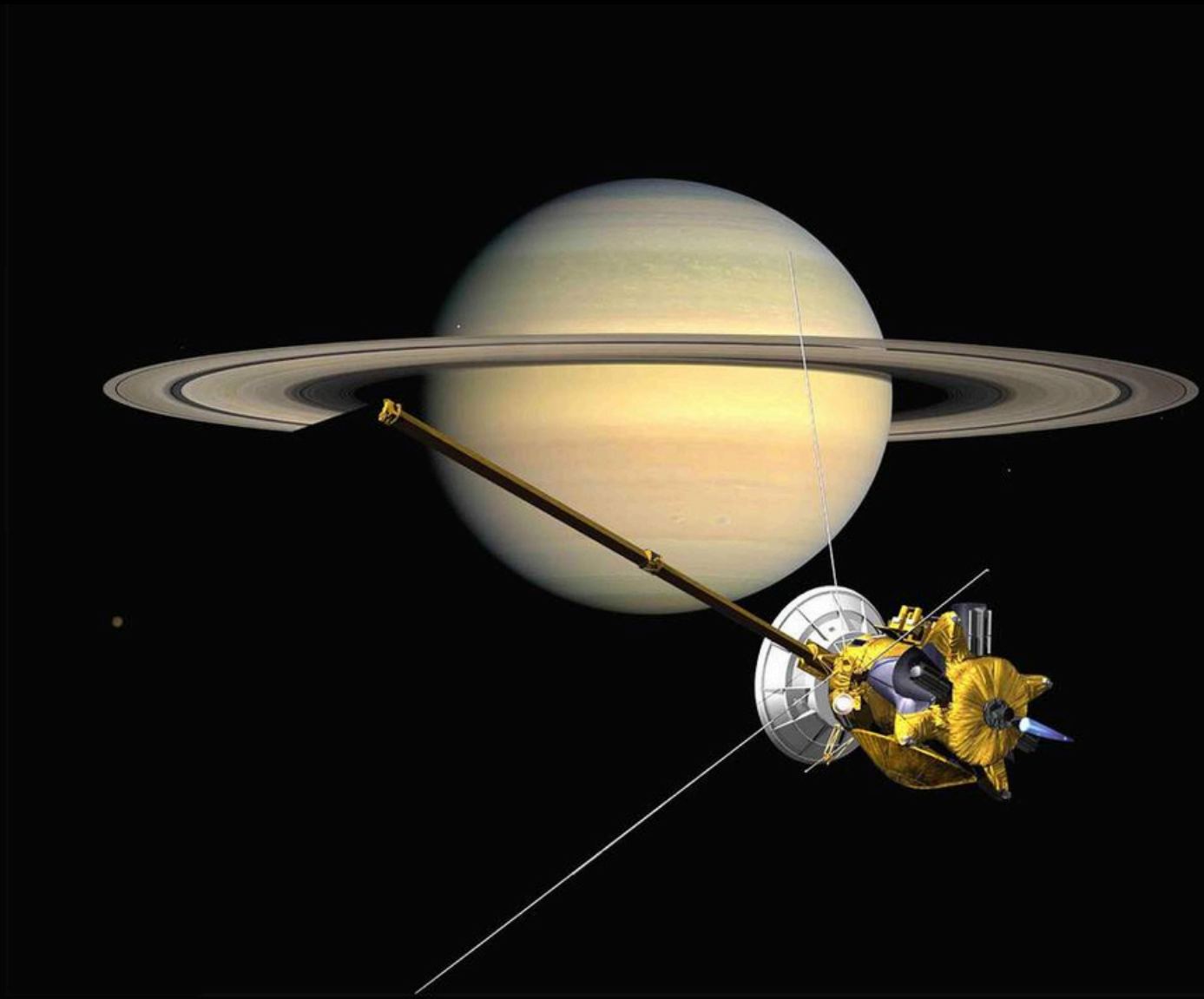
# Current PULSE



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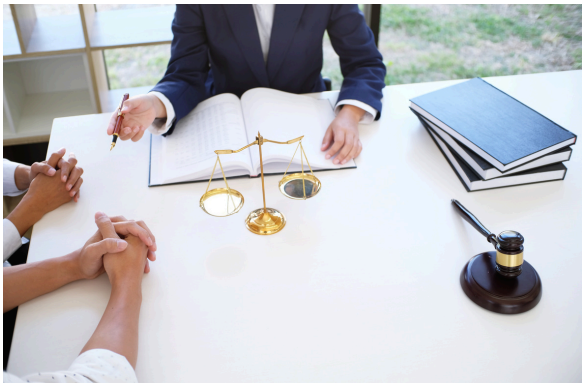
# Mutual Legal Assistance Treaty

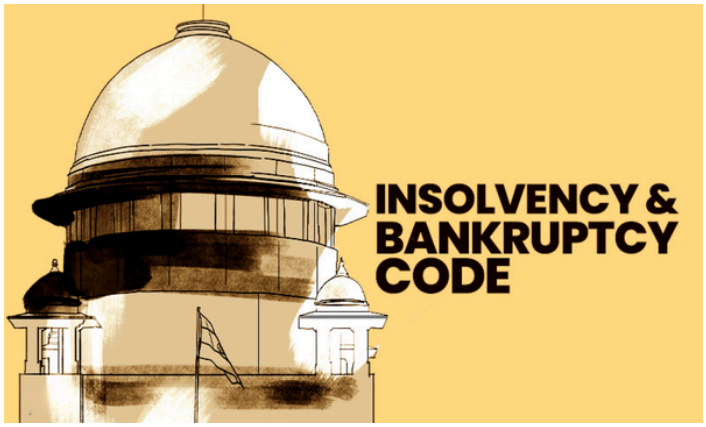


**Recently, the central government invoked the Mutual Legal Assistance Treaty with Singapore over the singer's death.**

**About Mutual Legal Assistance Treaty**

- It is a mechanism whereby countries cooperate with one another in order to provide and obtain formal assistance in prevention, suppression, investigation and prosecution of crime.
- It aims to ensure that the criminals do not escape or sabotage the due process of law for want of evidence available in different countries.
- India provides mutual legal assistance in criminal matters through Bilateral Treaties/Agreements, Multilateral Treaties/Agreements or International Conventions or on the basis of assurance of reciprocity.
- The Mutual Legal Assistance Treaties (MLATs) in criminal matters are the bilateral treaties entered between the countries for providing international cooperation and assistance.
- India has entered into Mutual Legal Assistance Treaties with more than 45 countries.
- Nodal Ministry: Ministry of Home Affairs (MHA).
- Common forms of assistance provided to or sought by India are as follows:
- Identifying and locating persons and objects;
- Taking evidence and obtaining statements; assisting in the availability of person in custody or others to give evidence or assist in investigations or appear as a witness;
- Effecting service of judicial documents;
- Executing searches and seizures;
- Providing information, documents, records and other evidentiary items;
- Taking measures to identify, locate, attach, freeze, restrain, confiscate or forfeit the proceeds and [7]instrumentalities of crime;

