is permitted limited use for domestic purposes, non-consumptive uses, irrigation and run-of-the-river hydroelectric projects, in accordance with the Treaty.
  - **Dispute Resolution under IWT:**
    - **Step 1: Permanent Indus Commission (PIC)** with a commissioner from each country. (Meets annually alternatively in both countries).
    - **Step 2: Neutral Expert (appointed by World Bank)** and involves rendering a binding decision.
    - **Step 3: Court of Arbitration** upon agreement between parties or at the request of either party.

| Implications of the Suspension of the Indus Waters Treaty                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>For Pakistan:</b></p> <ul style="list-style-type: none"><li>• <b>Food insecurity:</b> The Indus system irrigates over 80% of Pakistan's food crops (World Bank).</li><li>• <b>Economy:</b> Wheat, rice and cotton, dependent on the Indus system, earned USD 4.8 billion in exports (2022).</li><li>• <b>Electricity and water stress:</b> Around one-third of Pakistan's electricity comes from hydropower, while the country is already water-stressed.</li></ul> | <p><b>For India:</b></p> <ul style="list-style-type: none"><li>• <b>Weaponisation of water resources:</b> Global focus on Pakistan' State-terror nexus.<ul style="list-style-type: none"><li>◦ However, it might set a precedent for upstream countries, particularly China on the Brahmaputra, to adopt similar strategies.</li></ul></li><li>• <b>Credibility as a responsible international actor:</b> Unilateral suspension may be perceived as undermining treaty commitments.</li><li>• <b>Ecological imbalance:</b> New water infrastructure projects may affect the biodiversity-rich and seismically sensitive Indus basin.</li></ul> |

# India-US Relations

**India-US Relations on the 250th Anniversary of US Independence** The relationship between the world's largest democracy (India) and oldest democracy (United States) has transformed dramatically from Cold War estrangement to a robust strategic partnership.

## Historic Evolution of India-US Relations

- **The Cold War Era and Estrangement (1947–1990):**
  - **Policy of Non-Alignment:** Following independence, India adopted non-alignment to preserve **strategic autonomy**, creating geopolitical distance with Washington.
  - **Key Points of Friction:**
    - **1971 India-Pakistan War:** India signed the **Indo-Soviet Treaty of Friendship**; US deployed the **USS Enterprise task force in the Bay of Bengal in support of Pakistan**.
    - **Nuclear Tensions:** India's **1974 "Smiling Buddha"** test triggered US export controls. The **1998 Pokhran-II tests** led to immediate economic sanctions.
- **The Thaw and Turning Point (1991–2024):**
  - **Economic Opening (1991):** The end of the Cold War and **India's 1991 economic reforms opened markets** and initiated a thaw in relations.
  - **Diplomatic Shifts (1999–2001):** During the **1999 Kargil conflict**, the US pressured Pakistan to withdraw forces. By 2001, remaining nuclear sanctions were lifted.
  - **The Breakthrough (2008):** The **India-US Civil Nuclear Agreement** ended India's nuclear isolation and built foundational trust between the two democracies.
  - **India designated as Major Defense Partner (2016):** **Foundational Defense Agreements** such as LEMOA (logistics), COMCASA (communications), BECA (geospatial), etc. were signed.
  - **The Indo-Pacific Focus (2017):** Mutual concerns over China led to the revival of the **Quadrilateral Security Dialogue (Quad)** with Japan and Australia.

## Current Status of India-US Relations (2025-26)

- **Economic and Trade Dynamics:**
  - The US is **India's 2<sup>nd</sup> largest trading partners** with **bilateral trade (goods + services) exceeding \$200 billion (India having a surplus)** and ambitions to reach \$500 billion.
  - **2025 Tariff Tensions:** US imposed reciprocal tariffs (escalating to 50%) partly due to India's purchases of Russian oil.
  - **2026 Interim Trade Framework:** Tariffs **reduced to ~18%** on many Indian goods.
- **Defense and Security Cooperation**
  - **Key Platforms Acquired/Integrated:** C-17 Globemaster, C-130J, P-8I Poseidon, Apache helicopters, Chinook, MH-60R Seahawk.
  - **2025 10-Year Framework:** Signed for Major Defense Partnership, focuses on interoperability (land, sea, air, space, cyber), co-development, and industrial collaboration.
  - **Joint Exercises:** Routine drills like Yudh Abhyas (Army), Vajra Prahar, Malabar (naval with Quad partners).

# World Bank Income Classification

World Bank (WB) elevated **Vietnam, Sri Lanka, Philippines, Jordan, and Micronesia** to upper-middle income status.

- **India** remains an **Lower-Middle-Income Economy**.

## About WB Income Classification

- **Methodology Used:** GNI per capita measured in USD dollars — using the Atlas methodology.
- **Current Classification**
  - **Low-income economies:** GNI \$1,175 or less.
  - **lower middle-income economies:** GNI between \$1,176 and \$4,635.
  - **upper middle-income economies:** between \$4,636 and \$14,375.
  - **high-income economies:** More than \$14,375.
- On July 1 each year, WB updates classifications estimates from previous calendar year.
- **Significance:** Classifications inform which countries can **access concessional loans and development assistance**.

# Global Passport Index

India's ranking in the **Global Passport Index (GPI)** has fallen one rank from last year to **125th spot**.

