# Factly Monthly

## Compilation

2026

**For UPSC CSE Prelims Exam**

**January 2026**

# INDEX

## Amazonian Stingless Bees To Get Legal Rights

News: Amazonian stingless bees became the world's first insect to get legal rights after ordinances passed by Satipo and Nauta municipalities in Peru.

**About Amazonian Stingless Bees**


Source – DTE

- Amazonian stingless bees are bees that either lack stingers or have stingers that cause little pain.
- Location: They are found mainly in tropical regions. About half of the 500 known species live in the Amazon, with more than 170 species in Peru.
- Origin: These bees have existed for nearly 80 million years, dating back to the time of the dinosaurs.
- Significance
    - Ecological: They pollinate over 80% of Amazonian flora and support crops like cacao, coffee, avocados, and blueberries.
    - Cultural: They are central to Asháninka and Kukama-Kukamiria traditions, knowledge systems, and spiritual beliefs.
    - Other: Their honey is used as traditional medicine and has anti-inflammatory, anti-bacterial, and anti-viral properties.
- Threats: Stingless bees face habitat loss due to deforestation, illegal logging, agriculture, cattle grazing, forest fires, climate change, pesticides, and competition from European bees.

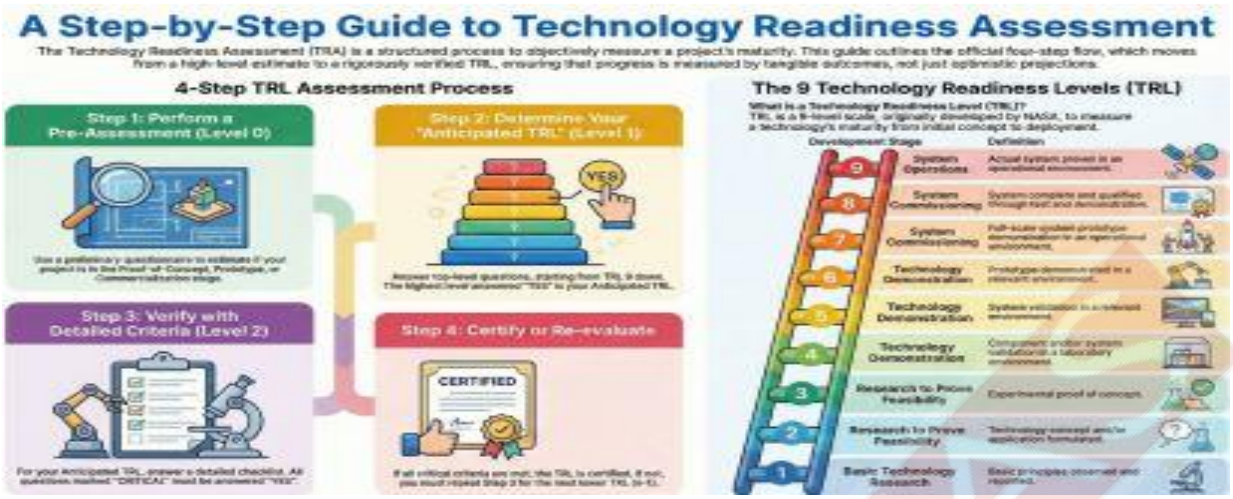
**Amazonian Stingless Bees To Get Legal Rights**

- Ordinances passed in: The landmark ordinances were first passed in the Peruvian municipality of Satipo (October 2025) and later in Nauta (December 2025).
- Legal Status: They are the first insects in the world to be recognized as "rights-bearing entities".
- The declaration is called the Declaration of Rights for Native Stingless Bees.
- Declaration developed by: The declaration was developed with Asháninka leaders and community members, with support from Amazon Research Internacional and the Earth Law Center.
- Rights provided: The bees have rights to exist, thrive, maintain healthy populations, restore habitats, live pollution-free, and be legally represented.

## National Technology Readiness Assessment Framework (NTRAF)

News: The National Technology Readiness Assessment Framework was unveiled on December 29, 2025, by the Principal Scientific Adviser to the Government of India.

**About National Technology Readiness Assessment Framework (NTRAF)**



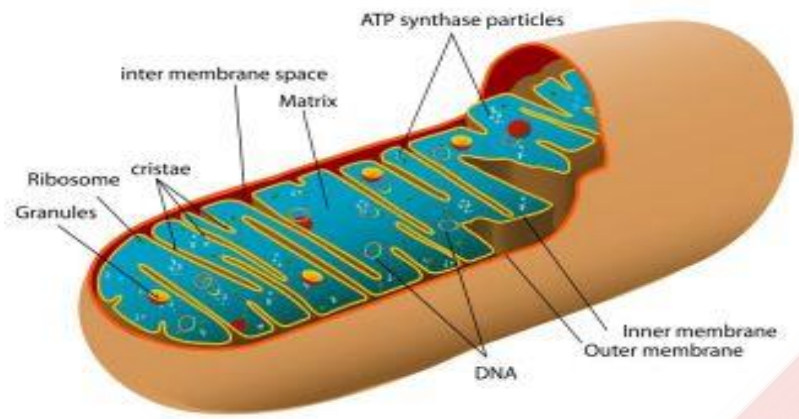

Source – PSA

- It is a framework that establishes a unified, objective yardstick to measure the maturity of technology projects from laboratory conception to commercial deployment.
- Developed by: The framework was developed by the Office of the Principal Scientific Adviser ( Government of India) in collaboration with the Confederation of Indian Industry.
- Aim
    - The framework aims to create a rigorous and standard method to assess technology maturity across 9 Technology Readiness Levels, so funding decisions become more precise and evidence-based.
    - It also aims to bridge the "Valley of Death" between TRL 4 and TRL 7 by reducing perceived risk and supporting technology transfer towards market-ready deployment.
- Key Features of the Framework
    - Global best practices, Indian context: The framework draws from global standards such as NASA and adapts them to India's R&D ecosystem.
    - Objectivity over subjectivity: The framework replaces qualitative estimation with a structured, evidence-based checklist at each stage of development.
    - Sector-specific nuances: The framework includes specialised annexures for sectors like Healthcare & Pharmaceuticals and Software to reflect different development pathways.
    - Self-assessment tool: The framework enables Project Investigators to assess their readiness level and identify technical gaps before seeking funding.
    - Nine-level Technology Readiness framework: The framework assesses projects across nine Technology Readiness Levels, where TRL 1–3 cover proof of concept, TRL 4–6 focus on prototype development, and TRL 7–9 relate to operational deployment and commercialisation.

## Mitochondria Evolution in Insects

News: Researchers from the University of Guelph (in Canada) found an unexpected link between chromosome sets in insects and the speed of mitochondrial genome evolution.

**About Mitochondria Evolution in Insects**




Source – Wikipedia

- Mitochondria evolved from bacteria and retain a small independent genome:
    - Mitochondria originated when an ancient single-celled ancestor engulfed a bacterium, which later evolved into mitochondria.
    - Over time, most bacterial genes moved to the nucleus, leaving a very small mitochondrial genome that produces energy for all cellular functions through adenosine triphosphate (ATP).
- Key Evolutionary Patterns in Insects
    - Chromosome Systems in Insects
        - Haploid condition: In some insects, males develop from unfertilised eggs and carry only one set of chromosomes, which makes them haploid.
        - Diploid condition: Females in these insects develop from fertilised eggs and carry two sets of chromosomes, one from each parent, making them diploid.
        - Haplo-diploid system: Ants, bees, and wasps follow this system, where females are diploid and males are haploid, and this method is called haplo-diploid sex determination.
        - Diplo-diploid system: In this system, both males and females are diploid and differ only by their sex chromosomes, while both transmit one chromosome from each pair to their gametes.
    - Mitochondrial DNA: Mitochondria are inherited only through females-
        - Males do not pass mitochondria to offspring, even though mitochondrial function depends on interaction with nuclear genes.
        - Unexpected evolutionary link: Despite maternal inheritance, species with haplo-diploid systems showed faster mitochondrial evolution than diplo-diploid species across insect orders.
    - The COI Gene: The COI gene shows faster change in haplo-diploid species-
        - Cytochrome c oxidase subunit I (COI) is a key mitochondrial protein, and its COI gene is in the mitogenome.
        - Using consensus sequences for each insect family, researchers found that haplo-diploid species showed about 1.7 times more protein changes than diplo-diploid species.
- Implications for biodiversity tracking: Faster evolution of the COI gene in haplo-diploid insects means genetic barcodes may change unevenly, affecting accurate identification and monitoring of insect biodiversity.

## Market Access Support (MAS) Intervention and Export Promotion Mission (EPM)

News: The Government of India has launched the Market Access Support (MAS) Intervention under the Export Promotion Mission (EPM), a flagship initiative approved by the Union Cabinet on 12 November 2025.

**About Market Access Support (MAS) Intervention**


Source – PIB

- The Market Access Support (MAS) Intervention is launched under the Export Promotion Mission (EPM), a flagship initiative approved on 12 November 2025.
- It is being implemented under the NIRYAT DISHA sub-scheme of EPM.
- Aim: It is aimed at strengthening international market access for Indian exporters, particularly MSMEs, first-time exporters and firms from priority sectors.
- Focus: The MAS Intervention focuses on improving buyer connect and enhancing India's presence in global markets through structured and outcome-oriented market access interventions.
- Working Mechanism: Under the Market Access Support Intervention, structured financial and institutional support will be provided for activities including Buyer-Seller Meets (BSMs), participation in international trade fairs and exhibitions, Mega Reverse Buyer-Seller Meets (RBSMs) organised in India and trade delegations to priority and emerging export markets.
- Features
    - A forward-looking three-to-five-year calendar of major market access events will be prepared and approved in advance, enabling exporters and organizing agencies to plan participation.
    - A minimum participation of 35 per cent MSMEs has been mandated for supported events, with special prioritization being accorded to new geographies and smaller markets to encourage export diversification.

- Delegation size has been benchmarked at a minimum of 50 participants, with flexibility provided based on market conditions and strategic relevance.
- Event-level financial support ceilings and cost-sharing ratios have been rationalised, with preferential support being extended to priority sectors and markets.
- Small exporters with export turnover of up to ₹75 lakh in the preceding year will be provided partial airfare support to encourage participation by new and small exporters.
- End-to-end processes for event listing, proposal submission, approvals, participant onboarding, fund release.
- Feedbacks: Mandatory online feedback mechanisms will be instituted for exporters participating in each supported event.
- A new component for Proofs-of-Concept and Product Demonstrations to potential overseas buyers, will be notified to complement existing market access interventions.

**About Export Promotion Mission (EPM)**


Source – DGFT

- It is a flagship initiative announced in the Union Budget 2025–26 to strengthen India's export competitiveness, particularly for MSMEs, first-time exporters, and labour-intensive sectors.
- The Mission will provide a comprehensive, flexible, and digitally driven framework for export promotion.
- Ministries involved: Department of Commerce, Ministry of MSME, Ministry of Finance
- Implemented by: It is jointly implemented by the Department of Commerce, Ministry of MSME and Ministry of Finance in coordination with Indian Missions abroad, Export Promotion Councils (EPCs), Commodity Boards and other industry associations.

- Implementing agency: The Directorate General of Foreign Trade (DGFT) will act as the implementing agency, with all processes being managed through a dedicated digital platform integrated with existing trade systems.
- Outlay and timeline: The Scheme is launched with a total outlay of 25,060 crore for FY 2025–26 to FY 2030–31.
- Uniqueness: EPM marks a strategic shift from multiple fragmented schemes to a single, outcome-based, and adaptive mechanism that can respond swiftly to global trade challenges and evolving exporter needs.
- Sub-schemes: The Mission will operate through two integrated sub-schemes:
    - NIRYAT PROTSAHAN: It focuses on improving access to affordable trade finance for MSMEs through a range of instruments such as interest subvention, export factoring, collateral guarantees, credit cards for e-commerce exporters, and credit enhancement support for diversification into new markets.
    - NIRYAT DISHA: It focuses on non-financial enablers that enhance market readiness and competitiveness, including export quality and compliance support, assistance for international branding, packaging, and participation in trade fairs, export warehousing and logistics, inland transport reimbursements, and trade intelligence and capacity-building initiatives.
- EPM consolidates key export support schemes such as the Interest Equalisation Scheme (IES) and Market Access Initiative (MAI), aligning them with contemporary trade needs.
- Feature
    - The Mission is designed to directly address structural challenges that constrain Indian exports, including:
        - Limited and expensive trade finance access,
        - High cost of compliance with international export standards,
        - Inadequate export branding and fragmented market access, and
        - Logistical disadvantages for exporters in interior and low-export-intensity regions.
    - Priority support: Under EPM, priority support will be extended to sectors impacted by recent global tariff escalations, such as textiles, leather, gems & jewellery, engineering goods, and marine products.
- The Mission is expected to:
    - facilitate access to affordable trade finance for MSMEs,
    - enhance export readiness through compliance and certification support,
    - improve market access and visibility for Indian products,
    - boost exports from non-traditional districts and sectors, and
    - generate employment across manufacturing, logistics, and allied services.

**About Interest Equalisation Scheme (IES)**

- The Interest Equalisation Scheme is designed to provide subsidies on interest rates for pre-shipment and post-shipment export credit to eligible exporters, particularly in the Micro, Small, and Medium Enterprises (MSME) sector.
- It was first implemented on 1st April, 2015.
- Implementing agency: It is being implemented by the RBI through various Public and non-Public Sector banks who provide pre- and post-shipment credit to the exporters.
- The Scheme is jointly monitored by the Directorate General of Foreign Trade (DGFT) and the RBI through a consultative mechanism.
- Goal: Its primary goal is to make Indian exports more competitive by reducing the financing costs for exporters.
- Beneficiaries: The IES is available to a broad range of exporters, including those in the MSME sector and manufacturers, regardless of their participation in the Production Linked Incentive (PLI) scheme.
- Eligibility: For export products to qualify under the IES, they must originate from India, which includes meeting the criteria for substantial value addition if imported inputs are used.
    - This ensures that the exported goods are sufficiently processed or manufactured in India, adhering to the rules of origin as outlined in the Foreign Trade Policy.

## Mannathu Padmanabha

News: On the birth anniversary of Mannathu Padmanabhan today, Prime Minister remembered with deep reverence a towering personality whose life was dedicated to serving society.

**About Mannathu Padmanabha**

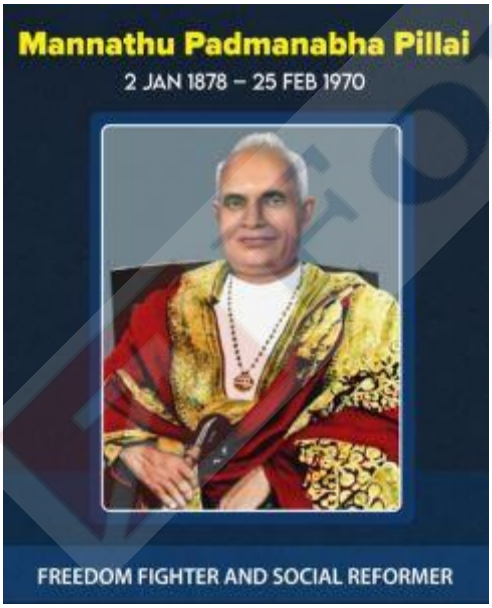



*Figure 1. Source – INC Archive*

- Mannathu Padmanabha Pillai (2 January 1878 – 25 February 1970), was an Indian social reformer and freedom fighter from the south-western state of Kerala.
- His birthday (2 January) is observed as Mannam Jayanti every year.

Nair Service Society (NSS)

- He is recognised as the founder of the Nair Service Society (NSS), which represents the Nair community.
- Objectives:
    - Social upliftment of the Nair community
    - Promotion of education and discipline
    - Removal of social evils and superstition
- NSS grew into one of the largest community organisations in India.

As a Social Reformer

- Actively supported the Vaikom Satyagraha (1924–25) for temple entry rights for lower castes, even though he was not directly involved in the satyagraha

- Played a crucial role in the Guruvayur Satyagraha (1931–32), advocating for temple entry for all Hindus.
- Strongly opposed caste discrimination and untouchability within the Nair community and society at large.

Role in Freedom Struggle

- Joined the Indian National Congress in the 1920s.
- Participated in the Salt Satyagraha (1930) and was imprisoned during the Civil Disobedience Movement.
- Later became a prominent leader in the Indian Independence Movement in Travancore.

Opposition to Communism

- Following India's independence, he shifted his focus through the Nair Service Society (NSS) to counter the expansion of communist influence in Kerala.

Honours

- Pillai received the Padma Bhushan award in 1966 from the Government of India for his contributions to social work.
- He was also honored with the title Bharata Kesari (Lion of India) by the President of India for his lifelong service to society and the independence movement.

## Collateral Support for Export Credit Initiative

News: As part of the initial rollout of the Export Promotion Mission, Collateral Support for Export Credit initiative under the NIRYAT PROTSAHAN sub-scheme has been launched to strengthen MSME exports and improve access to trade finance.

**About Collateral Support for Export Credit Initiative**


*Figure 2. Source – PIB*

- The Collateral Support for Export Credit is a key component of the Export Promotion Mission (EPM) announced in the Union Budget 2025-26 and operationalized on January 2, 2026 by the Government of India.
  - It is being implemented under the NIRYAT PROTSAHAN sub-scheme of EPM.
- Aim: It is aimed at giving MSME exporters the ability to access bank credit even with limited collateral or third-party guarantees.
- Outlay: ₹2,114 crore
- Implementing Agency: The scheme would be implemented through the Credit Guarantee Fund Trust for Micro and Small Enterprises (CGTMSE) on a pilot
- It will be applicable to export-linked working capital loans.
- Beneficiaries: MSME exporters exporting notified tariff lines will be eligible for the collateral support.

- Benefits: Guarantee coverage of up to 85 per cent will be provided for Micro and Small exporters and up to 65 per cent for Medium exporters, with a maximum outstanding guaranteed exposure of ₹10 crore per exporter in a financial year.

Note: To know more about the Export Promotion Mission (EPM), please CLICK here.

## Alps Mountain Range

News– A deadly bar fire at Crans-Montana, a Swiss ski resort located in the Alps mountain range, has drawn attention to the region, which is a major centre of alpine tourism and winter sports in Europe.

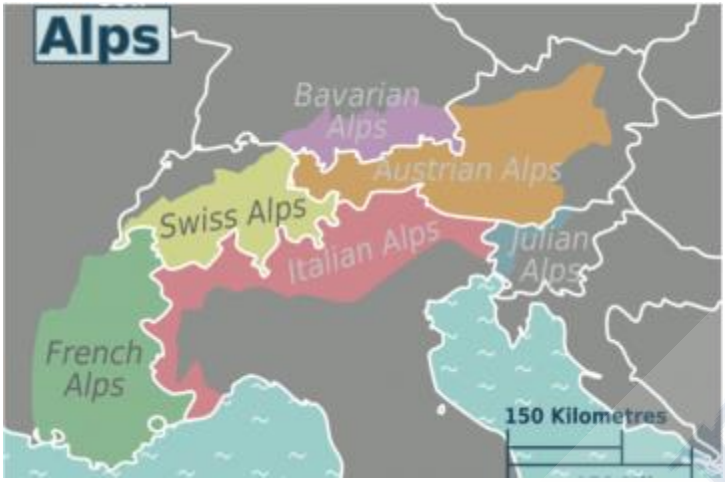



*Figure 3. Source- PBS*

**About Alps Mountain Range**

- Type & age: The Alps are young fold mountains, formed during the Alpine orogeny, which began around 65 million years ago towards the end of the Mesozoic Era.
- Plate tectonics:They were created due to the collision of the African and Eurasian tectonic plates, leading to intense folding, faulting, and uplift of marine sedimentary rocks.
- Relief & Structure:The range is characterised by rugged relief, sharp ridges, deep valleys, and high conical peaks, typical of young fold mountain systems.
- Extent & location: Stretching about 750 miles (around 1,200 km) in length, the Alps extend from the Mediterranean coast near Nice (France) to Vienna (Austria), where they merge with the Danube plains.
- Climatic significance: Due to their arc-like shape, the Alps act as a climatic divide, separating marine west coast climates of western Europe from the Mediterranean climate of southern Europe.
- Countries covered: The Alps span France, Italy, Switzerland, Germany, Austria, Slovenia, Croatia, Bosnia & Herzegovina, Montenegro, Serbia, and Albania.
    - Switzerland and Austria are considered true Alpine countries.
- Major Peaks:
    - Mont Blanc (around 4,810 m) – Highest peak of the Alps.
    - Monte Rosa (Dufourspitze – 4,634 m) – Highest peak of Switzerland
    - Dom (4,545 m) – One of the highest entirely within Switzerland Other notable peaks include Matterhorn, Weisshorn, Liskamm, Dent Blanche, and Grand Combin.

## Euro Zone

News: Bulgaria adopted the euro as its currency in 2026, becoming the 21st euro zone member and gaining representation in ECB monetary decisions.

**About Euro Zone**

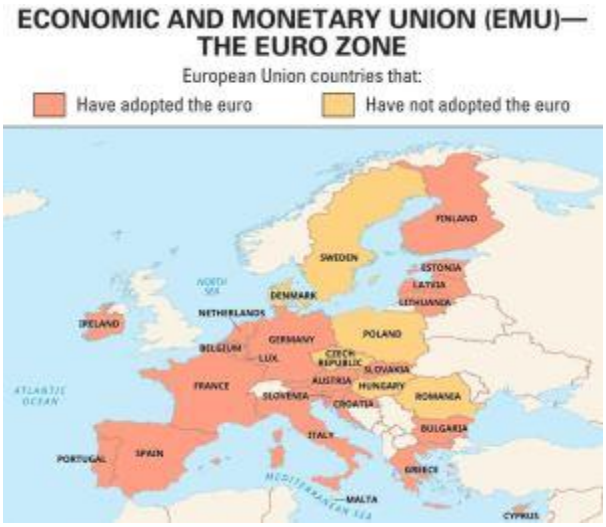



*Figure 4. Source – Britannica*

The euro zone, also called the euro area, is a currency union of European Union member states that use the euro as their sole legal tender.

- Total Members: The euro zone has a total of 21 member countries.
- Latest Entry: Bulgaria became the 21st member on January 1, 2026.
- Non-Euro EU Members (6) : The non-Euro EU members are Czech Republic, Denmark, Hungary, Poland, Romania, and Sweden, who maintain their national currencies, though most are legally committed to adopting the Euro once.
- History
  - Maastricht Treaty (1992): It was a landmark agreement that officially created the European Union (EU) consisting of three pillars:
    - European Communities;
    - Common Foreign and Security Policy (CFSP);
    - police and judicial cooperation in criminal matters (JHA).
  - It also established the legal framework for the Economic and Monetary Union (EMU).
  - It set out the path for a single currency (the euro) and a unified monetary policy under the European Central Bank (ECB).
  - Launch: The Euro was introduced for electronic payments in 1999 and physical notes/coins in 2002.

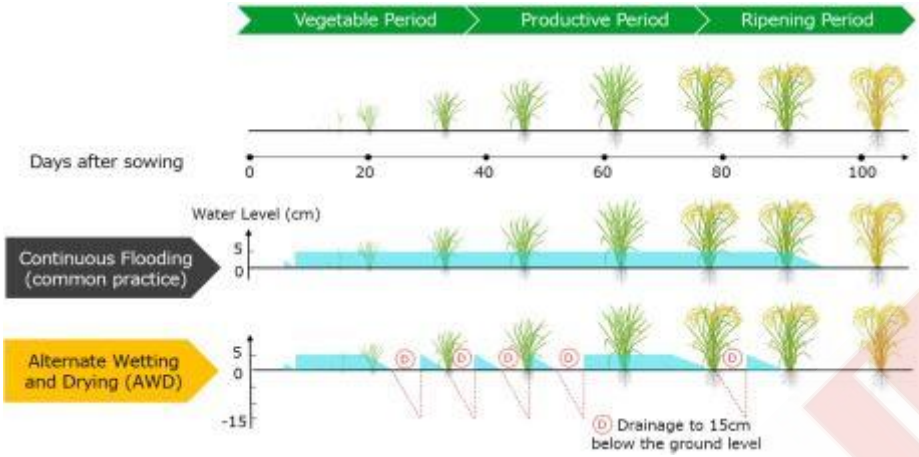
Institutional Framework

- Monetary Authority
  - Monetary policy in the euro zone is managed by the independent Eurosystem.
    - The Eurosystem includes the European Central Bank and national central banks of euro-area states.
  - The ECB's Governing Council sets a single monetary policy focused on price stability.
  - The Eurogroup: An informal body of finance ministers from Eurozone countries that coordinates fiscal policies.
  - European Stability Mechanism (ESM): A permanent bailout fund (established in 2012) providing financial assistance to Eurozone countries in severe financial distress.
- Joining Criteria (Maastricht Criteria)
  - Price Stability (Inflation): Average inflation must not exceed the average inflation of the three best-performing EU countries with the lowest inflation by more than 1.5 percentage points.
  - Sound Public Finances (Deficit): The annual government deficit must not be more than 3% of GDP. If the deficit is over this limit, it must be significantly reduced.
  - Sound Public Finances (Debt): Government debt should not exceed 60% of GDP. If it exceeds this level, it should be converging sustainably towards it.
  - Exchange-Rate Stability: The country must participate in the Exchange Rate Mechanism (ERM II) for at least two years. During this period, the country must not face severe tensions or devaluation.

# Alternate Wetting and Drying (AWD) Technique for Rice Cultivation

News: Alternate Wetting and Drying is discussed due to its role in reducing methane emissions, saving water, and enabling carbon credit generation in rice farming.

**About Alternate Wetting and Drying (AWD) Technique for Rice Cultivation**




Source – Kubota Corp

- Alternate Wetting and Drying (AWD) is is a water-management technology for lowland rice cultivation that reduces water consumption and methane emissions by alternating between flooded and non-flooded periods.
- Core mechanism
    - Controlled Irrigation Cycle: Unlike traditional continuous flooding (CF), AWD allows the water level to recede naturally to a specific threshold – usually 10–15 cm below the soil surface – before the field is re-flooded to a depth of roughly 5 cm.
    - Monitoring: Farmers often use a simple field water tube (perforated PVC or bamboo pipe) to monitor the subsurface water level.
- Timings
    - Initial Phase: Fields are kept flooded for the first 15–20 days after transplanting to establish seedlings.
    - AWD Phase: The wetting-drying cycle continues until the flowering stage.
    - Flowering Stage: Continuous flooding (3–5 cm) is maintained to prevent moisture stress.
    - Post-Flowering: Cycles can resume during grain filling and ripening.
- Benefits
    - Water Conservation: Reduces water use by 25–40% compared to traditional methods.
    - Methane ($CH_4$) Mitigation: AWD lowers methane emissions by disrupting anaerobic conditions suitable for methane-producing microbes.
    - Cost Efficiency: Decreases irrigation frequency, leading to lower labor and energy (pumping) costs.
    - Soil and Crop Health: Enhances root development, improves nutrient uptake, and may reduce lodging.
    - Reduces toxic metal accumulation in grains: This method can reduce the accumulation of arsenic, lead, and cadmium in rice grains, with variants like e-AWD significantly lowering their levels.
    - Reduces pests and diseases: This method can reduce insect pests and diseases, and periodic soil drying may reduce the incidence of fungal diseases.
- Challenges

- Farmers may initially hesitate to adopt AWD due to unfamiliar irrigation practices.
- AWD requires monitoring of water levels and soil moisture, which needs basic field management awareness.

## Rani Velu Nachiyar

News: The Prime Minister paid tributes to Rani Velu Nachiyar on her birth anniversary, highlighting her courage, leadership, and resistance to British rule.

**About Rani Velu Nachiyar**

*Figure 5. Source – DD News*

- Rani Velu Nachiyar (1730–1796) was the 18th-century queen of the Sivagangai estate in Tamil Nadu.
- She was the first queen in India to actively oppose British rule and fight for freedom.
- Early Life: Born on January 3, 1730, she was the only child of Raja Chellamuthu Vijayaragunatha Sethupathy of the Ramnad kingdom.
  - She later became the ruler of Sivaganga.
- Known as: She is known among Tamils as Veeramangai ("brave woman").
- Education and skills
  - She received training in warfare, including weapon usage, Valari, Silambam, horse riding, and archery.
  - She was a scholar and had proficiency in languages such as English, French, and Urdu.
- Key contributions
  - The Conflict: After her husband, Muthu Vaduganatha Periyavudaya Thevar, was killed by British soldiers and the Nawab of Arcot in the Kalaiyar Koil war (1772), she went into exile for eight years.
  - Strategic Alliances: During her exile, she built an alliance with Hyder Ali of Mysore and Gopala Nayaker.
  - Reclaiming Sivagangai (1780): With the help of her allies and the Marudu Brothers, she defeated the British and reclaimed her kingdom.
  - She created the first all-female army (Udaiyal) and utilized innovative tactics, including a woman who became a "human bomb" to destroy a British arsenal.

## OPEC+ (PLUS)

News: OPEC+ agreed in principle to maintain steady oil output despite falling prices, internal tensions, and widening geopolitical uncertainty among key members.

**About OPEC+**


Source – OPEC

- OPEC+ is a grouping of 22 oil-exporting countries that meets regularly to decide crude oil production levels to stabilise the global oil market.
- Genesis of OPEC+: OPEC+ was formed in 2016 in response to falling oil prices caused by oversupply, largely due to rapid growth in U.S. shale oil production, which weakened OPEC's market control.
- Members: OPEC+ includes the 12 OPEC members and 10 non-OPEC producers such as Azerbaijan, Bahrain, Brunei, Kazakhstan, Malaysia, Mexico, Oman, Russia, South Sudan, and Sudan.
- Nature of OPEC+: OPEC+ operates through a Declaration of Cooperation, which provides a framework for voluntary dialogue and coordination on oil production rather than a formal treaty-based structure.
- Functions
    - OPEC+ works to adjust crude oil production levels collectively to bring stability to the global oil market.
    - The group regulates oil supply to manage price volatility and market balance.
- Significance
    - OPEC+ crude output represents about 41% of global oil production.
    - OPEC and OPEC+ countries together produce about 60% of global oil output, giving them strong influence over oil markets.

**About OPEC**

- Established: OPEC was founded in 1960 at the Baghdad Conference by Iran, Iraq, Kuwait, Saudi Arabia, and Venezuela.
- Aim: OPEC coordinates petroleum policies to ensure stable oil prices, steady supply to consumers, and fair returns for investors.
- Members: OPEC currently has 12 members, mainly from the Middle East and Africa, after Angola withdrew in January 2024.
- Headquarters: OPEC is headquartered in Vienna, Austria.

## Gandhar Oilfield

News: Oil and Natural Gas Corporation (ONGC) plans to store captured carbon dioxide in depleted wells at Gujarat's Gandhar oilfield, marking the company's first full-scale Carbon Capture and Storage (CCS) pilot.

**About Gandhar Oilfield**


Source – Science Direct

- Location: The Gandhar oilfield is a major oil and gas field located in the Jambusar-Broach block of the Cambay Basin in Gujarat, India.
- Field boundaries : The field is situated on the western flank of the Broach depression, between the Dadhar river in the north and the Narmada river in the south.
- Size: Gandhar is a major oil and gas field spreading over 800 sq. km.
- Operator: The Oil and Natural Gas Corporation (ONGC) is responsible for the field's operations and development.
- Discovery: The oil field was discovered in 1983.
- Status: It is one of India's largest onshore "brownfields" (mature/ageing fields).

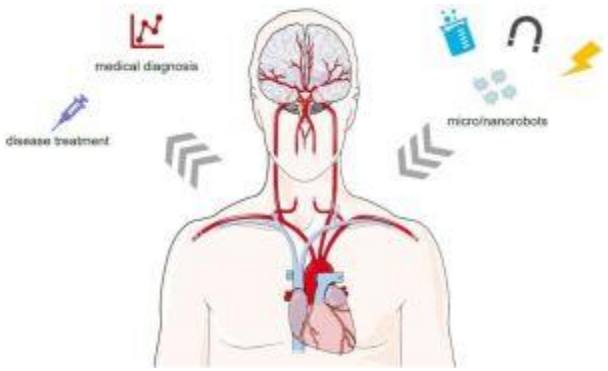
**About ONGC Carbon Capture Pilot projects**

- ONGC is currently spearheading its first full-scale Carbon Capture and Storage (CCS) pilot project at the Gandhar oilfield in Gujarat.
- This innovative project involves:
    - The project involves capturing $CO_2$ from nearby industries in Dahej and ONGC's Hazira plant.
    - The captured $CO_2$ will be transported to Gandhar and injected underground through two abandoned onshore wells at about 100 tonnes per day.
    - Aim: The project also aims to test using CO2 to enhance oil recovery ( EOR), turning a potentially harmful greenhouse gas into a productive resource, they said.

## Nanorobots

News: Dr. Ambarish Ghosh of IISc Bengaluru received the 2025 Tata Transformation Prize for developing magnetic nanorobots for cancer treatment.