# Clean Slate Doctrine under the Insolvency and Bankruptcy Code




**The Delhi High Court recently confirmed the "clean slate" doctrine under the Insolvency and Bankruptcy Code (IBC) by holding that a successful resolution applicant cannot be burdened with the criminal liabilities of a corporate debtor's past management.**

**About Clean Slate Doctrine under the Insolvency and Bankruptcy Code**

- The Clean Slate Doctrine is a key legal principle embedded in the Insolvency and Bankruptcy Code, 2016 ("IBC"), which plays a pivotal role in the corporate insolvency process in India.
- The doctrine suggests that once a company successfully undergoes the insolvency resolution process and is taken over by a new buyer, the new owner should not be held accountable for any of the company's pre-existing debts, penalties, or liabilities.
- This principle is designed to give the company a fresh start, essentially, a "clean slate" free from the baggage of its prior financial troubles.
- The Clean Slate Doctrine has been upheld in several landmark rulings by India's Supreme Court (SC), reaffirming its crucial role in the IBC framework.
- In the Essar Steel India case, the SC emphasized that one of the primary objectives of the IBC is to streamline insolvency procedures in India and bring all claims under a unified system.
- The SC ruled that once a resolution plan is approved by the National Company Law Tribunal (NCLT), any and all previous liabilities, including debts and penalties, are extinguished.
- This means no party can initiate or continue any legal proceedings related to a claim that is not included in the approved resolution plan.
- In the Edelweiss Asset Reconstruction case, the SC held that government dues, such as taxes and duties, are extinguished if they are not part of the resolution plan.
- In the Surya Exim case, the Gujarat High Court, following the SC rulings, held that any tax demands issued after the NCLT's approval of a resolution plan should be cancelled, reinforcing the idea that claims not included in the approved plan are no longer valid.

# Surrogacy (Regulation) Act, 2021


**The Supreme Court recently ruled that the age limits under the Surrogacy (Regulation) Act, 2021, do not apply to couples who had frozen their embryos and initiated the surrogacy process before the law came into force on January 25, 2022.**

**About Surrogacy (Regulation) Act, 2021**

- In India, surrogacy is regulated by the Surrogacy Regulation Act, 2021.
- This act prohibits commercial surrogacy.
- The object of this Act is to prevent the exploitation of the women who may be lured into the arrangements of the commercial surrogacy.
- Under the provisions of the Act altruistic surrogacy is permitted whereby the surrogate mother is required to carry the child to help another individual or couple without receiving the monetary benefit other than medical and insurance expenses.
- It provides for the prohibition and regulation of surrogacy clinics. It states that "No Surrogacy Clinic shall conduct or associate with or assist in the performance of the activities relating to the surrogacy and surrogacy procedures unless such clinic has been registered under this Act".
- It prohibits any person or entity, including the surrogacy clinic, paediatrician, gynaecologist, embryologist, or even the registered medical practitioner to engage in any form of the commercial surrogacy practices.
- It further prohibits the abortion during the period of the surrogacy without the written consent of the surrogate mother and the registered medical practitioner, including the gynaecologist, paediatrician, and embryologist.
- Surrogacy procedures shall not be performed or initiated unless the certificate of essentiality is obtained by the intended couple.
- It provides that a surrogate must be a woman who has been married and has at least one child of her own.
- She must be between the age of 25 -35 years on the date of implantation.
- The surrogate mother should refrain from providing her own gametes and from acting as a surrogate mother more than once.
- It states that the intended couple must be married.
- The women must be between the age of 23-50 years, and the man must be between the age of 26-55 years on the date of the certification.
- Intended partners must have been married for the period of 5 years and must be nationals of India.
- Further it states that the intended couple should not have any surviving children, whether biologically or through adoption or from any earlier surrogacy procedures.
- "A child born out of the surrogacy procedure shall be deemed to be the biological child of the intended couple and shall be entitled to all the rights and privileges which are available to the natural child.

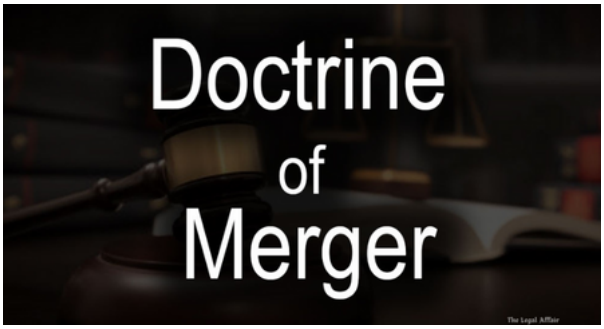
# Public Trust Doctrine


**The Supreme Court recently held that the doctrine of public trust is not confined only to natural waterbodies such as rivers, lakes, and wetlands but also extends to man-made or artificially created waterbodies that serve ecological or environmental purposes.**

**About Public Trust Doctrine**

- It is a legal principle establishing that certain natural and cultural resources are preserved for public use.
- Rooted in Roman law and developed through English common law, this doctrine encompasses various public assets such as tidal waters, lakes, rivers, wetlands, and ecosystems.
- It rests on the principle that certain resources have such great importance to the people as a whole that it would be wholly unjustified to make them a subject of private ownership.
- The public is considered the owner of the resources, and the government protects and maintains these resources for the public's use.
- The doctrine enjoins upon the government to safeguard the resources for the enjoyment of the final public instead of to allow their use for personal possession or industrial functions.
- Three types of restrictions on governmental authority are often thought to be imposed by the public trust:
- the property subject to the trust must not only be used for a public purpose, but it must be held available for use by the general public;
- the property may not be sold, even for a fair cash equivalent;
- the property must be maintained for particular types of uses.