## About Global Passport Index

- It evaluates how **effectively a passport enables citizens to travel, invest, live securely, and access global opportunities**.
- **Published by:** Global Citizen Solutions
- Covers **200 countries**.
- Uses **Three core pillars (Enhanced Mobility, Investment Potential, and Quality of Life)** and **15 indicators** to assess passport strength.

# India-Israel Bilateral Investment Agreement

The agreement replaces the **India–Israel Bilateral Investment Treaty (BIT), 1996** which was **terminated in 2017**.

- It aims to **promote investment while balancing investor protection** with the **sovereign right of governments to regulate**.
- Under the **Vienna Convention on the Law of Treaties (1969)**, there is **no substantive legal difference** between a "Treaty" and an "Agreement".

## About BIT

- **Definition:** They are **reciprocal agreements between two countries** that promote and protect **foreign investments in each other's territories**.
- **Purpose:** They provide a **legal framework** to ensure fair treatment of investors and **create a stable investment environment**.
- **International Law:** BITs come within **Art. 38 (1) (a) Statute of the International Court of Justice** as primary sources of obligations under public international law.
- **Indian framework:** India approved **new Model BIT Text in 2015**, which replaced **Indian Model BIT, 1993**.
  - Since then, Model text 2015 is used for (re)negotiations of BITs and investment.
    - **In Budget 2025-26**, the Government announced a review of the BIT framework.

## About India–Israel BIT

- **Investment Protection:** Protects investments made by **investors of both countries**.
- **Compensation during Armed Conflict:** Investors suffering losses due to **War, Armed conflict or Civil unrest** will receive **non-discriminatory treatment** regarding compensation.
- **Right to Regulate:** Preserves the government's authority to regulate for **public health, environment, security, and public welfare**.
- **Investor–State Dispute Settlement:** Provides a mechanism to **resolve disputes through international arbitration**.

## Other BITs of India

**India – Uzbekistan BIT (2024)**

**India – United Arab Emirates BIT (2024)**

**Brazil – India BIT (2020)**

**India – Kyrgyzstan BIT (2019)**

**Belarus – India BIT (2018)**

# Mount Erebus

Scientists have discovered that Mount Erebus emits volcanic gases containing microscopic crystals of pure gold.

## About Mount Erebus

- **Location:** Ross Island in the Ross Sea, Antarctica,
- **Key features**
  - It is the **world's southernmost active volcano**
  - It has a **permanent lava lake**
  - It is a **stratovolcano** and is part of the Pacific **Ring of Fire** that encircles the Pacific Ocean basin.

# Lonar lake

Recently, rising water levels in Lonar Lake have submerged parts of nearby temples, including the Kamalja Devi Temple.

## About Lonar lake

- **Location:** Vidarbha region, Maharashtra.
- **Origin:** Formed nearly 50,000 to 52,000 years ago when a meteorite impacted the Earth in the basalt formations of the Deccan Plateau.
  - It is the one of the largest crater lake.
- **Conservation:** It has been designated a Wildlife Sanctuary, National Geo-Heritage Site and Ramsar Site
- **Key features**
  - **Unique Biodiversity:** It has 2 distinct layers (alkaline and saline) of water, harboring microorganisms not found anywhere else.
  - **Endorheic basin:** a closed drainage basin with no outflow.
  - **Moon resemblance:** Minerals in the lake soil closely resemble those found in moon rocks

# Norwegian Sea

UK fighter jets intercepted a Russian patrol aircraft over Norwegian Sea.

## Norwegian Sea

- **Geography**
  - **Location:** Marginal sea of Arctic Ocean between Norway, Greenland, and Iceland.
  - **Boundaries:** Barents Sea (North-East) and Greenland Sea (North); separated from the Atlantic Ocean by Greenland–Iceland–Faroe–Scotland Ridge and from Greenland Sea by Jan Mayen Ridge.
  - **Formation:** ~250 million years ago due to separation of Eurasian and North American plates.
- **Oceanography & Climate**
  - **Currents:** Warm Norwegian Current keeps the sea ice-free year-round.
  - **Thermal Mixing:** Interaction with the East Iceland Current creates rich fishing grounds.



# Flash Floods

**Intense rainfall triggered massive flash floods and landslides in Jammu & Kashmir's Chenab Valley Increasing extreme weather events in the fragile Himalayan region are triggering flash floods.**

## About Flash Flood

- **Definition:** Sudden, short-duration and highly localised floods triggered within hours by intense rainfall, rapid snowmelt, dam/levee failure or ice jams, leaving very little time for warning and response.
- **Other recent occurrences:** Chennai (2015), Kerala (2018), Assam (2024), etc.

## Key Causes of Flash Floods in the Himalayas

- **Climatic & Meteorological Factors:** Cloudbursts, intense rainfall, western disturbance–monsoon interaction, climate change, and atmospheric aerosols trigger extreme precipitation and flash floods.
- **Glacial Lake Outburst Floods (GLOFs):** Sudden release of large quantities of bounded water due to the melting of ice blocks in glacier-fed rivers.
- **Geographical Factors:** High elevations and steep slopes promote intense rainfall and rapid surface runoff.
- **Anthropogenic (Human-Induced) Factors:** Unplanned infrastructure (dams, roads etc.), unscientific hill cutting, poor slope stabilisation, and improper muck (construction debris) disposal destabilise slopes, obstruct drainage, and intensify flash floods

## Way Forward

- **Strengthen Early Warning Systems:** Expand India Meteorological Department's **Flash Flood Guidance Services (FFGS)**, satellite monitoring and ensure that real-time alerts reach vulnerable communities.
- **Disaster-Resilient Infrastructure:** Adopt scientific drainage planning, slope stabilisation and regulate construction in fragile Himalayan regions.
- **Risk-Based Planning:** Recognise flash floods as a distinct disaster, undertake localised vulnerability mapping and develop state-specific SOPs.
- **Community-Based Resilience:** Integrate indigenous knowledge into local early warning and disaster preparedness systems.