**About Nanorobots**




Source – MDPI

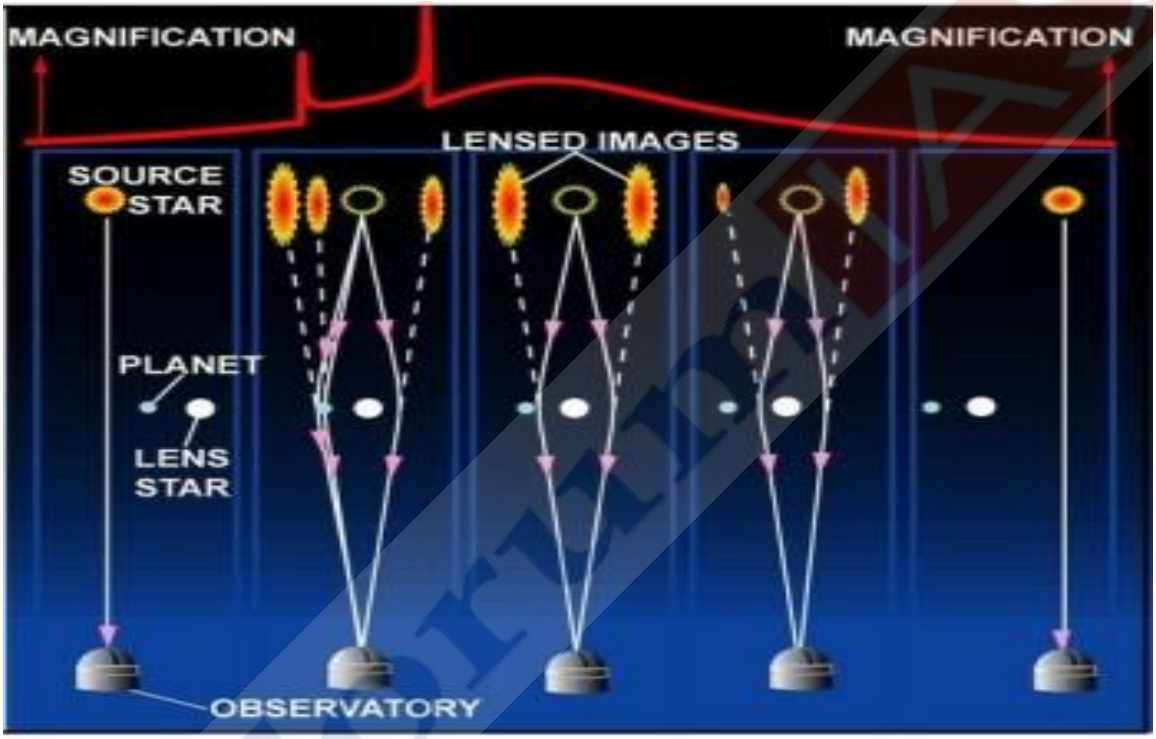
- Nanobots are microscopic robots (often around 1–100 nm) that can be programmed to carry out specific tasks.
- When nanorobots are designed specifically for healthcare/medical tasks, they are referred to as medical nanobots or nano medical robots.
- Working Mechanism of Nanorobots
    - Nanorobots work through a combination of sensing, movement, control, and action at the nanoscale.
    - Navigation: They move through body fluids like blood using chemical reactions, magnetic fields, or natural fluid flow.
    - Sensing: Sensors on nanorobots detect specific cells, chemicals, or conditions such as cancer markers or infection signals.
    - Decision-making: Pre-programmed instructions guide their response after detecting the target.
    - Action: They release drugs, destroy harmful cells, repair tissues, or send diagnostic information.
    - Exit or breakdown: After completing their task, they are designed to safely degrade or be removed from the body.
- Applications
    - Medical Applications
        - Targeted drug delivery: Nanorobots deliver medicines directly to diseased cells, reducing side effects on healthy tissues.
        - Cancer treatment: They identify tumour cells and release anti-cancer drugs precisely at the target site.
        - Early disease diagnosis: Nanorobots detect infections, cancer markers, or abnormal proteins at an early stage.
        - Blood clot removal: They help break down clots inside blood vessels without major surgery.
        - Precision surgery: Nanorobots assist in repairing tissues and cells at microscopic levels.
        - Continuous health monitoring: Nanorobots track blood sugar, toxins, or disease markers inside the body.
        - Pathogen detection: They identify bacteria and viruses quickly and accurately.
    - Environmental Applications: Nanorobots help detect and remove pollutants, heavy metals, and toxic chemicals from water, air, and soil.

- Industrial Applications: Nanorobots support precision manufacturing, material assembly at the molecular level, and detection of microscopic defects.
- Agricultural Applications: Nanorobots assist in targeted delivery of nutrients and pesticides, early detection of plant diseases, and soil health monitoring.

## Microlensing

News: A recent study used microlensing to measure the mass of a rogue planet, meaning a planet that does not orbit a star.

**About Microlensing**




Source: The Planetary Society

- Microlensing is a method astronomers use to find planets far away from Earth.
- Working mechanism
  - It is based on Einstein's theory of gravity, which says that massive objects like stars can bend light.
  - Microlensing occurs when a star passes in front of another distant star as seen from Earth.
  - The gravity of the front star bends and magnifies the light from the background star.
    - This bending of light causes the star to appear much brighter for a short period of time.
  - When the alignment is nearly perfect, the light forms a circular shape called an Einstein ring.
    - The brightness of the star increases, reaches a peak, and then slowly decreases over weeks or months.
- How microlensing detects planets
  - If the lensing star has a planet, the planet's gravity also bends the light.
  - This produces a short and sudden spike in brightness during the microlensing event.
  - The spike can last from a few hours to a few days.

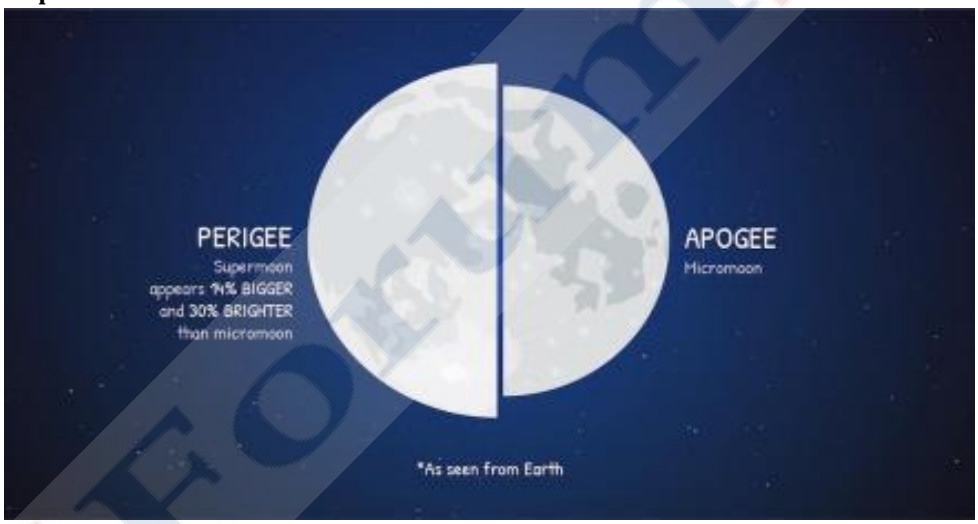
- By studying this spike, scientists can estimate the planet's mass and its distance from the star.

- Advantages of microlensing
  - Microlensing is the only known method capable of discovering planets at truly great distances from the Earth and is capable of finding the smallest of exoplanets.
  - This method is effective for finding planets that orbit far from their stars.
  - Microlensing can detect free-floating planets that do not orbit any star.
  - Many stars can be observed at the same time, increasing the chance of detection.
- Disadvantages of microlensing
  - Each microlensing event happens only once and cannot be observed again.
  - Planets discovered by microlensing cannot be studied in detail after the event ends.
  - The distance to the detected planet is only roughly estimated.
  - Microlensing events are rare and depend on precise alignment of stars and planets.

## Wolf Supermoon

News: The first supermoon of 2026, commonly called the Wolf Moon, illuminated the night skies over India, the United States, and many other parts of the world on January 3.

**About Wolf Supermoon**




Source: TH

- A wolf supermoon is a full moon in January that occurs when the Moon is near perigee, its closest point to Earth.
- Wolf supermoons are relatively uncommon and occur only when the January full moon aligns with a supermoon.
- Meaning of the Wolf Moon: The term "wolf moon" refers to the traditional name for the January full moon.
- What Is a Supermoon: A supermoon is an astronomical event that takes place when a full moon coincides with the Moon's closest approach to Earth.
- The Moon travels around Earth in an elliptical orbit rather than a perfect circle. When the Moon is near perigee, it appears slightly larger and brighter than a typical full moon.
- Change in Size and Brightness: During a wolf supermoon, the Moon can appear up to 14 % larger and about 30 % brighter than when it is at apogee.

- The difference in size and brightness is real but subtle and is easier to notice in photographs than by casual observation.

- As the Moon rises or sets, it may appear orange or reddish due to atmospheric filtering of light.
  - When the Moon is higher in the sky, it usually appears bright white.
- A common visual effect during a supermoon is the moon illusion, which makes the moon appear larger near the horizon.
  - The moon illusion is caused by human perception of distance and scale rather than any physical change in the Moon.

## Ozempic

News: A trend has been seen promoting a drink made by blending oats with water or juice, commonly referred to as "oatzempic."

**About Oatzempic**

Source – DTE

- Oatzempic is oat-based drink that people consume in the morning, often on an empty stomach for weight loss, appetite control or other health outcomes.
- The name references Ozempic, a prescription drug primarily prescribed for type 2 diabetes that is also known for its appetite-suppressing effects.
- The idea behind it is that Oats are rich in beta-glucan, a type of soluble fibre that forms a gel-like substance when mixed with water.
  - This slows down digestion which helps you to feel full.
- There are no scientific studies that look at the "oatzempic drink" for weight loss, appetite control or other health outcomes.

**About Ozempic**

- Ozempic is a medication that contains the active ingredient semaglutide.
- Semaglutide belongs to a class of drugs known as glucagon-like peptide-1 (GLP-1) receptor agonists.
- Ozempic mimics the natural GLP-1 hormone that is released in the body after eating.
- How Ozempic Works
  - Ozempic increases the release of insulin when blood sugar levels are high.
  - It slows down stomach emptying, which helps people feel full for a longer period.

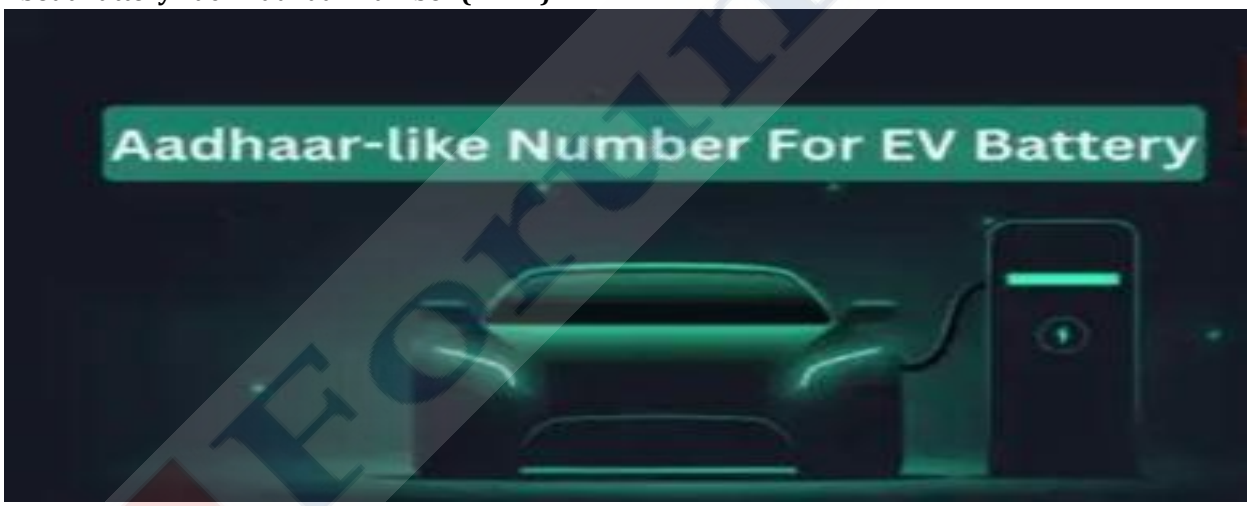
- Ozempic reduces the amount of sugar produced by the liver.
- These actions help improve blood sugar control and reduce appetite

- Medical Uses of Ozempic
  - Ozempic is FDA-approved to help manage blood sugar levels (A1C) in adults with type 2 diabetes.
  - It is used along with lifestyle changes such as a healthy diet and regular exercise.
  - Ozempic helps lower the risk of heart attack, stroke, and death from heart or blood vessel problems in adults with type 2 diabetes and heart disease.
  - It is approved to reduce the risk of kidney function decline in adults with type 2 diabetes and chronic kidney disease (CKD).
  - Semaglutide has been shown in clinical trials to support weight loss and help maintain weight loss.
  - Weight loss occurs because Ozempic controls appetite and promotes prolonged feelings of fullness.

## Battery Pack Aadhaar Number (BPAN)

News: The Union Ministry of Road Transport and Highways is proposing a mandatory identification system for electric vehicle batteries through a unique 21-character "Battery Pack Aadhaar Number" (BPAN).

**About Battery Pack Aadhaar Number (BPAN)**




Source – ET Now

- Battery Pack Aadhaar Number (BPAN) is a 21-character unique number to be provided to each battery introduced in the market or used for self-consumption.
- Aim: It aimed at ensuring end-to-end traceability across the battery lifecycle.
- Implementing Ministry: Ministry of Road Transport and Highways (MoRTH)
- Under the proposed framework, every electric vehicle battery pack will be assigned a BPAN that will track it from the sourcing of raw materials and manufacturing through usage, repurposing and final disposal.
- Batteries covered: The proposed system will apply to batteries already governed under the Battery Waste Management Rules, 2022. These include:
  - Electric vehicle batteries for L category vehicles
  - Electric vehicle batteries for M and N category vehicles

- Industrial batteries with a capacity of more than 2kWh
- This ensures that both mobility-related and large-capacity batteries are covered under a single traceability framework.

- Information stored in BPAN: Each Battery Pack Aadhaar will store detailed technical and environmental data, including:
  - Battery Manufacturer Identifier
  - Battery Descriptor and Identifier details
  - Battery material composition
  - Battery carbon footprint
  - Dynamic data related to battery performance and usage
- Information stored in BPAN: Each Battery Pack Aadhaar will store detailed technical and environmental data, including:
  - Battery Manufacturer Identifier
  - Battery Descriptor and Identifier details
  - Battery material composition
  - Battery carbon footprint
  - Dynamic data related to battery performance and usage
- Significance
  - The move is intended to bring greater transparency, accountability and sustainability to India's rapidly expanding electric mobility ecosystem.
  - It system will help address growing concerns around battery safety, environmental impact and improper disposal as EV adoption accelerates across the country.
  - It will function as a digital identity for batteries, enabling regulators, manufacturers and recyclers to access verified information on origin, chemistry, ownership history and end-of-life status.
  - The proposal also aligns with broader policy goals around circular economy practices and responsible resource management.

## Remote Sensing

News: Remote sensing has transformed how scientists study the Earth, enabling them to map forests, water bodies, crops, and mineral deposits without ever setting foot on the ground.

**About Remote Sensing**

- Meaning: Remote sensing is a technology that allows scientists and engineers to study the earth's surface and subsurface without physical contact.
- Working Principle: It uses satellites, aircraft, and drones equipped with sensors to collect information from a distance.
  - The Sun emits visible as well as invisible electromagnetic radiation such as infrared and ultraviolet light. Different materials on Earth, including plants, water, soil, and rocks, reflect and absorb this energy in unique ways.
  - These unique patterns are called spectral signatures and act like fingerprints for identifying materials. Sensors analyse reflected energy to determine the type, condition, and composition of objects on the ground.
- Uses of Remote Sensing Technique

- Vegetation, forest health, and carbon mapping: Remote sensing can distinguish between different plant communities and tree species across large forest areas.
    - Scientists use the Normalised Difference Vegetation Index (NDVI) to assess plant health using spectral signatures.
    - High NDVI values indicate healthy vegetation, while low values may indicate stress, disease, or lack of water.
- Mapping surface water and monitoring water quality: Satellites use optical indexing and synthetic aperture radar (SAR) to map rivers, lakes, wetlands, and floods.
    - Water reflects visible green light but absorbs near-infrared and shortwave infrared radiation.
    - Scientists use the Normalised Difference Water Index (NDWI) to identify water bodies in satellite images.
    - The Modified NDWI (MNDWI) is especially useful in urban areas to distinguish water from building shadows.
- Mineral detection and hyperspectral remote sensing: Hyperspectral sensors split reflected sunlight into hundreds of narrow wavelength bands.
    - These sensors generate detailed spectral signatures for every pixel in an image.
    - Hyperspectral data can identify specific minerals, rock types, and even nutrient deficiencies in plants.
- Oil and gas exploration from space: Oil and gas sometimes leak slowly upward through cracks in the Earth, a process known as micro-seepage.
    - This seepage alters soil chemistry and slightly stresses vegetation, causing subtle colour changes.
    - Satellites can detect these changes to identify potential drilling locations.
- Groundwater mapping using gravity: Underground water increases the gravitational pull of an area.
    - Example – NASA's GRACE mission measured tiny changes in gravity using two satellites flying in formation.

## Mishmi takin

News: The Mishmi takin is an elusive mountain ungulate found in the mist-covered Mishmi Hills of Arunachal Pradesh. It holds cultural, ecological, and symbolic importance for local communities.

**About Mishmi Takin**

Source: DTE

- The Mishmi takin is a goat-antelope native to Asia.
- It is a subspecies of takin.
- Habitat: The Mishmi takin thrives in diverse ecosystems, including pine scrub, subtropical forests, and alpine meadows.
- Distribution: The Mishmi takin is found in Northeast India, especially in eastern Arunachal Pradesh.
    - It also occurs in northern Myanmar and in parts of China, including regions near Tibet.
- Appearance: The Mishmi takin has a stocky body and a deep chest, which gives it a strong and powerful appearance.
    - It has a large head with a long, arched nose that makes the animal distinctive.
    - Both males and females possess stout horns that are ridged at the base and curve upward to a short point.
    - It has a long, shaggy coat that is oily in nature and helps protect it from cold and fog in mountainous regions.
- Behaviour: It usually lives in small family groups consisting of about twenty individuals.
    - Older males often lead a solitary life outside the herd.
    - During summer, large herds of up to three hundred individuals gather on high mountain slopes where food and mineral resources are available.
    - It is a diurnal animal and feeds mainly during the early morning and late afternoon.
    - It can stand on its hind legs to reach leaves that are more than three meters high.
    - In spring, Mishmi takins migrate upward into the mountains, while in winter they move down to lower, forested areas to survive harsh conditions.
    - When threatened, the Mishmi takin gives a cough-like alarm call, and the herd retreats into thick bamboo thickets for camouflage and safety.
- Diet: The Mishmi takin is a herbivorous animal that feeds mainly on bamboo and willow shoots.
- Threat: The Mishmi takin faces major threats from overhunting and habitat loss caused by deforestation.
- IUCN Status: At present, the Mishmi takin has not been evaluated by the IUCN Red List, and its population size remains unknown.

## Somnath Temple

News: Prime Minister Narendra Modi has said that the Somnath temple's survival over the past thousand years reflects the country's indomitable civilisational spirit.

**About Somnath Temple**

Source – Temple Diary

- Location: The Somnath temple is located along the coastline in Prabhas Patan, Veraval, Saurashtra region of Gujarat.
- Meaning: Somnath means "Lord of the Soma" or "moon".
    - The site is also called Prabhasa ("place of splendor").
- Significance: Somnath temple has been a jyotirlinga site (out of 12) for the Hindus, and a holy place of pilgrimage (tirtha).
    - It is one of five most revered sites on the seacoast of India, along with the nearby Dwaraka in Gujarat, Puri in Odisha, Rameswaram and Chidambaram in Tamil Nadu.
- History
    - The site of Somnath has been a pilgrimage site from ancient times on account of being a Triveni Sangam: the confluence of three rivers namely Kapila, Hiran and Saraswati.
    - The Gurjara-Pratihara king Nagabhata II recorded that he has visited tirthas in Saurashtra, including Someshvara, an alternative name for the temple.
    - According to an inscription written in Sanskrit on one of the towers in temple campus, one can travel to the south pole unobstructed by following the straight path from the tower in the south direction.
- Islamic invasions
    - In 1026, during the reign of Bhima I, the Turkic Muslim ruler Mahmud of Ghazni raided and plundered the Somnath temple, breaking its jyotirlinga.
        - He took away a loot of 20 million dinars.
    - Kumarapala (r. 1143–72) rebuilt the Somnath temple in "excellent stone and studded it with jewels," according to an inscription in 1169. He replaced a decaying wooden temple.
    - During its 1299 invasion of Gujarat, Alauddin Khalji's army, led by Ulugh Khan, defeated the Vaghela king Karna, and sacked the Somnath temple.
    - The temple was rebuilt by Mahipala I, the Chudasama king of Saurashtra in 1308 and the lingam was installed by his son Khengara sometime between 1331 and 1351.
    - In 1395, the temple was destroyed for the third time by Zafar Khan, the last governor of Gujarat under the Delhi Sultanate and later founder of Gujarat Sultanate.
- Reconstruction
    - The Iron Man of India and Deputy Prime Minister Vallabhbhai Patel came to Junagadh on 12 November 1947 at which time he ordered the reconstruction of the Somnath temple.

- Accordingly, The Somnath Trust was established to collect funds and oversee the construction of the temple.
- The new structure was built by the traditional Somapuri builders of temples in Gujarat.
- Architecture: The present temple is a Māru-Gurjara architecture (also called Chaulukya or Solanki style) temple.
  - It has a "Kailash Mahameru Prasad" form.
- On 11 May 1951, Rajendra Prasad, the President of India performed the installation ceremony for the temple.
- Currently, the chairman of the trust is the Prime Minister of India.

## CAG releases 'State Finances 2023-24' Report

News: In January 2026, the Comptroller and Auditor General released the second edition of the State Finances 2023-24 report covering all States.

**CAG releases 'State Finances 2023-24' Report**

*Figure 6. Source – ANI*

- The State Finances 2023-24 Report presents a consolidated and audited overview of the finances of all 28 States.
- Released by: The report was released by the Comptroller and Auditor General of India.
- Aim: The publication aims to provide comparable audited fiscal data of all States in one volume to support inter-State and inter-temporal analysis over a ten-year period.
  - It is intended to assist policymakers, public financial managers, researchers, academia, and other stakeholders through accessible and standardised fiscal information.
- January, 2026 Edition: This is the second edition of the publication, following the first edition released in September 2025.
- Key Findings
  - Revenue Receipts Composition: In FY 2023–24, total revenue receipts of States were ₹93 lakh crore, with States' Own Tax Revenue (SOTR) at about 50 percent, Union tax share at 30 percent, grants-in-aid at 12 percent, and SNTR at 8 percent.
  - States' Own Tax Revenue (SOTR): SOTR was 6.49 percent of GSDP in FY 2023–24, with a buoyancy ratio of 0.92, and showed wide variation across States.
  - States' Non-Tax Revenue (SNTR): SNTR constituted 8.22 percent of total revenue receipts and 1.08 percent of combined GSDP in FY 2023–24, with improvement after the Covid period.
  - Share in Union Taxes: The share of Union Taxes and Duties increased to 29.77 percent of States' revenue receipts in FY 2023–24, reflecting higher tax devolution over the decade.
  - Expenditure Pattern: Total expenditure of States was ₹81 lakh crore in FY 2023–24, equal to 16.15 percent of combined GSDP, with revenue expenditure forming 83.25 percent.
  - Capital Expenditure: Capital expenditure was ₹84 lakh crore, accounting for 16.75 percent of total expenditure, and remained within 13–20 percent over the decade.

- Committed Expenditure and Subsidies: Committed expenditure, subsidies, and Grants-in-Aid Salary together formed 59.90 percent of revenue expenditure in FY 2023–24.
- Public Debt and Liabilities: As on 31 March 2024, combined public debt was 23.42 percent of GSDP and total liabilities were 28.28 percent of GSDP, with wide variation across States.

## Suryastra Rocket Launcher System

News: The Indian Army signed a ₹293 crore emergency procurement contract for the Suryastra long-range universal rocket launcher system.

**About Suryastra Rocket Launcher System**

*Figure 7. Source – Money9*

- Suryastra is India's first Made in India universal multi-calibre rocket launcher.
- Manufactured by: It is manufactured by Pune-based private defence firm NIBE Limited.
- Technology Partner: It is developed in collaboration with Israel's Elbit Systems under a Technology Collaboration Agreement signed in July 2025.
- Procurement Mode: It is acquired under the Ministry of Defence's Emergency Procurement powers, approved by the Defence Acquisition Council.
- Key Features
  - Range: It is capable of precision surface-to-surface strikes up to 300 km.
  - Precision: During trials, the system achieved a circular error probable of less than five metres.
  - Multi-Calibre Versatility: A single launcher can integrate and fire multiple rocket types.
  - Loitering Munitions: The launcher can fire loitering munitions up to a range of 100 km.
  - Combat Mobility: The system is designed to engage multiple targets simultaneously at different ranges.
- Strategic Significance: The acquisition enhances deep-strike artillery firepower, extends operational reach, and supports domestic production of high-precision long-range rocket systems under emergency operational requirements.

## Popocatépetl Volcano

News: Over five years, UNAM scientists used 22 seismographs and AI to analyse seismic data and produce the first 3D image of Popocatépetl's interior, extending 18 km below the crater.

**About Popocatépetl Volcano**


Source: virtualuppermantle

- Location: Popocatépetl volcano is located on the border of the states of México and Puebla, central Mexico.
- Type: It is a steep-sided active stratovolcano located in the central part of the Mexican volcanic belt,
- Formation: It is formed by subduction of the Cocos and Rivera plates beneath the North American plate.
    - Popocatépetl took its present form over 20,000 years ago within the remnants of older volcanoes and has remained active since 1994, releasing smoke, gas, and ash almost daily.
- Eruptions: Its eruptions occur when a lava dome forms over the main vent and later collapses, the most recent such eruption taking place in 2023.
    - That's why it is also known as the "Smoking Mountain"
- It is regarded as one of the most dangerous volcanoes within the Pacific Ring of Fire, posing significant risks due to its high level of activity and proximity to densely populated areas.

## e-Production Investment Business Visa (e-B-4 Visa)

News: India has introduced the e-Production Investment Business Visa to facilitate Chinese business travel as part of recent people-centric steps.

**About e-Production Investment Business Visa (e-B-4 Visa)**

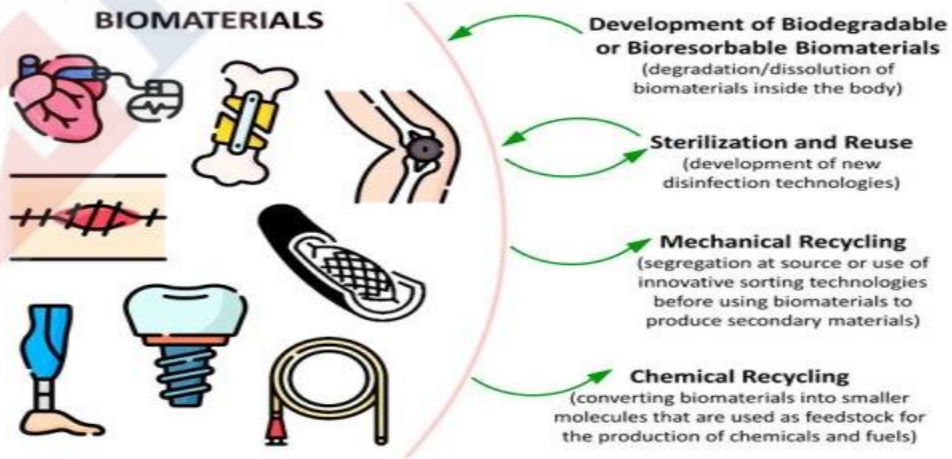
Source – FE

- The e-B-4 Visa is an online business visa for foreign professionals undertaking production-related activities in India.
- Launched by: It was launched by the Department for Promotion of Industry and Internal Trade (DPIIT), Ministry of Commerce and Industry.
- Objective: The objective is to simplify business visa procedures and support production, manufacturing, and investment-linked activities by foreign professionals in India.
- Operational date: The e-B-4 Visa was introduced on January 1.
- Validity and stay: The visa permits a stay in India for up to six months.
- Processing Time: The visa is issued in about 45 to 50 days after online application.
- Application Process : The application process is fully digital and does not require visiting an embassy or using intermediaries.
- Mandatory registration: Indian companies must generate a digital sponsorship letter through the National Single Window System before visa application.
    - The foreign professional then applies on the Indian e-Visa portal using the sponsorship letter number and uploads the required documents.
- Visa approval is decided separately by the Ministry of External Affairs and the Ministry of Home Affairs.
- Eligible Activities include
    - Installation and commissioning of equipment
    - Quality check and essential maintenance
    - Production activities
    - IT systems and ERP ramp-up
    - Training and knowledge transfer
    - Supply chain development for empanelling vendors
    - Plant design and bring-up
    - Senior management and executive visits

## Biomaterials

News: As India moves toward cleaner manufacturing methods for products like plastics and textiles, biomaterials are emerging as the next frontier in materials engineering.

About Biomaterials




Source: Frontiers

- Biomaterials are materials derived wholly or partly from biological sources or engineered using biological processes.
- They are designed to replace or interact with conventional materials.
- Types of Biomaterials:
    - Drop-in Biomaterials: Drop-in biomaterials are chemically identical to conventional fossil-based materials.
        - They can be used in existing manufacturing and recycling systems without modification. Bio-PET is a common example of a drop-in biomaterial.
    - Drop-out Biomaterials: Drop-out biomaterials are chemically different from conventional materials.
        - They require new processing methods and dedicated end-of-life systems. Polylactic acid (PLA) is a widely used drop-out biomaterial.
    - Novel Biomaterials: Novel biomaterials offer new properties not found in traditional materials.
        - These include self-healing materials, bioactive implants, and advanced bio-composites.
- Applications of Biomaterials
    - Biomaterials are used in orthopedic implants such as hip and knee replacements to restore mobility and reduce pain.
    - They are used in dental implants, providing strong support for artificial teeth
    - Cardiovascular stents made from biomaterials help keep arteries open and improve blood flow
    - Biomaterials are essential in prosthetics, enabling the development of artificial limbs and joint replacements.
    - They are used in drug-delivery systems to ensure controlled and targeted release of medicines.
    - In tissue engineering, biomaterials act as scaffolds for tissue and organ regeneration.
    - Biomaterials are incorporated into medical devices and diagnostics, such as biosensors and contact lenses.

## SHINE Scheme

News: The 79th Bureau of Indian Standards(BIS) Foundation Day was celebrated in New Delhi with the launch of SHINE and other key initiatives.

**About SHINE Scheme**

Source – PIB

- Full Form: SHINE, meaning Standards Help Inform and Nurture Empowered Women, is a new scheme that focuses on women-led quality awareness.
- Launched by: It has been launched by the Bureau of Indian Standards (BIS).
- Objective: To empower women with knowledge about safety, quality, and standards so they can act as "change agents" in their households and communities.
- Implementation: The scheme uses structured training and partnerships with NGOs and Self-Help Groups (SHGs) to spread awareness about authentic vs. counterfeit products.

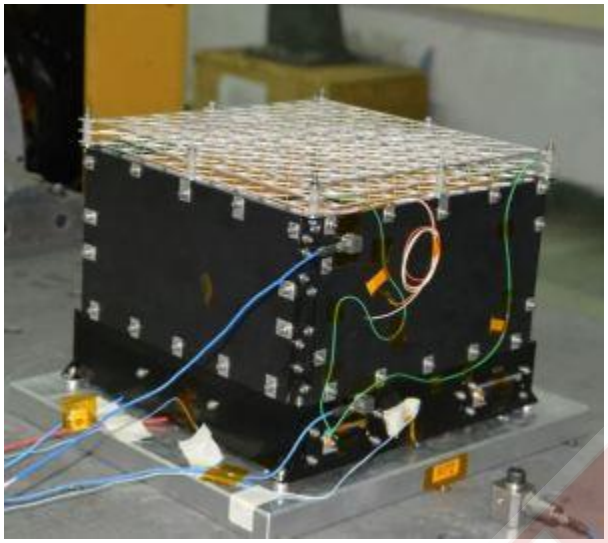
**About Bureau of Indian Standards (BIS)**

- BIS: It came into existence in 1986 under BIS Act,1986 and was established as the National Standard Body of India under the BIS Act 2016.
- Earlier version: The organisation was formerly the Indian Standards Institution (ISI) set up under the Department of Industries and Supplies and was registered under the Societies Registration Act, 1860.
- Nodal Ministry: Ministry of Consumer Affairs, Food and Public Distribution.
- Nodal agency: It functions as the nodal agency for standardization, marking, and quality certification of goods.
- Objective: Its objective is the harmonious development of standardization and quality certification activities.
- Headquarter : It is headquartered in New Delhi.
- It represents India in the International Organization for Standardization and the International Electrotechnical Commission.

## Dust EXperiment (DEX)

News: ISRO confirmed that the Dust Experiment (DEX), India's first indigenous dust detector, recorded interplanetary dust particles entering Earth's atmosphere every thousand seconds.

**About Dust EXperiment (DEX)**



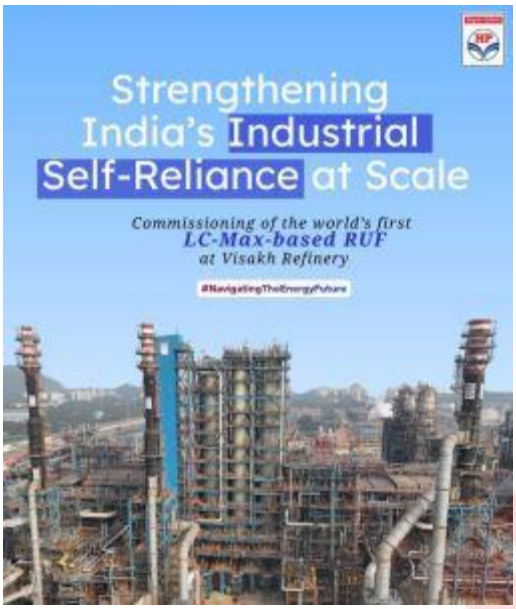
Source – ISRO

- Dust EXperiment (DEX) is India's first home-made instrument designed to detect high-speed interplanetary dust particles in Earth orbit.
- Developed by: It was developed by the Physical Research Laboratory under Indian Space Research Organisation.
- Aim: The main aim of DEX is to detect and measure impacts of microscopic interplanetary dust particles to understand the space environment.
- Mission: It was flown onboard the PSLV Orbital Experimental Module (POEM) of the PSLV-C58 XPoSat mission launched on January 1, 2024.
- Key technical details
    - The instrument has a weight of about three kilograms and operates at a power consumption of 4.5 watts.
    - It was placed at an altitude of around 350 km while skimming Earth's atmosphere at a 9.5 degree inclination.
    - The detector has a wide field of view of about 140 degrees.
    - It works on the hypervelocity detection principle by recording high-speed dust impact signals.
- Major findings
    - Constant bombardment: The observations confirmed that Earth's atmosphere faces continuous bombardment by interplanetary dust particles.
    - Dust flux: DEX measured a dust flux of up to $6.5 \times 10^{-3}$ per square metre per second, indicating a high impact rate.
- Significance: The experiment provides critical data for monitoring space environment risks and supporting future satellite, human spaceflight, and planetary missions.

## Residue Upgradation Facility (RUF) and Hydrocracking Technology

News: The Prime Minister lauded the commissioning of HPCL's Residue Upgradation Facility at Visakh Refinery as a significant step for energy security.

**About Residue Upgradation Facility (RUF) and Hydrocracking Technology**




Source – HPCL

- The Residue Upgradation Facility (RUF) is a hydrogen-based residue hydrocracking unit that converts low-value residual oils into high-value petroleum products.
- Commissioned by: The facility has been commissioned by Hindustan Petroleum Corporation Limited (HPCL).
- Location: The facility is located at the Visakh Refinery in Andhra Pradesh.
- Capacity: The RUF has a capacity of 3.55 million metric tonnes per annum.
- Efficiency: The facility converts nearly 93 % of bottom oils into high-value petroleum products, making it highly efficient.
- Key features
    - Technology: The facility uses advanced LC-Max based residue hydrocracking technology for deep-conversion refining.
    - Complexity: It houses three LC-Max reactors weighing about 2,200 metric tonnes each, which are among the heaviest in the world and are indigenously manufactured.
    - Digital integration: HPCL has deployed the RUF (LC-Max) Digital Suite, which is an industry-first in Indian refineries and enables real-time monitoring, predictive analytics using proprietary thermodynamic models, and AI-driven optimization to ensure stable and efficient operations.