# Doctrine of Merger




**In a judgment clarifying the limits of the doctrine of merger, the Supreme Court of India recently observed that the doctrine of merger is not a doctrine of rigid and universal application.**

**About Doctrine of Merger**

- It is a common law doctrine founded on the principle of maintenance of decorum and propriety in the functioning of Courts and Tribunals and preserving the sanctity of the justice delivery system.
- The underlying logic being that there cannot be more than one decree or operative order governing the same subject matter at a given point of time.
- It provides that when an appellate court passes an order, the order passed by the lower court is merged with that order.
- The doctrine is not recognized statutorily but is a statement of judicial propriety and seeks to instill discipline in the functioning of subordinate adjudicating authorities, whether judicial, quasi-judicial, or administrative.
- The applicability of the doctrine of merger entails the existence of a decision of a subordinate court/forum against which a right of appeal/revision before a superior forum/authority exists, which has been exercised and which has either modified, reversed or affirmed the decision of the subordinate authority.
- The consequence of such an act would be that the decision of the subordinate authority shall merge with that of the superior forum, which only shall sustain, be operative and capable of being enforced.
- The essence of the doctrine of merger is that it is only the decisions of the appellate, revisional, or higher authority that subsist, and the order under challenge ceases to have an independent existence.
- The doctrine solves the issue of which order must be enforced and given importance if there are multiple orders passed by both subordinate and superior courts on a single issue.
- It is not a doctrine of universal or unlimited application. It will depend on the nature of the jurisdiction exercised by the superior forum and the content or subject matter of the challenge.

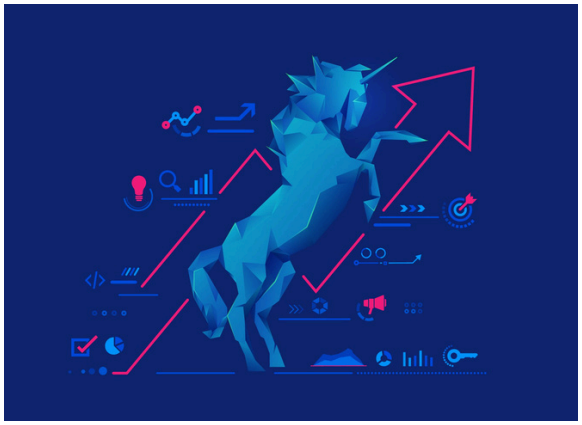
# Payments Regulatory Board


**Recently, the Reserve Bank of India (RBI) constituted a six-member Payments Regulatory Board (PRB).**

**About Payments Regulatory Board**

- It derives its authority from the Payment and Settlement Systems Act, 2007.
- It replaces the Board for Regulation and Supervision of Payment and Settlement Systems (BPSS), a committee of the RBI's Central Board.
- Composition of Payments Regulatory Board
- Ex officio Chairperson: RBI Governor
- Ex officio members: Deputy Governor and the Executive Director in charge of Payment and Settlement Systems.
- Government nominees: Central government nominates 3 members to the board.
- The principal legal adviser of the RBI is a permanent invitee to the meetings of the board.
- The PRB will be supported by the RBI's Department of Payment and Settlement Systems (DPSS), which will report directly to the PRB.
- Decision Making: Decisions by a majority of members present and voting. In the event of a tie, the chairperson — or in his absence, the deputy governor will have a second or casting vote.
- The Board is required to meet at least twice a year.
- Function of PRB: It is responsible for the regulation and supervision of all payment systems including electronic and non-electronic, domestic and cross-border systems.

# Unicorn Company



**Startups are emerging as the new driving force of India's defence innovation ecosystem, said Defence Minister recently, while calling upon young entrepreneurs to set new benchmarks and create India's first defence unicorn.**

**About Unicorn Company**

- A unicorn company is a privately owned start-up that has been valued at over $1 billion.
- It is commonly used in the venture capital industry. The term was first popularized by venture capitalist Aileen Lee in 2013, when she referred to the 39 startups that had a valuation of over $1 billion as unicorns.
- Key Characteristics of a Unicorn Startup:
- Valuation: A billion-dollar valuation or more.
- Private Ownership: Not publicly traded on a stock market.
- High Growth Potential: Demonstrates rapid growth and innovation.
- Disruptive Technology: Often introduces innovative products or services that disrupt existing industries.
- Attracts Significant Investment: Secures substantial funding from venture capitalists and other investors.
- The valuation of unicorns is not expressly linked to their current financial performance, but largely based on their growth potential as perceived by investors and venture capitalists who have taken part in various funding rounds.
- Some unicorns choose to go public by launching an initial public offering (IPO); some opt to remain private using their funding rounds to avoid going public; and still others end up getting acquired by bigger companies.
- As of July 2025, there are over 1,200 unicorns around the world.

**What are Gazelles and Cheetahs in the Startup Ecosystem?**

- Gazelle is a startup founded after 2000 with the potential to go unicorn in two years, while "cheetah" may go unicorn in the next four years.
- Gazelles have an estimated valuation ranging from $500 million to $1 billion, and the valuation of cheetahs ranges from $200 million to $500 million.

# Foreign Currency Settlement System

**Recently, the union Finance Minister launched a Foreign Currency Settlement System (FCSS) at the International Financial Services Centre (IFSC) in Gujarat International Finance Tec-City (GIFT City).**

**About Foreign Currency Settlement System**

- It is established under a comprehensive legal and regulatory framework of the Payment and Settlement Systems Act, 2007.
- It is authorised by International Financial Services Centres Authority (IFSCA).
- Key Features
- It enables foreign currency transactions between IFSC Banking Units (IBUs) to be settled locally instead of routing through the traditional correspondent banking route.
- It provides a structured framework for the settlement of foreign currency transactions, enabling market participants to process cross-border payments with greater speed, reliability, and legal certainty.
- Initially, the system will support US dollar transactions, with scope to add other foreign currencies over time.
- It is operated by the CCIL IFSC Limited (CCIL IFSC), a subsidiary of Clearing Corporation of India Limited.
- Currently, foreign currency transactions in GIFT IFSC are processed via correspondent banking routes i.e through multiple Nostro account relationships (accounts held with foreign banks) and intermediaries to route funds.
- That chain of relay can lead to settlement lags of 36 to 48 hours.