# Water Security in a Rapidly Drying India

Research by the **Council on Energy, Environment and Water (CEEW)** indicates that

- **11 out of 15 major river basins in India are experiencing water stress** (with annual water availability below 1,700 m<sup>3</sup> per person).
- Water crisis has evolved from a **seasonal inconvenience into a permanent structural risk**, threatening households, agriculture, industry, and urban economies (like Bengaluru, Delhi, etc.).

## Challenges in ensuring water security in India

- **Limited Freshwater Resources:** India has nearly **18% of the world's population** but **only about 4% of global freshwater resources**.
- **Declining Urban Water Availability:** E.g. in Delhi, the actual water supply has plummeted to **~70% of its total daily demand** of 1,250 million gallons.
- **Seasonal Rainfall Pattern:** **~ 70% of annual rainfall occurs within three months**, making water availability highly uneven across seasons.
  - Factors like El Nino have led to a **40% deficit even in monsoon rainfall in June 2026**.
- **Infrastructure Gaps:** Such as inadequate facilities for **treating wastewater (only 30% gets treated as per CPCB)**, high levels of **water pollution**, etc.

## Strategies to achieve water security in India

- **Climate-Proofing:** Through **granular climate risk mapping of water infrastructure** to protect critical urban infrastructure (like grids and schools) in low-lying or coastal areas.
  - Leverage existing mechanisms like the **Urban Challenge Fund (UCF)** to finance **resilient municipal water systems**.
- **Urban Water Reuse:** Shifting to a **circular water approach** by treating and reusing wastewater for activities such as cooling data centres.
- **Scale up Micro-Irrigation (beyond the current 20% coverage):** Requires **redesigning subsidies for smallholder farmers**, providing low-cost insurance with faster claims under PMFBY.
- **Generate River Basin-Level Data:** Closing metrics gaps **by measuring actual consumption, withdrawals, and losses** instead of merely estimating raw availability by **leveraging AI technology at scale**.

# Zoological Survey of India (ZSI)

**Animal Discoveries–2025**, released by the **Zoological Survey of India (ZSI)** reported 709 new faunal records, including **483 new species and 226 species recorded** in India for the first time.

## About Zoological Survey of India (ZSI)

- It is India's premier institution for survey, exploration, taxonomy, documentation, and conservation of the country's faunal diversity.
- **Established** in 1916
- It functions under the Union Ministry of Environment, Forests and Climate Change.
- **Key Objectives:**
  - Maintenance & Development of National Zoological Collections
  - Periodic review of the Status of Threatened and Endemic species, etc.
- **HQ: Kolkata** and has 16 regional centers spread across the country.

# Borjuli wetland

The Borjuli wetland has been notified as a **Biodiversity Heritage Site**.

## About Borjuli Wetland

- **Location:** Sonitpur District, Assam
- It is known for harbouring a variety of **wild rice (*Oryza rufipogon*)**
  - It is the **progenitor** of present-day cultivated rice, ***Oryza sativa***.
  - It is disease- and pest-resistant and can tolerate flooding and saline conditions.

## Biodiversity Heritage Site

- They are unique, ecologically fragile ecosystems having rich biodiversity comprising some specific components. E.g., high endemism, presence of threatened species etc.
- **Notification:** by the State Government in consultation with local bodies under the **Biological Diversity Act, 2002**.
- **National Biodiversity Authority**, under ministry of Environment, advises the State Government in the selection and management

# Cyttopsis indica (Indian dory)

ICAR-Central Marine Fisheries Research Institute (ICAR-CMFRI), Kochi has discovered a **new deep-sea fish 'Cyttopsis indica' (Indian dory)** from the Arabian Sea off Kerala.

## About Cyttopsis indica (Indian dory)

- It was found at depths of **350-500 metres** along the continental slope of the **eastern Lakshadweep Sea**.
- **The DNA analysis** revealed a **stark genetic divergence from all other known species in its genus**, correcting a long-standing taxonomic error.
- **Until now**, the fish seen in the **Indian Ocean** was believed to be *Cyttopsis rosea*, a species with distribution now confined to the **Atlantic Ocean**.

# Direct-Seeded Rice

Direct-Seeded Rice (DSR) is witnessing increased adoption by farmers amid El Niño-induced water stress.

## About Direct-Seeded Rice

- A **water- and labour-saving** method of rice cultivation in which **seeds are sown directly in the field**, eliminating the need for nursery raising and transplanting.
- Can be practised through **dry seeding, wet seeding or water seeding**, using broadcasting or seed drills.
- Reduces **cultivation cost and methane emissions**, while enabling timely sowing.
- Requires **effective weed management** and proper water control for optimum yields.

**Note:** System of Rice Intensification (SRI) is a rice cultivation method using **young seedlings, wider spacing and intermittent irrigation** to enhance yield while reducing water use.