**About Hydrocracking Technology**

- Hydrocracking technology is a hydrogen-based process used for upgrading heavy residual oils into lighter and more valuable petroleum product.
- It enhances refinery complexity and improves gross refining margins by producing a superior product slate and improving overall operational efficiency.

## Mayon Volcano

News: A series of mild eruptions at Mayon Volcano in the Philippines has prompted the evacuation of nearly 3,000 villagers in a permanent danger zone on its foothills.

**About Mayon Volcano**


Source – Britannica

- Location: It is located in Albay Province in the Bicol Region of Luzon, Philippines.
- Geology: It is located on a convergent boundary between the Eurasian and Philippine Plates.
    - It is part of the Pacific Ring of Fire.
- Type: It is classified as a stratovolcano active volcano, formed by alternating layers of lava and ash.
- It is one of the youngest in the volcanic chain in the Bicol volcanic chain.
    - The Bicol volcanic chain includes Bulusan in Sorsogon, and Iriga and Isarog, which are both active stratovolcanoes (made of layers of lava and ash) located in Camarines Sur.
- It has a base 130 km in circumference and rises to 2,462 m from the shores of Albay Gulf.
- Structure: It is famous for its nearly perfect cone shape and symmetrical structure.
    - The upper slopes are steep, with angles ranging between 35 and 40 degrees.
- Conservation area: It is the centre of Mayon Volcano National Park.
    - There are large abaca plantations on its lower slopes.
- Past Eruptions: The first recorded eruption occurred in July 1766.
    - Mount Mayon has erupted more than 50 times over the past 500 years.

## Justice Mission 2025

News: Recently, military forces of the People's Republic of China conducted Justice Mission-2025 around Taiwan.

**About Justice Mission 2025**


Source: Global Taiwan

- Conducted by: People's Liberation Army (PLA) of China on 29–30 December 2025.
- Location: It was conducted in the air and maritime areas surrounding Taiwan.
- The exercise was the second named large-scale PLA maritime drill directed at Taiwan in 2025, following the Strait Thunder–2025A exercise earlier in the year.
- Objective: The exercise focused on sea and air combat readiness patrols, seizing comprehensive superiority, blockading key ports and territories and "three-dimensional external line deterrence" in the maritime region around Taiwan.
- Forces Involved: China deployed army, naval, air force, and artillery units, including fighter jets, bombers, unmanned aerial vehicles (UAVs), and long-range rockets.
    - PLA forces practiced striking mobile land-based targets while simulating a coordinated multi-directional assault on Taiwan.
    - The exercise placed greater emphasis on shore-based aviation, rocket forces, and amphibious assault ships rather than carrier strike group operations.
- Activities by PLA during the exercise: During the exercise, various Chinese military aircraft and ships were operated around Taiwan, with some vessels deliberately approaching the contiguous zone, 24 nautical miles from the island's coast.
    - Dozens of PLA boats and aircraft conducted maritime and air operations, including rehearsals for potential port blockades.
- Strategic Significance
    - The exercise marked the first time China publicly stated that its drills are aimed at deterring foreign intervention.
    - PLA actions demonstrated an increasing willingness to operate near Taiwan's territorial waters and signal the potential for escalation.
    - The combination of live-fire drills, amphibious rehearsal imagery, and propaganda posters underscores a dual strategy of military intimidation and political messaging.

## PANKHUDI Portal

News: The Ministry of Women and Child Development launched the PANKHUDI Portal on 8 January 2026 to strengthen CSR coordination for women and children.

**About PANKHUDI Portal**


*Figure 8. Source – DD News*

- PANKHUDI is an integrated digital portal for Corporate Social Responsibility and partnership facilitation in women and child development.
- Launched by: The portal was launched by the Ministry of Women and Child Development.
- Objective: The objective of PANKHUDI is to strengthen coordination, transparency, and structured stakeholder participation in initiatives for women and child welfare.
- Key features
  - Single-window digital platform: PANKHUDI functions as a single-window digital platform for individuals, NRIs, NGOs, CSR contributors, corporates, and government agencies.
  - Integration of thematic contributions: The portal integrates contributions in areas such as nutrition, health, ECCE, child protection, rehabilitation, and women's safety and empowerment.
  - Unified digital interface: It provides a common digital interface for proposal submission, approval, monitoring, and accountability.
  - Non-cash financial transactions: All financial contributions on the portal are accepted only through non-cash modes to ensure transparency.
- Strategic Support to Missions: The portal supports Mission Saksham Anganwadi & Poshan 2.0, Mission Vatsalya, and Mission Shakti through a structured digital mechanism.
- Significance: The portal improves infrastructure and services across Anganwadi Centres, Child Care Institutions, and support centres, leading to better service delivery for citizens.

## District-Led Textiles Transformation (DLTT) Initiative

News: The Ministry of Textiles unveiled the District-Led Textiles Transformation initiative at the National Textile Ministers Conference held in Guwahati.

**About District-Led Textiles Transformation (DLTT) Initiative**

Source – ET

- The District-Led Textiles Transformation initiative is a strategic program to promote inclusive and sustainable growth in India's textile sector.
- Nodal Ministry: Ministry of Textiles
- Aim: The initiative aims to transform 100 high-potential districts into Global Export Champions and develop 100 Aspirational Districts as self-reliant textile hubs.
- Key features
    - Data-driven approach: The initiative adopts a district-level and sector-specific approach based on data-driven scoring using export performance, MSME ecosystem, and workforce presence.
    - Two-pronged classification: Districts are categorized into Champion Districts and Aspirational Districts under a two-pronged strategy.
        - Champion District focus: Champion Districts focus on removing advanced bottlenecks through Mega Common Facility Centres, Industry 4.0 integration, and direct export market linkages.
        - Aspirational District focus: Aspirational Districts focus on workforce foundation, basic skilling, certification, raw material banks, and promotion of micro-enterprises through SHGs and cooperatives.
    - Purvodaya convergence: The initiative emphasizes Purvodaya convergence in eastern and northeastern regions for tribal development, connectivity improvement, and GI tagging.
- Significance: The initiative strengthens textile clusters through coordinated government support and partnerships with industry and academia to scale successful district-level models.

## Vitamin B12

News: Vitamin B12 deficiency in India is widespread, underdiagnosed, and linked to diet, absorption problems, and long-term neurological and physical health effects.

**About Vitamin B12**


Source – The Conversation

- Vitamin B12 is a water-soluble vitamin, also called cobalamin, that is essential for nerve function, red blood cell formation, and DNA synthesis.
- Forms of B12
    - Vitamin B12 exists as methylcobalamin and 5-deoxyadenosylcobalamin, which are the metabolically active forms.

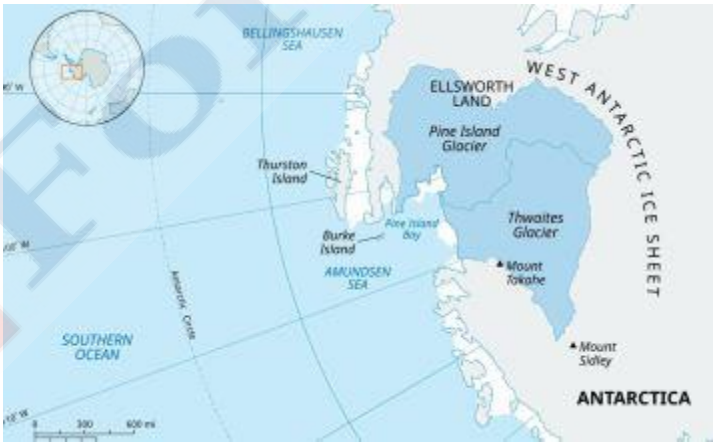
- Hydroxycobalamin and cyanocobalamin become active after conversion inside the body.

- Sources of B12
  - Its sources are primarily animal products like meat, fish (salmon, tuna, sardines), poultry, eggs, and dairy (milk, cheese, yogurt), plus fortified foods for vegetarians/vegans, such as breakfast cereals, plant milks, and nutritional yeast.
- Key functions
  - Vitamin B12 supports the development, myelination, and proper functioning of the central nervous system.
  - It is required for healthy red blood cell formation and prevention of anaemia.
  - It plays an essential role in DNA synthesis and normal cell division.
  - It acts as a cofactor for enzymes involved in amino acid and fatty acid metabolism.
- Cause of deficiency
  - Limited access to animal-source foods and prolonged cooking methods reduce available B12.
  - Poor absorption occurs due to gastric, intestinal, or age-related factors.
  - Long-term use of certain medications can gradually deplete B12 stores.
- Effects of deficiancy
  - Deficiency causes persistent fatigue, weakness, numbness, tingling, poor concentration, and mood changes.
  - Prolonged deficiency can lead to nerve damage, cognitive decline, balance problems, and anaemia-related complications.

## Thwaites Glacier

News: The pattern of fractures in the ice of the Thwaites Glacier, which is the outflow of the West Antarctic Ice Sheet, shows how the rest the Antarctic Ice Shelf could collapse in the future.

**About Thwaites Glacier**




Source – Britannica

- The Thwaites Glacier is a massive Antarctic ice feature in West Antarctica critical to global sea level dynamics.
- Location: It is located east of Mount Murphy, on the Walgreen Coast of Marie Byrd Land in Antarctica.
- It is commonly known as the 'Doomsday Glacier' because of its potential to significantly add to worldwide sea levels.
- Naming: It is named after the late American glaciologist Fredrik T. Thwaites.

- The glacier is flowing into Pine Island Bay which is a part of the Amundsen Sea.
- Size and area:
    - Width: It is 120 km wide and is the single widest glacier in the world.
    - Thickness: It is also very tall, with ice thickness from bedrock to surface measuring between 800 m and 1,200 m.
    - Area: It has an area of 192,000 sq. km.
    - It is larger than the American state of Florida and a little smaller than the entire island of Great Britain.
- Significance: It is one of the fastest changing ice-ocean systems on the planet.
    - The complete melting of the glacier could add 65 cm to global sea levels.

## Mrs. Hume's Pheasant

News: Lurh Tlang Vavu Sanctuary in Farkawn village of Champhai district has become Mizoram's first community-led forest dedicated to the sole conservation of Mrs. Hume's pheasant, the state bird of Mizoram.

**About Mrs. Hume's Pheasant**

Source – Bongabay

- It is also known as the bar-tailed pheasant.
- It is the state bird of Mizoram and Manipur.
- Naming: The name commemorates Mary Ann Grindall Hume, wife of the British naturalist A. O. Hume, one of the key founders of the Indian National Congress.
- Habitat and Distribution
    - Habitat: It inhabits open, dry, subtropical evergreen (mainly oak), coniferous (chiefly pine) or mixed conifer-broadleaf forests on steep, rocky hillsides interrupted by scrub and grassy clearings.
    - Distribution: It is endemic to China, Myanmar, Thailand, Burma and India.
        - In India, it is found in Manipur, Mizoram, Nagaland and Arunachal Pradesh.
- Characteristics
    - The pheasant is up to 90 cm long with a greyish brown head, bare red facial skin, chestnut brown plumage, yellowish bill.
    - It has metallic blue neck feathers.
    - The male has a long greyish white, barred black and brown tail.
    - The female is a chestnut brown bird with whitish throat, buff colour belly and white-tipped tail.
- Threats

- Habitat loss and fragmentation due to shifting cultivation
- Deforestation
- Hunted for food
- Trade of meat

- IUCN Status: Vulnerable

## United Nations Department of Economic and Social Affairs (UNDESA)

News: The United Nations Department of Economic and Social Affairs projected India's growth at 7.2% for 2025–26 in its World Economic Situation and Prospects 2026 report.

**About United Nations Department of Economic and Social Affairs (UNDESA)**

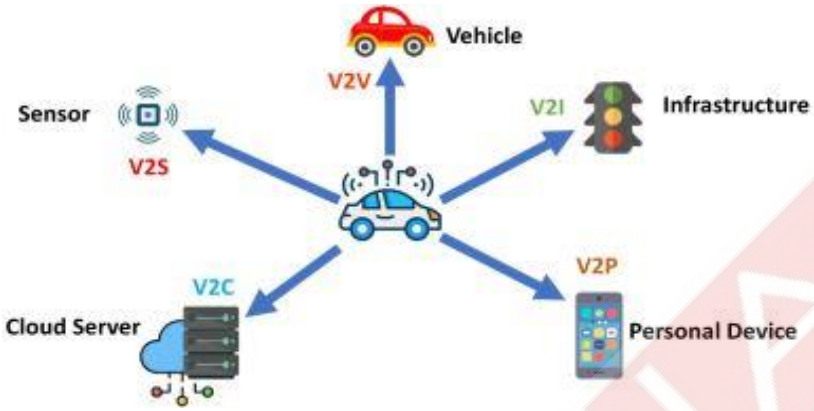

Source – UN DESA

- UNDESA is a core department of the United Nations Secretariat that leads work on economic, social, and environmental development.
- Established in: UNDESA was established in 1948 and was restructured into its present form in 1997 through mergers of UN development and policy departments.
- Headquarters: New York City, USA
- Aim: The aim of UNDESA is to support countries in achieving sustainable, inclusive, and equitable development by translating global UN commitments into national policies and actions.
- Functions
  - Economic and social analysis: UNDESA conducts global economic and social analysis by producing flagship reports such as the World Economic Situation and Prospects to guide policy decisions.
  - SDG Coordination: It monitors and coordinates progress on the 17 Sustainable Development Goals and supports their implementation across countries.
  - Advice and technical assistance: It provides policy advice and technical assistance to governments on poverty reduction, inequality, employment, climate action, and social protection.
  - It offers intergovernmental support by providing secretariat services to the UN General Assembly, ECOSOC, UN Commissions, and the High-Level Political Forum.
- Reports published by UNDESA
  - World Economic Situation and Prospects Report (WESP)
  - World Social Report
  - Sustainable Development Goals Report
  - United Nations E-Government Survey

# Vehicle-to-Vehicle (V2V) Communication Technology

News: The Government of India is preparing to roll out Vehicle-to-Vehicle (V2V) communication technology by end of 2026.

**About Vehicle-to-Vehicle (V2V) Communication Technology**




Source – MDPI

- Vehicle-to-vehicle communication technology is a wireless system that allows vehicles to directly exchange safety data without using mobile or internet networks.
- Objective: The primary objective is to lower the risk of collisions and chain accidents by providing advance warnings about sudden traffic changes.
- Working mechanisms
    - Internal communication unit: Vehicles will be fitted with an internal communication unit that can transmit and receive signals from other vehicles on the road.
    - Continuously shares details: While moving, each vehicle continuously shares details such as position, speed, direction, and braking status with surrounding vehicles.
    - Dedicated radio frequency: This exchange uses a dedicated radio frequency authorised by the Department of Telecommunications and does not depend on mobile or internet services.
    - Immediate alerts: When the system identifies risks like sudden deceleration, close distance, or vehicles approaching from blind spots, it immediately alerts the driver.
    - In vehicles equipped with Advanced Driver Assistance Systems, these alerts can support timely automatic responses.
- Key features
    - All-round communication: The technology enables vehicles to exchange information from the front, rear, and sides, ensuring complete situational awareness.
    - Hidden hazard alerts: It provides immediate warnings about dangers that are not directly visible to the driver.
    - Low-visibility safety: The system reduces accident risks during foggy or poor visibility conditions on highways.
    - Network-free integration: It works without mobile networks and strengthens the performance of existing driver assistance systems.
- Concern: The technology requires large-scale adoption to be effective, adds extra cost for vehicle buyers, operates within a limited range, and initially provides only warning-based assistance.

## Zehanpora Site and Buddhism in Kashmir

News: The Zehanpora site gained attention after Prime Minister Narendra Modi mentioned its archaeological discovery in his Mann ki Baat address.

**About Zehanpora Site and Buddhism in Kashmir**

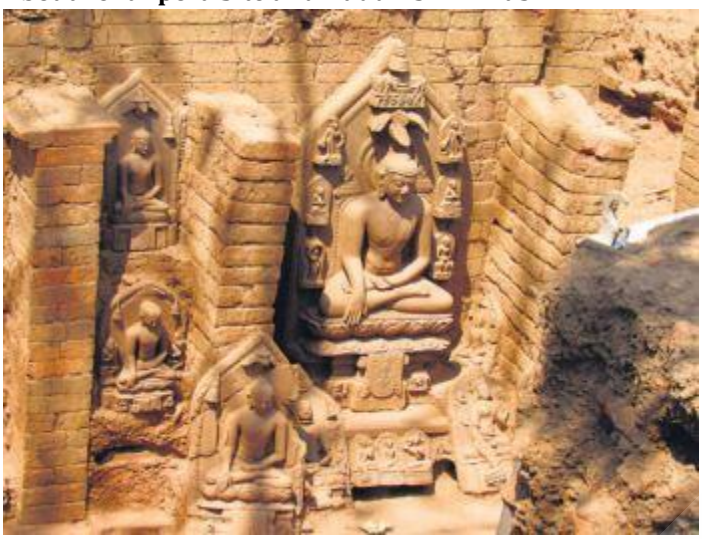


*Figure 9. Source – HT*

- Zehanpora is a large Buddhist archaeological site that highlights the deep historical roots of Buddhism in Kashmir.
- Location: Zehanpora is located in Baramulla district of Jammu and Kashmir, in the northern part of the Kashmir region.
- Major findings at site
  - Structures: Archaeologists have identified stupas, monk living spaces, and carefully planned stone foundations spread across the plateau.
  - Architecture: The stupa layouts show Gandharan influence, which indicates cultural interaction with north-western Buddhist regions.
  - Links to Kushan-Era (1st – 3rd century): Archaeologists believe the site may have links with Huvishkapura, an ancient Kushan capital mentioned in historical texts.
- Strategic Location: Zehanpora lay on an ancient trade and pilgrimage corridor connecting Gandhara and Kashmir, supporting the movement of monks, merchants, and ideas.
- Significance: The site confirms Kashmir's role as a major Buddhist centre and an important node in ancient trade and pilgrimage networks.

**About Buddhism in Kashmir**

- Buddhism was prevalent in Kashmir even before Ashoka's reign, as mentioned in Kalhana's *Rajatarangini*.
- The Fourth Buddhist Council, associated with the Sarvastivada tradition, is believed to have been held in Kashmir during Kanishka's reign.
- Kashmir hosted important Buddhist philosophical developments, including the rise of Mahayana Buddhism.
- The region played a role in spreading Buddhism to Central Asia and China through missionary monks.
- Other important sites: Harwan, Ambaran (Akhnoor), and Parihaspora are significant ancient Buddhist archaeological sites in Kashmir.

## Gray Slender Loris

News: Kerala and Tamil Nadu have begun efforts to restore habitats and strengthen monitoring of the grey slender loris.

**About Gray Slender Loris**

*Figure 10. Source: neprimateconservancy*

- The gray slender loris is a small nocturnal primate. They belongs to the group of prosimians, which represents some of the oldest and most primitive primates.
- Scientific name: Loris lydekkerianus
- Sub- species: Malabar slender loris, Mysore slender loris, Northern Ceylonese slender loris, and Highland slender loris.
- Habitat: In India, gray slender lorises inhabit tropical dry forests in high-altitude areas and subtropical regions near plantations.
    - In Sri Lanka, they are mainly found in dry-zone forests with evergreen vegetation.
- Distribution
    - Endemic: Southern and Eastern India and Sri Lanka.
    - In India, they are found in the southern regions of the Eastern and Western Ghats.
    - The Malabar and Mysore subspecies occur in India, while the Northern Ceylonese and Highland subspecies are endemic to Sri Lanka.
- Physical Characteristics
    - The gray slender loris is the smallest species of loris.
    - Adults weigh about 255 grams and measure approximately 21.5 centimetres in length.
    - They lacks a tail, contributing to its small appearance.
    - Coat colour varies by subspecies, ranging from greyish-brown in Indian populations to reddish tones in Sri Lankan populations.
    - All subspecies have large forward-facing eyes with dark patches, adapted for nocturnal vision.
    - It has long limbs of equal length and strong, grasping hands with opposable thumbs.
    - Its lower teeth form a comb-like structure used for grooming and feeding.
    - Unlike many primates, it cannot jump or leap due to the absence of a tail.
- Diet: They are primarily insectivorous.
    - Their diet mainly includes ants and termites, along with beetles, spiders, mollusks, and small vertebrates.
- Behaviour and Lifestyle: Gray slender lorises are nocturnal and arboreal, spending most of their lives in trees.
    - They use all four limbs to move cautiously along branches in dry forest canopies.
    - Grey slender lorises is unique among lorises for its occasional ability to move quickly when threatened.
- Defence Mechanisms: When threatened, gray slender lorises often freeze to avoid detection.

- If necessary, they growl and release a strong-smelling secretion from scent glands under their arms.

- Ecological Role: As insect predators, gray slender lorises help regulate insect populations.
  - They also form part of the food chain, serving as prey for larger predators such as snakes, birds of prey, and carnivorous mammals.
- Threats: Major threats include habitat loss due to deforestation, hunting, and illegal wildlife trade.
- Conservation Status
  - IUCN: Near Threatened
  - CITES: Appendix II
  - Wildlife Protection Act, 1972: Schedule I

## Oreshnik Missile

News: The Russia–Ukraine conflict escalated after Moscow confirmed the use of its Oreshnik hypersonic missile, marking the weapon's first deployment since November 2024.

**About Oreshnik Missile**

Source: usijournal

- The Oreshnik missile is a hypersonic, nuclear-capable intermediate-range ballistic missile developed by Russia.
- The term "Oreshnik" translates to "hazelnut tree" in the Russian language.
- First Operational Use: Russia first deployed the Oreshnik missile in combat in November 2024 during a strike on the Ukrainian city of Dnipro.
- Features:
  - Technological Lineage: The Oreshnik missile is based on the RS-26 Rubezh missile system, which was originally developed as an intercontinental ballistic missile.
  - Missile Classification: It is classified as an intermediate-range ballistic missile capable of hypersonic speeds.
  - Speed Capability: The missile travels at hypersonic speeds of approximately 8,000 miles per hour, making interception extremely difficult.
    - The missile can travel at speeds of up to ten times the speed of sound.

- Range: The missile has a demonstrated range of 600 to 1,000 miles, with assessments suggesting a maximum range of over 3,000 miles.
- Multiple Target Strike Ability: A key feature of the Oreshnik is its ability to strike multiple targets simultaneously, a capability usually associated with intercontinental ballistic missiles.
- Warhead Capability: The Oreshnik missile is capable of carrying multiple warheads, including both nuclear and conventional payloads.
    - It can deploy up to six Multiple Independently Targetable Reentry Vehicles (MIRVs).
- Independent Targeting: Each MIRV can be independently guided toward separate targets, allowing a single missile to strike multiple locations simultaneously.
- Advanced Flight Trajectory: The missile follows a steep ascent beyond the atmosphere and re-enters sharply, enhancing its survivability against air defence systems.
- Low Intercept Probability: Its extreme speed, high-altitude trajectory, and multiple warhead deployment make it nearly impossible to intercept.

## Phayre's Leaf Monkey

News: The Phayre's leaf monkey is in the news due to genetic reclassification which reduced its estimated population and increased conservation concern.

**About Phayre's Leaf Monkey**


Source – DTE

- Phayre's leaf monkey is a diurnal and arboreal Old World monkey found mainly in forested regions of Northeast India.
- Scientific name: Its scientific name is Trachypithecus phayrei.
- Naming: The species is named after Arthur Purves Phayre, a 19th century British officer and naturalist.
- Local name: It is known as chasma bandor in Bengali and chasma-chakuwa bandar in Assamese.
- Habitat and distribution
    - Phayre's langur inhabits tropical, deciduous, and evergreen forests of North-East India (mainly found in Tripura, Assam and Mizoram), eastern Bangladesh, and western Myanmar.
    - It also occupies secondary forests such as bamboo clusters and rubber plantations, and rests under large-canopy tree species found in Bangladesh.
- Reclassification
    - Recent genetic studies showed that Indian and Myanmar populations are separate species.
    - The Indian population is now called Phayre's langur, while the Myanmar population is named Popa langur (*Trachypithecus popa*).

- Physical Characteristics
    - The monkey has a dark face with white rings around the eyes and lips, giving a spectacled look.
    - It has a thick bluish-grey coat, a long slender tail, and adults weigh between 6 and 8 kg.
    - Both sexes have a small sagittal crest, while infants are born with a golden-yellow coat.
- Diet
    - Phayre's leaf monkey is a strict folivore that feeds mainly on young leaves, shoots, and flowers.
    - It occasionally eats fruits and seeds and has a multi-chambered stomach to digest fibrous leaves.
- Behavior
    - The species lives in cohesive and territorial groups led by a dominant male.
    - It uses vocal calls and displays to defend its range and spends most of its time in treetops.
- Threats
    - Habitat loss
    - Forest fragmentation
    - Hunting
    - Illegal poaching and trading locally
- Conservation Status
    - IUCN – Endangered
    - CITES – Appendix II

## Kathputlis

News: Kathputli Nagar in Jaipur is in focus for preserving Kathputli puppetry, where nearly 250 families continue this traditional craft across generations.

**About Kathputlis**

Source – TH

- Kathputli is a traditional string puppet theatre from Rajasthan and is one of the oldest folk art forms of the region.
- Naming: The word Kathputli comes from *kath*, meaning wood, and *putli*, meaning doll, which reflects the basic structure of the puppet.
- It is traditionally practiced by the Bhatt community.
- Key Features
    - Craftsmanship: The puppets are hand-carved from wood for the head and torso, while the rest of the body is made from colorful scrap fabrics, cotton, and sequins.

- Distinctive Appearance: They are known for having large, expressive eyes, arched eyebrows, and no legs, hidden instead by long, ground-length skirts that twirl during movement.
- Puppeteers: Puppeteers control the puppets by tying two to five strings to their fingers and moving them from above.

- Theme: Performances narrate stories of Rajput kings, brave warriors, folk heroes, moral tales, and characters from everyday life and folklore.
- Instrument used: The shows are accompanied by folk music played on the dholak and harmonium, along with rhythmic narration.

**Other String Puppet Theatre of India**

- Kundhei of Odisha: Light wooden string puppets are used to narrate stories from the Ramayana, Mahabharata, and Puranas, accompanied by Odissi-style music.
- Gombeyatta of Karnataka: String puppets modelled on Yakshagana characters perform mythological and folk narratives with elaborate costumes and headgear.
- Bommalattam of Tamil Nadu: Large and heavy puppets, using a mix of string and rod techniques, enact episodes from Hindu mythology.
- Putul Nach of West Bengal: Wooden string puppets present folk tales, social themes, and epics, supported by local music and narration.

## Aral Sea

News: The Aral Sea is discussed due to long-term human-induced environmental damage caused by river diversion for agriculture during the Soviet period.

**About Aral Sea**


*Figure 11. Source – Save Aral*

- Aral Sea is an endorheic salt lake, meaning it's a closed basin with no outflow to the ocean.
- Borders: It marks the border between Kazakhstan to the north and Uzbekistan to the south.
- It was once served as a vast saltwater lake in Central Asia and ranked as the world's fourth largest inland water body.
- Formation: The Aral Sea depression emerged towards the conclusion of the Neogene Period, spanning from approximately 23 to 2.6 million years ago.
- Climate: It is known for its harsh climate with hot summers, cold winters, and temperature changes throughout the day.
- Important river: The two rivers that feed the Sea are the Amu Darya from the south and the Syr Darya from the north.
- Drainage: It encompasses drainage from Uzbekistan and parts of Kazakhstan, Tajikistan, Afghanistan, Turkmenistan, Iran, and Kyrgyzstan.
- Salinity: Due to high evaporation and lack of outflow, its salt content became extremely high, killing off freshwater fish.

- Historical collapse
    - From the 1950s onward, the Soviet government promoted large-scale cotton farming by diverting the Amu Darya and Syr Darya rivers, which sharply reduced water reaching the Sea, causing a rapid fall in water level from the 1960s.
    - Environmental Degradation: Over half a century, the Aral Sea lost about 60,000 sq. km, nearly 90 % of its total area, a crisis termed by the United Nations as "the dry tears of the Aral."
- Restoration Efforts: Restoration efforts now focus on regional projects, including the Kok-Aral Dam in Kazakhstan and water-saving irrigation initiatives in the Amu Darya delta to reduce agricultural water use.

## Gee's Golden Langur

News: The Gee's golden langur remains one of the rarest and most threatened primates globally, found only in Assam in India.

**About Gee's Golden Langur**


Source – DTE

- Scientific name: Trachypithecus geei
- They are also known as simply the golden langur.
- They were first brought to the attention of the world by the naturalist Edward Pritchard Gee in the 1950s.
- Habitat
    - They inhabit subtropical broadleaf forests of the Himalayan foothills, typically at elevations of 100-1,500 m.
- Distribution: They are endemic only to Assam and Bhutan.
    - They are concentrated between the Manas and Sankosh rivers in India and the foothills of Bhutan's Black Mountains.
    - Range: Their range is largely confined to the Chakrashila Wildlife Sanctuary, Raimona National Park, Kakoijana Reserved Forest, parts of Manas National Park, and a few fragmented patches in Kokrajhar and Dhubri districts.
    - In Assam, the population of golden langur is estimated to be around 7,400 individuals.
- Characteristics
    - The langur's long, silky coat gives it a luminous appearance that changes with the seasons.

- Males tend to have a deeper golden tone, while females and juveniles are lighter and silvery-white.
- The black face, pale beard, and long crown whorl of hair add to its distinctive look, and its tail often exceeds 1 metre.
- The species is strictly arboreal, using contiguous, tall canopy across moist evergreen, semi-evergreen and riverine forests.
- Socially, the langurs live in small groups averaging eight individuals, typically one male with several females and young ones.
- Unlike many primates, golden langurs are shy and avoid humans.
- Diet: They have a herbivorous diet of fruits, leaves, seeds, buds, and flowers.

- Threats
  - Fragmentation of habitats due to construction of roads, powerlines and cleared corridors.
  - Electrocution by power lines, road traffic and dog attacks
  - Fragmentation also restricts gene flow, leading to inbreeding and long-term population decline.
- Conservation status
  - IUCN: Endangered
  - CITES: Appendix I
  - Wildlife Protection Act, 1972: Schedule 1

## Arbitration Council of India (ACI)

News: As many as six years after the law was amended, the Union Government is yet to constitute the Arbitration Council of India to regulate and promote institutional arbitration in the country.

**About Arbitration Council of India (ACI)**

*Figure 12. Source – TH*

- The Arbitration Council of India (ACI) is a statutory body established to promote and regulate arbitration mechanisms in the country.
- It is governed by Part IA (Sections 43A to 43M) of the Arbitration and Conciliation Act, 1996, as amended in 2019.
- It reflects India's aim to become a global arbitration hub, especially for commercial disputes.
- Headquarter: Its head office shall be in Delhi.

- Composition of ACI
  - Chairman: ACI will be chaired by a former Supreme Court or High Court judge or an eminent arbitration expert, appointed by the Central Government in consultation with the Chief Justice of India.
  - Full-time Members: It will also have two Full-time Members from amongst eminent arbitration practitioners and academicians.

- Part-time Member: In addition, one representative of a recognized body of commerce and industry shall be nominated on rotational basis as a Part-time Member.
- Ex-officio Members
  - The Secretary, Department of Legal Affairs, Ministry of Law & Justice
  - Secretary, Department of Expenditure, Ministry of Finance
  - Chief Executive Officer, ACI will be ex-officio Members.
- Functions: As per Section 43D of the Act, the Council would discharge the following functions:
  - Frame policy governing the grading of arbitral institutions.
  - Recognize professional institutes providing accreditation of arbitrators.
  - Review of grading of arbitral institutions and arbitrators.
  - Hold training, workshops and courses on arbitration in collaboration of law firms, universities and arbitral institutes.
  - Frame, review and update norms to ensure satisfactory level of arbitration and conciliation.
  - Act as a forum for exchange of views and techniques to make India a robust centre for domestic and international arbitration.
  - Make recommendations to the Central Government to make provisions for easy resolution of commercial disputes.
  - Promote institutional arbitration by strengthening arbitral institutions.
  - Conduct examination and training on various subjects relating to arbitration and conciliation and award certificates.
  - Establish and maintain depository of arbitral awards.
  - Make recommendations regarding personnel, training and infrastructure of arbitral institutions.

## Jeeraphool Rice and Nagri Dubraj Rice

News: A Regional Office of the Agricultural and Processed Food Products Export Development Authority (APEDA) was inaugurated at Raipur, Chhattisgarh increasing export potential GI-tagged products such as Jeeraphool Rice and Nagri Dubraj Rice.

**About Jeeraphool Rice and Nagri Dubraj Rice**

*Figure 13. Source – Kisan Tak*

**About Jeeraphool Rice**

- Jeeraphool rice is an ancient, indigenous, aromatic, and short-grained rice variety mainly grown in the Indian states of Chhattisgarh.
- Cultivated in: It is a common and widely cultivated crop in Surguja district of Chhattisgarh.
- The rice grain resembles Cumin (Jeera) in appearance, which is why it's known as Jeeraphool.
- Uses: The flour of Jeeraphool rice is smooth and used to make various local dishes, including "Chausela" (Poori), anarsa, and chawal.

- GI Tag: It was awarded the Geographical Indication (GI) status tag on 14 March 2019.

**About Nagri Dubraj Rice**

- Nagri Johar Dubraj Rice is a premium aromatic rice variety traditionally grown by the tribal farming communities of Dantewada, Chhattisgarh.
- Its soft texture and medium-length grains turn tender and naturally fragrant when cooked.
- Being unpolished, it retains more nutrients and offers a richer flavour than regular polished rice.
- Popularly known as the "Basmati of Chhattisgarh," this rice is cultivated through community-based and sustainable practices, making it a wholesome and authentic choice for everyday meals.
- GI Tag: It was awarded the Geographical Indication (GI) status tag in March, 2023.

## NIRANTAR platform

News: Union Minister for Environment, Forest and Climate Change chaired a meeting of the National Institute for Research & Application of Natural Resources to Transform, Adapt and Build Resilience (NIRANTAR) platform.