**What is the International Financial Services Centres Authority?**

- It is a statutory authority established under the International Financial Services Centres Authority Act, 2019.
- The IFSCA is a unified authority for the development and regulation of financial products, financial services, and financial institutions in the International Financial Services Centre (IFSC) in India.
- The IFSCA aims to develop a strong global connection and focus on the needs of the Indian economy as well as to serve as an international financial platform for the entire region.
- Headquarter: GIFT City, Gandhinagar, in Gujarat

# Income Tax Appellate Tribunal

**Recently, the Chief Justice of India praised the Income Tax Appellate Tribunal (ITAT) for its significant contribution to the justice delivery system which marked its 84th anniversary.**

आयकर अपीलीय अधिकरण
INCOME TAX APPELLATE TRIBUNAL

**\About Income Tax Appellate Tribunal**

- It is a quasi-judicial institution set up in January, 1941 and specializes in dealing with appeals under the Direct Taxes Acts.
- It was started in 1941 with six Members constituting three Benches – one each at Delhi, Kolkata (Calcutta), and Mumbai (Bombay).
- Presently ITAT has 63 Benches at 27 different cities, covering almost all the cities having a seat of the High Court.
- Nodal Ministry: It functions under the Ministry of Law and Justice.

**Composition of Income Tax Appellate Tribunal**

- The President of the ITAT constitutes a bench from among the members of the ITAT.
- Each bench has an accountant member and a judicial member.
- In some cases, a special bench with three or more members may be constituted to dispose of income tax appeals.

**Functions of Income Tax Appellate Tribunal**

- It adjudicates appeals made under the Income Tax Act of 1961.
- It hears appeals concerning orders passed by the income-tax authorities.
- ITAT serves as the final fact-finding body in tax disputes, offering both taxpayers and the income tax authorities a convenient platform to resolve disputes.
- It is the second forum to hear income-tax appeals after the Commissioner of Income-tax (Appeals)
- ITAT functions under the regional High Court's jurisdiction and must adhere to the rules of the same.
- ITAT is subordinate to both the region's High Court and the Indian Supreme Court.

**Who can File an Appeal in ITAT?**

- A tax appeal can be filed by a taxpayer who does not agree with the assessment order or any other order, passed by an income-tax authority.
- An appeal before the ITAT is generally filed by the taxpayer to contest any order passed by the Commissioner of Income-tax (Appeals).
- Similarly, an income-tax department can also file an appeal against any order passed by the Commissioner of Income-tax (Appeals) before the ITAT.
- The orders passed by the ITAT are final. An appeal lies to the High Court only if a substantial question of law arises for determination.

# Financiaxl Action Task Force

**The ongoing Financial Action Task Force (FATF) meetings in Paris are expected to deliberate on state sponsorship as a means to fund and support terrorism, including the financing of banned outfits and their proxies operating in Pakistan.**

**About Financial Action Task Force**

- It is an independent intergovernmental body that develops and promotes policies to protect the global financial system against money laundering and terrorist financing.
- The FATF Recommendations are recognised as the global anti-money laundering (AML) and counter-terrorist financing (CFT) standard.
- Origin:
  - It was established in 1989 during the G7 Summit in Paris in response to a growing concern about money laundering.
  - In 2001, its mandate expanded to include terrorism financing.
  - Headquarters: Paris, France.
- Members:
  - FATF members include 39 countries, including the United States, India, China, Saudi Arabia, Britain, Germany, France, and the EU as such.
  - India became a member of FATF in 2010.
  - In addition, more than 180 countries worldwide are affiliated with the FATF through a network of FATF-style regional bodies (FSRBs).
- The FATF researches how money is laundered and terrorism is funded, promotes global standards to mitigate the risks, and assesses whether countries are taking effective action.
- FATF regularly publishes reports that raise awareness about the latest money laundering, terrorist financing, and proliferation financing techniques.
- Once a member, a country or organization must endorse and support the most recent FATF recommendations and commit to being evaluated by (and evaluating) other members.
- The FATF holds countries to account that do not comply with the FATF Standards.
- If a country repeatedly fails to implement FATF Standards, then it can be placed under the grey and black lists.
- What are FATF 'grey list' and 'blacklist'?
  - Black List: Countries known as Non-Cooperative Countries or Territories (NCCTs) are put on the blacklist. These countries support terror funding and money laundering activities. The FATF revises the blacklist regularly, adding or deleting entries.
  - Grey List: Countries that are considered a safe haven for supporting terror funding and money laundering are put on the FATF grey list. This inclusion serves as a warning to the country that it may enter the blacklist.
  - Three countries-North Korea, Iran, and Myanmar, are currently on FATF's blacklist.
- Consequences of being on the FATF blacklist:
  - No financial aid is given to them by the International Monetary Fund (IMF), the World Bank, the Asian Development Bank (ADB), and the European Union (EU).
  - They also face a number of international economic and financial restrictions and sanctions.

# Payment Aggregator

**The ongoing Financial Action Task Force (FATF) meetings in Paris are expected to deliberate on state sponsorship as a means to fund and support terrorism, including the financing of banned outfits and their proxies operating in Pakistan.**


**About Payment Aggregator (PA):**

- A PA (also known as a merchant aggregator) is a third-party service provider that allows merchants to accept payments from customers by integrating it into their websites or apps.
- PAs enable their clients to accept various payment methods such as debit cards, credit cards, cardless EMIs, UPI, bank transfers, e-wallets, and e-mandates.
- PA provides a stack of multiple payment methods to merchants so that their customers can payusing their preferred mode of payment.
- Also, a payment aggregator does fund settlement, i.e., it moves the money from banks and other issuing entities to the merchants.
- Similarly, they also enable disbursing payments to various stakeholders, such as partners, employees, suppliers, and authorities.
- It allows merchants to accept bank transfers without setting up a bank-based merchant account. It means a merchant need not have a merchant account directly with the bank.
- A PA in India is incorporated under the Companies Act 2013.
- A PA can be a bank or a non-bank entity.
- Since a PA handles funds, it requires a license from the RBI.
- Only non-bank PAs require unique authorization from RBI as 'handling funds' is considered a part of the normal banking relationships for bank PAs.
- Examples: Amazon (Pay) India, Google India, Razorpay, Pine Labs, etc.