# Microgastrinae

A new study focused on **Microgastrinae** found that Earth could hold 14.2 million to 20.3 million insect species.

## About Microgastrinae

- They belong to a subfamily of **parasitoid wasps that** live on the larvae of butterflies and moths.
- **Ecological Importance:**
  - Many species act as **natural biological control agents for managing agricultural and forestry pests.**
  - Provide an effective way to **estimate overall insect richness** due to their exceptional diversity and close association with their hosts.

# World Bank (WB) Drops Key Climate Finance Targets

Following disapproval from **United States** (bank's largest shareholder), WB indicated to retire **45% climate co-benefits target** and **35% target in the Climate Change Action Plan [CCAP]**.

- While agreeing to continue its CCAP plan, WB clarified its work on climate is and will remain **firmly client driven**.

## About CCAP

- **Genesis:** Launched In 2016 after Paris Agreement as a five-year **Climate Change Action Plan 2016–2020**.
  - Building on its achievements, the **second CCAP covering 2021–2025** allocated 35% to climate finance.
  - It was **extended until June 30, 2026**.
- **Purpose:** Increase financial and technical support to client countries and private sector clients for **mitigation and adaptation**.

## Key Implications of WB Withdrawal

- **Important Role of WB:** In FY 2025, **48% of WB financing had climate co-benefits**, with important projects in India targeting states like UP, Maharashtra, Kerala, etc.
  - **Climate Co-Benefits** are financial resources which deliver positive benefits associated with climate change **mitigation and adaptation**.
- **Difficulty Achieving Global Targets:** **New Collective Quantified Goal (NCQG)** adopted at CoP29 of UNFCCC demands scaling up financing for **developing countries to at least USD 1.3 trillion annually by 2035** from all sources.
- **Existing Climate Finance Gaps:** **Adaptation financing needs** in developing countries is **12-14 times** as much as current flows (UNEP's 2025 Adaptation Gap Report).
  - India needs cumulative investment requirements of **USD 22.7 trillion by 2070** (NITI Ayog).
- **Energy Security as core driver of development:** E.g., Iran war has cast doubt on viability of liquefied natural gas as 'transition fuel' demanding **renewable alternatives**.

# Himalayan Pangolin

**Himalayan pangolin**, earlier classified as subspecies of Chinese pangolin (*Manis pentadactyla*), confirmed as a **distinct species**.

- Scientists found that **climate change** played a key role in diverging the two lineages ~1.8 million years ago during the early Pleistocene Epoch.

## About Himalayan Pangolin (*Manis aurita*)

- **Distribution:** Restricted to southern Himalayan foothills (Nepal, South Tibet, and Northeast India, including Assam).
- **Features:**
  - It is **larger** on average compared to the Chinese pangolin.
  - It paradoxically has markedly **smaller ears**.
  - It also has a **shorter and broader nasal bone**.

## About Pangolins

- **Highly olfactory reliant scaly mammals**, exhibiting significantly **enlarged olfactory bulb and turbinates**, using smell to forage for **ants and termites**.
- They **roll up into a ball** for protection.
- **Threat:** Poaching, Inbreeding, Illegal wildlife trade.
- **Eight species** of Pangolins exist globally including **Indian Pangolin** (*Manis crassicaudata*).

# AI hallucination

The Supreme Court set aside an order of the National Company Law Tribunal (NCLT) for Using AI-Hallucinated Citations.

## About AI hallucination

- These are **incorrect or misleading results** that AI models generate.
- It perceives **patterns or objects that are non-existent** or imperceptible to human observers, creating outputs that are **nonsensical** or altogether inaccurate.
- E.g., Google's **Bard chatbot** incorrectly claimed that the James Webb Space Telescope had captured the **world's first images** of a planet outside our solar system.
- **Factors responsible** are insufficient training data, incorrect assumptions made by the model, or biases in the data used to train the model.

# Green Ammonia and Methanol

Recently an **Indian company secured long-term offtake deal** with leading Japanese companies for **Green Ammonia and Green Methanol**.

## Green ammonia

- It is a pungent gas primarily used to make fertilizers (China is the largest producer of ammonia)
- **Production:** using the **Haber-Bosch process**, where hydrogen and nitrogen are combined.
- **Significance:** Reducing GHG emissions, can be used as a fuel (has higher density in relation to other chemicals produced via renewable processes), can be used to produce hydrogen

## Green Methanol

- **Methanol** is a colourless liquid
- **Applications** : mainly used for producing other chemicals such as formaldehyde, acetic acid and plastics
  - It can be used as a fuel source for engines, but it is also expensive, flammable and requires double the fuel tank size compared to its oil equivalent.
- **Production:** Green methanol is produced from low-carbon sources such as biomass, or via carbon capture.

# Large Hadron Collider

The European Organization for Nuclear Research (CERN) has shut down the **Large Hadron Collider (LHC)** for its **third Long Shutdown (2026–2030)** to upgrade it into the **High-Luminosity LHC (HL-LHC)**.

## About LHC

- **World's largest and most powerful** particle accelerator, operated by European Organization for Nuclear Research (CERN).
- **Began** operations on 10 September **2008**.
- **Located in a 27-km circular tunnel** underground, on the France–Switzerland border near **Geneva**.
- **Accelerates** and collides **protons and heavy ions** to nearly the speed of light to study the fundamental constituents of matter and conditions immediately after the Big Bang.
- Includes four particle detectors – **ATLAS, CMS, ALICE and LHCb**.
- Discovered the **Higgs boson in 2012**.
  - **Higgs boson** explains how fundamental particles acquire mass.
- Uses superconducting magnets cooled to  $-271.3^{\circ}\text{C}$  with liquid helium.