**About NIRANTAR Platform**

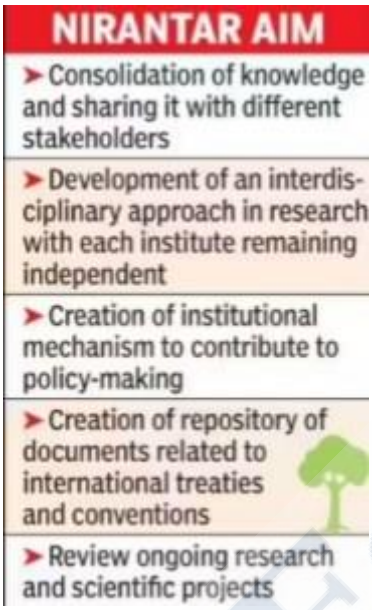



*Figure 14. Source – Times of India*

- NIRANTAR stands for National Institute for Research & Application of Natural Resources to Transform, Adapt and Build Resilience.
- It is a platform of institutions to improve coordination and collaboration among institutions.
- Initiative by: Ministry of Environment, Forest and Climate Change (MoEFCC)
- Aim: It aimed at
  - Consolidation of knowledge and sharing it with different stakeholders
  - Development of an interdisciplinary approach in research with each institute remaining independent
  - Creation of institutional mechanism to contribute to policy-making
  - Creation of repository of documents related to international treaties and conventions
  - Review ongoing research and scientific projects
- It is to assist in formulating balanced policies that harmonize environmental protection with industrial and economic development.
- It seeks to ensure that natural resources are utilised wisely, preventing over-exploitation while promoting sustainable growth.
- Led by: A high-powered steering committee headed by environment minister with all secretaries of science and technology, tribal, and agriculture ministries, department of industry, and internal trade.
- Features:
  - Four Vertical Approach: The platform operates through four verticals, each focusing on different aspects of research, assessment of outcomes, and practical utilisation of natural resources. This structure allows for specialised and coordinated efforts across multiple domains of environmental and developmental science.
  - NIRANTAR focuses on three aspects: Research, its role in policymaking and the way ahead. It also emphasised the importance of institution building through committed and capable human resources.

# Swami Vivekananda

News: The Vice President of India paid floral tributes to Swami Vivekananda on National Youth Day.

**About Swami Vivekananda**

Source: Cultural India

- Swami Vivekananda was a Hindu monk, spiritual leader, and reformer who played a major role in spreading Vedanta philosophy.
- He was originally named Narendranath Datta and was born on January 12, 1863, in Kolkata.
- From a young age, Narendranath had mystical experiences and became deeply curious about the existence of God.
- In 1881, he met Ramakrishna Paramhamsa, who later became his spiritual guru.
- Life as monk: Around 1890, Vivekananda travelled across India as a wandering monk under the names Vividishananda and Sachchidananda. During his travels, he met people from different social classes and studied the social and religious conditions of India.
- World's Parliament of Religions, Chicago (1893): Vivekananda represented Hinduism at the World's Parliament of Religions in Chicago in 1893.
    - His speeches were deeply inspiring and emphasized harmony, peace, and acceptance of all religions.
    - He became famous as a captivating orator, and newspapers described him as "an orator by divine right."
    - In his final address, he stated that the message of all religions should be "Help and not fight, assimilation and not destruction, harmony and peace and not dissension."
- Founding of Organizations: After returning to India in 1897, he founded the Ramakrishna Mission to organize humanitarian and spiritual activities. He also established Ramakrishna Math at Belur, West Bengal, to train young monks and serve as a spiritual center.
    - He established Vedanta Societies in New York (1894) and San Francisco (1900), which spread Vedanta philosophy in the West.
- Philosophy and Teaching:
    - His philosophy is based on Vedanta, which highlights the divinity of the soul, the oneness of all existence, and the importance of self-realization
    - He believed in a universal religion, teaching that all faiths are different paths leading to the same ultimate truth, promoting tolerance and religious harmony.

- He emphasized service to humanity with the principle "Jiva is Shiva," meaning helping others is equivalent to serving God
- He popularized Karma Yoga, the path of selfless action, teaching that duties should be performed without attachment to results and dedicated to the divine.

- Contribution:
  - He was India's first cultural ambassador to the West, promoting Hinduism, Indian spirituality, and culture globally while countering negative stereotypes.
  - He emphasized the harmony of science and religion, advocated selfless action, and stressed the wisdom of the Bhagavad Gita in guiding life and social service.
  - Vivekananda championed social reforms, opposing untouchability, caste discrimination, and superstition, while promoting women's education, equality, and the upliftment of the poor.
  - He inspired nationalism, universal brotherhood, and spiritual renaissance, awakening Indian pride and integrating material progress with spiritual growth.
- His birthday is celebrated as National Youth Day in India since 1985.
- He died on July 4, 1902, near Calcutta at the age of 39.
- The Vivekananda Rock Memorial in Kanyakumari commemorates his meditation before leaving for Chicago in 1893.

## Himalayan Brown Bear

News: A survey of the Trans-Himalayan region of Ladakh for mapping brown bear habitat found that the most high-quality habitat lies outside protected areas and overlaps with zones of rapid infrastructure expansion, underscoring the need for wildlife corridor protection.

**About Himalayan Brown Bear**

*Figure 15. Source: Animalia*

- The Himalayan brown bear (Ursus arctos) is a subspecies of the brown bear and represents one of the oldest bear lineages adapted to high-altitude environments.
- It is locally known as Lal Bhalu in many Himalayan regions.
- Habitat: They primarily inhabits alpine meadows, alpine scrublands, and glacial valleys.
  - They are generally found at elevations ranging from 3,000 to 5,000 m above sea level.
- Distribution: They are found in northwestern and central Himalayas, including Pakistan, India, Nepal, the Tibetan Autonomous Region of China, and Bhutan.
  - In India, they are found across the western Himalayan states of Jammu and Kashmir, Himachal Pradesh, and Uttarakhand.
- Physical Characteristics
  - The Himalayan brown bear has light brown to sandy or reddish-brown fur that varies seasonally.
  - Their coat becomes shorter during summer and significantly thicker and longer in winter to provide insulation.
  - The species has a prominent shoulder hump, which is a defining characteristic of brown bears.

- They possess strong limbs and long, sharp claws that are used for digging roots, insects, and for defense.
- Adult males can weigh up to 550 kilograms, making it the largest terrestrial carnivore in the Himalayan region.
- Size: 150 to 280 cm.

- Diet: They are omnivorous and feeds on a wide variety of plant and animal matter.
  - Their diet includes grasses, roots, berries, insects, small mammals, and occasionally wild ungulates.
- Behavior
  - They are solitary species and generally avoids contact with humans.
  - They are the least arboreal of all bear species and spends most of its time on the ground.
  - They hibernate during the winter months in self-dug dens located on sheltered slopes.
- Ecological importance
  - They play a crucial role as an apex predator and scavenger in alpine ecosystems, contributing to nutrient cycling through scavenging and foraging activities.
  - They help to regulate herbivore populations and maintains ecological balance.
- Threats:
  - Habitat degradation
  - Increasing human–wildlife conflict
  - Poaching and retaliatory killings
  - Fragmentation
  - Climate change is altering alpine ecosystems and affecting feeding and hibernation patterns.
- Conservation Status:
  - IUCN Red List: Critically Endangered
  - Wildlife (Protection) Act of 1972: Schedule I
  - CITES: Appendix I

## 'Make in India in Sports' and 'International Relations' Committees

News: The Ministry of Youth Affairs & Sports has advised all recognised National Sports Federations (NSFs) to constitute dedicated Committees on International Relations and Make in India in Sports within their respective organisations.

**About 'Make in India in Sports' and 'International Relations' Committees**

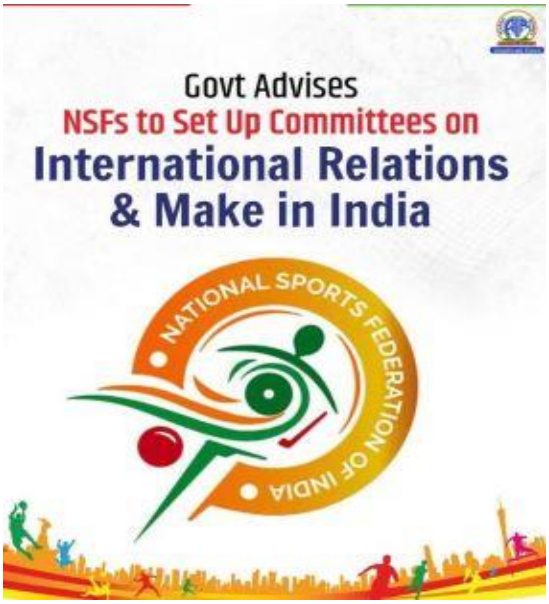



*Figure 16. Source – AIR*

**About 'Make in India in Sports' Committee**

- The Make in India in Sports Committee will be responsible for engaging with Indian manufacturers, start-ups, research institutions, and testing and standardisation bodies to facilitate product development, trials, and certification in the concerned sport, thereby promoting the domestic sports manufacturing ecosystem envisaged under Make in India.
- Composition: The Committee shall include senior Federation members, technical experts, former international athletes, and at least one member with experience in sports equipment or technology, manufacturing, or standards.
- The Committee will also prepare periodic reports on the adoption of indigenous solutions, highlighting progress made, constraints faced, and recommendations for consideration within the NSF, with specific reference to contributions towards Make in India and Atmanirbhar Bharat.

**About 'International Relations' Committee**

- The International Relations Committee will monitor developments in relevant International Federations (IFs) and Continental Federations (CFs), including changes in competition rules and structures, governance frameworks, elections, and athlete-centric programmes.
- Aim: It is aimed at strengthening India's international engagement in sports.
- Composition: The Committee shall comprise senior Federation members, former international athletes, coaches, and subject experts with proven experience in global sports administration and diplomacy.
- Functions
    - The Committee will formulate a medium-term international cooperation plan covering bilateral and multilateral MoUs, joint training camps, exchange programmes, knowledge-sharing initiatives, and opportunities for hosting international sporting events in India.
    - It will ensure that all international engagements are aligned with Government of India policies, the Olympic Charter, and IF statutes, and adhere to principles of good governance, anti-doping compliance, and athlete safeguarding.
    - The Committee will strengthen collaboration with counterpart national federations and leading international sports research and academic institutions to secure best-in-class training opportunities and sports science support for Indian athletes.
    - It will also coordinate with international federations and relevant bodies to ensure timely participation in bidding processes and share all proposals for hosting international events in India with the Ministry in advance, for information and, where required, prior consultation or clearance under extant guidelines.

## Responsible Nations Index (RNI)

News: The Responsible Nations Index will be formally launched on 19 January 2026.

**About Responsible Nations Index (RNI)**

*Figure 17. Source – PIB*

- It is India's first globally anchored index designed to measure national responsibility beyond economic and military power.
- Launched by: World Intellectual Foundation in collaboration with Jawaharlal Nehru University, Indian Institute of Management Mumbai, and the Dr. Ambedkar International Centre.
- Aim: To assess how responsibly nations govern their people, protect the environment, and contribute to global stability.
- Purpose of the Index: The Index seeks to move beyond traditional indicators such as GDP, military strength, and economic growth.
- Focus: It focuses on ethical governance, social well-being, environmental sustainability, and global responsibility.
- Coverage and Data: The RNI evaluates a total of 154 countries across the world.
    - It is based on transparent, globally sourced, and verifiable data to ensure credibility and comparability.
    - The methodology is designed to allow objective cross-country assessment.
- Core Dimensions of the Index: The Index is structured around three major dimensions of responsibility.
    - Internal Responsibility: Internal responsibility measures a nation's commitment to dignity, justice, and the well-being of its citizens.
        - It examines governance quality, social equity, and human development indicators.
    - Environmental Responsibility: Environmental responsibility assesses how nations manage natural resources and address climate change.
        - It includes indicators related to sustainability, conservation, and environmental protection.
    - External Responsibility: External responsibility evaluates a country's contribution to global peace and international cooperation.
        - It measures participation in multilateral efforts, global stability, and responsible international conduct.

## Mithi River

News: The Mithi river flowing through Mumbai has became a national symbol of urban vulnerability after the devastating floods that claimed over 1,000 lives in 2005.

**About Mithi River**

Source: mediaradiosai

- Location: The Mithi River is one of the four rivers flowing through the city of Mumbai.
- Origin: The river originates from the overflow of the Vihar Lake and also receives the overflows from the Powai Lake, about 2 km downstream.
- Length and end: It flows for approximately 18 km before meeting the Arabian Sea at Mahim Creek.
    - The river passes through densely populated residential areas and major industrial zones of Mumbai.

- Importance of River: The Mithi River plays a crucial role as a natural stormwater drainage system for Mumbai.
    - It helps control flooding in a low-lying coastal city that receives heavy monsoon rainfall.
    - The river and its mangroves support a fragile estuarine ecosystem and protect the city from tidal flooding.
- Current condition of river: The Mithi River currently functions more like a sewage drain than a natural river.
    - Powai Lake has pollution levels far above safe limits and has been declared unfit for drinking.

## Shaksgam Valley

News: In response to a statement by the India's Ministry of External Affairs (MEA) spokesperson, a Chinese government spokesperson reaffirmed the country's claims to the Shaksgam Valley.

**About Shaksgam Valley**


Source: Tibetanreview

- Location: The Shaksgam Valley, also known as the Trans-Karakoram Tract, is a remote, high-altitude valley located north of the Karakoram mountain range.
    - It lies in the Hunza–Gilgit region of Pakistan-occupied Kashmir and is a disputed territory.
- Bordering Region: The valley borders China's Xinjiang province to the north, Pakistan-occupied Kashmir to the south and west and the Siachen Glacier region to the east.
- Rivers: The valley is drained by the Shaksgam River which is a tributary of the Yarkand River (a river of Xinjiang region of China).
- Administered by: At present, the valley is administered by China as part of Xinjiang, although India claims it as its territory.
- Historical Background: Shaksgam Valley was part of the former princely state of Jammu and Kashmir.
    - Pakistan gained control over the region during the 1947–48 conflict.
    - In 1963, Pakistan ceded the Shaksgam Valley to China through the Sino-Pakistan Boundary Agreement.

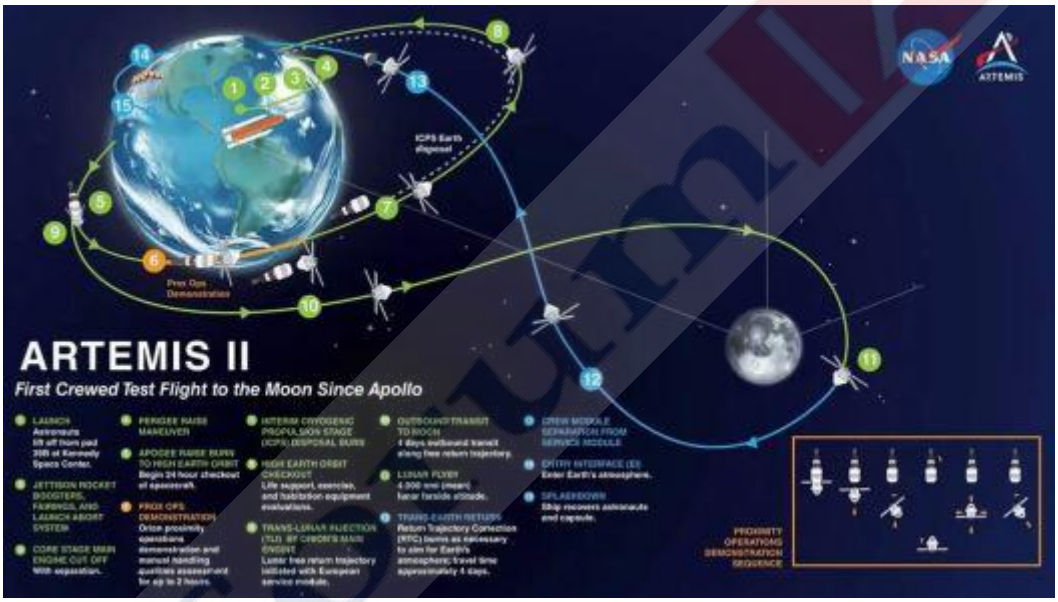
- Subsequently, the Karakoram highway was constructed by China in this Valley.
- India has never accepted this agreement, stating that the 1963 China-Pakistan Boundary Agreement is illegal and invalid.

- Importance
  - The valley is strategically important due to its proximity to the Siachen Glacier, which is the world's highest militarised zone and also Karakoram passes.
  - Control over the region affects India's security posture in Ladakh and along the northern borders.

## Artemis II Mission

News: The mission is in the news because NASA announced Artemis II is in final preparation stages with launch windows beginning February 2026.

**About Artemis II Mission**




Source – NASA

- Artemis II is the first crewed mission of NASA's Artemis programme to send humans to the vicinity of the Moon since 1972.
- Aim: The mission aims to test the Space Launch System rocket and the Orion spacecraft for safety of life-support and navigation systems.
- Launch Date: The earliest targeted launch date is February 6, 2026, with identified launch windows across February, March, and April 2026.
- Mission Type: Artemis II is a crewed lunar flyby mission and will not include a lunar landing.
- Significance: Artemis II is a critical test flight, and its success will allow NASA to proceed with Artemis III.

**About NASA's Artemis Program**

- The Artemis program is a Moon exploration program led by NASA, established in 2017, to re-establish human presence on the Moon and support future Mars missions.
- Artemis I to Artemis IV
  - Artemis I: It was an uncrewed test mission in 2022 that successfully tested SLS and Orion in lunar orbit.

- Artemis II: It will conduct the first crewed test flight of SLS and Orion around the Moon.
- Artemis III: It will send humans to explore the region near the lunar South Pole.
- Artemis IV: It will introduce the first lunar space station and a more powerful SLS rocket.

## Bhadrakali Temple Inscription

News: The Bhadrakali Temple inscription has drawn attention for highlighting the historical legacy, religious importance, and preservation of Somnath-related epigraphic records.

**About Bhadrakali Temple Inscription**

*Figure 18. Source – PIB*

- The Bhadrakali Temple inscription is an important 12th-century epigraph that records the history and patronage of the Somnath Temple.
- It is a eulogistic inscription of Param Pashupata Acharya Shriman Bhavabrihaspati, the spiritual preceptor of Maharajadhiraj Kumarapala of Anhilwad Patan.
- Location: The inscription is located at Prabhas Patan in Gujarat and is embedded in the wall of the ancient Bhadrakali Temple.
- Carved in: The inscription was carved in 1169 CE, corresponding to Valabhi Samvat 850 and Vikram Samvat 1255.
- Royal Patronage: It confirms the fifth temple's construction by Kumarapala in 1169 CE and reflects Solanki patronage of religion, art, and literature.
- Language used: The inscription is engraved in Sanskrit.
- Historical significance: The inscription uniquely chronicles the construction of the Somnath Temple across the four mythological Yugas, listing the materials used in each:
  - Satya Yuga: Built of gold by the Moon God (Soma).
  - Treta Yuga: Built of silver by Ravana.
  - Dvapara Yuga: Built of wood by Shri Krishna.
  - Kali Yuga: Built of stone by King Bhimdev Solanki.
- Protection: It is a protected monument under the State Department of Archaeology.

## Global Risks Perception Survey (GRPS) 2026

News: The World Economic Forum released the Global Risks Perception Survey 2026, highlighting shifting global risks and rising geoeconomic confrontation.

**About Global Risks Perception Survey (GRPS) 2026**


Source – WEF

- The GRPS 2026 assesses major global risks across immediate, short-to-medium, and long-term time horizons.
- Released by: The survey is released by the World Economic Forum and draws responses from over 1,300 global leaders and experts.

**Key Findings**

- Overall global outlook
    - Immediate and short-term outlook (2026 to 2028):
        - Geo-economic confrontation is ranked as the top global risk and the most likely trigger of a material global crisis in 2026.
        - State-based armed conflict ranks second and is increasingly linked with economic instability.
        - Extreme weather events remain a major concern but have slipped in ranking in the short-to-medium term.
        - Societal polarisation and misinformation and disinformation are identified as serious risks affecting democratic systems and social cohesion.
        - Economic downturn shows one of the sharpest rises in perceived severity over the two-year period.
    - Long-term outlook (10-year period up to 2036):
        - Environmental risks such as extreme weather events, biodiversity loss, and changes to earth systems rank among the top long-term concerns.
        - Adverse outcomes of artificial intelligence rise sharply as a long-term risk due to insufficient governance and potential harm to jobs and society.

**India-Specific Findings**

- For India, the top risks identified include cyber insecurity, income and wealth inequality, insufficient public services, economic downturn, and state-based armed conflict.
- The report notes that the strategic use of natural resources could create future tensions in the India–Pakistan context.
- India's 2024 general elections are highlighted as an example of how misinformation and disinformation are undermining democratic processes worldwide.

# Landmark Aquatic Biodiversity Conservation Initiatives under the Namami Gange Mission

News: The Union Minister for Jal Shakti has inaugurated several significant and far-reaching initiatives under the Namami Gange Mission to strengthen scientific research, monitoring and policy support for aquatic biodiversity conservation.

**Landmark Aquatic Biodiversity Conservation Initiatives under the Namami Gange Mission**

Source – DD News

**Aqua Life Conservation Monitoring Centre**

- The Aqua Life Conservation Monitoring Centre for Ganga and Other Rivers was inaugurated at Wildlife Institute of India (WII) as a dedicated institutional framework for aquatic biodiversity conservation.
- The Centre will support systematic monitoring, research, hotspot identification and policy formulation for aquatic species.
- The Centre is equipped with specialised laboratories for ecotoxicology, aquatic ecology and spatial ecology.
- A dedicated microplastics laboratory has been established to assess microplastic pollution in river ecosystems.

**Dolphin Conservation and Rescue Ambulance**

- A Dolphin Rescue Ambulance was launched to provide rapid, scientific and sensitive emergency response for Ganga dolphins in distress.

**Conservation of Riverine Bird Species**

- The Indian Skimmer Conservation Project, launched by the Bombay Natural History Society, focuses on protecting rare and endangered bird species along the Ganga's riverine stretches.
- The project highlights the importance of conserving the entire river ecosystem, including avian biodiversity.

**Turtle Conservation and Species Recovery**

- The first phase of the Turtle Conservation Project demonstrated successful revival of endangered turtle species through scientific reintroduction and monitoring.
- Endangered species such as the Narrow-headed Softshell Turtle and the Red-crowned Roofed Turtle were reintroduced into the Yamuna and Ganga rivers using modern tracking technologies.

**Capacity Building and Education**

- A two-year Master's programme in Freshwater Ecology and Conservation has been launched under the Namami Gange Mission to develop skilled professionals for river restoration, biodiversity conservation and sustainable water management.

**Knowledge Creation and Publications**

- A conservation action plan for the critically endangered Gharial was released, providing insights into its distribution in the Ganga basin.

- A publication linking biodiversity conservation with food and nutrition security through millets was also launched.

## SVASTIK Portal

News: The SVASTIK web portal was launched during CSIR-NIScPR's 5th Foundation Day celebration held in New Delhi on 14 January 2026.

**About SVASTIK Portal**


Source – CSIR

- SVASTIK stands for "Scientifically Validated Societal Traditional Knowledge" and functions as a national web portal for public communication.
- Implemented by: It is implemented by the CSIR–National Institute of Science Communication and Policy Research (NIScPR).
- Objective: It's objective is to conserve the practice of the right tradition, inculcate scientific temper of verifying tradition in a scientific manner and instill confidence in citizens regarding the scientific value of our traditional knowledge/practices.
- Key Features
    - Digital hub: The portal is the primary digital hub for the SVASTIK (Scientifically Validated Societal Traditional Knowledge) initiative
    - Multilingual Access: Content is available in English, 19 Indian languages, and 5 foreign languagesto ensure broad accessibility.
    - Centralized Repository: It serves as a single point of access for all SVASTIK content, including stories, infographics, and research summaries related to traditional knowledge.

Note: The SVASTIK initiative was originally launched on August 25, 2021, following a call from Prime Minister to communicate verified traditional information to the public.

**About CSIR-National Institute of Science Communication and Policy Research (NIScPR)**

- It serves as the coordinating body for implementing the national initiative to communicate India's scientifically validated traditional knowledge to society.
- It is a newly formed institute under the Council of Scientific and Industrial Research (CSIR), created by merging CSIR–NISCAIR and CSIR–NISTADS.

- It is actively engaged in the conservation and promotion of traditional knowledge through research, documentation, and outreach activities.

## Famous Tunnels of India

News: India's tunnel infrastructure is in focus due to recent completions, operational launches, and progress in major strategic and transport tunnel projects.

**About Famous Tunnels of India**


Source – PIB

**Atal Tunnel**

- Situated in: It is situated in Himachal Pradesh.
  Location: It is located Beneath the Pir Panjal ranges.
  Connects: It connects the Manali with Lahaul–Spiti.
- Key Features:
  - The 9.02 km long tunnel bypasses Rohtang Pass and enables year-round high-altitude travel under extreme Himalayan conditions.
  - It is officially recognized as the World's Longest Highway Tunnel above 10,000 feet in 2022.

**Sonamarg Tunnel**

- Situated in: It is situated in Jammu & Kashmir.
  Location: It is located in the mountainous region near Sonamarg at an altitude of over 8,650 feet above sea level.
  Connects: It connects Srinagar with Sonamarg and further towards Ladakh.
- Key Features: The 12 km tunnel project includes a 6.4 km main tunnel, an egress tunnel, and approach roads built using the New Austrian Tunnelling Method.

**Sela Tunnel**

- Situated in: It is situated in Arunachal Pradesh.
- Location: It is located on the Tezpur–Tawang route at an altitude of about 13,000 feet.
- Connects: It connects Tezpur with Tawang.
- Key Features: The tunnel is constructed by the Border Roads Organisation using the New Austrian Tunnelling Method at a cost of ₹825 crore.
  - It ensures all-weather connectivity, holds strategic importance for the Armed Forces, and supports socio-economic growth in border areas.

**Banihal–Qazigund Road Tunnel**

- Situated in: It is situated in Jammu & Kashmir.

- Location: It is located between Banihal and Qazigund.
- Connects: It connects the Jammu region with the Kashmir Valley.
- Key Features: The 8.45 km long twin-tube tunnel has reduced the road distance by 16 km and cut travel time by about one and a half hours.

**Dr Syama Prasad Mookerjee Tunnel**

- Situated in: It is situated in Jammu & Kashmir.
- Location: It is located in the Himalayan terrain between Udhampur and Ramban.
- Connects: It connects Udhampur with Ramban on the Jammu–Srinagar route.
- Key Features: The 9 km long twin-tube tunnel has reduced travel time between Jammu and Srinagar by nearly two hours.

**Tunnel T50 under USBRL Project**

- Situated in: It is situated in Jammu & Kashmir.
- Location: It is located between Khari and Sumber.
  Connects: It connects the Kashmir Valley with the rest of India through rail connectivity.
- Key Features: It is a12.77 km long tunnel, stands as one of India's longest transportation tunnel constructed under the Udhampur–Srinagar–Baramulla Rail Link (USBRL) project.

**Zojila Tunnel**

- Situated in: It is situated in the Himalayan region between Jammu & Kashmir and Ladakh.
- Location: It is located at an altitude of about 11,578 feet on the Srinagar–Kargil–Leh National Highway.
- Connects: It connects Ladakh with the rest of the country through an all-weather road link.
- Key Features: Once completed in 2028, it will become India's longest road tunnel and Asia's longest bi-directional tunnel, while saving over ₹5,000 crore through the use of modern technology.

**Mumbai–Ahmedabad High-Speed Rail Tunnel**

- Situated in: It is situated in Maharashtra.
- Location: It is located between Ghansoli and Shilphata, including an undersea section.
- Connects: It connects sections of the Mumbai–Ahmedabad High-Speed Rail corridor.
- Key Features: The 4.8 km undersea tunnel is excavated simultaneously from both ends using the New Austrian Tunnelling Method under difficult underwater conditions.
    - Designed as a single-tube tunnel capable of carrying two high-speed trains, it is a key feature of India's first bullet train project.

**Rishikesh–Karnaprayag New Rail Line Project Tunnels**

- Situated in: It is situated in Uttarakhand.
- Location: It is located in the geologically complex and environmentally sensitive Himalayan terrain.
- Connects: It connects Rishikesh with Karnaprayag through a tunnel-dominated railway alignment.
- Key Features: The project comprises 16 main line tunnels with a cumulative length of approximately 105 km and 12 parallel escape tunnels totaling about 98 km. Overall, 199 km of tunnelling has been completed against a total scope of 213 km.

**Kolkata Underwater Metro Tunnel**

- Situated in: It is situated in West Bengal.
- Location: It is located beneath the Hooghly River.
- Connects: It connects Esplanade with Howrah Maidan.
- Key Features: Launched in 2024, it is India's first underwater metro tunnel and a major engineering achievement.

# Export Preparedness Index (EPI) 2024

**News:** NITI Aayog released the fourth edition of the Export Preparedness Index (EPI) 2024.

**About Export Preparedness Index (EPI) 2024**

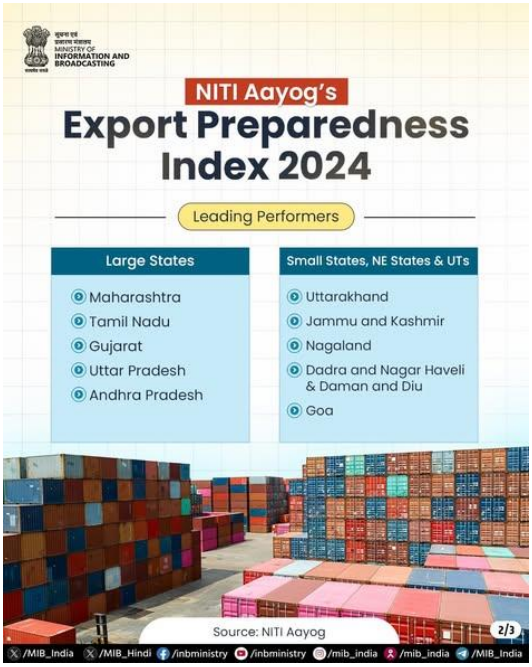



*Figure 19. Source: NITI Aayog*

- It is a comprehensive assessment of export readiness across States and Union Territories (UTs).
  - It provides an evidence-based framework to strengthen export competitiveness at the State, UT and district levels.
- Released by: NITI Aayog
- First edition: The first edition was published in August 2020.
- Strategic Alignment: It is aligned with India's target of USD 1 trillion in merchandise exports by 2030 and supports the long-term national vision of Viksit Bharat @2047.
- Objectives
  - It evaluates the strength, resilience and inclusiveness of subnational export ecosystems.
  - It identifies structural challenges, growth drivers and policy opportunities.
  - It promotes sustainable growth, employment generation, regional balance and integration into global value chains.
- Structure of the Index: It is built around four pillars-
  - Export Infrastructure
  - Business Ecosystem
  - Policy and Governance
  - Export Performance.
  - It is further divided into 13 sub-pillars and 70 indicators for granular analysis.
- Methodology
  - It uses data-driven and indicator-based approach and official data from Central Ministries, State Governments and public institutions.
  - Indicators are normalised and aggregated with balanced weightages across pillars and sub-pillars.
- Key Enhancements in 2024 Edition
  - Inclusion of new dimensions such as macroeconomic stability, cost competitiveness, financial access, human capital and MSMEs.
  - State and UT Classification:
    - States and UTs grouped into Large States, Small States, North Eastern States and Union Territories.
    - They are categorized within each group as Leaders, Challengers or Aspirers to enable benchmarking and peer learning.
  - District-Level Focus: Greater emphasis is on districts as the fundamental units of export competitiveness.
    - It encourages place-based export strategies rooted in local strengths, clusters and value-chain linkages.

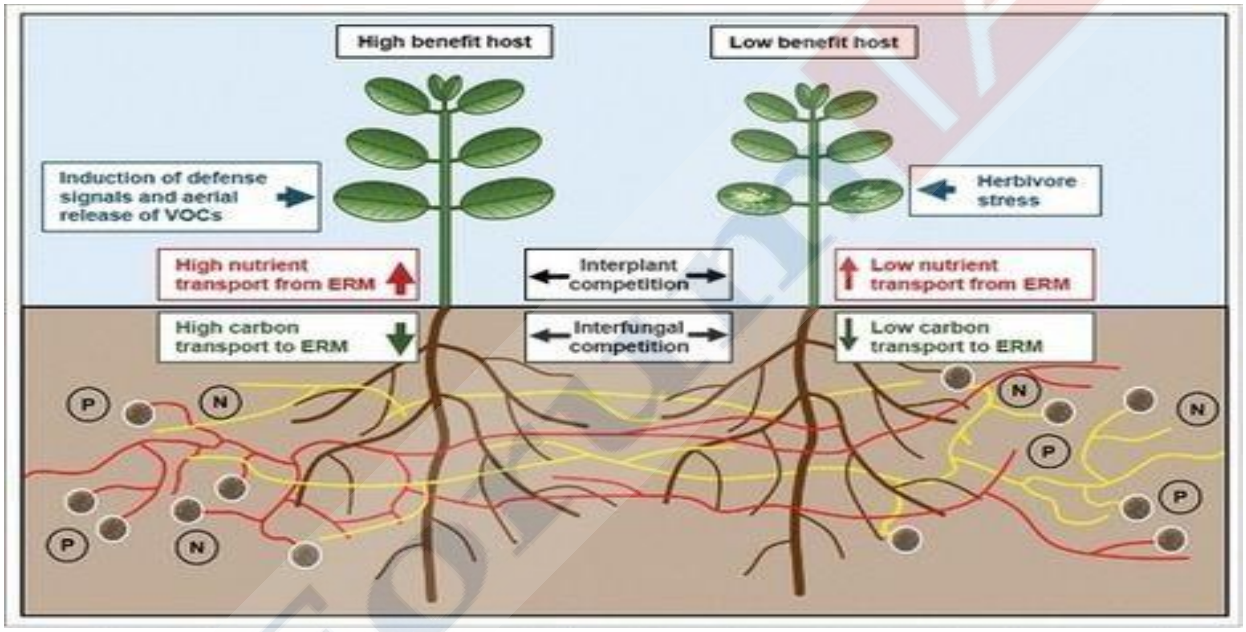
**Key Findings of the Export Preparedness Index (EPI) 2024**

- Top Performing States: Maharashtra, Tamil Nadu, Gujarat Uttar Pradesh and Andhra Pradesh ranked highest among large states due to strong industrial ecosystems and export infrastructure.
- Uttarakhand led the smaller states category, followed by Jammu & Kashmir, Nagaland, Dadra & Nagar Haveli & Daman & Diu, Goa, and Tripura.
- Expanding Regional Export Base: The rankings show rising export preparedness in non-traditional and smaller states, indicating broader regional participation in exports.

## Mycorrhizal Networks

**News:** American evolutionary biologist Toby Kiers has been awarded the Tyler Prize for Environmental Achievement for her work related to Mycorrhizal Networks.