**What is a Payment Gateway?**

- It is a software service that connects your bank account to the platform where you need to transfer your money.
- It authorizes you to conduct an online transaction through different payment modes like net banking, credit card, debit card, UPI, or other online wallets.
- A Payment gateway plays the role of a third party that securely transfers your money from the bank account to the merchant's payment portal.

**Payment Aggregator v/s Payment Gateway:**

- A payment gateway is a software that allows online transactions to take place, while a payment aggregator is the inclusion of all these payment gateways.
- While a payment gateway is an intermediary, the payment aggregator is the interface where the payment gateway processes the transactions.

***Most payment aggregators own payment gateways to offer various exclusive services to their merchant customers.***

# SWAMIH Fund

**The Reserve Bank of India will exempt a government-backed SWAMIH fund from its tightened rules for alternate investment funds (AIF).**

**About SWAMIH Fund**

- The Special Window for Affordable and Mid-Income Housing (SWAMIH) Investment Fund I was set up in 2019 to rescue stressed real estate projects by providing debt financing for stalled housing projects.
- The Fund is sponsored by the Ministry of Finance, Government of India.
- Fund Managed by: It is managed by SBICAP Ventures Ltd
- It is a Category-II AIF (Alternate Investment Fund) debt fund registered with the Securities and Exchange Board of India.
- The SWAMIH Fund is considered the lender of last resort for distressed projects for established developers with troubled projects.

**Eligibility Criteria for Funding**

- Real estate projects must be registered under the Real Estate (Regulation and Development) Act (RERA) 2016.
- The project must be classified as a non-performing asset (NPA) or be under insolvency proceedings.
- The project should have been declared as a “stalled” or “delayed” project by a competent authority.
- The fund is available only for projects that fall under the affordable and mid-income housing categories.

# Key Facts about Philippines


**Recently, an offshore earthquake of magnitude 6.9 struck Cebu province in central Philippines.**

**About Philippines**

- Location: It is an island country of Southeast Asia in the western Pacific Ocean.
- It shares maritime borders with Vietnam to the west, Taiwan to the north, Palau to the east, and Malaysia and Indonesia to the south.
- Water Bodies: It is surrounded by the South China (north and west); Philippine Sea (east); Celebes Sea (south); and by the Sulu Sea to the (southwest).
- Highest Point: Mount Apo.
- Major Rivers: Cagayan River (Philippines' longest river), Mindanao, Agusan etc.
- Volcano: Mayon Volcano, one of the most active in the country.
- Climate: Tropical and monsoonal.
- Major Lake: Laguna de Bay
- Natural resources: Timber, petroleum, nickel, cobalt, silver, gold, salt, copper
- The Philippines is the third-largest producer of geothermal energy globally, after the United States and Indonesia.
- World Heritage Site: The Puerto-Princesa Subterranean River National Park site in the Philippines is inscribed on the World Heritage List in 1999.
- Capital city: Manila

# Wassenaar Arrangement

**The Wassenaar Arrangement faces challenges in adapting to cloud technology, requiring updates to control lists and enforcement mechanisms.**

**About Wassenaar Arrangement**

- It is a multilateral "export control regime" for conventional arms and dual-use goods and technologies.
- The body came into being in 1996 to succeed the Cold War-era Coordinating Committee for Multilateral Export Controls.
- The name comes from Wassenaar, a suburb of the Hague, Netherlands, where the agreement to start such a multi-lateral cooperation was reached in 1995.
- Purpose: To promote transparency and greater responsibilities for transfers of conventional arms and dual-use goods, as well as technologies, to prevent destabilizing actions.
- Member countries: 42 members.
- India joined the Wassenaar Arrangement in 2017 and incorporated its lists into its Special Chemicals, Organisms, Materials, Equipment, and Technologies framework.
- Headquarters: Vienna, Austria.

**How does Wassenaar Arrangement work?**

- The group works by regularly exchanging information in respect of technology, both conventional and nuclear-capable, that is sold to, or denied to countries outside the grouping.
- This is done through maintenance and updating of detailed lists of chemicals, technologies, processes and products that are considered militarily significant.
- Through this exchange of information, the group aims at controlling the movement of technology, material or components to countries or entities which undermine international security and stability.

# International Social Security Association

**Recently, the Union Labour Ministry has highlighted the expansion of social protection in the country from 19% in 2015 to over 64% in 2025 at a conclave of the International Social Security Association (ISSA) held in Kuala Lumpur.**

**About International Social Security Association**

- It was founded in 1927, under the auspices of the International Labour Organization (ILO).
- It is the principal international organisation for social security organisations, governments and departments of social security.
- It promotes excellence in social security administration through professional guidelines, expert knowledge, services and support to enable its members to develop dynamic social security systems.
- India is a member country of this organization
- Headquarters: Geneva, Switzerland

**Governance of International Social Security Association**

- General Assembly: It is actually the constituent assembly of the Association and is the highest statutory body. It consists of all members of the ISSA who are directly represented. It meets every three years.
- Council: It constitutes the electoral body of the Association, composed of the titular delegates of each country in which the ISSA has at least one affiliate member, with each of these countries having one titular delegate.
- Bureau: It constitutes the administrative authority of the Association, composed of the President of the ISSA, the Treasurer, the Secretary General, and elected members representing the different geographical regions of the world.
- Control Commission: It examines the financial records of the Association and the annual report and statements presented to the Bureau by the Treasurer, and verify that all financial transactions have been carried out in conformity with the Financial Regulations.