# Artificial Intelligence in Modern Warfare

From the **Cold War's ideological and nuclear arms race** to the **21st century's Autonomous weapons and algorithmic warfare**, **Artificial Intelligence (AI)** is reshaping modern warfare.

## How AI is Reshaping Modern Warfare

- **AI-enabled battlefield awareness:** AI platforms integrate data from satellites, radar, sensors, and social media to form a digital 'kill web' to compress engagement times. E.g. **Ukraine's Delta platform**.
- **Real-Time Data Analysis:** To process huge data from surveillance systems. E.g. **Project Maven**, a U.S. initiative to analyse large quantities of surveillance data.
- **Minotaur warfare:** AI and human commanders operate as an integrated combat network. E.g. **YFQ-44A Fury**, an AI-enabled Collaborative Combat Aircraft of USA.
- **Intelligence, surveillance, and reconnaissance (ISR):** AI analyzes massive datasets to track enemy movements, predict behavior. E.g. **"Lavender" AI system** used by Hamas targets.

## What India needs to do in AI Warfare?

- **Develop an AI Battlefield Platform:** Build an indigenous AI-enabled data analytics platform.
- **Enable Autonomous Drone Swarms:** Develop AI software for swarm coordination, target identification, and autonomous engagement.
- **Enhance Space-based ISR:** Expand low-Earth orbit (LEO) satellite constellations for persistent surveillance and offensive ISR.
- **Others:** Increase Defence-Tech Investment, Expand Drone Inventory etc.

## India's AI Initiatives in Defence

- **Evaluating Trustworthy Artificial Intelligence Framework and Guidelines:** Launched by the Chief of Defence Staff to promote responsible AI adoption in the Armed Forces.
- **AI-based Crime & Threat Prediction:** Use of ANANT (Adversary Network Analysis Tool) developed by BEL for predictive intelligence and attack forecasting.
- **Project Seeker:** AI-enabled system developed by the Indian Army for surveillance, garrison security, and population monitoring.
- **AI Task Force:** Strategic Implementation of AI for National Security and Defence Task Force, chaired by C. Chandrasekaran.

# e-MERLIN Radio Array

Astronomers, including from India, discovered a hidden population of faint, weakly active supermassive black holes in nearby galaxies using **e-MERLIN (enhanced Multi-Element Remotely Linked Interferometer Network) radio array**.

## About e-MERLIN Radio Array

- It is **UK's national radio telescope interferometer**.
- **Infrastructure:** Network of **7 radio telescopes** spread over **217 km** across Great Britain.
- **Connectivity:** Linked by optical fibre to **Jodrell Bank Observatory**; operated by the **University of Manchester**.
- **Resolution:** Hubble-like angular resolution with high-sensitivity centimetre-wave radio observations.
- **Capabilities:** 2 GHz wide-band correlator for advanced spatial-scale coverage.

# Gaganyaan missions

ISRO conducts first SOLVE ground test important for Gaganyaan missions Sub-Orbital Launch Vehicle for Experiments (SOLVE) solid motor was successfully tested at the Static Test Facility, Satish Dhawan Space Centre, Sriharikota.

- ISRO is developing a solid motor based SOLVE as a test platform to carry out Integrated Parachute Tests.

## About SOLVE

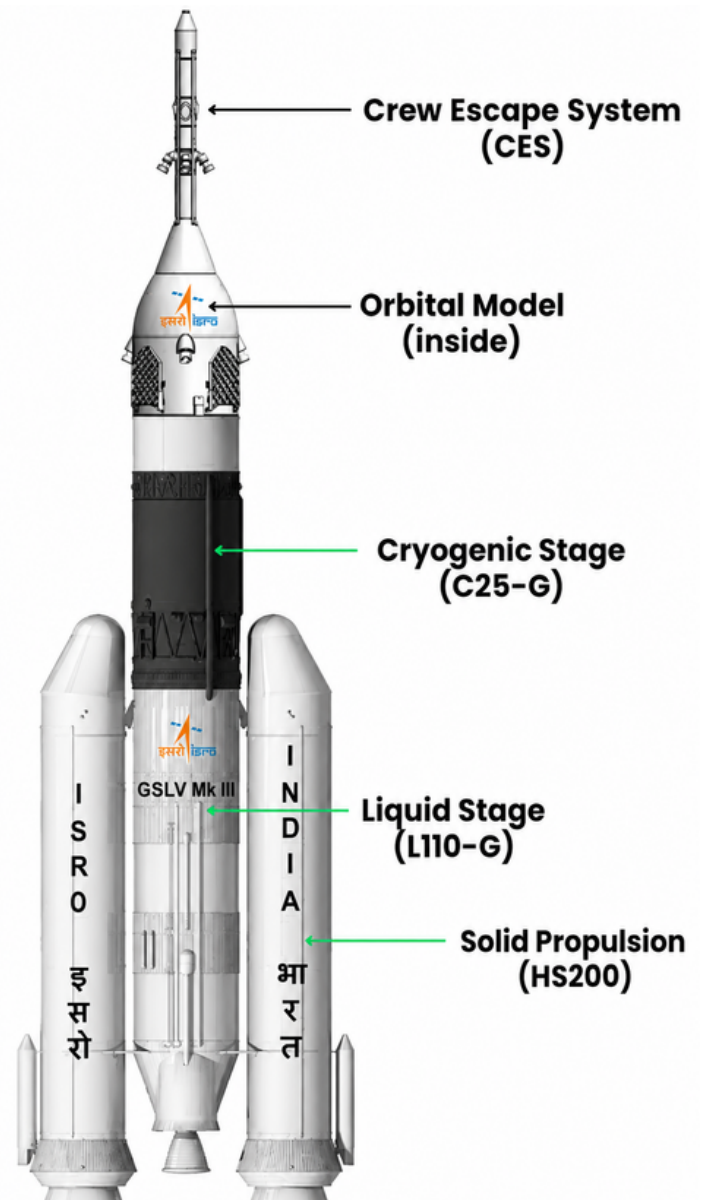
- **Objective:** It will serve as a test platform for validating the deceleration (parachute) system of the Gaganyaan Mission Crew Module.
- **Function:** Carries Crew Module to 10–17 km, followed by separation and sea splashdown using 10 parachutes.
- **Component:** Solid motor is derived from the Polar Satellite Launch Vehicle (PSLV) Strap-on Motor with modifications.