**About Mycorrhizal Networks**




Source: Research gate

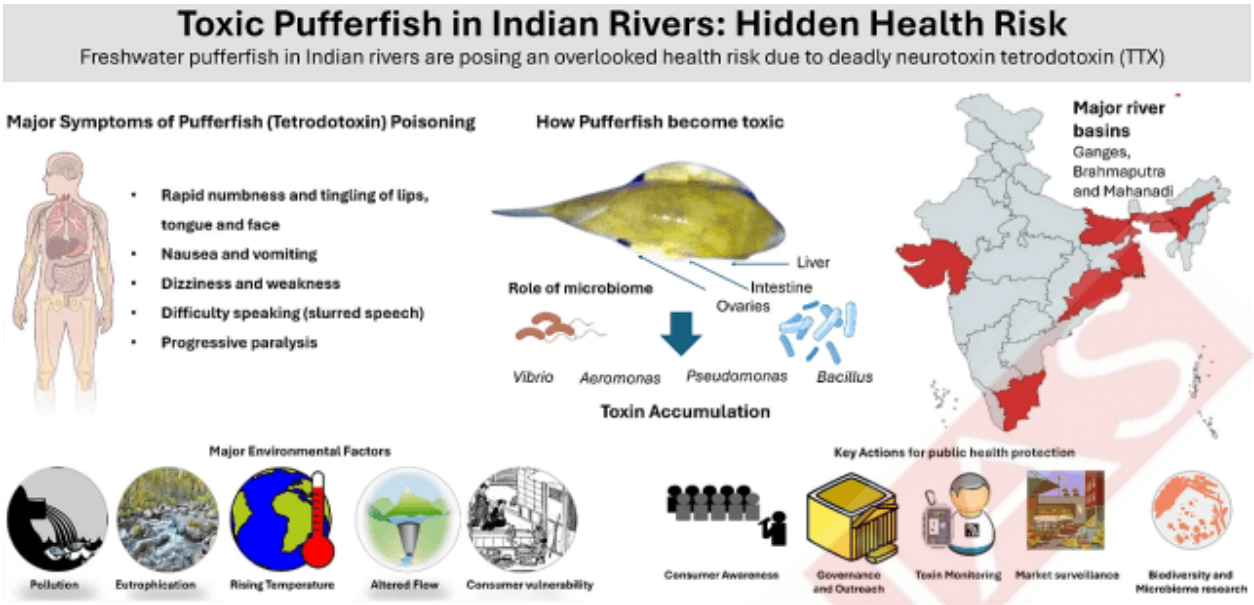
- The word ***mycorrhiza*** comes from **Greek and means "fungus–root,"** describing the **close association between fungi and plant roots.**
- Mycorrhizal networks are **underground systems formed by symbiotic fungi** that connect the roots of plants and trees.
- These networks **are often referred to as the "Wood Wide Web"** because they **function like a natural communication system.**
- **Age and Evolution:** Mycorrhizal networks have existed for more than 400 million years. These fungal partnerships appeared before trees, flowering plants, and humans.
- **Structure of Mycorrhizal Networks:** Mycorrhizal networks are composed of microscopic fungal filaments called hyphae. Hyphae are extremely thin, often only one cell wide. A small amount of forest soil can contain miles of interconnected fungal threads. These threads greatly extend the functional root system of plants.
- **Functions performed by Mycorrhizal Networks**
    - **Symbiotic Relationship Between Plants and Fungi:** Plants **provide mycorrhizal fungi with sugars and carbon produced** during photosynthesis. Fungi **supply plants with water**

**and essential nutrients** such as nitrogen and phosphorus. This **exchange benefits both organisms** and is classified as a mutualistic relationship.
    - **Communication and Signaling:** Mycorrhizal networks **allow plants to communicate through chemical signaling.** Warning signals **can be transmitted when a plant is attacked by insects or pathogens.** Neighboring plants **receive these signals and activate defensive responses.** This communication increases the overall survival of plant communities.
    - **Resource Sharing and Forest Cooperation:** Mycorrhizal fungi **redistribute nutrients and water across the network.** Resources are **directed toward plants that are stressed or growing in poor conditions.** Large, mature trees support younger seedlings through these networks. Some trees remain alive after being cut down because they continue to receive nutrients from nearby trees.
- **Types of Mycorrhizal Fungi:** There are two main types of mycorrhizal fungi: arbuscular and ectomycorrhizal fungi.
    - **Arbuscular mycorrhizal fungi** enter plant root cells and form structures where nutrients are exchanged. These fungi are associated with most crops, grasses, and flowering plants.
    - **Ectomycorrhizal fungi** form a protective sheath around roots and do not enter root cells. They are commonly found in forest trees such as pines, oaks, and birches. Many well-known forest mushrooms are the fruiting bodies of ectomycorrhizal fungi.
- **Ecological Importance:** More than 90 percent of plant species rely on mycorrhizal relationships.
    - **Forests with intact fungal networks are more resilient to drought and disease.** These networks improve soil health and ecosystem stability.
    - Mycorrhizal fungi play a **key role in maintaining biodiversity.**
    - Mycorrhizal fungi **naturally occur in healthy agricultural and garden soils.** Adding compost and organic matter supports fungal growth. Mycorrhizal inoculants can help plants establish strong root systems.

## Freshwater Pufferfish

**News:** India's first scientifically confirmed case of freshwater pufferfish poisoning highlights a hidden risk.

**About Freshwater Pufferfish**




Source: DTE

- Freshwater pufferfish belong **primarily to the family *Tetraodontidae*.**
- **Distribution:** They are naturally distributed across tropical regions of **South and Southeast Asia** (India, Thailand, Indonesia) and **Africa**, where they inhabit rivers, streams, floodplains, and lakes.
    - Globally, about **190–193 valid species** of pufferfish are recognised.
    - India hosts **eight genera and 32 species**, occurring in both marine and freshwater systems.
    - In India, they are primarily found in **Western Ghats and m**ajor river basins such as the **Ganga, Brahmaputra, and Mahanadi.**
- **Habitat:** Freshwater pufferfish are **benthic** and inhabit rivers, floodplains, wetlands, and lakes.
- **Diet:** They are **omnivorous**, feeding on algae, aquatic plants, insects, molluscs, and small invertebrates.
- **Features:**
    - **Size:** Freshwater puffers exhibit an extraordinary range of sizes and forms. At the smallest end is the **pea puffer (*Carinotetraodon travancoricus*)**, reaching only about 2–2.5 cm.
    - At the opposite extreme is the **mbu puffer (*Tetraodon mbu*)**, which can exceed 60 cm and is among the largest freshwater fishes kept in captivity.
    - Freshwater pufferfish may contain **tetrodotoxin (TTX)**, one of the most potent natural neurotoxins. Evidence suggests pufferfish **do not synthesise TTX themselves**. The toxin is likely produced by **symbiotic or ingested bacteria.**
    - Pufferfish are widely regarded as some of the most **intelligent freshwater aquarium fish**. They demonstrate strong visual recognition, curiosity, and problem-solving abilities.
    - Their presence often indicates **good river health and ecological balance**.
- **Conservation status:** Some species, such as the **dwarf pufferfish**, are listed as **Vulnerable** on the IUCN Red List.
- **Threats:** Wastewater and industrial pollution, Habitat degradation and overharvesting for the aquarium trade.

# BRICS 2026

**News:** India formally launched the BRICS Presidency 2026 logo and official website in New Delhi. India will assume the BRICS chairship in 2026, coinciding with 20 years of BRICS since its inception.

**About BRICS 2026**


*Figure 20. Source: TOI*

- **About the logo:** The logo of BRICS India 2026 is inspired by the **lotus**, India's national flower.
  - The **overall shape** reflects Indian cultural identity and continuity.
  - The **inner petals form two hands joined in a "Namaste"**, symbolising greeting, respect, and harmony.
  - The **five petals** are coloured to represent the **founding BRICS members**: Brazil, Russia, India, China and South Africa
  - The design highlights **unity in diversity** and collective cooperation among BRICS nations.
- **Theme:** The logo and theme emphasise the idea that **"BRICS brings countries together"**. The theme positions BRICS as a **platform for global welfare**, particularly for emerging markets and developing economies.
- **The underlying message focuses on:** Strengthening collective capacities, promoting innovation and advancing sustainable development
- **BRICS India 2026 Official Website:** The official website will act as a **central information and coordination platform** during India's chairship.
  - **It will provide:** Updates on meetings and initiatives, information on outcomes and decisions and timely dissemination of official communications
  - The website is intended to enhance **transparency, engagement, and coordination** among BRICS members and stakeholders.
- **India's Priorities for BRICS 2026:** India outlined **four broad priorities** for its BRICS chairship: **Resilience, Innovation, Cooperation and Sustainability**
  - These priorities aim to provide a balanced framework across BRICS' three core pillars: Political and security cooperation, Economic and financial collaboration and Cultural and people-to-people exchanges.
- **Note:** India will chair BRICS for the fourth time in 2026, having previously held the Chairship in 2012, 2016, and 2021.

**About BRICS**

- BRICS is an **intergovernmental organization** comprising eleven countries: Brazil, China, Egypt, Ethiopia, India, Indonesia, Iran, Russia, Saudi Arabia, South Africa, United Arab Emirates.
- **Partner countries:** In 2025, ten Partner countries joined BRICS: Belarus, Bolivia, Cuba, Kazakhstan, Malaysia, Nigeria, Thailand, Uganda, Uzbekistan, and Vietnam
- The **term BRIC was originally coined by Jim O'Neil** in 2001 to designate the group of emerging markets.

- It serves as a useful platform for consultation and cooperation on contemporary issues having global as well as regional significance, and issues of global political and economic governance.
- The **first summit took place in 2009** featured the founding countries of **Brazil, Russia, India, and China**, where they adopted the acronym BRIC and formed an informal diplomatic club where their governments could meet annually at formal summits and coordinate multilateral policies. In 2010, South Africa was admitted & the organisation adopted the name BRICS.
- The acronym **BRICS+** has been **informally used to reflect new membership since 2024.**

## Secretary General of Rajya Sabha

**News:** The Supreme Court raised concerns that the Secretary General of the Rajya Sabha exceeded his administrative role while preparing a draft decision on a removal motion.

**About Secretary General of Rajya Sabha**


Source – Live Law

- The Secretary General is the **administrative head of the Rajya Sabha Secretariat** and **assists the Chairman in the overall functioning of parliamentary business.**
- **Constitutional Provision: Under Article 98 of the Indian Constitution,** each House of Parliament is mandated to have its own separate secretarial staff.
- **Appointment by:** The Secretary General is **appointed by the Chairman of the Rajya Sabha, who is the Vice President of India.**
- **Rank and Status:** The position holds a **rank equivalent to the Cabinet Secretary of the Government of India**, who is the senior-most bureaucrat in the country.
- **Roles and Responsibilities**
    - **Advisory Role:** The **Secretary General assists the Presiding Officer** in conducting the business of the House by interpreting rules and parliamentary precedents.
    - **Administrative Head:** The Secretary General **manages the Rajya Sabha Secretariat**, including **budget proposals and the allocation of work among officers.**
    - **Parliamentary Functions:**
        - The Secretary General **prepares the daily *List of Business* for each session.**

- The Secretary General **summons members to attend sessions on behalf of the President of India.**
- The Secretary General **acts as the Returning Officer for the elections of the President and the Vice President,** alternating with the Lok Sabha Secretary General.

- **Custodial Duties:** The Secretary General **serves as the custodian of the official records of the House.**

**Recent Developments**

- In the Justice Yashwant Varma removal motion case, the Supreme Court stated that the Secretary General has only an administrative role and cannot perform quasi-adjudicatory functions.
- The Court clarified that the admission of a removal motion should be decided by the Rajya Sabha Chairman or the Lok Sabha Speaker, as applicable.

## Jamma Bane Land System

**News**: Recently, Karnataka government has **amended its land revenue law** to modernise an age-old Jamma Bane system of land records in the scenic Coorg region.

**About Jamma Bane Land System**

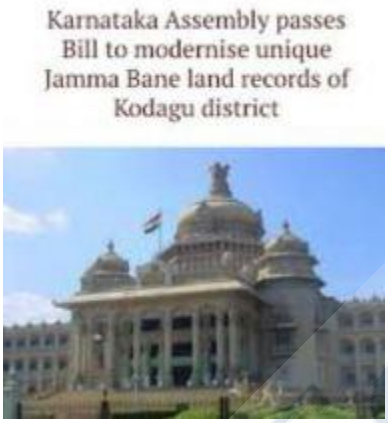



*Figure 21. Source – IE*

- The **Jamma Bane** land system is a unique form of hereditary land tenure specific to the **Kodagu (Coorg)** district in Karnataka.
- **Naming**: The word **"Jamma" means hereditary**.
- **Origin**: These Jamma lands were **originally granted by erstwhile kings of Coorg and the British — between 1600 and 1800** — to **local communities in return for military service.**
- **Components:** The system typically consists of **two land types**:
  - **Wetlands:** Used primarily for paddy cultivation.
  - **Bane (Highlands):** Forested lands attached to the wetlands, originally used for grazing and firewood, but now largely transformed into coffee plantations.
- **Ownership Structure:**
  - The Jamma Bane land ownership is registered in the name of the **original pattedar from a family**.
  - Over generations, the names of the **new owners are added alongside** the name of the pattedar.
  - The land **ownership name could not be changed** to reflect new owners.
- **Issue**: Prior to this amendment, **current "owners" struggled** to sell land, register inheritance, or secure bank loans because they **did not have clear titles in their names**—the records still reflected ancestors from generations ago.

## Balaram Ambaji Wildlife Sanctuary

**News:** The Standing Committee of the National Board for Wildlife (SCNBWL) issued guidelines on diverting sanctuary land for religious structures after a proposal involving Balaram Ambaji Wildlife Sanctuary, which houses two historic temples.

**About Balaram Ambaji Wildlife Sanctuary**


*Figure 22. Source – Gujarat Tourism*

**Location:** It is located in the Aravalli Hills in the **Banaskantha district of Gujarat.**

- **Establishment:** It was declared a Wildlife Sanctuary in **1989.**
- **Name Origin:** It is **named after two historic temples, Balaram and Ambaji,** which are located at opposite ends of the sanctuary.
- **Rivers:** It falls in the catchments of **Banas and Sabarmati River.**
- **Vegetation:** The sanctuary is **characterized by dry deciduous forests** with undulating hills, valleys and rocky terrain.
- **Flora:** It is **home to 483 plant species,** including **medicinal plants like Kadaya, Gugal, and Musali.** Prominent trees include **Khair, Dhavada, Timru, and Khakhara (Palash).**
- **Fauna: Leopard, sloth bear, striped hyena, bluebull, Indian pangolin, porcupine, wolf, jackal, and wild boar** are found in the sanctuary. It also supports **rare and common birds** such as **adjutant stork, spoonbill, osprey, vultures, peafowl, hornbill, and several raptors.**
- **Ecological Importance:** It **plays a crucial role in conserving the Aravalli ecosystem** and **checking the southward spread of the Thar Desert.**

## Finke River

**News:** The Finke Riveris believed to be the world's oldest river system. Researchers say it began flowing between 300 and 400 million years ago, long before dinosaurs walked the planet.

**About Finke River**

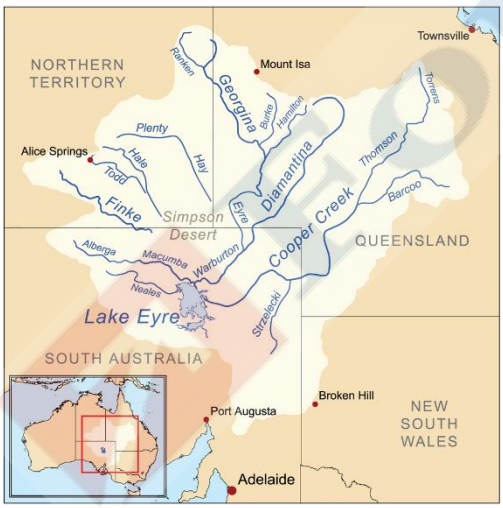



*Figure 23. Source: academic*

- The Finke River is also called **Larapinta** in the **Indigenous Arrente language**.
- **Location:** It is **located in central Australia** and flows through **the Northern Territory and** the state of **South Australia.**
- **Origin:** It originates in **MacDonnell Ranges** in Australia.
- **Formation:** The river forms **where two smaller creeks, Davenport and Ormiston meets.**
- **Dating:** It is the **oldest riverbed in the world** and **also one of the four crucial waterbodies of Lake Eyre Basin.**
  - This river system is dated in **either the Devonian (419 million to 359 million) period or Carboniferous (359 million to 299 million) era.**
- **Length:** It runs for **more than 640 km.**
- **Drainage:** It forms an **important part of the Lake Eyre Basin**, one of Australia's major drainage systems.
- **Drainage pattern:** The river has a **cross-axial drainage system or antecedent system.**
  - It is a river system that **cuts across geological structures rather than following them**.

- The **river is intermittent in nature** and **flows mainly after heavy rainfall.**
    - For most of the year, **it appears as a series of isolated waterholes** due to the arid climate.

## Sukhatme National Award in Statistics

**News:** The Ministry of Statistics and Programme Implementation has called for nominations for the Sukhatme National Award in Statistics 2026.

**About Sukhatme National Award in Statistics**


*Figure 24. Source – PIB*

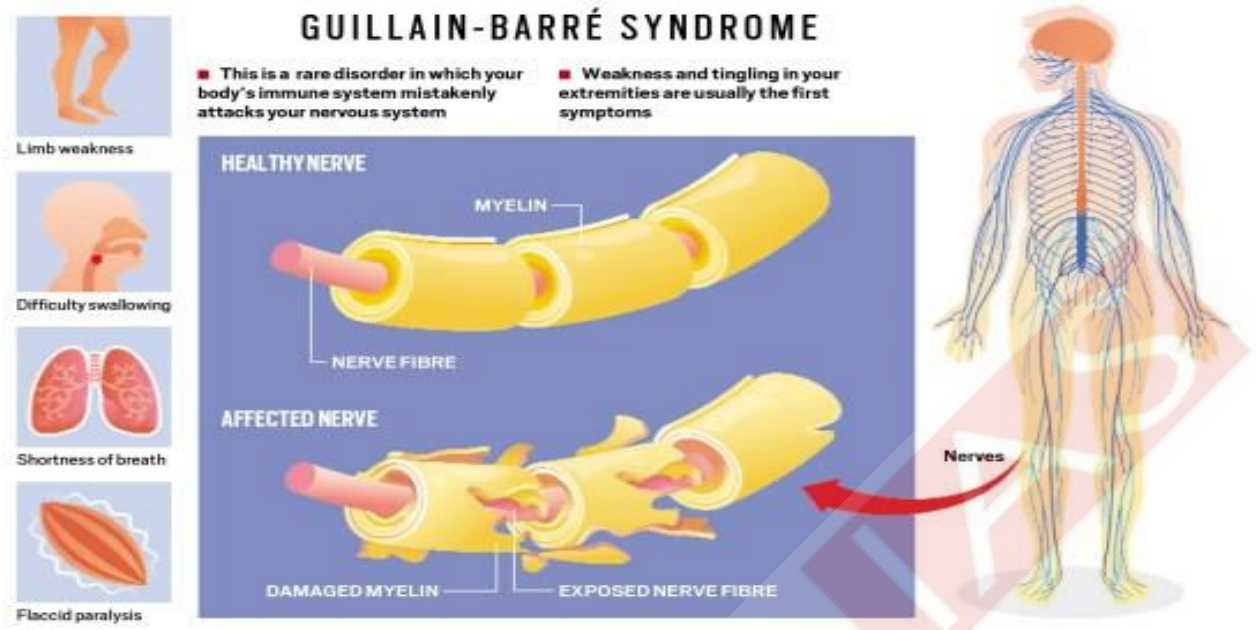
**Instituted by:** Ministry of Statistics and Programme Implementation (MoSPI)

- It is a **prestigious national honour instituted to recognise exceptional and outstanding contributions** to the field of **official statistics** in India.
- It **carries a citation, a shawl and a memento.**
- **Instituted in:** The award was **instituted in the year 2000**.
- **Objective of the Award:** To acknowledge **eminent Indian statisticians** whose **high-quality research and professional work** have:
    - Strengthened the **official statistical system** in India.
    - Contributed significantly to the **development and improvement of official statistics.**
- **Eligibility:** It is **conferred on Indian statisticians aged 45 years** and above for their lifetime contributions and achievements in the field of statistics.
- The award is **conferred in alternate years.**
- **Nominations: Self-nomination** by eligible candidates is permitted and **Institutions** are also allowed to **propose nominations**
- **Award Presentation:** The award is presented on **Statistics Day (June 29).**

## Guillain-Barré syndrome (GBS)

**News:** Two deaths were reported in Manasa town in Madhya Pradesh due to a Guillain-Barré Syndrome (GBS) outbreak.

**About Guillain-Barré syndrome (GBS)**




Source: IE

- Guillain-Barré syndrome (GBS) is a **rare neurological disorder** in which a **person's immune system mistakenly attacks part of their peripheral nervous system.**
    - The **peripheral nervous system** is the network of nerves that **carries signals from the brain and spinal cord to the rest of the body.**
- **Causes:** The **exact cause** of GBS is **unknown.** It is **considered an autoimmune condition**.
    - GBS often develops **after a respiratory or gastrointestinal infection.**
    - **Common triggers include** infections such as ***Campylobacter jejuni*, influenza, COVID-19, Zika, cytomegalovirus, or Epstein-Barr virus.**
    - It **can affect people of any age** but is more common in **adults over 50.**
- **Types of GBS:**
    - **Acute Inflammatory Demyelinating Polyradiculoneuropathy (AIDP):** It is **most common type** of GBS. In this, immune system damages the **myelin sheath.**
    - **Acute Motor Axonal Neuropathy (AMAN) and Acute Motor-Sensory Axonal Neuropathy (AMSAN):** In this, immune system **may damage the axons themselves.**
    - **Miller Fisher Syndrome:** It affects **cranial nerves,** causing eye muscle weakness, balance problems, and loss of reflexes.
- **Symptoms**
    - **Early signs** include **weakness or tingling sensations**, typically starting in the **legs** and spreading to the **arms and face**.
    - In some cases, symptoms **progress to paralysis of the legs, arms, or facial muscles.**
    - **Severe cases** may involve **problems with speaking and swallowing**.
- **Treatment**
    - There is **no cure,** but **treatment can reduce severity and shorten recovery time.**
    - **Plasma exchange (plasmapheresis)** which removes harmful antibodies from the blood and **Intravenous immunoglobulin (IVIg)** which reduces immune attack on nerves.

## Bagurumba Dance

**News:** Prime Minister Narendra Modi will will attend a traditional Bodo cultural programme in Guwahati, where around 10,000 artists will perform the Bagurumba dance.

**About Bagurumba Dance**

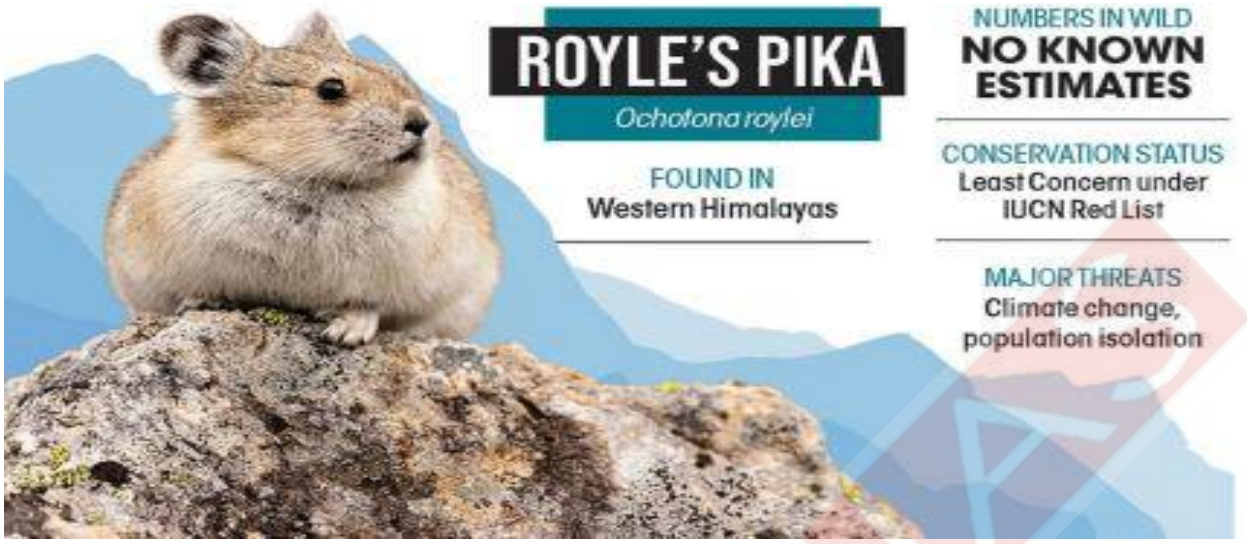
*Figure 25. Source: assamchronicle*

- Bagurumba is a **ancient traditional folk dance of the Bodo community** of Assam.
- **Origin:** It was **initially performed as a ritual dance connected with harvest, nature worship, and spiritual practices.**
  - Over time, Bagurumba evolved **from village ceremonies into a major cultural symbol.**
- It is prominently performed during the **Bwisagu, the Bodo New Year,** and **Domasi festival.**
- **Features of Bagurumba**
  - Bagurumba is popularly **known as the "Butterfly Dance"** because of its gentle, flowing, and fluttering hand movements.
  - The **dance is traditionally performed by women of Bodo Community in groups** with **synchronized movements**.
  - Musical instruments are being played by male counterparts.
  - **Circular and geometric formations are commonly used**, symbolizing harmony and balance in nature.
  - The **choreography reflects elements of nature** such as birds, rivers, trees, and butterflies, showing the Bodo people's close relationship with the environment.
- **Costume of Bagurumba**
  - The dancers **wear traditional Bodo attire** known as **dokhona**, which is a handwoven, bright red, yellow, and green wraparound cloth, **jwmgra** and an **aronai** which is a beautifully designed traditional scarf, is draped over the shoulders.
  - **Floral ornaments and traditional jewelry are used** to enhance the elegance and beauty of the performance.
- **Musical Instruments Used in Bagurumba:** The dance is **accompanied by traditional musical instruments** such as:
  - **Serja** which is a violin-like string instrument, provides melody.
  - **Kham** which is a traditional drum which maintains the rhythm.
  - **Siphung** which is a bamboo flute, adds a soothing musical tone.
  - **Jotha**, a type of cymbal which enhances the rhythmic beats of the dance are used.

## Royle's pika (Ochotona roylei)

**News:** Royle's pika of the Himalayan highlands which goes about its life unaware that scientists now view it as a sentinel of climate change.

**About Royle's pika (Ochotona roylei)**




Source – DTE

- **Royle's pika** is also called the **Himalayan mouse hare** or **hui shutu is a species of pika.**
- **Scientific name:** Ochotona roylei
- **Habitat**: They **commonly inhabit rocky mountain slopes, open rocky edges, and forests** dominated by conifer trees.
- **Distribution**: Their distribution spans the **Himalayan region,** extending from **northwestern Pakistan through Jammu and Kashmir, Himachal Pradesh, Uttarakhand, Sikkim and Arunachal Pradesh in India, and into Nepal and Tibet.**
- **Characteristics**
    - They have a **slightly arched head, a rufous-grey body, a chestnut-colored head**, and **sparse hair in front of their ears**.
    - They **measure about 17–22 centimetres in length.**
    - They are a **crepuscular species,** meaning it is **most active during early morning** and **evening hours** and **remains inactive** during **midday** to avoid heat stress.
    - **They do not build its own burrows** but uses natural crevices, narrow cracks, and existing burrow systems.
    - Unlike many mountain mammals**, they do not hibernate.**
- **Diet**: They are **herbivore and folivore,** feeding **mainly on grasses, leaves, and other plant materials.**
- **Ecological Role:** They play a **vital role in high-altitude food webs** as they are important prey species for predators especially during harsh winters when other prey is scarce.
- **Conservation Status**: IUCN: **Least Concern**
- **Threat:** Habitat loss and human habitation in hilly areas.

## Chips to Start-up (C2S) Programme

**News:** Recognizing chip design as a strategic national priority, the Ministry of Electronics and Information Technology (MeitY) has implemented proactive measures to transform India's semiconductor design landscape under the Chips to Start-up (C2S) Programme.

**About Chips to Start-up (C2S) Programme**


Source – PIB

- The C2S Programme is an **umbrella capacity-building initiative** to build **semiconductor design capacity**, covering academic institutions across India.
- **Nodal Ministry:** Ministry of Electronics and Information Technology (**MeitY**)
- **Nodal Agency:** Centre for Development of Advanced Computing **(C-DAC)**
- **Outlay and timeline:** It launched in **2022**, with a total **outlay of ₹250 crore over five years.**
- **Objectives**
    - The Programme **targets** the **development of 85,000 industry-ready professionals** across undergraduate, postgraduate, and doctoral levels.
    - It aims to catalyse the **incubation of 25 start-ups** and enable **10 technology transfers**.
    - It also seeks to provide **access to SMART lab facilities**, **train one lakh students**, generate **50 patents**, and support at **least 2,000 focused research publications**.
- **Functioning :** It caters to the **whole electronics value chain** through:
    - **Specialized Manpower Training:** The program provides **in-depth hands-on exposure to chip designing, fabricating, and testing** through periodic training provided jointly with industry partners.
    - **Design Infrastructure Support:** Providing access to **Electronic Design Automation (EDA) tools** (e.g., from Siemens, Cadence, Synopsys, Mentor Graphics, Silvaco, Ansys, Keysight), access to **foundries for fabrication in MPW** (Multi-Project Wafer) mode, support for **packaging** of chips, support for **testing and characterization**, and having an **IP Core Repository.**
    - **Centralized Design Facility:** The C2S Programme initiated the **ChipIN Centre at C-DAC,** which is **one of the biggest design facilities in the country**, and is a **centralized design** facility providing **high-end chip design infrastructure** directly to the semiconductor design community in India.
        - The **ChipIN Centre** has **state-of-the-art tools** which support the entire chip design cycle **up to a 5nm or advanced node technology,** and aggregate services for fabricating designs at foundries and packaging.
    - **Collaborative Projects:** There are initiatives to promote **Academia – Industry Collaborative Projects, Grand Challenges, Hackathons, and Requests for Proposals (RFPs)** for the development of System/SoC/IP Core.
    - **Participation of Startups and MSME:** Startups and MSMEs can also apply under various categories, using expertise from Academic institutions and R&D organisations.
    - The **MeitY Startup Hub (MSH)** provides **facilitation and monitors innovation and IPR activities**, bringing together incubator centres and startups.

- **Key Outcomes of the C2S programme**


Source – PIB

## CSIR Integrated Skill Initiative

**News**– The CSIR Integrated Skill Initiative has trained over 1.9 lakh individuals through 5,200+ skill-based programmes.

*Figure 26. Source- PIB*

**About CSIR Integrated Skill Initiative**

- It is a flagship **national skill development programme** implemented by the **Council of Scientific and Industrial Research (CSIR).**
- The initiative aims to **bridge the gap between scientific research, industry requirements, and employable skills.**
- It **integrates science and technology with skill development** by leveraging CSIR's extensive laboratory network, research infrastructure, and scientific expertise across India.
- **Objectives**
  - To align skill training with real-world industrial, societal, and entrepreneurial needs.
  - To enhance employability, entrepreneurship, and career growth through practical and application-oriented learning.
  - To support the creation of a self-reliant and future-ready workforce.
- **Beneficiaries**
  - Students, young researchers, technical staff, and working professionals.
  - School dropouts and ITI/diploma holders.
  - Farmers and rural communities, with a special focus on rural citizens and women.

**Key Features**

Offers **short-term and long-term skill development modules**, including:

- Training programmes
- Internships
- Certification courses
- Hands-on laboratory exposure

**Covers 18 out of 36 key sectoral skills** identified under the **National Skill Development Mission (NSDM).**

Skill areas include **aerospace, agriculture, automotive, electronics, food processing, green jobs, healthcare, life sciences, textiles**, and **IT & ITeS**, among others.

## BRICS Plus Naval Exercise 2026

**News:** The issue is in the news after India clarified its non-participation in the BRICS Plus Naval Exercise held off South Africa's coast.

**About BRICS Plus Naval Exercise 2026**

*Figure 27. Source – The Mint*

- It was a **joint naval drill** conducted under the BRICS Plus framework from January 9 to January 16, 2026.
- **Focused:** The exercise focused on **maritime security, counter-terrorism, anti-sea strike operations, and search and rescue activities.**
- **Theme:** The theme was "**Joint Actions to Ensure the Safety of Key Shipping Lanes and Maritime Economic Activities".**
- **Host nation:** It was hosted by **South Africa**.
  - The exercise took place off the coast of **Simon's Town, South Africa.**
- **Participating countries: China, Russia, Iran, and the UAE** participated in the naval exercise.
- **Observer countries: Brazil, Egypt, Ethiopia, and Indonesia** attended the exercise as observers.
- **Non-participants: India opted out** of the drills and **declined even observer status.**
- **Key features**
  - It was **not a regular or institutionalised BRICS activity** and was conducted as a **South African initiative**, with participation from only some BRICS members..
  - The exercise was **projected as cooperation among Global South nations.**

## India's Coconut Economy and Rugose Spiralling Whitefly (RSW)

**News:** The rugose spiralling whitefly continues to spread across coconut-growing regions in India, causing severe yield losses and rising financial stress for farmers.

**About India's Coconut Economy**

Source – Mongabay

- **India** is the **third largest coconut-producing country** in the world and accounted for about **31.45% of the world's total production** during **FY22**, with a production of **19,310 million nuts**.
- During **FY24**, India produced **21,373.62 million nuts**.
- The crop contributed around **US$ 3.72 billion** to the country's gross domestic product (GDP) during **FY23.**
- The coconut palm provides food **security and livelihood opportunities** to more than **12 million people** in India.
- It is also a **fibre-yielding crop** for more than **15,000 coir-based industries**, employing nearly **6 lakh people**.
- The **productivity** of coconuts at a national level for FY24 was at **9,871 nuts per hectare, one of the highest** in the world.
- Copra processing, coconut oil extraction and coir manufacturing are the traditional coconut-based activities in the country.
- **Producing states:** India's coconut production is majorly situated in **Kerala, Karnataka, Tami Nadu and Andhra Pradesh,** accounting for **89.13%** of the **coconut area** and **90.77% of the coconut production in the country** during FY24.
    - **Other coconut-producing states** in the country are West Bengal, Orissa, Maharashtra, Gujarat, Assam and Bihar.

**About Rugose Spiralling Whitefly (RSW)**

- Rugose spiralling whitefly is an **invasive sap-sucking insect** that attacks **coconut, banana, palm and other crops**.
- **Scientific name:** RSW is scientifically known **as Aleurodicus rugioperculatus.**
- **Native to:** It is native to the **Caribbean and Central America.**
- **Officially recorded in India:** RSW was **officially recorded in 2016 at Pollachi in Coimbatore district of Tamil Nadu.**
- **Key Characteristics**
    - **Appearance:** The pest forms **white spiralling patterns on leaves** and produces **sticky honeydew**.
    - **Life Cycle:** It multiplies rapidly under **warm conditions and survives throughout the year.**
    - **Feeding:** It sucks plant **sap**, weakening the tree and reducing growth.
    - **Honeydew:** The **sticky secretion** leads to **black sooty mould**, which **blocks photosynthesis**.

- **Concern:** RSW causes **heavy yield loss**, decline in fruit quality, rising farmer debt and increased pesticide use, while field-level control remains ineffective.