# NATO Pipeline System

**Recently, the Polish government said that it will finally join the NATO Pipeline System (NPS).**

**About NATO Pipeline System**

- It was set up during the Cold War to supply NATO forces with fuel.
- It is approximately 10,000 kilometres long, runs through 12 NATO countries and has a storage capacity of 4.1 million cubic metres.
- The NPS links together storage depots, military air bases, civil airports, pumping stations, truck and rail loading stations, refineries and entry/discharge points.
- Funding: Bulk distribution is carried out using facilities from the common-funded NATO Security Investment Programme.
- Controlled by: The networks are controlled by national organisations, with the exception of the Central Europe Pipeline System (CEPS), which is a multinational system managed by the CEPS Programme Office under the aegis of the NATO Support and Procurement Agency.
- Structure
  - It is overseen by the Petroleum Committee, which is the senior advisory body in NATO on consumer logistics and, more specifically, on petroleum issues.
  - It reports to the Logistics Committee on all matters of concern to NATO in connection with military fuels and other petroleum installations.
  - The NPS consists of eight national pipeline systems and two multinational systems

# New START Treaty

**Recently, US President Donald Trump said that Russian President Vladimir Putin's idea of the New START Treaty was a good one.**

**About New START Treaty**

- It is known as The New Strategic Arms Reduction Treaty (New START).
- It is the last remaining nuclear arms deal between Russia and the United States of America, and it was extended for five years in 2021. (Extended the treaty till February 4 2026.)
- Objective: The New START caps the number of nuclear warheads well below Cold War limits.
- This treaty entered into force on February 5, 2011.
- The treaty concerns strategic weapons: usually long-range weapons designed to influence the outcome of a war, not merely a battle, by destroying power centres, command and control facilities, or key infrastructure.
- Timeline of Treaty
  - It was signed by then-presidents Barack Obama and Dmitry Medvedev in Prague in 2010; it came into force in 2011.
  - New START replaced the 1991 START I treaty, which expired in December 2009, and superseded the 2002 Strategic Offensive Reductions Treaty (SORT), which terminated when New START entered into force.
  - Both Russia and the United States announced that they met New START limitations by Feb. 5, 2018.

# Black Sea


**Russia recently reported destroying 251 Ukrainian drones overnight, mostly over its southwest and the Black Sea, with one targeting Moscow.**

**About Black Sea**

- It is a large inland sea situated at the southeastern extremity of Europe.
- It is one of the marginal seas of the Atlantic Ocean.
- The roughly oval-shaped body of water has a surface area of 436,000 sq.km.
- Bordering Regions:
  - West: Balkan Peninsula (Southeastern Europe).
  - East: Caucasus Mountains.
  - North: East European Plains (Russia & Ukraine).
  - South: Anatolia (Turkey, Western Asia).
- Countries bordering the Black Sea are Turkey to the south, Bulgaria and Romania to the west, Ukraine to the north, Russia to the northeast, and Georgia to the east. The Crimean Peninsula juts into the Black Sea from the north.
- Russia has the longest coastline (2,300 km), followed by Turkey (1,329 km) and Ukraine (1,282 km).
- It connects to the Aegean Sea (Mediterranean) via the Bosporus Strait, the Sea of Marmara, and the Dardanelles Strait.
- To its east, the Kerch Strait links the Black Sea to the smaller Sea of Azov.
- The Black Sea has lower salinity than the world's oceans due to isolation from the Mediterranean.
- Major rivers flowing into it include the Danube, Dnieper, Southern Bug, Rioni, and Dniester.

**Environmental and Strategic Importance of the Black Sea**

- World's Largest Meromictic Basin:
- Movement of water between the lower and upper layers of the Sea is rare.
- This creates considerable temperature and nutrient differences between these layers, with the lower layers being absolutely free of oxygen and anoxic.
- This complex water chemistry is fueled by extensive freshwater inputs from multiple large rivers and rainfall, with salt water exchanges with the Aegean Sea only through the Bosphorus and Dardanelles Strait.
- Anoxic zones: One of the largest anoxic basins, meaning low dissolved oxygen in deeper layers, affecting marine biodiversity.
- Crucial for global trade, particularly for Russia and Ukraine's grain and energy exports.
- NATO and Russia frequently conduct naval operations in the region.
- Russia's Black Sea Fleet is stationed in Sevastopol, Crimea, making the region highly militarized.
- Key Islands: Snake Island (Ukraine); Giresun Island (Turkey); St. Ivan Island (Bulgaria).

# UNESCO


**Recently, Unesco's executive board has nominated an Egyptian former tourism and antiquities minister, Khaled el-Anani, to be the agency's next director.**

**About UNESCO**

- The United Nations Educational, Scientific and Cultural Organization (UNESCO) is a specialized agency of the United Nations.
- Goal: It is dedicated to strengthening our shared humanity through the promotion of education, science, culture, and communication.
- UNESCO was started in 1945 after World War II. It took over from an older group called the International Committee on Intellectual Cooperation.
- UNESCO is part of the United Nations Sustainable Development Group.
- UNESCO focuses on five main areas: Education, Natural sciences, Social and human sciences, Culture, Communication and information.
- Member countries: UNESCO has 194 member countries and 12 associate members.
- Headquarter: Paris, France

**Functions of UNESCO**

- It supports member states' efforts to eliminate illiteracy, encouraging the extension of free education, and acts as a clearinghouse for the exchange of ideas and knowledge.
- It also works with many other groups, including non-governmental organizations and private companies.
- UNESCO designates and maintains a list of World Heritage Sites, which are places of outstanding universal value that deserve protection for future generations.

# IUCN World Conservation Congress

**Recently, India unveiled its National Red List Roadmap and Vision 2025-2030 at the IUCN World Conservation Congress 2025.**

**About IUCN World Conservation Congress**

- It is the largest gathering of nature conservation experts, leaders and decision-makers in the world.
- It will help shape global priorities for nature conservation and climate change for the coming decade and beyond.
- It is held once-every-four-years.
- Theme of IUCN Congress 2025: Under the theme "Powering transformative conservation".

**Components of IUCN World Conservation Congress**

- Forum: It is the largest knowledge marketplace for conservation and sustainable development science, practice and innovation.
- Exhibition: In the Exhibition, IUCN Members and Commissions, businesses, partners, and academia host pavilions, booths and events.
- Member's Assembly: It is IUCN's highest decision-making body. During the Assembly, IUCN's Member organisations vote on pressing conservation and sustainable development issues.

**Key Facts about IUCN**

- The International Union for Conservation of Nature (IUCN) is a membership Union of government and civil society organisations.
- It was created in 1948, IUCN is now the world's largest and most diverse environmental network, harnessing the knowledge, resources.