## About Gaganyaan Mission

- India's first human spaceflight mission aims to send 3 astronauts to a 400 km Low Earth Orbit for 3 days, followed by a safe splashdown in Indian waters.
- Gynoid (female robot) Vyommitra will undertake the first uncrewed mission of Gaganyaan.

## Components of the Gaganyaan Mission

- **Human-Rated LVM3 (HLVM3):** Modified LVM3 rocket designed to safely carry astronauts, equipped with a Crew Escape System (CES). It is a three-stage rocket. (Refer Image)
- **Crew Escape System (CES):** Emergency escape mechanism that rapidly separates the Crew Module from the launch vehicle.
- **Orbital Module (OM):** Spacecraft comprising:
  - **Crew Module (CM):** Pressurized, habitable module with life support.
  - **Service Module (SM):** Provides propulsion, power, and thermal control.
- **Life Support System (LSS):** Maintains an Earth-like environment inside the Crew Module.
- **Thermal Protection & Recovery Systems:** Includes heat shield, parachutes, and sea recovery systems etc.
- **Human-Centric Technologies:** Human Factors Engineering, Bioastronautics, etc.



# Pandavani

The President and Prime Minister expressed grief over the demise of the renowned Pandavani singer Teejan Bai.

- Teejan Bai was the only person from Chhattisgarh to have been awarded the Padma Vibhushan.

## About Pandavani

- Pandavani is a **traditional narrative folk-art** form that originates **Chhattisgarh**.
- Rooted in the ancient Indian epic, **the Mahabharata**,
  - Performances combine music, narration, dialogue, and dramatic acting.
- It has **two main styles**:
  - **Vedamati**: The narrator, known as the Vedamati, recites the stories playing the musical instrument called the “Bhumbo,” a stringed instrument.
  - **Kapalik**: It involves a solo performance where the artist not only narrates but also enacts the different characters of the epic.

# Changpa Community

The Ladakh administration has taken measures to strengthen the Pashmina value chain and enhance the livelihoods of the Changpa pastoral community.

## About Changpa

- A **semi-nomadic pastoral community** inhabiting the **Changthang Plateau** of Ladakh.
- Primarily inhabit the **Changthang Cold Desert Wildlife Sanctuary**.
- Rear the indigenous **Changthangi (Changra) goats**, which produce the world-famous **Pashmina (cashmere) wool**.
- Practise **seasonal transhumance** and also rear **yaks and sheep**.
- Recognised as a **Scheduled Tribe (ST)** in India.
- Custodians of Ladakh's high-altitude pastoral ecosystem and traditional Pashmina heritage.

# Safety and sustainability of Roads in India

The Ministry of Road Transport and Highways (MoRTH) released the **Road Accidents in India 2024 report**, highlighting rising road accidents and fatalities, emphasizing the need for safe, sustainable, and technology-driven road infrastructure.

## Road Safety as a concern in India

- India accounts for **11% of global road fatalities with just 1% of the world's vehicles** (World Bank).
- In 2024, India recorded **485 road deaths per day**, exceeding the 10-year average (MoRTH).

## Technological Solutions for Safer Roads

- **Vehicle-to-Vehicle (V2V) Communication:** Shares real-time vehicle data to prevent collisions.
- **Automated Incident Detection:** Enables faster emergency response to crashes and breakdowns.
- **Intelligent Transport Systems (ITS):** AI-enabled CCTV, Advanced Traffic Management Systems, and automated incident detection.
- **AI-based Surveillance:** Detects traffic violations and accidents in real time.
- **Speed Detection Systems:** Identify over-speeding and enable e-challans.

## Key Measures for sustainable roads

- **Green Construction:** Use of waste plastic, fly ash, and industrial slag in highway construction.
- **Green Engineering:** Conserves natural resources and reduces industrial waste.
- **Global Best Practices:** Netherlands (solar roads), Germany (eHighways), Sweden (dynamic wireless charging roads), and Norway (EV highway charging networks) showcase innovative models for sustainable and energy-efficient road infrastructure.