- **Solution: ICAR-NBAIR identified the parasitoid *Encarsia guadeloupae*,** which caused natural parasitism ranging from 56% to 82%, without the use of chemical pesticides.
  - **ICAR-NBAIR also developed a biocontrol fungus, *Isaria fumosorosea*,** which was effective against all life stages of the pest and recorded pest mortality of up to 91%, significantly reducing crop protection costs.

## INS Sagardhwani and Sagar Maitri-5 Initiative

**News:** INS Sagardhwani was flagged off from Kochi on 17 January 2026 for the fifth edition of the Sagar Maitri initiative.

**About INS Sagardhwani**


*Figure 28. Sources – UNI*

- INS Sagardhwani is **India's oceanographic research vessel**.
- **Designed by:** The vessel was designed by **the Naval Physical and Oceanographic Laboratory (NPOL).**
- **Built by:** The vessel was built by **Garden Reach Shipbuilders & Engineers (GRSE).**
- **Commissioned in:** INS Sagardhwani was commissioned in **July 1994**.
- **Role:** The vessel serves as a **specialized platform** for **ocean observations**, **marine research**, and **collection of oceanographic and acoustic data**.
- **Key features**
  - It is a specialized **marine acoustic research vessel.**
  - It supports **scientific objectives relevant to Underwater Domain Awareness for the Indian Navy.**
- INS Sagardhwani will retrace the **historic routes** of **INS Kistna**, which participated in the **International Indian Ocean Expedition during 1962–65.**

**About Sagar Maitri-5 Initiative**

- **MAITRI** stands for **Marine & Allied Interdisciplinary Training and Research Initiative.**
- SM-5 is the **fifth edition** of the **ongoing oceanographic cooperation programme.**
- **Initiative of:** It is a **flagship collaborative** initiative of the **Indian Navy and DRDO.**
- **Aligned with:** It is aligned with India's vision of **Mutual and Holistic Advancement for Security and Growth Across Regions (MAHASAGAR).**
- **Key objectives:**
  - **Socio-economic cooperation**: To promote closer cooperation in socio-economic aspects among Indian Ocean Rim countries.

- **Scientific interaction**: To enhance scientific interaction, especially in ocean research.
- **IOR collaboration**: To build sustained scientific collaboration with eight IOR countries, namely Oman, Maldives, Sri Lanka, Thailand, Malaysia, Singapore, Indonesia, and Myanmar.
- **Maldives partnership**: To initiate collaborative oceanographic studies with Maldives, enabling joint research and professional exchange among scientists of IOR nations.

## Brandt's Hedgehog (Paraechinus hypomelas)

**News:** A previously unrecorded hedgehog species in India, Brandt's Hedgehog (*Paraechinus hypomelas*), has been discovered in Jammu and Kashmir.

**About Brandt's Hedgehog ( Paraechinus hypomelas)**

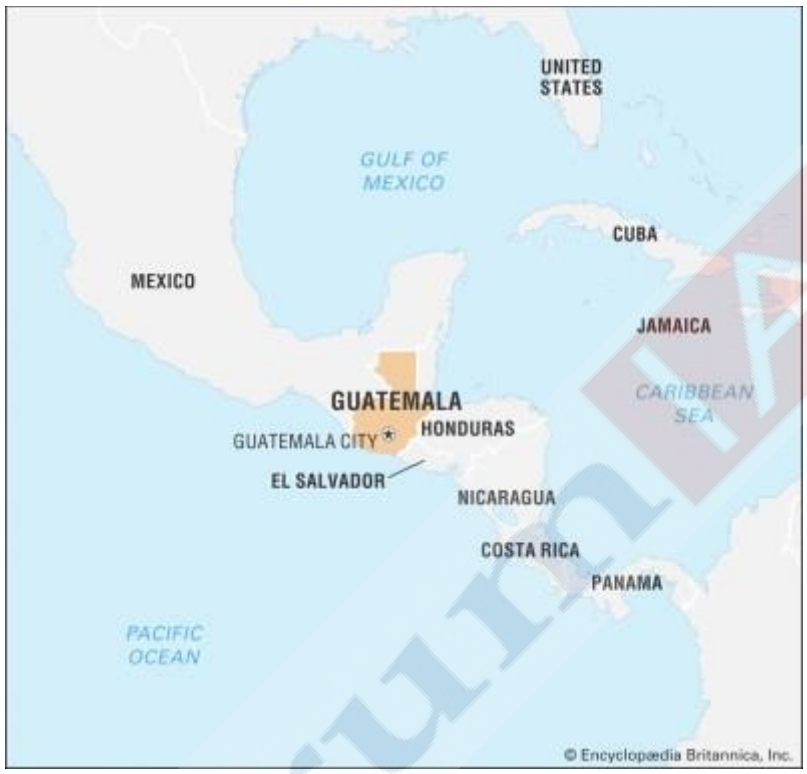
Source: HT

- Brandt's hedgehog is a **species of desert hedgehog.**
- **Scientific name: Paraechinus hypomelas**
- **Native to:** Parts of the Middle East and Central Asia.
- **Habitat:** It **inhabits arid desert regions, mountains, grasslands, savannas, and shrublands.**
  - It prefers natural shelters but **can dig its own dens when necessary.**
- **Distribution:** It is **found across Asia, including Yemen, Afghanistan, Iran, Oman, Pakistan, Saudi Arabia, Tajikistan, Turkmenistan, and Uzbekistan.**
- **Diet:** It is **omnivorous** and feeds on **snakes, insects, grass roots, mushrooms and melons,** etc.
- **Physical Characteristics:**
  - **Size:** It measures **about 25 cm in length** and **weighs** between **500 and 1,000 gm.**
  - It has **distinctively large ears,** similar to those of the long-eared hedgehog.
  - It **is a faster runner than many hedgehogs** because of its lighter needle protection.
  - It is **predominantly nocturnal.**
  - It **hibernates during colder weather conditions.**
- **Conservation status: IUCN:** Least Concern

# Key Facts about Guatemala

**News:** Guatemalan President Bernardo Arévalo declared a 30-day nationwide state of siege after gang violence killed seven police officers.

**Key Facts about Guatemala**



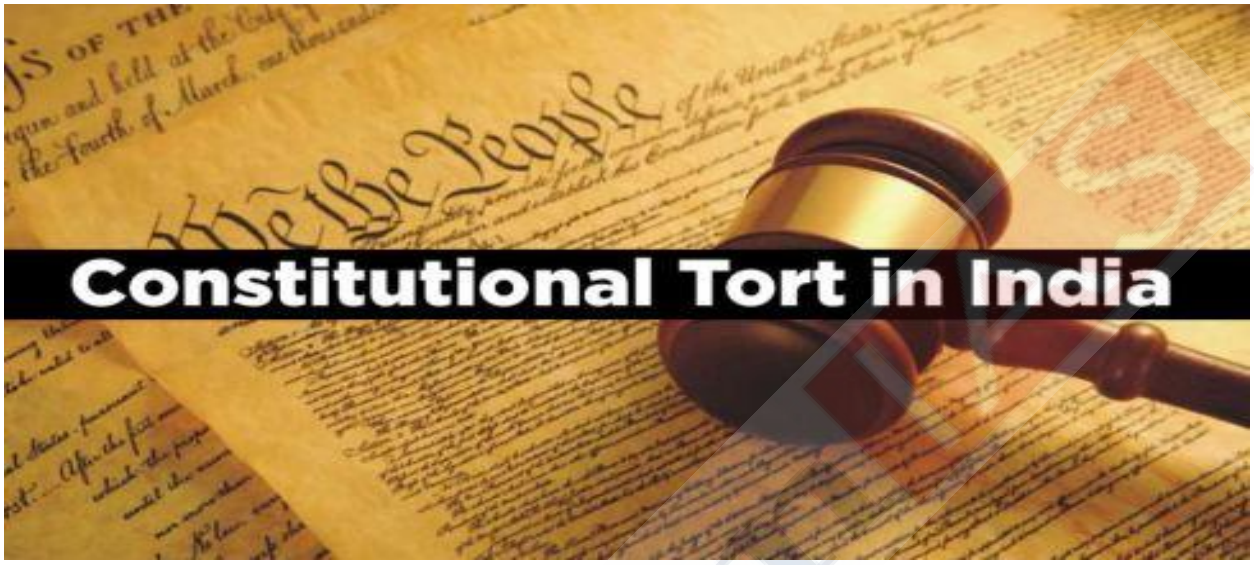

Source: Britannica

- **Location:** Guatemala is **located in Central America.**
- **Bordered by:** It is **bounded by the Pacific Ocean to the south** and the **Gulf of Honduras to the northeast.**
- **Border countries:** Belize, El Salvador, Honduras, and Mexico.
- **Area:** 109,000 $km^2$ (42,085 sq. mi.)
- **Geography:**
    - Guatemala has **four main geographic regions**: the **volcanic highlands** (which contain about **27 volcanoes)**, the **Pacific coastal plain,** the **mountain ranges (sierras)**, and the **Petén lowlands.**
    - **Volcán Tajumulco** is the **highest peak** at 4,220 metres.
    - **Fuego, Pacaya, and Santiaguito** are active volcanoes.
    - **Major rivers:** Motagua and Usumacinta
    - **Terrain:** Fertile coastal plains, mountainous.
    - **Climate:** Tropical on coasts, temperate in highlands.
- **Ethnic Groups:** Ladinos (mestizo) and Maya Indigenous peoples
- **Language spoken:** Spanish (official) and about twenty Mayan languages

## Constitutional Tort

**News:** Prominent activists and religious leaders urged the Supreme Court to recognize hate speech as a constitutional tort due to its discriminatory impact on constitutional guarantees.

**About Constitutional Tort**




Source – DeFactoLaw

- A **constitutional tort** is a **legal remedy** through which the **State can be held vicariously liable** for **violation of constitutional rights by its officials**.
- **Constitutional basis**
    - **Article 294(b)** makes the **Union or State government liable** for **contractual obligations** inherited from **previous governments**.
    - **Article 300(1)** provides that the **Union and State governments** may **sue or be sued** in their respective names, forming the **constitutional foundation of State tortious liability.**
- **Public Law Jurisdiction:** Redress is usually sought through writ petitions under **Article 32 before the Supreme Court or Article 226 before the High Courts** for enforcement of fundamental rights.
- **Key Features**
    - It **holds the State responsible** for **wrongful acts committed by its officials during official duties.**
    - It applies when violations occur **under the colour of State law**, meaning misuse of official authority.
    - It provides **compensation** for infringement of fundamental rights, especially under **Articles 19, 20, and 21**.
    - It strengthens **accountability of State** power through continuous judicial oversight.

## INS Sudarshini and Global Expedition 'Lokayan 26

**News:** INS Sudarshini embarked on a ten-month global expedition Lokayan 26 to showcase maritime heritage and strengthen international maritime cooperation.

**About INS Sudarshini**

Source – PIB

- INS Sudarshini is the **Indian Navy's sail training ship** undertaking the global **expedition Lokayan 26.**
- **Built by:** It was built indigenously by **Goa Shipyard Limited**.
- **Key features**
    - **Size**: It is a **54-m sail training ship designed for ocean sailing**.
    - **Equipped with:** The ship is **equipped with 20 sails with a total sail area of over 1,000 sq. m.**
    - The ship has **covered over 1,40,000 nautical miles** till date.

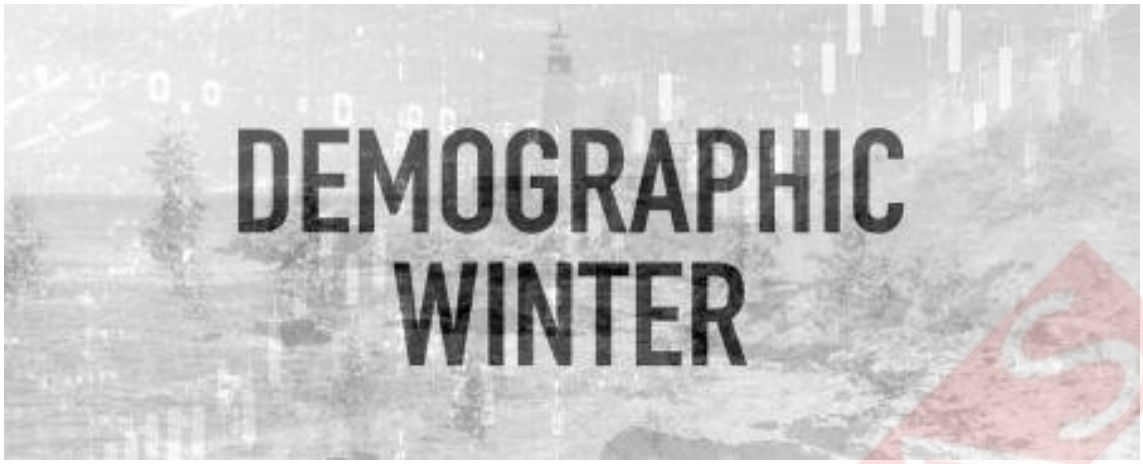
**About Global Expedition 'Lokayan 26'**

- Lokayan 26 is a **ten-month transoceanic voyage** highlighting India's maritime heritage and naval outreach.
- **Initiative by:** The expedition is undertaken **by the Indian Navy**.
- **Duration:** The expedition will **last for ten months.**
- **Flagged off from:** The voyage was flagged off from **Naval Base Kochi.**
- **Aim:** The expedition **aims** to showcase **India's seafaring legacy** and strengthen **maritime cooperation and cultural diplomacy**.
- **Aligned with:** The expedition is aligned with the principles of **Vasudhaiva Kutumbakam** and the **vision of MAHASAGAR.**
- **Key features**
    - **Voyage:** The ship will **sail nearly 22,000 nautical miles and visit 18 ports across 13 countries.**
    - **Key Destinations:** It will participate in **prestigious international tall-ship events – Escale à Sète, in France**, and **SAIL 250**, in **New York, USA.**

## Demographic Winter

**News:** China is facing a demographic winter as its population declined for the fourth year in 2025 due to record-low births and rising deaths.

**About Demographic Winter**




Source – Maine Policy Instt.

- The concept of **Demographic Winter** refers to a **situation where a country or region experiences a significant and prolonged decline in population growth** due to **low fertility rates**, **aging populations**, and **increased mortality rates**.
- This trend results in a **shrinking workforce, a growing dependent population (primarily elderly), and long-term economic and social challenges.**
- This phenomenon has been observed in **various countries**, especially in **Europe and East Asia.**
- **Solution suggested**
    - It can be addressed through **pro-natalist policies** such as **financial incentives for families, affordable childcare, flexible work arrangements, greater female workforce participation, and managed immigration**.
- **Countries Facing Demographic Winter**
    - **Europe**
        - **Europe's Population is ageing rapidly with around 25% population above 60 and this is expected to reach 35% by 2050.**
        - Many European countries like **Italy**, **Germany**, and **Spain** have fertility rates below **1.5 children per woman.**
    - **East Asia:**
        - China is facing **Demographic Winter** as its population fell by **3.39 million to 1.405 billion in 2025**, births dropped to **7.92 million (a 17 % decline)**, and deaths rose to **11.31 million**, with rapid ageing and a shrinking workforce.
        - **Japan's** population has been declining since 2011, with a fertility rate of 1**.34** and more than **28% of its population aged 65 or older**.
        - In **South Korea**, the fertility rate dropped to **0.78** in 2022, one of the lowest in the world, leading to **fears of a demographic collapse**.

## G4 Geomagnetic Storm

**News:** Sky-watchers worldwide witnessed breathtaking auroras as a severe G4 geomagnetic storm pushed the dazzling lights far beyond their typical polar regions.

**About G4 Geomagnetic Storm**

Source: Space

- **Geomagnetic Storm:** A **geomagnetic storm** is a **severe disturbance of Earth's magnetosphere.**

- **How it is caused: Energy produced by nuclear fusion in the Sun** is **released as sunlight, radiation, and charged particles.**
    - These charged particles constantly flow away from the Sun as the solar wind.
    - Sometimes, **the Sun releases large clouds of plasma called coronal mass ejections.**
    - When these charged particles or plasma **reach Earth, they collide with Earth's magnetic field.**
    - This **disturbs the magnetic field** and **causes a geomagnetic storm**.
- **Favourable conditions**:
    - Geomagnetic storms occur when the solar wind blows toward Earth **at a very high speed for several hours.**
    - A **southward directed solar wind magnetic field** (opposite the direction of Earth's field) at the dayside of the magnetosphere.
- **Classification:** Geomagnetic storms are classified on the **G-scale**, ranging from **G1 (minor)** to **G5 (extreme)**.
    - A **G4 storm** falls under the **severe category**, indicating intense geomagnetic activity.
- **Impacts**
    - G4 geomagnetic storms can cause **serious disturbances in satellite operations.**
    - **Power systems may experience voltage instability** and increased risk of damage.
    - **Radio communications**, especially on the sunlit side of Earth, can be disrupted.
    - **GPS and navigation systems** may show reduced accuracy during the storm.
    - **Auroral Effects:** During strong geomagnetic storms, **the auroral oval expands, allowing auroras to be visible at much lower latitudes than usual.**

## Environmental Protection Fund

**News:** Centre notifies rules governing utilization of Environmental Protection Fund collected through environmental penalties.

**About Environmental Protection Fund**

Source – BS

- **Created under:** The Environmental Protection Fund has been **created under the Environment (Protection) Act, 1986.**

- The **framework for its operation** is provided under the **Environmental (Protection) Fund Rules, 2026.**
- **Enabled by:** The creation of the Environmental Protection Fund was **enabled by** the **Jan Vishwas Act, 2023**.
- **Purpose of the Fund:** The fund is **meant to utilize penalties collected from environmental violations** for environmental protection and improvement.
- **Audited by:** Comptroller and Auditor General of India (**CAG**)
- **Permitted Uses of the Fund:** The Rules specify **11 categories of activities** for which the fund can be used.
    - The fund can be used for the **installation, operation, and maintenance of environmental monitoring equipment.**
    - It supports **capacity building**, including the **establishment and upgradation of environmental laboratories.**
    - The fund can be utilised for **remediation and restoration of environmental damage**.
    - It may be used for **conducting studies** as **directed by courts and environmental tribunals.**
    - Any other a**ctivity considered necessary for environmental protection may also be approved.**
    - **Administrative Expenses:** The fund can be used to meet **administrative expenses.** Administrative expenditure is capped at **5% of the total funds available** in a financial year at the Centre or state level.
- **Management of penalties**
    - The funds **collected through the penalties shall be credited to the consolidated fund of India (CFI)** and **thereafter transferred to the Public Account of India.**
    - **75% of the penalty amount** collected will be transferred to the **Consolidated Fund of the concerned State or Union Territory**. The remaining **25% of the penalty** will be retained by the **Central Government for national-level environmental initiatives.**

## Article 15(5) of Indian Constitution

**News:** The Congress demanded that the proposed higher education regulator must ensure implementation of Article 15(5) on its twentieth anniversary.

**About Article 15(5) of Indian Constitution**

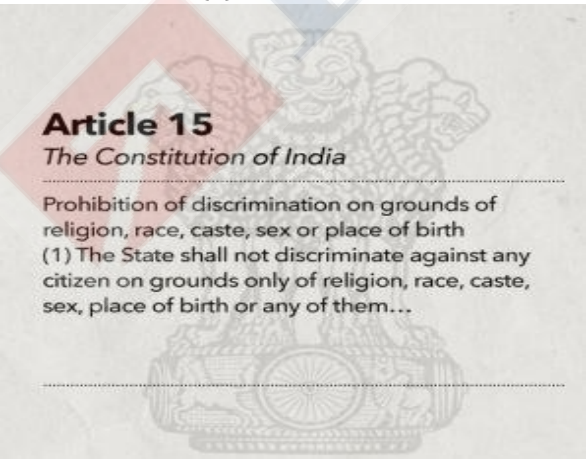



*Figure 29. Source – Constitution of India*

**Article 15 is** part of the **Fundamental Rights** and **aims** to prevent **discrimination while promoting equality and social justice**.

- **Sub-clauses of Article 15**
    - **Article 15(1):** It **prohibits discrimination** on **religion, race, caste, sex, or place of birth.**
    - **Article 15(2):** It ensures **equal access to public places maintained** or **funded** by the **State**.
    - **Article 15(3):** It **allows the State** to make **special provisions for women and children.**
    - **Article 15(4):** It permits **special provisions** for socially and educationally **backward classes, including SCs and STs**.

- **Article 15(5):** It enables **reservations for SCs, STs, and OBCs in educational institutions, including private institutions**.
- **Article 15(6):** It provides **10% reservation for Economically Weaker Sections (EWS)**.

- **Article 15(5) Enactment:** Article 15(5) was **inserted** through the **93rd Constitutional Amendment Act, 2005.**
- **Scope**: The provision authorises the government to mandate **reservations** for SC, ST, and OBC students in **centrally funded and private higher educational institutions.**
- **Exclusion**: **Minority educational institutions** are **excluded** from the application of **Article 15(5).**
- **Landmark Case Law:**
  - **Ashok Kumar Thakur v. Union of India (2008):** The Supreme Court upheld the constitutional validity of the 93rd Amendment.
  - **Pramati Educational and Cultural Trust v. Union of India (2014):** The Court upheld the validity of Article 15(5) and confirmed that reservations are permissible in private higher educational institutions.
- **Significance**: Article 15(5) reinforces the **constitutional commitment to social justice** by expanding access to higher education for disadvantaged communities.

## SAMPANN Pension Portal

**News:** The SAMPANN pension management system has been integrated with the UMANG platform.

**About SAMPANN Pension Portal**


*Figure 30. Source: PIB*

- **About: SAMPANN stands for System for Accounting and Management of Pension.**
- **Initiative by:** It is a **flagship digital platform of the Department of Telecommunications.**
- **Developed by:** Office of the Controller General of Communication Accounts
- **Launched on:** It was launched on 29th December, 2018.
- **Aim:** To enhance **ease of access for pensioners, promote transparency, and ensure the seamless delivery of pension-related information** via a unified digital platform.
- **Features:**
  - It enabled **single window system** for complete pension lifecycle.
  - It includes **digitalisation of processes** such as **initiation and processing of cases, issuance of e-Pension Payment Orders (e-PPOs), disbursement, accounting, reconciliation, financial reporting, audit facilitation and grievance redressal.**

- Pensioners can **also check payment status, submit life certificates, generate e-PPOs, request changes like mobile numbers or addresses online.**
- A **toll-free helpline has also been operated** for assisting senior citizens.
- **Pensions are credited directly into pensioners' bank accounts,** removing the need to visit banks or government offices.
- Recently, the portal has been **integrated** with the **UMANG (Unified Mobile Application for New-age Governance) platform.**

## Kumbhalgarh Wildlife Sanctuary

**News:** The Ministry of Environment, Forest and Climate Change issued a notification declaring Kumbhalgarh Wildlife Sanctuary as an Eco-Sensitive Zone to conserve biodiversity.

**About Kumbhalgarh Wildlife Sanctuary**


*Figure 31. Source – Royal Rajasthan*

- Kumbhalgarh Wildlife Sanctuary is a **protected area** located in the **Aravalli mountain range**.
- **Location:** It is situated in the **Rajsamand district of Rajasthan** in western India and **extends across parts of the Udaipur and Pali districts.**
- **Naming**: The sanctuary is named after the historic **Kumbhalgarh Fort**, which lies within its boundary.
- **Area**: It covers a **total area of 610.5 square km.**
- **Mountain ranges:** It covers **four hills** in the mountain ranges of the **Aravallis – the Kumbhalgarh Range, the Sadri Range, the Desuri Range, and the Bokhada Range.**
- **Major river:** The eastern section is the origin of the **Banas River**, while the western slopes give rise to tributaries of **the Luni River.**
- **Flora**: The sanctuary supports mainly **herb-based vegetation** across its landscape.
  - Plant species such as **Churel, Dhok, Khair, and Salar** grow abundantly and form an important **part of the local forest cover**.
- **Fauna:** The sanctuary supports a wide range of wildlife, including **leopard, striped hyena, jungle cat, Indian pangolin, blue bull, and chinkara**, along with several **bird** species.
  - It also provides habitat to **wolf, sloth bear, jackal, sambhar, nilgai, chausingha, and hare.**

## Parbati Giri

**News:** Prime Minister Narendra Modi paid homage to freedom fighter Parbati Giri on the occasion of her birth centenary.

**About Parbati Giri**

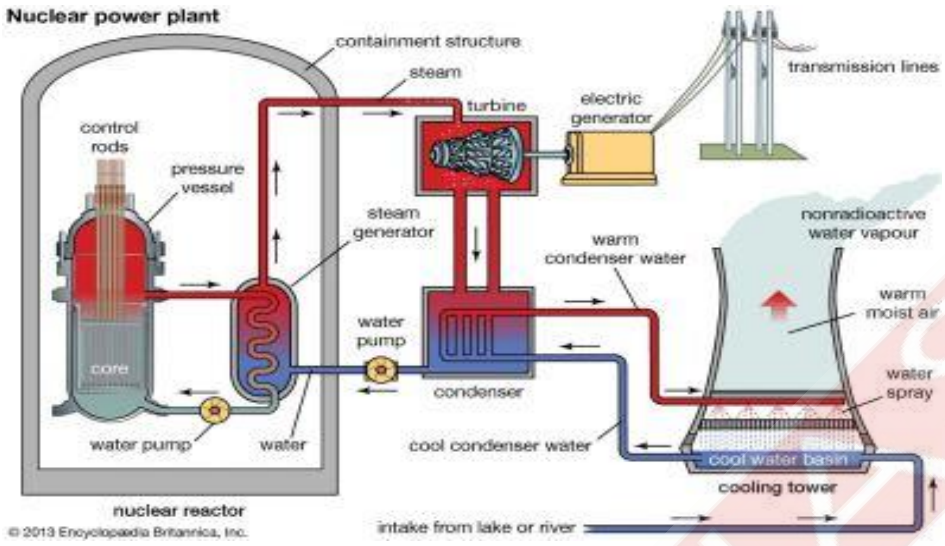

*Figure 32. Source – INC*

- Parbati Giri was a **prominent freedom fighter** from **Odisha.**
- She was **born on 19 January 1926 in the Bargarh district of Odisha.**
- She is also known as the **Mother Teresa of Western Odisha,** and epithet **as 'Banhi-kanya' (daughter of fire**).
- She was inspired by **Gandhism and** adopted it as her way of life.
- **Role in India's Freedom struggle:**
  - She joined the freedom movement at the young **age of 11.**
  - She travelled across villages **spreading awareness and campaigning for Congress.**
  - She participated in **direct Satyagraha and Gandhiji's Khadi Andolan movement.**
  - She became a prominent young volunteer in **Quit India Movement and led many rallies against Britishers.**
  - She had also staged an **agitation** at **Bargarh Court** to persuade the lawyers to **boycott the erstwhile court** in defiance of the British.
  - She had taken **tutelage at the famous Ashrams in Bari, Wardha, and Delhi Gandhi Sebashram.**
- **After India gained independence**, she chose a **path of selfless social service, believing that true freedom must reach the poorest.**
  - Her **major contributions include** establishing ashram for women, orphans and destitutes namely **Kasturba Gandhi Matruniketan and Dr Santra Bal Niketan.**
  - She also dedicated her life in **improving healthcare for tribal communities and supporting leprosy patients.**
- **Recognition:** For her dedicated social work, she was **awarded a prize in 1984 by the Dept. of Social Welfare of the Govt. of India.**
  - She also received an **Honorary doctorate from the University of Sambalpur in 1988.**
- **Passing:** Parbati Giri passed away on **17 August 1995** after a prolonged illness.

## Light Water Reactors

**News:** India is accelerating indigenous Light Water Reactor development while opening the nuclear sector to private participation, focusing on exports, and implementing the SHANTI Act, 2025.

**About Light Water Reactors**




Source – Britannica

- A Light Water Reactor is a **thermal-neutron nuclear reactor** that uses **ordinary water as both coolant and neutron moderator**.
- It **uses solid fissile fuel** and is the **most common nuclear reactor** type worldwide.
- **Primary Types of Light Water Reactors**
    - **Pressurized Water Reactor (PWR)** uses **water under high pressure** to **prevent boiling**.
    - **Boiling Water Reactor (BWR)** allows **water to boil directly** inside the **reactor vessel**.
    - **Supercritical Water Reactor (SCWR)** operates **water above its critical temperature and pressure**.
- **Key Characteristics**
    - **Water Type:** Light water means **ordinary $H_2O$** and is **different** from **heavy water that contains deuterium**.
    - **Functional Role:** Water **carries heat produced during atomic fission** and **slows neutrons** to sustain the nuclear reaction.
    - **Fuel Requirement:** Light Water Reactors use **enriched uranium** as fuel to support the chain reaction.
- **Design:** These reactors have **simpler design** and **engineering** compared to heavy water reactors.
- **Economics:** They **benefit from economies of scale** and generally **involve lower construction cost.**
- **Global presence:** Light Water Reactors account for **over 85 %** of global civil nuclear reactor capacity.
- **Safety Feature:** If **overheating** occurs, the **boiling away of water naturally stops the nuclear reaction.**

**Note:** For detailed information on **SHANTI Bill, 2025** read this article here.

## Galathea Bay, Pemmaya Bay, and Nanjappa Bay

**News:** The Great Nicobar Island mega infrastructure project has raised concerns after Tribal Council members alleged pressure to surrender ancestral lands in three bays.

**About Galathea Bay, Pemmaya Bay, and Nanjappa Bay**


Source – TH

- **Location: Galathea Bay** lies on the **south-eastern coast of Great Nicobar Island**, while **Pemmaya Bay and Nanjappa Bay** are located along the **western coast of the island.**
- **Major tribes:** These bays are traditional habitats of the **Nicobarese** and **Shompen** tribal communities.
- The **Nicobarese** are a largely **settled** community, while the **Shompen** are a **semi-nomadic hunter-gatherer** group living deep inside forests.
- **Biodiversity and ecology**
    - **Great Nicobar Island** is covered largely by rainforests and forms part of the **Sundaland biodiversity hotspot** extending to Southeast Asia.
    - Galathea Bay is a **major global nesting site of the endangered giant leatherback turtle**.
- **International Port: Galathea Bay** is the proposed site of the **International Container Transshipment Port (ICTP)** under the **Great Nicobar Island Development Project.**
    - The port has a natural depth of more than **20 m** and was notified as **India's 13th major port in September 2024 and** named as**Kamarajar Port**.
- **Issues:** Parts of Galathea Bay, Pemmaya Bay, and Nanjappa Bay require **diversion of forest land** where tribal villages existed before the 2004 tsunami.
    - A **wildlife sanctuary** in Galathea Bay was **denotified** earlier to facilitate the port project, even though the area was classified as **CRZ-1A**.
    - Environmental clearances are under **challenge** before the **National Green Tribunal**, while forest clearances are being heard in the **Calcutta High Court**.

## Ras Behari Bose

**News:** Union Home Minister Shri Amit Shah paid tribute to Ras Behari Bose on his death anniversary, recalling his role in INA and Ghadar movement.

**About Ras Behari Bose**

Source – India Today

- Ras Behari Bose was an **Indian revolutionary** leader and **freedom fighter** who actively fought against British rule in India and **abroad**.
- **Birth:** He was born on **25 May 1886** in **Subaldaha village of Purba Bardhaman district**, now in West Bengal.
- **Background:** He worked as a **clerk at the Forest Research Institute in Dehradun** and was secretly **involved in revolutionary activities**.
- **Influences:** Deeply inspired by the **French Revolution (1789)** while studying at **Dupleix College in Chandernagore** (then a French colony).
- **Key contributions:**
    - **Activities in India:**
        - **Alipore Bomb Case (1908):** He **left Bengal to avoid trial** related to the case.
        - **Delhi–Lahore Conspiracy Case (1912):** He helped **plan the bomb attack on Viceroy Lord Hardinge,** who was severely injured.
        - **Ghadar Mutiny (1915):** During World War I, he became a leading **organiser of the Ghadar uprising** to trigger mutiny within the Indian army.
    - **Activities in Japan (Exile):**
        - **Escape:** He escaped British intelligence and reached Japan in 1915 under the alias **Priyanath Thakur**.
        - **Indian Independence League (IIL):** He convened conferences in Tokyo and Bangkok to establish and expand the League.
        - **Azad Hind Fauj (INA):** He helped **organise the Indian National Army (INA) in 1942** as the military wing of the League.
        - **Handover to Netaji:** In 1943, he handed over the leadership of the IIL and the INA to **Subhas Chandra Bose**, acknowledging Netaji's ability to lead the final assault against British rule.
- **Honors and Legacy**
    - He received the **Order of the Rising Sun (2nd class)** from the Japanese government.
    - T**he Posts and Telegraphs Department of India** issued a **special postage stamp in 1967** in his honour.
- **Passing:** Ras Behari Bose died on **21 January 1945 due to tuberculosis**.

## Kaladi

**News:** Kaladi is in the news as the Union Minister directed scientific upscaling to improve shelf life and expand markets under the ODOP initiative.

**About Kaladi**

*Figure 33. Source – Jammu Heritage*

- Kaladi is a **traditional dairy product of Jammu and Kashmir**, known for its **milky flavour and stretchable texture**.
- It has received the **Geographical Indication tag (GI).**
- **Location:** Kaladi belongs to the **Udhampur district of Jammu and Kashmir**.
- **Preparation process**
  - Kaladi is prepared from **raw full-fat milk using whey water** as a natural **coagulant**.
  - The milk is **churned in an iron pot** with a **wooden tool**, after which **sour milk or curd called *mathar*** is **added** to separate the milk solids.
  - The **stretched cheese** is then **cooled**, allowed to **solidify**, and finally sun **dried to remove excess moisture**.
- **Key features**
  - It has a distinct **milky flavour, soft mouthfeel, and stretchable texture**.
  - It is often referred to as the "**mozzarella of Jammu**".
  - It has a **very short shelf life** of only a few days without refrigeration.
- **Scientific support: CSIR-CFTRI, Mysuru and CSIR-IIIM, Jammu** will jointly **work on nutrient profiling, characterisation, value addition, and shelf-life enhancement.**
  - **Significance :** The initiative aims to **strengthen local livelihoods**, expand national and international markets, and **promote Dogra cuisine globally.**

## Small Industries Development Bank of India (SIDBI)

**News:** The Union Cabinet has approved the equity support of Rs.5,000 crore to Small Industries Development Bank of India (SIDBI).