**Governance of IUCN**

- President and Council: The council is IUCN's principal governing body in between sessions of the World Conservation Congress. The IUCN President presides over the IUCN Council.
- IUCN World Conservation Congress: The Members' Assembly of the IUCN World Conservation Congress is IUCN's highest governing body.
- IUCN Members discuss strategic topics, adopt motions defining IUCN's general policy, approve the IUCN programme, amend IUCN's statutes and elect the IUCN Council.
- IUCN Statutes: It lays out the governance of IUCN.

# International Telecommunication Union

**Recently, the Department of Telecommunications (DoT) and International Telecommunication Union (ITU) hosted 'AI for Good Summit' at India Mobile Congress (IMC) 2025 in New Delhi.**

**About International Telecommunication Union**

- It is the United Nations specialized agency for information and communication technologies.
- It was established in 1865 as the International Telegraph Union.
- In 1947 the ITU became a specialized agency of the United Nations.
- It is an intergovernmental organization that coordinates between governments and private sector bodies with respect to global telecommunication and information communication technology (ICT) services.
- Member countries: It has a membership of 194 countries and more than 1000 companies, universities and international and regional organizations.
- India and ITU: India has been an active member of the ITU since 1869 and has been a regular member of the ITU Council since 1952.
- Headquarters: Geneva, Switzerland.

**Functions of International Telecommunication Union**

- Allocate global radio spectrum and satellite orbits;
- Coordination and setting of technical standards related to telecommunication/ICT;
- Work to improve access to ICTs in underserved communities worldwide;

**What is India Mobile Congress (IMC) 2025?**

- It is Asia's largest technology forum.
- It is jointly organised by the Department of Telecommunications and the Cellular Operators Association of India (COAI).
- The event brings together global ICT and digital ecosystem leaders to explore the innovations that are shaping the future of connectivity, digital transformation, and the evolving role of AI.

# IUCN's World Commission on Protected Areas

**Recently, the Director of Kaziranga National Park and Tiger Reserve has received the Kenton R. Miller Award, constituted by the IUCN World Commission on Protected Areas (WCPA).**

**About IUCN's World Commission on Protected Areas**

- IUCN World Commission on Protected Areas is one of six technical commissions of the International Union for Conservation of Nature (IUCN).
- It was established in 1948 as a global network dedicated to the conservation of nature and the sustainable use of natural resources.
- Functions: It specializes in protected area governance, management, and policy, supporting the creation and effective management of protected areas globally, including national parks, reserves, and marine protected areas.

**Key Facts about Kenton R. Miller Award**

- It was established in 2006.
- It is presented every two years by the IUCN-WCPA for Innovation in National Parks and Protected Area Sustainability.
- It was named after a former Director General of the IUCN.
- The award recognises individuals or teams whose innovations in planning, management, finance, governance, monitoring, capacity building, and communication have a significant impact and peer recognition without prior international awards.
- The Kenton Miller Award comes with a US $5,000 cash prize.

# India-UK Connectivity and Innovation Centre

**India and the United Kingdom recently announced the launch of the India-UK Connectivity and Innovation Centre.**

**About India-UK Connectivity and Innovation Centre (CIC)**

- It is a strategic partnership between India and the United Kingdom launched at India Mobile Congress 2025.
- The initiative aims to advance digital inclusion and shape the future of secure, innovative, and resilient communications between the two nations.
- It will be implemented under the UK-India Technology Security Initiative, jointly delivered by the UK Research and Innovation (UKRI) and India's Department of Telecommunications (DoT).
- The Centre will bring together the complementary strengths of India and the UK in advanced connectivity – linking cutting-edge university research with lab testing, field trials, and pathways for market deployment.
- Over the next four years – a critical phase for shaping the technological and commercial contours of 6G – the Centre will focus on three strategic areas:
  - Transforming Telecom with AI: Using advanced artificial intelligence tools to optimise networks, enhance efficiency, and enable new digital services.
  - Non-Terrestrial Networks (NTNs): Developing satellite and airborne systems to deliver high-speed, reliable connectivity to rural and remote regions.
  - Telecoms Cybersecurity: Strengthening network resilience through open, interoperable, and secure communication systems for businesses and consumers.

**Funding:**

- Both nations have jointly committed an initial £24 million (approximately ₹250 crore) over four years to drive the initiative.
- The funding will support applied research through collaborations between academic and industry partners, establishment of joint testbeds, and participation in global standards development for emerging telecommunications technologies.

# Key Facts about Armenia


**Recently, Armenia has become the newest State Member of the International Union for Conservation of Nature (IUCN).**

**About Armenia**

- Armenia is a landlocked country, located in the south of Caucasus mountain range.
- Bordering Countries: It is bounded by Georgia in the north, Azerbaijan in the east, Iran in the southeast and Turkey in the west.
- Terrain: The Lesser (or Little) Caucasus Mountains dominate much of Armenia's landscape.
- Much of Armenia's soil—formed partly by residues of volcanic lava—is rich in nitrogen, potash, and phosphates.
- Highest Peak: Mount Aragats (4,090 m) which is an extinct volcanic peak.
- Climate: Highland continental, hot summers, cold winter climate.
- Rivers: Aras, Hrazdan, Arpa, and Vorotan, rivers which provide hydropower and irrigation facilities to the country.
- Natural resources: Small deposits of gold, copper, molybdenum, zinc, bauxite
- Lakes: Lake Sevan is the largest lake of Armenia.
- Language: The official and national language of Armenia is Armenian, spoken by the vast majority of the country's population.
- Capital: Yerevan

# Blue Flag Certification

**Recently, five beaches in Maharashtra have received the international Blue Flag certification.**

**About Blue Flag Certification**

- It is a globally recognized eco-label accorded by the Foundation for Environment Education in Denmark (FEE).
- It is awarded to beaches that meet 33 criteria related to cleanliness, beauty, and environmental sustainability.
- The Blue Flag programme was started in France in 1985 and in areas outside of Europe in 2001.
- It is one of the world's most recognised voluntary awards for beaches, marinas, and sustainable tourism boats.
- It promotes sustainable development in freshwater and marine areas through four main criteria: water quality, environmental management, environmental education and safety.
- Mission: The mission of Blue Flag is to promote sustainability in the tourism sector, through environmental education, environmental protection and other sustainable development practices.
- The other Indian beaches in the blue list are Shivrajpur-Gujarat, Ghoghla-Diu, Kasarkod and Padubidri-Karnataka, Kappad-Kerala, Rushikonda- Andhra Pradesh, Golden-Odisha, Radhanagar- Andaman and Nicobar, Kovalam in Tamil Nadu and Eden in Puducherry beaches, Minicoy Thundi Beach, Lakshadweep, Kadmat Beach, Lakshadweep.