# Defence Acquisition Council

**Defence Acquisition Council (DAC) approves capital acquisition for the procurement several weapon systems.**

- **DAC (chairman: Defense Minister)** gives 'in principle' approval to Capital acquisitions in the Long Term Perspective Plan and Grants acceptance of necessity for acquisition proposals.

## Key Weapon System Approved

- **AKASH TARANG:** Anti-Unmanned Aerial Vehicles (UAV) Electronic Warfare System for the Indian Army.
  - Unlike hard kill it just **disrupts the frequency, jamming GPS/GNSS and severs communication (soft kill)** between the drone and operator.
- **Medium Range Surface-to-Air Missile (MR-SAM):** Developed by Israel Aerospace Industries and DRDO with **range over 70 km** and is based on the Barak-8 missile.
- **Very Short Range Air Defence System (V-SHORADS):** To neutralize **low altitude aerial threats** at short ranges.
  - It is an indigenously developed **Man Portable Air Defence System**.

# Shift towards Whole-of-Government Approach in Governance in India

**Whole of Government (WoG) approach** refers to a mode of governance where **different government departments & ministries work together** (rather than in silos) to **achieve shared goals** that no single agency can tackle alone.

- E.g. climate change, poverty etc.

## Key Benefits of WoG Approach

- **Enhanced Policy Coherence:** It ensures that different departments are not working at cross-purposes, leading to more consistent governance.
  - E.g. new highways are often dug up soon after construction to lay optical fiber cables.
- **Improved Efficiency and Effectiveness:** Streamlined processes and integrated service delivery reduce redundancy and optimize resource allocation.
  - E.g. **POSHAN Abhiyaan** brings together > 26 ministries to tackle malnutrition as it cannot be solved by food alone but requires clean water, immunization etc.
- **Resource Optimization:** Pools financial, human, and technological resources, which reduces delays, cost overruns and allows sharing of knowledge.
- **Increased Public Trust:** Instead of citizens navigating multiple departments for approvals, integrated platforms provide single-window solutions.
  - E.g. **Jan Samarth portal** integrates 13 credit-linked government schemes from various ministries onto one digital platform.
- **Rapid Crisis Response:** As demonstrated during the **COVID-19 pandemic**, a WoG approach allows for a unified and timely response to national emergencies.
- **Others:** Reduces duplication, enhances transparency and accountability, etc.

## Key Initiatives taken in India

- **PM GatiShakti National Master Plan:** Integrates 44 Central Ministries and 36 States/UTs for infrastructure planning.
- **India Stack:** Integration of foundational digital public infrastructure, such as Aadhaar, UPI, DigiLocker represents WoG in digital service delivery.
- **PRAGATI Platform:** Implemented by Prime Minister's Office, it removes administrative silos by involvement of various government agencies for expeditious project implementation.

# National SC-ST Hub (NSSH) Scheme

The National SC-ST Hub (NSSH) Scheme is a focused initiative designed to empower entrepreneurs from Scheduled Castes and Scheduled Tribes.

## About NSSH Scheme

- **Launched:** In 2016 under the **Ministry of Micro, Small and Medium Enterprises (MSME)**.
- **Implementing Agency:** National Small Industries Corporation (NSIC).
- **Objectives:**
  - Provide professional support to SC/ST entrepreneurs.
  - Designed to help SC/ST enterprises meet the **mandatory 4% procurement sub-target** under the **Central Government Public Procurement Policy for MSEs, 2012**.
  - Promote adoption of best business practices.
  - Leverage opportunities under the Stand-Up India initiative.

# Regional Connectivity Scheme (RCS) – Modified UDAN Launched

Approved by the Union Cabinet on 25 March 2026, the scheme aims to accelerate aviation-led development and advance the vision of **Viksit Bharat 2047**.

## Modified UDAN (Ude Desh Ka Aam Nagrik) Scheme

- **Duration:** 10 years (FY 2026–27 to FY 2035–36)
- **Outlay:** ₹28,840 crore
- **Key Components:**
  - **Development of Aerodromes (CAPEX):** Develop 100 airports from existing unserved airstrips.
  - **Operation & Maintenance (O&M) support:** For 3 years for ~441 RCS-only aerodromes.
  - **Development of 200 Modern Helipads:** In hilly, remote, island and aspirational regions to improve last-mile connectivity and emergency response.
  - **Viability Gap Funding (VGF):** ₹10,043 crore support over 10 years for airline operators to sustain regional routes.
  - **Atmanirbhar Bharat Aviation:** Promote indigenous aircraft procurement (**HAL Dhruv helicopters and HAL Dornier aircraft**) to strengthen aviation capacity in remote and difficult terrains.

## About UDAN Scheme

- **Launch:** October 2016 (Conceptualised under **National Civil Aviation Policy (NCAP) 2016**)
- **Type:** Central Sector Scheme.
- **Ministry:** Ministry of Civil Aviation
- **Implementing Agency:** The Airports Authority of India (AAI).
- **Objective:** Democratize aviation by **making flying accessible and affordable** and strengthening connectivity to Tier-2 and Tier-3 cities.
- **Achievements:**
  - **669 routes** operationalised across **95 airports, heliports and water aerodromes**, benefitting over **1.66 crore passengers**.
  - **₹4,593.28 crore** disbursed as **Viability Gap Funding (VGF)**.
  - Contributed to the expansion of India's airport network from **74 (2014)** to **159 (2024)**.