**About Small Industries Development Bank of India (SIDBI)**

Source – SIDBI

- **Set up:** It was **set up on 2nd April 1990 under an Act of Indian Parliament,** as a wholly owned subsidiary of IDBI Bank. It was **delinked from IDBI on March 27, 2000.**
- **Ministry:** It comes under the **Ministry of Finance.**
- **Headed by:** Board of Directors along with Chairman & Managing Director.
- **Mission:** To facilitate and strengthen the **flow of credit to MSMEs** (Micro, Small, and Medium Enterprises) while addressing financial and developmental gaps within the MSME ecosystem.
- **Mandate:** To **serve as the principal financial institution** for executing the triple agenda of promotion, financing, and development of the MSME sector.
- **Functions:**
    - **Indirect Lending:** The Bank **provides financing to MSMEs** through banks, SFBs, NBFCs, MFIs, and new-age fin-techs, leveraging the multiplier effect to achieve larger outreach.
    - **Direct Lending:** It **fills existing credit gaps in the MSME sector** through innovative and demonstrative lending products that can be scaled up by the credit delivery ecosystem.
    - **Fund of Funds:** The Bank **supports emerging startups and promotes an entrepreneurship culture** by providing capital through the Fund of Funds channel.
    - **Promotion and Development:** It **promotes entrepreneurship and handholds budding entrepreneurs for holistic development of the MSME sector** through credit-plus initiatives.
    - **Facilitator:** The Bank **acts as a facilitator by serving as the nodal agency** for government schemes aimed at MSMEs.
- **Shareholders:** Government of India (GOI), State Bank of India (SBI), LIC, and NABARD are among the major shareholders.
- **Headquarters:** Lucknow, Uttar Pradesh

## Subhash Chandra Bose Aapda Prabandhan Puraskar 2026 and Parakram Diwas–2026

**News:** The Sikkim State Disaster Management Authority (SSDMA) in the Institutional Category and Lieutenant Colonel Seeta Ashok Shelke in the Individual Category have been selected for the Subhash Chandra Bose Aapda Prabandhan Puraskar 2026.

**About Subhas Chandra Bose Aapda Prabandhan Puraskar**


*Figure 34. Source: PIB*

- It is an award **to recognize the excellent work done by individuals and Institutions in India in the field of Disaster Management.**
- **Eligibility**
    - **Only Indian nationals and Indian institutions** are eligible to apply for the award.
    - **Institutions** such as **voluntary organisations, corporate bodies, academic/research institutions, uniformed forces,** and **individuals are eligible to apply.**

- Applicants **must have worked in disaster management in India,** including prevention, mitigation, preparedness, response, relief, rehabilitation, research, innovation, or early warning.

- **Nomination: The application for the award can be filed between 1st July to 31st August each year.**
- **Selection Process:** A **three-tier screening process** shall be followed. It involves the **Secretary NDMA, consultation with SDMAs/DDMAs and experts and screening by MHA**.
- The award is **announced on 23rd January each year,** on the **birth anniversary of Netaji Subhash Chandra Bose.**
- **Award Prize:**
  - **For Organisation:** Cash prize of ₹5.1 million and a certificate
  - **For Individual:** Cash prize of ₹5 million (5.5 million rupees) and a certificate

**About Parakram Diwas 2026**

- Parakram Diwas 2026 is **annually observed on January 23, 2026**.
- Parakram translates **'Day of Valour'.** The day honours **his unconquerable spirit, bravery, courage and his selfless service to the country.**
- **Observed by:** Ministry of Culture
- It marks the **129th birth anniversary of Netaji Subhas Chandra Bose.**
- The celebrations will take place at **13 other locations across the country** associated with the life and legacy of freedom fighter Bose.

## Sirsiya River

**News:** The Sirsiya river is in the news due to severe industrial pollution affecting public health, culture, ecology, and cross-border areas of Nepal and India.

**About Sirsiya River**


Source – Bihar Govt.

- The Sirsiya river is a **transboundary perennial river** flowing **from southern Nepal to India**.
- **Origin:** The river originates from **the Ramban Jhadi forest in Jeetpur Simara Sub-metropolitan City of Bara district in Nepal.**
- **Course:** The river flows through the **Bara–Parsa industrial corridor** and **crosses into India at Raxaul in Bihar.**

- **Tributaries** The two major tributaries of the Sirsiya river **are Kiyasut and Vaudyi, which merge near Birgunj.**
- **Merges into:** After crossing into **India**, it **flows southward**, **merging with the Bangari River** before **joining the Burhi Gandak River in Bihar**, contributing to the **broader Ganga River basin.**
- **Cultural Importance:** The riverbank is lined with **numerous shrines and temples.**
    - It is a **central site for the Chhath festival** for local communities.
- **Pollution crisis**
    - Untreated industrial waste and sewage released by factories have turned the Sirsiya river black and highly toxic.
    - During the dry season, nearly 80% of the river's flow consists of industrial wastewater, which has destroyed aquatic life and caused serious health problems and cultural decline among riverside communities.

## Global Water Bankruptcy Report

**News:** The United Nations University Institute for Water, Environment and Health (UNU-INWEH) has released a **Global Water Bankruptcy report**.

### About Global Water Bankruptcy Report – 2026


Source: Global Water Bankruptcy Report 2026

- **Title of the report:** "Global Water Bankruptcy: Living Beyond Our Hydrological Means in the Post-Crisis Era"
- **Published by:** United Nations University Institute for Water, Environment and Health (**UNU-INWEH**)
    - It has been **published on the occasion of UNU-INWEH's 30th anniversary and ahead of 2026 UN water conference.**
- **What it covers:** The report **highlights concern** such as **chronic groundwater depletion, water overallocation, land degradation, deforestation, pollution and climate change,** which are **pushing many regions to water bankruptcy** and **the need to take action.**
- **Findings of the Global Water Bankruptcy Report, 2026**

- **Increasing Scarcity of Water: Water is becoming scarce around the world** leading to crop failures, power grids falter, diseases, migration, conflicts, and threats to peace and security.
- **Slow Progress on SDG:** The report highlights that **the world is far from achieving SDG 6.** It highlights that **2.2 billion people lack safely managed drinking water, 3.5 billion lack proper sanitation, and nearly 4 billion face severe water scarcity** every year.
- **Emergence of Global Water Bankruptcy:** The report declares that the world has entered **an era of "global water bankruptcy"** due to structural imbalance between water demand and available resources.
- **Water Insecurity and Resource Depletion:** It shows that nearly **75 percent of the global population lives in countries classified as water-insecure or critically water-insecure.**
    - It also finds that **70 percent of major aquifers are declining, nearly 3 billion people live in areas with unstable water storage,** and more than **170 million hectares of farmland face high water stress.**
- **Role of Climate Change: Climate change** is disrupting rainfall, melting glaciers, and increasing floods and droughts, **making water availability unpredictable.**
- **Chronic and Interconnected Water crisis:** The report observes that **droughts, shortages, and pollution are becoming long-term problems** and **water stress in one region will intensify pressures and conflicts elsewhere.**
- **Risk of "Day Zero" in Cities:** The report warns that **many cities across continents are approaching "Day Zero,"** where regular water supply fails due to overburdened urban systems.
- **Shift in water Management:** The report calls for **moving away from crisis management to bankruptcy management.** There is need to **deliberate combination of efforts for mitigation plus adaptation** to new hydrological and environmental normals.

**About Status of water scarcity in India**

- India supports about **18 percent of the world's population with only 4 percent of global freshwater,** and its **per capita surface water availability declined by 73 percent between 1951 and 2024.**
- **The NITI Aayog's 2018 Composite Water Management Index warned that around 600 million Indians face high to extreme water stress** and by 2030, water demand may be twice the available supply.
- **World Resources Institute ranked India 13th among the 17 most water-stressed countries** and over **60 percent of irrigation and 85 percent of drinking water depend on rapidly depleting groundwater.**
- **According to 2024 Annual Groundwater Quality Report, nearly 70 percent of India's water sources are contaminated** which is posing serious risks to public health, agriculture, and livelihoods.

## Operation MegaBuru

**News:** Operation MegaBuru is in the news after 19 alleged Maoists were killed during a major anti-Maoist operation in Jharkhand's Saranda forests.

**About Operation MegaBuru**


*Figure 35.Source – Argus News*

- Operation MegaBuru is a **large-scale counter-insurgency operation** carried out **against CPI (Maoist) in Jharkhand**.
- **Location:** The operation is being conducted in **the Kumdi area** under Kiriburu police station limits in **West Singhbhum district, Jharkhand.**
- **Launched in:** The operation was **launched in January 2026.**
- **Conducted by:** The operation is jointly conducted by the **Central Reserve Police Force and Jharkhand Police.**
- **Aim:** The aim of the operation is to **neutralise top Maoist leadership and dismantle their command structure** in the region.
  - It also seeks to **clear remaining Maoist pockets** in the **Singhbhum area** and support the **government's goal to end Naxalism by March 2026.**
- **Key features**
  - **Intelligence-driven:** The operation was **intelligence-driven** and based on inputs about senior Maoist leaders.
  - **Elite forces:** Around 1,500 **elite CoBRA commandos** were deployed for deep forest operations.
  - **Advanced technology**, including helicopters, drones, and satellite monitoring, was used to support surveillance and operations.

## Pangolakha Wildlife Sanctuary

**News:** A forest fire has been burning for the past two days within Sikkim's Pangolakha Wildlife Sanctuary.

**About Pangolakha Wildlife Sanctuary**

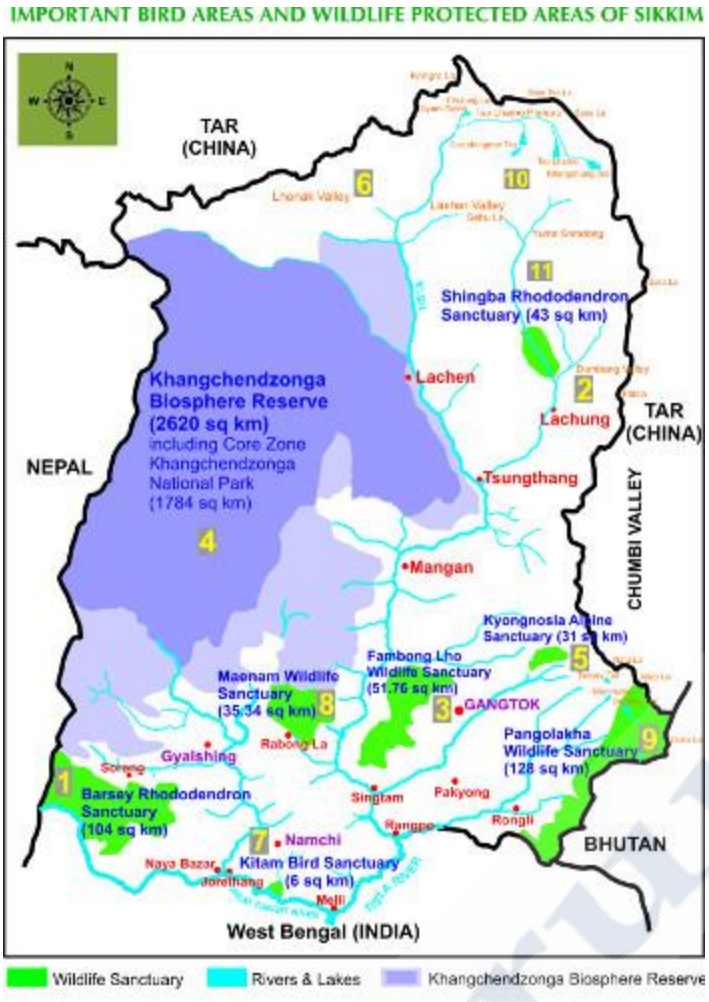


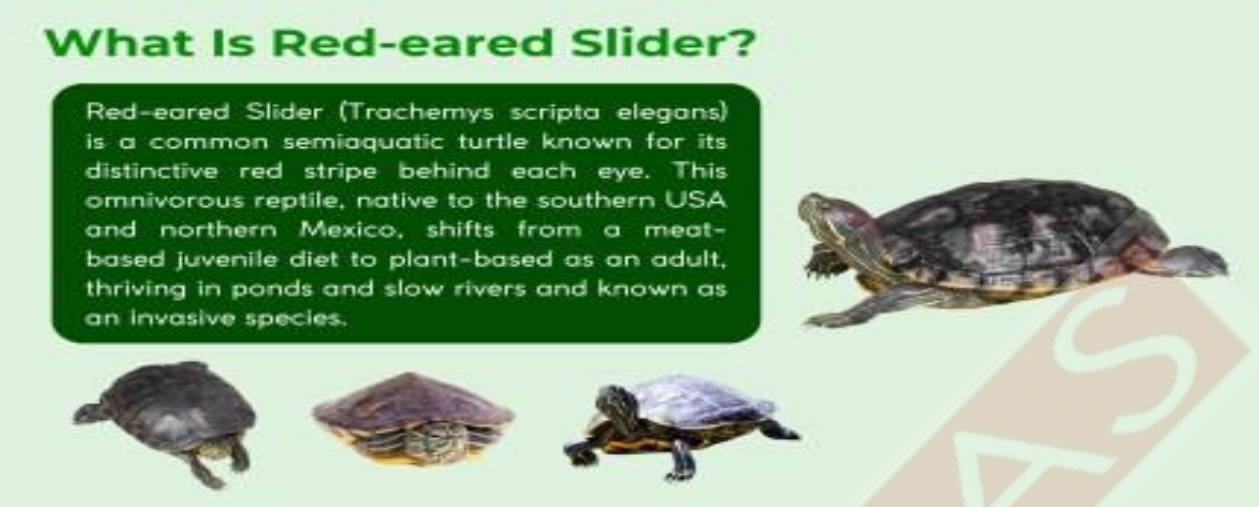

*Figure 36. Source: ResearchGate*

- **Location:** Pangolakha Wildlife Sanctuary is located in **East Sikkim.**
  - It is situated at the **tri-junction of Sikkim, Bengal and Bhutan.**
  - The **Pangolakha range** in the east **separates Sikkim from Bhutan.**
  - It is **linked to Neora Valley National Park of West Bengal.**
- **Established:** It was established as a **Wildlife Sanctuary in the year 2002.**
- **Area:** It covers an area of about **12,400 hectares.**
- **Altitude:** It lies at an altitude **ranging from 1,300 metres to above 4,000 metres.**
- **Lakes:** The area has **high-altitude lakes** such as **Bedang Tso and wetlands near Jelep La and Natu La.**
- **River:** Rivers like **Rangpo and Jaldhaka** originate from nearby lakes within the sanctuary.
- **Vegetation:** It contains **alpine, temperate, and subtropical vegetation zones.**
- **Flora: Rhododendron, silver fir, juniper, oak, and bamboo thickets** are found there.
- **Fauna:** Species **such as Red Panda, Tiger, Snow leopard, Takin, Goral, Serow, Musk Deer, Red Fox, and Asiatic Black Bear, Mouse-Hare and Himalayan Weasel** are found here.
  - **Bird species** such as **Bar-headed Goose, Large Cormorant, and Brahminy Shelduck, Bar-headed Goose, Large Cormorant Brahminy, Shelduck, etc** are found here.

## Red-eared slider turtle

**News:** Red-eared slider turtle, an invasive turtle species is posing a threat to tanks and other wetlands in Coimbatore.

**About Red-eared slider turtle**




Source: Animalpedia

- It is a **semiaquatic turtle freshwater turtle.**
- It belongs to **Emydidae family.**
- **Scientific name:** Trachemys scripta elegans
- **Habitat:** It prefers to live in **ponds, lakes, marshes, and slow-moving rivers.**
- **Distribution**: It has an established **distribution across all continents, except Antarctica**.
- It is native to **Mississippi River basin in the U.S.** (Illinois to Gulf of Mexico), and **northern Mexico.**
- **Characteristic Features**
    - It has **bright red stripes behind each eye,** which give the species its name.
    - It has a **hard, oval-shaped shell with yellow and green patterns.**
    - It **has webbed feet** that help it swim easily in water.
    - It has **strong, toothless jaws** that are used for tearing and crushing food.
    - **Females are generally larger than males**, while males have longer front claws and tails.
    - It is **diurnal (active during the day)in nature.**
    - During cold weather, **it survives by entering a resting state called brumation** (the reptile form of hibernation).
- **Diet: It** is **omnivorous**.
- **Lifespan:** 20–30 years on average; can exceed 40 years in captivity
- **Conservation Status**
    - **IUCN: Least Concern**
    - In many countries, it is **considered an invasive species (like in India).**

## Gandak River

**News:** The Gandak river has emerged as the second major river after the Chambal with the highest number of gharials.

**About Gandak River**


*Figure 37. Source – Living Water Museum*

- Gandak River is a **major river of Nepal** and a **left-bank tributary of the Ganges in India.**
- **Origin:** It **originates at an altitude of 620 m above msl to the north of Dhaulagiri Mountain in Tibet** near Nepal border.
- **Course of river:** Gandak River is known as the **Kali Gandaki and Narayani after its confluence with the Trisuli River in Nepal.**
  - While flowing through the Nepal Himalayas, **it forms the Kali Gandaki gorge, one of the deepest river gorges in the world.**
  - It **flows southward into India** and passes through the **districts of West Champaran, East Champaran, Muzaffarpur, Gopalganj, Siwan, Saran, and Vaishali in Bihar,** as well as **Gorakhpur and Deoria in Uttar Pradesh.**
  - It **finally joins Ganga at Hajipur in Bihar.**
- **Total Catchment area:** 46,300 $km^2$.
- **Major Tributaries:** Daraudi, Seti, Madi, Marsyandi, and Budhi Gandaki.
- **Fauna:** The basin supports species such as **tiger, one-horned rhinoceros, gaur, and fishing cat, Gangetic dolphin, smooth-coated otter, gharial, and mugger, gangetic dolphins, turtles, greater and lesser adjutants and the common shelduck,** etc

**About Gharial**

- The gharial is a **species of crocodilian.** It scientific name is **Gavialis gangeticus.**
- It is the **only visibly sexually dimorphic crocodilian, characterized by a large, bulbous knob called a *ghara*.**
- **Distribution:** Gharials are primarily **found in the rivers of India and Nepal.**
  - The surviving population can be found within the **tributaries of the Ganges river system: Girwa, Son, Ramganga, Gandak, Chambal and Mahanadi.**
- **Habitat:** Gharials prefer **deep, fast-flowing rivers** but are also found in **still water branches and deep holes at river bends and confluences.**
- **Physical Characteristics**
  - **It is one of the largest crocodilian species.**
  - **Male gharials** grow between **3 to 6 m in length**, while **females range from 2.6 to 4.5 m.**
  - **Mature males develop a bulbous growth called a ghara** on their snouts, which t**hey use to produce vocalization**.
  - Their **distinctive snout is lined with sharp, interlocking teeth,** which help them catch fish efficiently.
  - **Gharials are not well-suited for walking on land and spend most of their time in water.**
- **Importance in Ecosystem:** Gharials play a **vital role in maintaining the balance of river ecosystems and act an indicator of a healthy ecosystem.**
- **Threats to Gharial: Habitat destruction, Fishing activities and Climate change**

- **Conservation status:** Listed in **Schedule I of Wildlife (Protection) Act, 1972** and as **Critically Endangered** on **IUCN Red List.**
- **Conservation efforts:**
    - Between 1975 and 1982, India established **16 captive breeding and release centers** to support gharial populations.
    - The species primarily survives in five key sanctuaries: **National Chambal Sanctuary (NCS), Katerniaghat Sanctuary, Chitwan National Park, Son River Sanctuary and Satkosia Gorge Sanctuary.**

## Jeevan Raksha Padak Awards-2025

**News:** The President of India has approved the conferment of Jeevan Raksha Padak Series of Awards – 2025.

**About Jeevan Raksha Padak Awards-2025**

Source : Royal Patiala

- **About:** Jeevan Raksha Padak Series of Awards are **an offshoot of the Ashoka Chakra series of Gallantry awards.**
- **Instituted in:** 1961
- The awards are **given to a person for meritorious act of human nature in saving the life of a person.**
- **Categories:** The award is given in **three categories**:
    - **Sarvottam Jeevan Raksha Padak-** for **conspicuous courage in saving life** under **circumstances of very great danger to the life of the rescuer**
    - **Uttam Jeevan Raksha Padak-** for **courage and promptitude in saving life** under **circumstances of great danger to the life of the rescuer.**
    - **Jeevan Raksha Padak-** for **courage and promptitude in saving life** under **circumstances of grave bodily injury to the rescuer.**
- **Presented by:** It is presented to the awardees **by the respective Union Ministries/Organizations/State Government** to which the awardee belongs.
- **Eligibility:** Persons of all walks of life are **eligible for these awards.**
    - The award **can also be conferred posthumously.**
- **Process of the award:** Its nominations are **invited annually** from States/UTs and Union Ministries.

- The recommendations of the award are **considered by the Awards Committee within a period of two calendar years** from the date of performance of the act.
- The **Awards Committee makes its recommendations to the Prime Minister and the President.**

- **Awards constitute:** A **Medal, Certificate** signed by the Union Home Minister and **lump sum Monetary Allowance.**
  - **Sarvottam Jeevan Raksha Padak:** ₹ 2,00,000/-
  - **Uttam Jeevan Raksha Padak:** ₹ 1,50,000/-
  - **Jeevan Raksha Padak:** ₹ 1,00,000/-
- **Details of Jeevan Raksha Padak Awards-2025:** Jeevan Raksha Padak Awards-2025 has been conferred on **30 persons.**
  - **Sarvottam Jeevan Raksha Padak** to **06, Uttam Jeevan Raksha Padak** to **06** and **Jeevan Raksha Padak** to **18 persons.**
  - **Six** awardees are **posthumous.**

## Operation Sahyadri Checkmate

**News:** Operation Sahyadri Checkmate was launched recently by Directorate of Revenue Intelligence (DRI).

**About Operation Sahyadri Checkmate**

*Figure 38. Source: PIB*

- "Operation Sahyadri Checkmate" was **anti-narcotics operation.**
- **Aim:** It **dismantled a clandestine mobile mephedrone manufacturing laboratory** in the remote **hinterland of the Sahyadri ranges**.
- **Launched by:** Directorate of Revenue Intelligence (DRI)
- **What was recovered: Around 21.9 kilograms of mephedrone in various forms** and **over 70 kilograms of chemical precursors and raw materials** were recovered.
  - **Note:** Mephedrone is **a synthetic stimulant** and is **commonly described as a party drug**.
  - The **total value of the seized contraband** is estimated at **Rs 55 crore in the illicit market.**

**About Sahyadri Ranges**


Source – Research Gate

- **About:** The **Northern-Western Ghats** of India **are popularly known as 'Sahyadri'.**
- **Location:** They extend from the **Goa–Karnataka–Maharashtra tri-junction** in the **south to the Tapi River** near the **Gujarat border** in the **north.**
- **Length:** About **640 km** long and **10 to 20** km wide**.**
- **Height:** Average elevation is of around **1,000 m.**
- **Formation:** They are **formed about 60 million years ago** due to **massive volcanic activity and** are **part of the Deccan Traps.**
- **Composition:** They are mainly **composed of basalt rocks.**
- **Features**
    - The **western slopes** of the Sahyadris **rise steeply** from the Konkan Coast, while the **eastern slopes descend gradually** into the Deccan Plateau.
    - They **act as a natural barrier to the southwest monsoon winds** and **receive heavy rainfall** on their crestline.
    - **Annual rainfall:** Between **4,000 and 6,000 mm**.
- **Rivers:** The rivers **Godavari and Krishna** originate from these ranges.
- **Peaks: Kalasubai** (Highest – 1,646 meters), Salher and Mahabaleshwar.
- **Important passes: Thal Ghat, Bhor Ghat**, Naneghat, Amba Ghat, and Amboli Ghat.
- **Vegetation: Evergreen forests** are found mainly **along the wet western crestline**, while **drier regions** support **deciduous forests and grasslands.**

- **Flora:** It is home to **over 4,000 plant species, with at least 159 endemic flowering plants**.
    - **Sacred groves** are protected by local communities.
- **Fauna:** The Sahyadris support various wildlife species, including the **purple frog (endemic), leopards, gaur, Indian giant squirrel, Tigers, Asian elephants, sloth bears, etc.**
    - Some of the important birds include the **Nilgiri wood-pigeon, Malabar grey hornbill, grey-headed bulbul, and the Malabar parakeet.**
- **Important protected areas: Bhimashankar Wildlife Sanctuary, Chandoli National Park, Koyna Wildlife Sanctuary,** etc.
- **Historical Importance:** Famous **forts** like **Raigad, Rajgad, Sinhagad, and Shivneri a**re located in this range.
- **Conservation International** has recognized the **Sahyadri range (Western Ghats) as part of one of the world's 34 global biodiversity hotspots.**

## Chattergala Pass

**News:** Border Roads Organisation (BRO) successfully carried out a high-altitude rescue and road restoration operation under Project Sampark at Chatergala Pass in the Bhaderwah–Chatergala axis in Jammu region of Union Territory of Jammu and Kashmir.

**About Chattergala Pass**

*Figure 39. Source – Republic World*

- Chattergala Pass is a **mountain pass** located in the **Middle Himalayas of the Jammu region** of Jammu and Kashmir, India.
- **Connecting:** It connects the **town of Bhaderwah in the Neeru river valley with Basohli in the Shiwalik hills.**
- **Significance:** It is a **strategically and geographically significant location**, particularly in the context of **border security and connectivity in the Pir Panjal sub-range**.
- The **Chattergala Tunnel** is planned under the pass.

**Chattergala Tunnel**

- It is a **8 km long road tunnel** under the Chattergala pass.
- It is built at an **elevation of 10,500 ft.**
- It is planned to **connect Kathua and Doda via Bani.**
- It will provide **all-weather road connectivity** and **reduce the travel time** from **Lakhanpur to Doda to four hours**.

# Long Range Anti-Ship Hypersonic Missile (LR-AShM)

**News**– At the 77th Republic Day Parade on Kartavya Path, DRDO showcased the Long Range Anti-Ship Hypersonic Missile (LR-AShM) for the first time.

*Figure 40. Source- The Hans India*

**About Long Range Anti-Ship Missile (LR-AShM)**

- It is an indigenously developed hypersonic glide missile by the Defence Research and Development Organisation (DRDO). It is designed primarily to meet the coastal battery and sea-denial requirements of the Indian Navy.
- **Key Features**
  - **Range**: Capable of striking static and moving targets at a range of *around 1,500 km*, with future variants planned up to 3,500 km.
  - **Speed & Trajectory**: Follows a *quasi-ballistic trajectory*, reaching speeds of *Mach 10* initially and maintaining an *average Mach 5.*
  - **Stealth advantage**: Its low-altitude flight, high speed, and manoeuvrability reduce detection by enemy ground- and ship-based radars.
  - **Propulsion & flight Profile**
    - Configured with a *two-stage solid propulsion* rocket motor system.
    - Possesses high aerodynamic efficiency, enabling long-range, accurate strikes with minimal drag.
- **Strategic significance**
  - Capable of neutralising all classes of warships, it is a major asset for sea denial operations, especially in the Indian Ocean Region (IOR).
  - Army, Air Force, and ship-launched naval variants are under development or consideration, placing India firmly in the hypersonic weapons domain.

**India's Other Hypersonic Missile Programmes**

- DRDO is developing two hypersonic weapon technologies—***hypersonic glide vehicles (HGVs)*** and ***hypersonic cruise missiles*.**
  - A Hypersonic Glide Vehicle (HGV) is carried to high altitude by a rocket, after which it separates and glides through the atmosphere while manoeuvring at speeds above Mach 5.
  - In contrast, hypersonic cruise missiles remain within the atmosphere and achieve hypersonic speeds using scramjet engines for sustained, powered flight and high manoeuvrability.

**Ramjet vs Scramjet:**

- Ramjets are air-breathing engines that compress incoming air using the missile's forward motion and therefore require an assisted launch.They operate most efficiently around **Mach 3** but lose efficiency at hypersonic speeds.

- Scramjets maintain supersonic airflow within the combustion chamber during operation. This enables efficient flight **beyond Mach 5**, though scramjets are technologically more complex to design and operate.

## Punjab Kesari Lala Lajpat Rai

**News:** The Prime Minister Shri Narendra Modi paid tributes to Lala Lajpat Rai on his birth anniversary and remembered his life of sacrifice.

**About Lala Lajpat Rai**

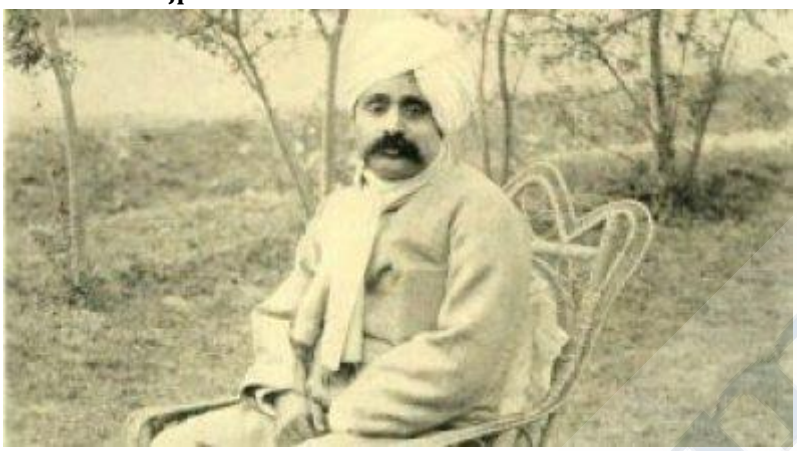


*Figure 41. Source – Indian Express*

- Lala Lajpat Rai was an Indian revolutionary, politician, and author, **popularly known as Punjab Kesari** and a **member of the Lal–Bal–Pal trio.**
- **Birth:** He was born on **28 January 1865** in **Dhudike**, Faridkot district of the Punjab Province.
  - He belonged to an **Agrawal Jain family** and was the eldest son of **Munshi Radha Krishna** and **Gulab Devi Aggarwal**.
- **Education**: He received his early education in **Rewari** and later studied law at **Government College, Lahore.**
- **Influence by**: He was deeply influenced by **Swami Dayanand Saraswati** and the **Arya Samaj movement**.
- **Key Contributions**
  - **Freedom Struggle**
    - He joined the **Indian National Congress** and was deported to **Mandalay in 1907**.
    - He founded the **Indian Home Rule League of America** in 1917.
    - He was elected **President of the Indian National Congress in 1920**.
    - He led the protest against the **Simon Commission in 1928** with the slogan "Simon Go Back."
  - **Social & Institutional Reforms**
    - He helped establish the **Dayanand Anglo-Vedic School, Lahore**.
    - He founded the **National College at Lahore**, where Bhagat Singh studied.
    - He established the **Servants of the People Society** in 1921.
    - He supported reforms related to caste system, women's position, and untouchability.
  - **Banking and Economy:** In 1894, he helped found the **Punjab National Bank (PNB)** and the **Lakshmi Insurance Company** to promote Indian-owned financial institutions.
- **Literary Works:** Important works included ***Unhappy India***, ***Young India***, ***England's Debt to India***, **and *The Story of My Deportation*.**
  - He also wrote biographies of **Mazzini, Garibaldi, Shivaji, and Shri Krishna**.
- **Death**: He died on **17 November 1928** due to injuries from a **police baton charge during the Lahore protest against the Simon Commission**.

# Bactrian Camel

**News:** This year, two Bactrian camels named Galwan and Nubra marched on Kartavya Path in the Republic Day Parade.

**About Bactrian Camel**

Source – DTE

- The Bactrian camel is a **double-humped camel scientifically known as *Camelus bactrianus*.**
- **Naming:** The name "Bactrian" comes from the ancient region of Bactria, located between present-day Afghanistan, Iran and Kazakhstan
- **Distribution**
  - **Globally:** It is **native to Central Asia** and occupies regions from **Afghanistan to China,** including the **Mongolian steppes and the Gobi desert**.
  - **Smaller populations** exist in **northern Pakistan, Iran, Turkey and India**.
  - **In India:** It is found only in the **cold desert of Ladakh**, mainly in the **Nubra Valley.**
- **Key characteristics**
  - **Hump structure:** The two humps store fat that can be converted into energy during long periods of food scarcity
  - **Body adaptation:** Its nostrils can close to block dust, and its broad feet help movement on sand and snow.
  - **Cold tolerance:** It has a thick, shaggy coat that becomes dense in winter and protects it from temperatures as low as minus 40°C.
  - **Thirst survival**: It can **withstand thirst for long periods** and can survive by eating snow to meet hydration needs.
  - **Feeding habit:** It feeds on **bitter, thorny and saline plants** and is mainly **herbivorous**.
- **Historical significance**
  - The Bactrian camel was **central to Silk Road trade** and was known as the **"ship of the Silk Road."**
  - It enabled movement of **goods, people, monks and ideas** across Central Asia and India.
  - Chinese Buddhist monks **Faxian (Fahien)** and **Xuanzang (Hiuen Tsang)** travelled from China to India in caravans that **included Bactrian camels.**
- **Conservation status**
  - **IUCN Red List: Critically Endangered**

# ExoMiner++

**News:** NASA has open sourced its AI system ExoMiner++ while analysing TESS data to support transparent, collaborative, and faster global exoplanet discovery.

**About ExoMiner++**


Source – Tech Times

- ExoMiner++ is a **deep learning–based artificial intelligence system** used to identify exoplanets from space mission data.
- **Developed by:** It was developed by **NASA.**
- **The main goals of the ExoMiner project are:**
    - Perform classification of transit signals in **Kepler and Transiting Exoplanet Survey Satellite (TESS) data;**
    - Create vetted catalogs of **Threshold Crossing Events (TCEs)** for Kepler and TESS runs for the exoplanet community.
    - **Validate new exoplanets** using Kepler and TESS data.
- **Mechanism used:** ExoMiner++ **uses deep learning to study stellar light curves and detect small dips in brightness** caused by planetary transits.
- **Key features**
    - **Explainable AI (XAI):** The open-source system allows researchers to study, audit, and understand the model's working.
    - **False Positive Mitigation:** It distinguishes genuine planetary signals from eclipsing binary stars and astrophysical noise.
    - **Efficiency:** It flagged approximately 7,000 potential exoplanet candidates from TESS data, speeding up exoplanet discovery.
    - **Open Science:** NASA has open sourced ExoMiner++, enabling global collaboration and replication of results.

**About ExoMiner**

- ExoMiner is an **open-source artificial intelligence software** designed to **analyse exoplanet data** from space missions.
- **Developed by:** It was developed by a team from **NASA's Ames Research Center in 2021.**
- The team later created ExoMiner++, trained using Kepler and TESS data.

## Humanoid Robot 'ASC ARJUN'

**News:** Indian Railways has introduced a humanoid robot named "ASC ARJUN" at Visakhapatnam Railway Station.

**About Humanoid Robot 'ASC ARJUN'**

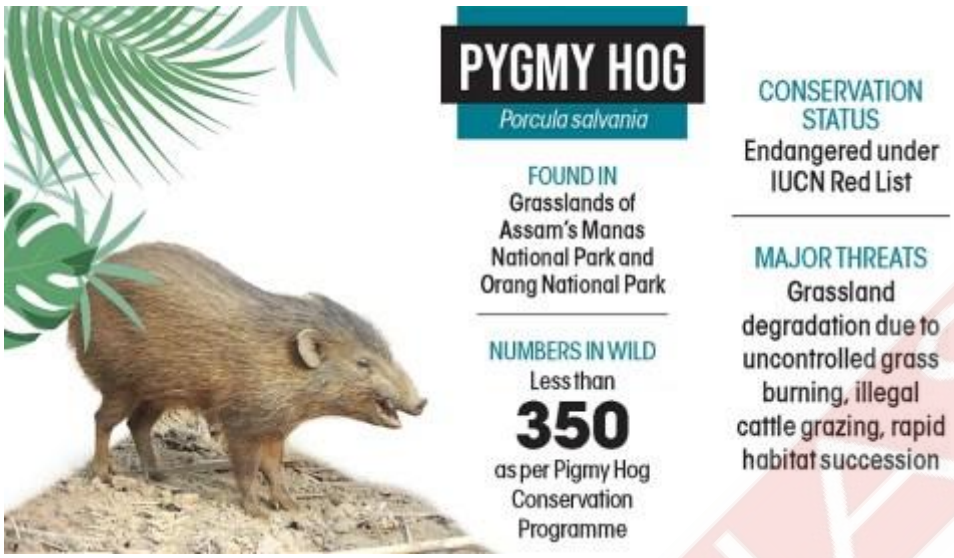
*Figure 42. Source: PIB*

- ASC ARJUN is a **humanoid robot, deployed at Visakhapatnam Railway Station.**
- This deployment **marks a first-of-its-kind initiative** on the Indian Railways network.
- **Developed By:** ASC ARJUN has been **fully designed and developed in Visakhapatnam** using **home-grown technology.**
- **Main Objective:** To create a safer, more secure, and passenger-friendly railway environment.
- It **works alongside RPF personnel** to support station operations, especially during peak passenger movement.
- **Features:**
  - It **assists in intrusion detection** through a **Face Recognition System (FRS), AI-based crowd monitoring, and real-time alerts** to RPF control rooms.
  - **Patrolling Capability:** It has **semi-autonomous navigation** along predefined paths with obstacle avoidance for continuous patrolling.
  - **Emergency Response:** It is **equipped with fire and smoke detection systems** to enable **timely response in emergency situations.**
  - It can **make automated public announcements** in **English, Hindi, and Telugu.**
  - It **also offers friendly gestures** such as **Namaste for passengers** and **salutes for RPF personnel,** along with an easy-to-use interface.

## Pygmy Hog

**News:** The population of Pygmy Hog has declined sharply due to habitat loss, grass burning, illegal grazing, and land degradation.

**About Pygmy Hog**




Source: DTE

- The Pygmy Hog is the **smallest and rarest wild suid in the world.**
- **Scientific name:** Porcula salvania
- **Habitat:** Pygmy Hogs prefer **undisturbed patches of tall wet grassland** mixed with a wide variety of herbs, shrubs and young trees.
- **Distribution:** It is endemic to Northeast India.
    - At present, they are found only in **Assam**, mainly in **Manas and Orang National Parks.**
- **Physical Features:**
    - **Size:** They measure about **55–71 cm in length**, **25 cm in height**, and weights **6.6–9.7 kg**.
    - They have **small, compact, and streamlined body** with small ears and tail.
    - They have **grayish-brown skin** with **blackish-brown bristles**.
    - They have **short legs and short false hooves**, suitable for grassland living.
    - The **snout is positioned perpendicular** to their head, and they **lacks facial warts.**
    - **They have well-developed teeth**, with upturned canines and rounded molars.
- The pygmy hog is **one of the very few mammals that build their own home, or nest, complete with a 'roof'.**
- **Nature:** They are **social animals** and **live in small family groups.**
    - They are **diurnal** and spend daylight hours foraging.
- **Ecological Role:** They are also an **indicator species** as their presence reflects the health of grassland of the region.
    - They **help to disperse seeds and aerate the soil** through their dietary and foraging habits.
- **Diet**: It is an **omnivore** and feeds on **roots, tubers, insects, rodents, and small reptiles**.
- **Threats**
    - Loss and degradation of habitat due to human settlements
    - Agricultural encroachments
    - Flood control schemes
    - Traditional forestry management practices
- **Conservation status**
    - **IUCN: Critically Endangered**
    - Wildlife Protection Act, 1972: **Schedule I**

# Madras Hedgehog

**News:** For the first time, the Tamil Nadu forest department has begun a study on Madras Hedgehog at the Theri forests.

**About Madras Hedgehog**


Source: DTE

- The Madras hedgehog is a **small-sized insectivorous mammal.**
- It is also called the **bare-bellied hedgehog or South Indian hedgehog.**
- **Scientific name:** Paraechinus nudiventrus
- **Habitat:** It lives in **arid and semi-arid habitats** such as grasslands, open shrublands, thorn forests, and dry deciduous forests.
    - It prefers **open natural ecosystems and avoids dense forests.**
- **Distribution:** It is **endemic** to **southern India**.
    - It is **found only** in **Tamil Nadu, Karnataka, Andhra Pradesh, Telangana, and Kerala.**
- **Physical Features:**
    - **Appearance:** Its body is **covered with sharp spines** except on the face, legs, and underbelly. It has soft white fur on its belly.
    - **Defence:** When threatened, it **rolls itself into a tight ball for protection.**
    - It has a **pig-like snout** which helps it in searching for food in the soil.
    - **Length:** 14–25 cm with a short tail of 1–3 cm.
    - **Weight:** 130-315 grams
    - **Lifespan:** Five to six years
- **Nature:** It is a **nocturnal animal** and remains active mostly during the night.
    - It has a **limited home range of about two to three kilometres** and completes its life cycle within this area.
- **Diet:** It is an **omnivore** and mainly feeds on insects and soil invertebrates.
- **Ecological role:**
    - It plays an important role in **maintaining ecological balance** as both a predator and prey species.
    - It can eat up to forty insects in an hour and **helps farmers by controlling pest populations.**

- It is considered an **ecological indicator because its population reflects the health of the environment.**

- **Threat**
  - Habitat loss from agriculture, plantations and wind or solar infrastructure
  - Poaching
  - Road mortality.
- **Conservation status**
  - **IUCN** Red List: **Least Concern**

## Rojava Region

**News:** Renewed fighting between Syrian government forces and the Kurdish-led Syrian Democratic Forces threatens the autonomy of the Rojava region in northeastern Syria.

**About Rojava Region**


Source – Freedom Socialist Party

- **Rojava region** (meaning **"West" in Kurdish**) refers to a **de facto Kurdish autonomous region** in **northern and northeastern Syria**.
- The region lies **along the Euphrates basin** and includes **major oil- and gas-rich areas of eastern Syria.**
- **Major Regions:** It covers parts of **Hasakah, Raqqa, Deir ez-Zor, and Aleppo,** including the **Kobane region**.
- **Boundary**
  - **Türkiye** lies to the **north**.
  - **Iraq's Kurdistan Region** lies to the **east**.
  - **Syrian government–controlled** areas lie to the **west and south.**
- **Climate:** The climate is **generally arid**, marked by hot summers and cold winters, which **supports wheat cultivation in fertile river plains.**
- **Topography:** The region is dominated by **mostly flat, arid to semi-arid plains and steppe lands**, forming part of the broader **Fertile Crescent zone.**
- **Mountains:** Although largely flat, the region includes the **Mount Abdulaziz** (also known as **Mount Kezwan)** range in **the Hasakah area.**
- **Rivers:** Rojava lies between the **Tigris River in the east** and the **Euphrates River system**, with the **Khabur River** as an important tributary supporting agriculture.

# TomTom Traffic Index 2025

**News:** As per TomTom Traffic Index 2025, Bengaluru was the second most congested city in the world in 2025.

**About TomTom Traffic Index 2025**

| Rank | Country | Average Congestion level (2025) |
|---|---|---|
| 1 | Colombia | 48.8% |
| 2 | Malta | 45.1% |
| 3 | Philippines | 44.6% |
| 4 | Mauritius | 37.8% |
| 5 | India | 37.4% |
| 6 | Singapore | 36.8% |
| 7 | Mexico | 36.8% |
| 8 | Peru | 36.5% |
| 9 | Japan | 34.3% |
| 10 | Indonesia | 34.4% |

*Figure 43. Source: tomtom*

- TomTom Traffic Index is an **annual analysis of global traffic trends and commuting behavior**.
- **Released by:** TomTom, an Amsterdam- based company that offers traffic solutions
- **Benchmark:** The Index **measures congestion levels, average speeds and travel times per mile** across the global road network.
- The TomTom Traffic Index is compiled using anonymised GPS data and real driving speeds from across the world.
- **2025 edition:** TomTom Traffic Index 2025 is the **15th edition of the index.**
- **Findings related to India:**
  - **India ranked as the fifth most traffic-congested country globally** and **second in Asia,** with commuters experiencing **an average congestion level of 37.4 per cent.**
  - **Bengaluru emerged as India's most traffic-congested city,** recording an average congestion level of 74.4 per cent, thereby ranking second globally.
  - During peak hours, commuters in Bengaluru took **15 minutes to travel 4.2 kilometres** and commuters **lost 168 hours per year** due to heavy traffic.
  - Kolkata ranked **fourth among the world's slowest cities**.
  - Pune became the **fifth most congested city globally**, overtaking Mumbai.
  - **Mumbai showed slight improvement,** with time lost to congestion reducing to **126 hours per year**.
  - **New Delhi ranked 23rd** in the **global congestion index.**
  - **Other Indian cities featured in the rankings:** Jaipur, Chennai, Hyderabad, Ernakulam, and Ahmedabad.
- **Findings related to Global Congestion:**
  - For the first time, TomTom calculated global congestion using driving data from over **2.2 trillion miles (3.6 trillion km)** worldwide.
  - The index showed that **global congestion increased from 20% to 25%**, marking a rise of **5 percentage points**.
  - Of the top 10 cities with the highest congestion in Asia, **six were from India: Bengaluru (1), Pune (2), Mumbai (6), New Delhi (7), Kolkata (9), and Jaipur (10). Chennai ranked 11th, while Hyderabad was placed 15th** in the Asia ranking.

- **Least Congested:** U.S.A ranked 54th globally in congestion, making it one of the least congested countries.
- **Most Congested: Colombia ranked first** with nearly **50% congestion**, making it the most congested country.

## PESA Rankings of States for Year 2024-25

**News:** The PESA Rankings for 2024-25 were released, showing Maharashtra first, Madhya Pradesh second and Himachal Pradesh third among PESA States.

### About PESA Rankings of States for Year 2024-25

The performance of the States in PESA Ranking is as follows:

| State | Performance |
|---|---|
| Maharashtra<br>Madhya Pradesh<br>Himachal Pradesh | Front Runner |
| Rajasthan<br>Chhattisgarh<br>Telangana | Performer |
| Andhra Pradesh<br>Gujarat | Aspirant |
| Odisha<br>Jharkhand | Beginner |

Source – PIB

- The PESA Rankings of the States for 2024-25 **assess how well States** have **implemented the PESA Act in the Fifth Schedule Areas.**
- **Released by:** It is release by the **Ministry of Panchayati Raj.**
- **Aim:** The Rankings aim to **encourage States** with **Fifth Schedule Areas** to **strengthen Gram Sabha-centered self-governance** and identify areas needing focused support.
- **Measurement of performance:**
  - The performance of States was measured on mutually agreed **100-point PESA indicators** to **ensure objectivity, transparency and accountability** in the implementation of the PESA Act.
  - The PESA Indicators were **formally released during PESA Mahotsav on 24th December, 2025**, the day when PESA Act came into force in 1996.
- **The performance of the States in PESA Ranking (2024-25) is as follows**
  - **Front Runner category: Maharashtra, Madhya Pradesh and Himachal Pradesh**
- **Performers category: Rajasthan, Chhattisgarh and Telangana**
- **Aspirant category: Andhra Pradesh and Gujarat**
- **Beginner category: Odisha and Jharkhand**

### About Panchayats (Extension to Scheduled Areas) PESA Act

- The act intends to **provide tribal self-rule for people** living in scheduled and tribal areas.
- To promote **local self-governance** in rural India, the **73rd constitutional amendment was made in 1992**, due to which a three-tier Panchayati Raj Institution was made into a law.
    - However, its **application** to the **scheduled and tribal areas under Article 243(M) was restricted.**
- After the **Bhuria Committee** recommendations in 1995, **PESA Act 1996** came into existence.
- The PESA Act conferred the **powers to Gram Sabha**, whereas **state legislature has given an advisory role** to ensure the proper functioning of Panchayats and Gram Sabhas.

## Fishing Cat

**News:** The fishing cat is in the news due to rapid wetland destruction and increasing concern over its declining population across floodplains and deltas.

**About Fishing Cat**


Source – DTE

- The fishing cat is a **medium-sized wild cat** that is strongly **adapted to wetland and aquatic environments.**
- **Scientific Name:** Its scientific name is **Prionailurus viverrinus.**
- **Habitat:** The fishing cat mainly inhabits **wetlands** such as **marshes, swamps, floodplains, mangroves, and reed-beds near rivers** and agricultural landscapes.
- **Distribution : In India**, its range extends from the **Indus basin** through the **Ganga river system** and **Terai region**, across the **Ganga–Brahmaputra plains and delta**, and south up to the **Mahanadi, Godavari, and Krishna basins**.
    - It is the **state animal of West Bengal** in India.
- **Key Characteristics**
    - **Behavior:** It is **nocturnal**, **swims** frequently, and can **dive underwater** to catch fish.
    - It has a **strong body, stocky legs,** and **measures** about **57–78 cm** in length.
    - **Aquatic adaptations:** It has **semi-webbed feet**, a **water-resistant coat**, a thick tail, half-retractile claws, and **ear lobules** that **block water** while diving.
    - **Diet:** It mainly feeds on **fish** and also eats **frogs, crustaceans, snakes, birds, and carcasses.**
- **Threats**

- Destruction of wetlands due to human settlement
- Agriculture drainage
- Pollution
- Wood-cutting
- Depletion of fish
- Occasional poaching

- **Conservation Status**
  - **IUCN Red List: Endangered**
  - **CITES: Appendix II**
  - **Indian Wildlife (Protection) Act, 1972: Schedule I**

## Hoverflies

**News:** Concern is growing over declining pollinator populations worldwide, bringing attention to the ecological importance of non-bee pollinators such as hoverflies.

**About Hoverflies**

Source – Mongabay

- Hoverflies are a diverse group and not a single insect type.
- They belong to the **Syrphidae family of Diptera**, which includes more than 6,000 species across 377 genera worldwide.
- Different hoverfly species **perform different ecological roles such as pollination, pest control, and waste recycling.**
- **Distribution:** Hoverflies are found across the globe with over 6,000 species, thriving everywhere except in extreme tundra and desert climates.
- **Key Characteristics**
  - **Appearance:** They have large globular eyes, short stubby antennae, and a rounder lower body that gives them a distinct shape.
  - **Mimicry:** They show **Batesian mimicry** ***(where harmless insects imitate harmful ones for protection)*** by resembling bees or wasps in colour, body shape, and buzzing sound.
  - **Hovering is a signature behaviour** of these flies and is linked to food searching, with males and females showing different flight patterns.
  - They thrive in meadows, peatlands, farms, forests, and densely populated urban areas, **showing high adaptability.**
  - **Harmlessness:** Hoverflies are **harmless insects and do not possess stingers.**
- **Ecological Roles**

- **Second-Line Pollinators:** Hoverflies support pollination of 551 plant species and contribute significantly after wild bees.
- **Biological Control:** Their larvae feed on pests like aphids and can remove 70–100% of pest populations.
- **Waste Recycling:** Some larvae live in stagnant water and organic waste, breaking down matter and recycling nutrients.

## Euratom

**News:** The European Union (EU) and India have reaffirmed their commitment to strengthening cooperation on the peaceful use of nuclear energy under the India–Euratom agreement.

**About Euratom**


*Figure 44. Source – Euratom*

- The European Atomic Energy Community (EAEC or EURATOM) is an **international organisation** created by **Treaty of Rome** signed on **25 March 1957.**
- **Entered into force:** 1st January 1958
- **Objective:** The Treaty was created to **promote research, achieve security of nuclear materials supply** and **to establish a system for supervising the peaceful use of nuclear materials** for all member countries.
- **Scope:** The treaty is strictly limited to **civilian (not military) uses** of nuclear energy.
- **Membership:** Six founding members: **Belgium, France, Germany, Italy, Luxembourg and the Netherlands** and further **it included all members of the European Union (EU).**
  - UK left Euratom following Brexit.
- **Purpose:** Its current role is **to establish and maintain standards for regulating civilian nuclear activities in the United Kingdom.**
  - These include **oversight of nuclear fuel supply, radioactive waste management, and cooperation** between nuclear states.
  - It also **operates a system of nuclear safeguards,** monitors and controls the distribution of fissile materials among member states.
  - It also **ensures high levels of safety, and supports international research** in nuclear fission and fusion.
- **Governed by: Commission and Council,** operating under the **jurisdiction of the European Court of Justice.**
- **Main Instruments:** Its main instruments are the **Euratom Supply Agency, and its research and nuclear safeguard activities.**
- Euratom **regulates the European civil nuclear industry,** which produces almost 30 % of energy in the EU.

## Smart and Integrated Fishing Harbour at Mayabunder

**News:** The Government of India approved the Smart and Integrated Fishing Harbour at Mayabunder under PMMSY with full central financial assistance.

**About Smart and Integrated Fishing Harbour at Mayabunder**

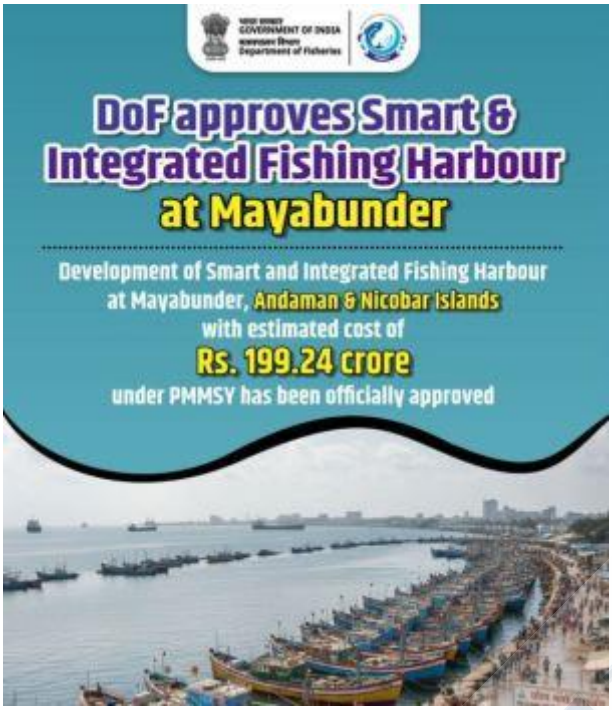



*Figure 45. Source – PIB*

- It is a **modern harbour project** planned to **improve fisheries infrastructure using technology and sustainable practices.**
- **Location:** It is located at **Mayabunder** in the **Andaman and Nicobar Islands.**
- **Ministry involved:** The project is **implemented by the Department of Fisheries** under the **Ministry of Fisheries, Animal Husbandry and Dairying.**
- **Total corpus:** The total approved cost of the **project is ₹199.24 crore**, with **100% Central Financial Assistance.**
- **Scheme type:** The project is **funded under the Pradhan Mantri Matsya Sampada Yojana (PMMSY).**
- **Objective:** The project aims to **strengthen fisheries infrastructure**, promote sustainable fishing, enhance safety, and improve income and livelihoods of stakeholders.
- **Key features**
  - **Harbour facilities:** Safe landing and berthing arrangements for fishing vessels.
  - **Blue Port Initiative:** It is being developed in alignment with the **Blue Port Initiative**, focusing on sustainable and technologically advanced maritime infrastructure.
  - **Technological Integration:** The harbour will feature **IoT-enabled systems**, digital traceability, and energy-efficient infrastructure to modernize fish handling and operations.
  - **Capacity:** It will provide safe landing and berthing for **430 fishing vessels** and is designed to handle an annual fish landing of **9,900 tonnes**.

## Gita Mittal Committee

**News:** The Supreme Court extended the tenure of the all-women Gita Mittal Committee monitoring rehabilitation work in violence-affected Manipur by six months.

**About Gita Mittal Committee**

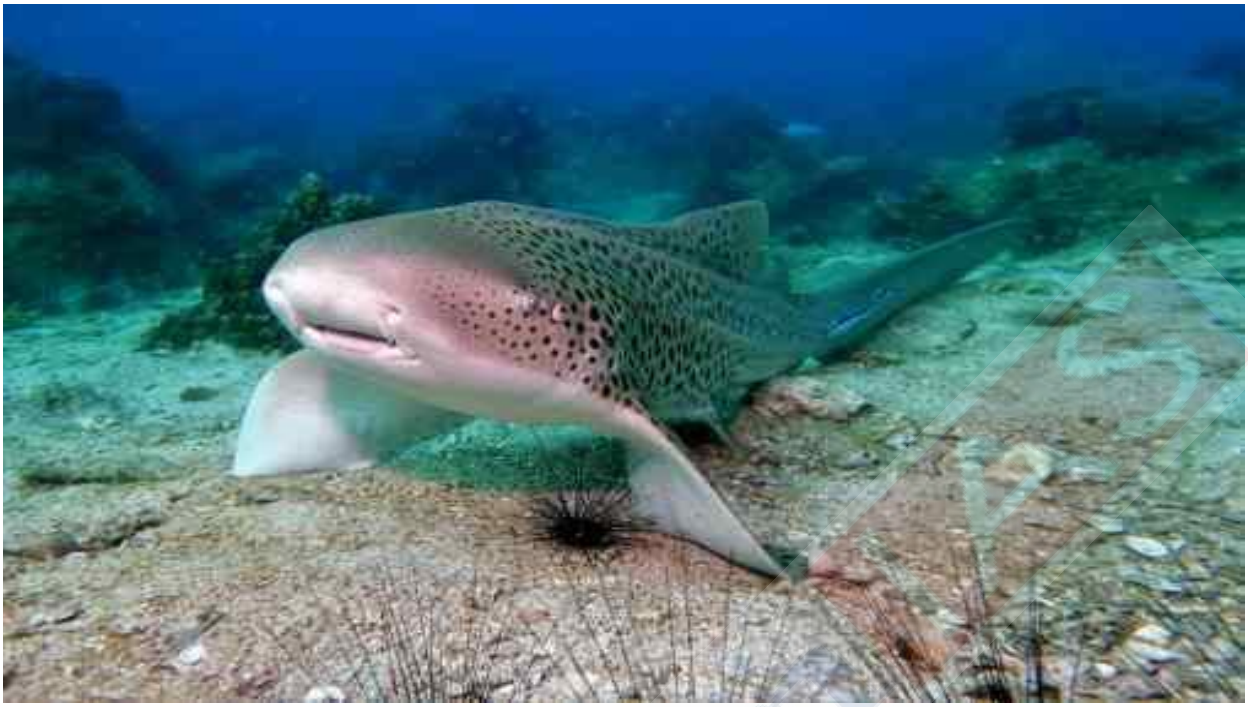

Source – Live Law

- The Gita Mittal Committee is an **all-women committee of three former High Court judges** formed to **support rehabilitation in Manipur**.
- **Appointed by:** The committee was appointed by the **Supreme Court in August 2023.**
- **Role:** The committee was formed to **provide a "healing touch"** by **supervising and monitoring relief, rehabilitation, and restoration work in** violence-affected Manipur.
- It **does not conduct criminal investigations**, as investigation-related responsibilities are handled **separately by the CBI, SITs, and police officers under Supreme Court monitoring.**
- **The committee consists of three retired High Court judges:**
    - **Justice Gita Mittal (Chairperson):** Former Chief Justice of the Jammu & Kashmir High Court.
    - **Justice Shalini Phansalkar Joshi:** Retired judge of the Bombay High Court.
    - **Justice Asha Menon:** Retired judge of the Delhi High Court.
- **Its key responsibilities include**
    - **Relief and Rehabilitation:** Monitoring the conditions of relief camps and ensuring the supply of essential items.
    - **Documentation:** Overseeing the reconstruction of identity documents (like Aadhaar cards) lost by displaced persons.
    - **Compensation:** Ensuring the disbursement of compensation to victims of sexual assault and violence.
    - **Restoration:** Monitoring the restoration of homes and religious places of worship damaged during the conflict.

## Indo-Pacific Leopard Shark

**News:** Conservationists have launched Thailand's first rewilding project by releasing a young Indo-Pacific leopard shark into Maiton Island.

**About Indo-Pacific Leopard Shark**



Source: Seattleaquarium

- Indo-Pacific leopard sharks **are slow-swimming reef sharks.**
- **Scientific name:** Stegostoma tigrinum
- **Habitat:** They live in **coastal waters** and can be found from the **intertidal zone to depths of about 62 metres.**
    - They **prefer water temperatures** that are **warmer than 22 degrees Celsius.**
- **Distribution:** Leopard sharks live in **tropical waters of the Indo-Pacific region.**
- **Lifespan:** 18 to 24 years in wild
- **Diet:** Leopard sharks mainly **feed on molluscs, crustaceans, and small bony fish.**
- **Physical Characterstics:**
    - It grows up to **2.5 metres** in length.
    - Appearance: It has **dark spots on a pale body**, giving a "leopard" pattern and also features **five raised ridges** along its back.
    - Juveniles are **dark with white stripes**, which is why they are sometimes called **zebra sharks**.
    - They use their stripes as **camouflage** to avoid predators.
    - The **shark's body pattern changes as it grows older.**
    - They have whisker-like sensory organs called barbels on their snout**. Barbels help them locate and taste prey in the dark.**
    - They **use strong teeth to crush the shells** of mollusks and crustaceans.
- **Nature:** Indo-Pacific leopard sharks are **nocturnal** and **are active mainly at night**.
- **Threat: Overfishing and habitat loss** are the main causes of decline.
- **Conservation:** The species is **listed as endangered by the IUCN.**

# Arab League

**News:** External Affairs Minister (EAM) met Secretary General of the League of Arab States to discuss strengthening cooperation between India and the Arab League across a wide range of sectors.

**About Arab League**


Source – Research Gate

| Aspects | Description |
|---|---|
| **About** | • The **Arab League** is also known as the **League of Arab States (LAS).**<br>• It is a **regional organization** comprising **Arab states in the Middle East and parts of Africa.**<br>• It was **established** in **Cairo on March 22, 1945**, in **response** to **concerns about postwar colonial divisions and strong opposition to the establishment of a Jewish state on Palestinian territory**. |
| **Headquarter** | It's headquarters is located at **Cairo, Egypt**. |
| **Official Language** | It's official Language is **Arabic**. |
| **Purpose** | • Its primary **aim** is to **promote arab interests**.<br>• The **aim** is to:<br>  ○ develop both national and international strategies<br>  ○ identify priorities for crime prevention. |
| **Objective** | Its main **objective** includes:<br>• **Strengthen and coordinate the political, cultural, economic, and social programs** of member states.<br>• **Resolve disputes** among member states or between them and third parties.<br>• **Provide military support** to defend member states, an agreement reached in 1950. |

| | |
|---|---|
| **Membership** | • It has total **22 members**.<br>• **Founding members:** Egypt, Syria, Lebanon, Iraq, Jordan, Saudi Arabia, and Yemen<br>• **Other members** include Libya, Sudan, Tunisia, Morocco, Kuwait, Algeria, Bahrain, Oman, Qatar, the United Arab Emirates, Mauritania, Somalia, the Palestine Liberation Organization, Djibouti, and Comoros.<br>• **Observer Status:** It is conferred to Brazil, Eritrea, **India**, and Venezuela. |
| **Council** | • **Structure:** The **highest body** of the League is the **Council**, consisting of **representatives from member states,** usually **foreign ministers**, their representatives, or permanent delegates.<br>• **Decision-Making:** Decisions are made on a **majority basis.**<br>• **Voting and Compliance:** Each member has **one vote**.<br>  ○ **Decisions** are **binding only on those states that voted for them**, with **no enforcement mechanism** for compliance. |

## PAIMANA Portal

**News:** The Ministry of Statistics and Programme Implementation has operationalized the PAIMANA portal to monitor central sector infrastructure projects and replace OCMS-2006.

**About PAIMANA Portal**


Source – MoSPI

- PAIMANA **(Project Assessment, Infrastructure Monitoring & Analytics for Nation-building)** is a **web-based portal** created for mandated **monitoring of Central Sector Infrastructure Projects** worth **₹150 crore and above.**
- **Operationalized by:** The portal has been operationalised by the Ministry of Statistics and Programme Implementation (**MoSPI**).
- It will **replace** the erstwhile **OCMS-2006 (Online Computerized Monitoring system).**
- **Key Features**
  - **Integration with IPMP:** PAIMANA is integrated with DPIIT's Integrated Project Monitoring Portal through APIs to enable automatic data flow.
  - **One data, one entry principle:** The portal follows a **single data entry system**, which reduces duplication and improves consistency.

- **Reduced manual data entry:** Around **60 % of projects are updated** automatically, lowering manual reporting work.
- **Centralized national repository:** The portal functions as **a single national database of infrastructure projects.**
- **Advanced analytical tools:** It provides **web-generated analytical reports** to support better monitoring and evaluation.
- **Data quality and decision support:** Features such as **dashboards**, reporting modules, role-based access, and review cases help identify data gaps and improve informed decision-making.

## Menstrual Hygiene as a Fundamental Right

**News:** The Supreme Court delivered a landmark judgment while hearing a case on nationwide implementation of the Centre's menstrual hygiene policy for school-going girls.

**About Menstrual Hygiene as a Fundamental Right**


Source – HT

- The Supreme Court held that the **right to menstrual hygiene and access to related products** is part of the **right to life under Article 21.**
- **Case Background:** The judgment was delivered by a Bench of **Justices J. B. Pardiwala and R. Mahadevan** during a hearing **related to menstrual hygiene in schools.**
- **Supreme Court Observation**
  - **Article 21 (Dignity and Privacy):** The Court ruled that **dignity cannot remain an abstract idea** and must include conditions that prevent humiliation, exclusion, and avoidable suffering.
    - **Forcing girls to choose between education and menstruation violates the right to live with dignity.**
  - **Article 14 (Substantive Equality):** The SC observed that **equal treatment without addressing existing disadvantages** perpetuates inequality.

- The absence of menstrual hygiene facilities converts a biological reality into structural exclusion.

- **Article 21A (Right to Education):** Lack of menstrual hygiene facilities acts as an **infrastructural barrier to education**.
  - Removing this barrier is necessary to make education truly free, compulsory, and accessible.

## World Nuclear Outlook Report 2025-26

**News:** The World Nuclear Association released the World Nuclear Outlook Report highlighting the possibility of global nuclear power capacity reaching 1,446 GWe by 2050.

**About World Nuclear Outlook Report 2025-26**

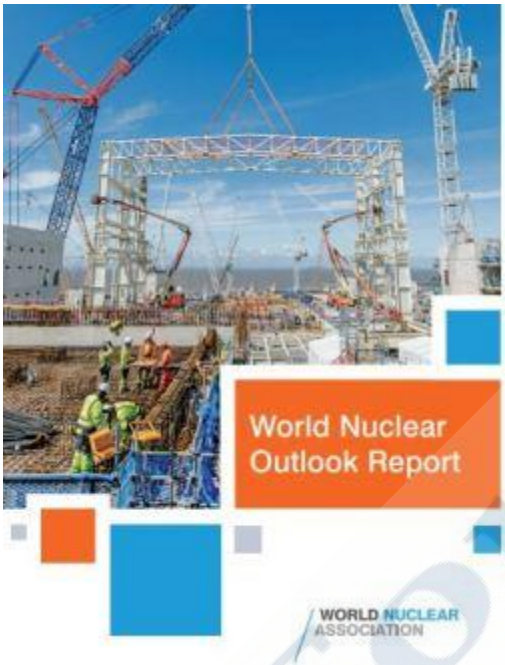



*Figure 46. Source – World Nuclear Association*

- It assesses future global nuclear power capacity based on existing reactors, planned projects, and government targets.
- **Published by:** It is published by **World Nuclear Association.**
- **Key Highlights**
  - **Global Capacity Projection**: Global nuclear capacity **could reach 1,446 GWe by 2050,** exceeding the 1,200 GWe target established under the **Declaration to Triple Nuclear Energy**. This declaration was **announced at the COP28 meeting in Dubai in 2023**.
  - **Role of 5 Major Countries**: **China, France, India, Russia, and the United States** together may account for **nearly 980 GWe by 2050.**
  - **Reactor Lifetime Extension:** Extending reactor lifetimes to 60–80 years is highlighted as a cost-effective low-carbon electricity option.
  - **Construction Challenges**: Annual grid connections must rise to 65.3 GWe per year during 2046–2050, nearly double the historic peak.

- **India-Specific Outlook**
  - India is among the **five leading countries** anchoring global nuclear capacity by 2050.
  - The report expects **continued expansion of India's nuclear fleet**.
  - South Asia's outlook reflects **ongoing nuclear build-out in countries with existing programmes**, including India**.**
- **Recommendations of the Report**
  - Governments should **integrate nuclear power** firmly into long-term **decarbonisation and energy security plans.**
  - Support is **needed for reactor lifetime extensions** and **faster licensing and financing frameworks.**
  - Financial institutions are urged to **adopt technology-neutral** lending and ESG approaches.
  - Industry should **expand manufacturing capacity** and prepare for large-scale deployment after 2035.

# Sampoornata Abhiyan 2.0

**News:** Recently, NITI Aayog has launched Sampoornata Abhiyan 2.0, a 3-month national campaign to saturate key health, nutrition, education and sanitation indicators in Aspirational Districts and Blocks.

**About Sampoornata Abhiyan 2.0**


Source: NITI Aayog

- **Launched by:** NITI Aayog on 28 January 2026.
    - NITI Aayog will work **in collaboration with the relevant Central Ministries and Departments,** as well as **the Governments of States and Union Territories.**
- **Duration:** The campaign will run for **three months (28 January to 14 April 2026)**.
- **Aims:** It aims to achieve **saturation of critical development indicators** in **112 Aspirational Districts** and **513 Aspirational Blocks**.
- **Key Performance Indicators (KPIs):** The programme targets **6 Key Performance Indicators (KPIs)** in Aspirational Blocks and **5 KPIs** in Aspirational Districts.
    - **Focus:** The KPIs focuses on improving **health, nutrition, sanitation, education, and livestock welfare** indicators.
- **Districts and Blocks are required** to prepare **3-month action plans** for achieving saturation.
- Progress will be **reviewed and monitored monthly**.
- **Awareness campaigns and behaviour change initiatives** will be conducted to increase community participation.
- District-level officers will undertake **regular field visits** for monitoring and support.

**About Aspirational Districts and Blocks Programme**

- **Aspirational Districts Programme (ADP):** It was launched in **2018** to accelerate development in **112 underdeveloped and remote districts**.
    - It focuses on improving outcomes in **health and nutrition, education, agriculture & Water resources, financial inclusion & Skill development, and Infrastructure**
    - Progress is measured on **49 Indicators of development.**
- The **Aspirational Blocks Programme (ABP):** It was launched in **2023** and expanded to **513 blocks by 2025**.
    - It focuses on **health and nutrition, education, agriculture & allied services, basic infrastructure and social development.**
    - Progress is measured on **40 Indicators of development.**

**Read more:** Sampoornata Abhiyan