# National Action Plan for Drug Demand Reduction

The Ministry of Social Justice and Empowerment has launched the **National Action Plan for Drug Demand Reduction**.

## About National Action Plan for Drug Demand Reduction

- A comprehensive national framework for **drug demand reduction**.
  - Over 7 crore people in India affected by substance use disorder (2019 survey).
- Focuses on **prevention, awareness, capacity building, treatment, rehabilitation and social reintegration**.
- Forms the policy framework for the **Nasha Mukta Bharat Abhiyaan (2020)**.
- Supports **NGOs, Integrated Rehabilitation Centres for Addicts (IRCAs), and Community-based Peer-led Interventions (CPLI)**.
- Promotes **research, training, IEC activities and livelihood support**.
- Adopts a **whole-of-government and whole-of-society** approach.

# Online Child Sexual Exploitation and Abuse

**Government issues notice to Meta to Prevent Online Child Sexual Exploitation and Abuse** The Ministry of Electronics and Information Technology directed Instagram to disable all ads and content facilitating access to child sexual exploitative and abuse material (CSEAM).

- **Online Child Sexual Exploitation and Abuse (OCSEA)** involves the use of information and communication technology as a means to sexually abuse and/or sexually exploit children.

## Types of OCSEA

- **Online Grooming:** Building trust with a child online to facilitate sexual exploitation or abuse.
- **CSEAM:** Creation, possession, sharing, or distribution of images/videos depicting child sexual abuse.
- **Sextortion:** Coercing or blackmailing a child using intimate images or videos.
- **Online Enticement/Solicitation:** Persuading or coercing a child to engage in sexual conversations or activities.
- **Others:** Live-streaming Child Sexual Abuse, Online Trafficking and Recruitment, Exposure to Harmful Sexual Content, Identity Theft and Impersonation.

## Steps to be taken to Prevent Online Child Abuse

- **Strengthen Legal Enforcement:** Of POCSO Act, IT Act, and SC judgements.
  - E.g. **Just Rights for Children Alliance v. S. Harish (2024)** held that possession and circulation of CSEAM is punishable under the POCSO and IT Act.
- **Sex Education:** Introduce age-appropriate sex education focusing on consent, online safety, and digital ethics.
- **Awareness and Prevention:** Conduct nationwide campaigns on child protection, cyber safety, and POCSO provisions.
- **Early Intervention:** Identify at-risk children and youth and provide timely counselling and behavioral support.
- **Victim Support:** Expand psychological counselling, rehabilitation, and educational assistance for survivors.

## Initiatives taken by India

- **POCSO Act, 2012:** Section 15 criminalizes the storage and possession of CSEAM.
- **Information Technology Act, 2000 (Amended 2008):** Section 67B criminalizes publishing, browsing, transmitting, or collecting child sexual abuse content electronically.
- **IT Rules, 2021:** Mandate social media intermediaries to proactively identify, remove, and block access to CSEAM.
- **Juvenile Justice Act, 2015:** Provides care, protection, and rehabilitation for children vulnerable to sexual exploitation.
- **UN Convention on the Rights of the Child (1989):** India's ratification reinforces commitments to protect children from online and offline sexual exploitation.

# EAC-PM Report on Unconditional Cash Transfer to Women

An analysis by the **Economic Advisory Council to the Prime Minister (EAC-PM)** evaluates the **socio-economic impacts of cash transfer schemes (in Maharashtra and Odisha) to women** with annual family income below Rs 2.5 lakh.

- **Majhi Ladki Bahin Yojana (Maharashtra):** Provides a monthly direct benefit transfer of Rs 1,500 (Rs 18,000 annually) to eligible women aged 21 to 65.
- **Subhadra Yojana (Odisha):** Provides a biannual transfer totaling Rs 10,000 per year to eligible women aged 21 to under 60.

## Key Findings of Report

- **Financial Security:** Significantly increased **women's savings** (up 84% in Maharashtra and 45% in Odisha) and **monthly spending** (up 46% and 28%, respectively).
- **Financial Autonomy:** E.g. Odisha's Subhadra yojna led to spending decisions **independent of family's financial status**.
- **Financial Inclusion:** Accelerated **use of digital platforms** e.g. UPI due to direct bank transfers.
- **Spending Quality:** Women used the extra income to upgrade their spending **toward welfare-improving categories** like lifestyle, healthcare, and education.

## Policy Recommendations by EAC-PM

- **"Cash-Plus" Framework:** Combining the financial support with **capacity-building, digital literacy, and linkages to Self-Help Groups (SHGs)**.
- **Strengthen Targeting:** Ensuring no deserving woman is excluded while removing ineligible users.
- **Moving toward outcome-based transfers:** Such as children's nutrition-based outcomes.
- **Periodic Review:** To align with inflation and evolving **household expenditure patterns**.

## Issues Related to Unconditional Cash Transfer

- **Limited Impact:** As cash transfers alone may not be sufficient to transform **"entrenched gender norms"**.
- **Fiscal strain:** State's combined public debt stood at **23.27% of GSDP** while total liabilities reached **27.89% of GSDP**.
- **Gaps in Digital Literacy and Infrastructure:** E.g. Jan Dhan-Aadhaar-Mobile can act as a barrier to receiving benefits as **only 38% of households are digitally literate**.