# Key Facts about Uruguay


**Recently, Uruguay's senate has passed a law decriminalising euthanasia.**

**About Uruguay**

- It is a country located on the southeastern coast of South America.
- It is the only South American nation to be situated entirely south of the Tropic of Capricorn. Bordered by: Argentina (west and southwest), Brazil (north and east); and by the South Atlantic Ocean to the southeast.

**Geographical Features of Uruguay**

- Climate: It is characterized as a humid subtropical climate.
- Terrain: It is influenced by the Pampas, these grasslands traditionally used for extensive livestock farming. It also consists of rolling plains, low plateaus, and hills.
- It also consists of Haedo Ridge (Cuchilla de Haedo) in the north and Grande Ridge (Cuchilla Grande) in the southeast.
- Major Rivers: Rio de la Plata/Parana River, Uruguay river (It forms the border between Uruguay and Argentina).
- Uruguay's coast is influenced by the Brazil Current (warm, northward) and Malvinas (Falkland) Current.
- Highest Point: Mount Catedral
- Capital city: Montevideo

# UN-GGIM-AP

**India has been elected as Co-Chair of the Regional Committee of the United Nations Global Geospatial Information Management for Asia and the Pacific (UN-GGIM-AP) for a three-year term till 2028.**

**About United Nations Global Geospatial Information Management for Asia and the Pacific**

- The UN-GGIM-AP is one of the five regional committees of the United Nations Committee of Experts on Global Geospatial Information Management.
- It is the apex inter-governmental mechanism for making joint decisions and setting directions with regard to the production, availability and use of geospatial information within national, regional and global policy frameworks.
- History of UN-GGIM-AP
- It was initially established in 1995 as the Permanent Committee on GIS Infrastructure for Asia and the Pacific (PCGIAP).
- It was rebranded as UN-GGIM-AP in 2012, subsequent to the establishment of UN-GGIM in 2011.
- Aim: To address global challenges regarding the use of geospatial information.
- Members: It is represented by the National Geospatial Information Agencies of 56 countries in Asia and the Pacific region,
- Functions: It works to maximize the economic, social, and environmental benefits of geospatial information through cooperation, capacity development, and shared solutions.
- Secretariat: United Nations Economic and Social Commission for Asia and the Pacific (ESCAP) serves as secretariat since 2018.

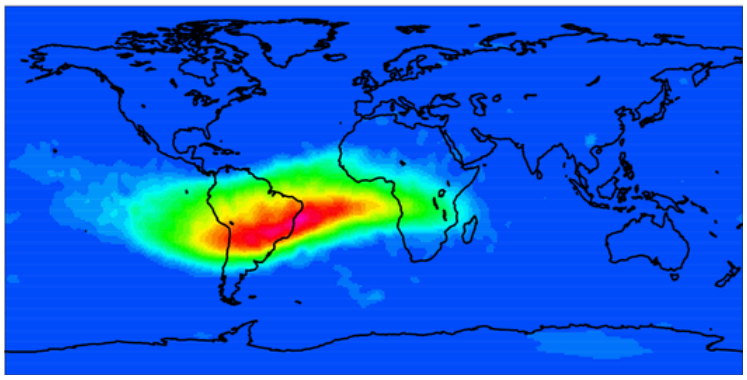
# MERCOSUR Group

**Recently, India and Brazil agreed to significantly expand their existing trade agreement between India and the MERCOSUR bloc.**

**About MERCOSUR Group**

- The Southern Common Market (MERCOSUR for its Spanish initials) is a South American regional economic organization.
- It is the fourth largest integrated market after the European Union (EU), North American Free Trade Agreement (NAFTA), and ASEAN.
- It was created in 1991 by signing the Treaty of Asunción.
- Objective: Free movement of goods, services, capital and people and it became a customs union in January 1995.
- Member countries:
  - It originally comprised Argentina, Brazil, Paraguay, and Uruguay as its members.
  - Bolivia and Venezuela joined it later. (Venezuela has been suspended since December 1, 2016).
  - Mercosur also counts Chile, Colombia, Ecuador, Guyana, Peru, and Suriname as associate members.
- Headquarters: Montevideo, Uruguay.
- Its official working languages are Spanish and Portuguese.
- Governance of MERCOSUR Group
  - Common Market Council:  It is the bloc's highest decision-making body, and provides a high-level forum for coordinating foreign and economic policy.
  - The group consists of the foreign and economic ministers of each member state, or their equivalent, and decisions are made by consensus.
  - The group's presidency rotates every six months among its full members.
- India and MERCOSUR: India and MERCOSUR signed a Preferential Trade Agreement (PTA) in 2004.

# South Atlantic Anomaly



**A giant dent in Earth's magnetic field, called the South Atlantic Anomaly, is continuing to expand, according to the latest data from a trio of satellites monitoring our world.**

**About South Atlantic Anomaly**

- It is a unique location on Earth where the magnetic field is weaker than normal.
- It is southeast of South America and southwest of Africa. In this area, the planet's magnetic field dips down.
- It was first identified in the 19th century.
- Why does it occur?
- Earth's magnetic field acts like a protective shield around the planet, repelling and trapping charged particles from the Sun.
- SAA exists because the Earth's inner Van Allen radiation belt comes closest to the planet's surface, causing an increased flux of energetic particles.
- This leads to the penetration of solar energetic particles deep into Earth's atmosphere, posing severe problems for airplanes and ships' positioning systems as well as spacecraft electronic systems.

**What are the Van Allen Radiation Belts?**

- The Van Allen radiation belt is a zone of energetic charged particles, most of which originate from the solar wind.
- The particles are captured by and held around a planet by that planet's magnetic field.
- It surrounds Earth, containing a nearly impenetrable barrier that prevents the fastest, most energetic electrons from reaching Earth.
- The outer belt is made up of billions of high-energy particles that originate from the Sun and become trapped in Earth's magnetic field, an area known as the magnetosphere.
- The inner belt results from interactions of cosmic rays with Earth's atmosphere.
- The Van Allen belts are most intense over the Equator and are effectively absent above the poles.

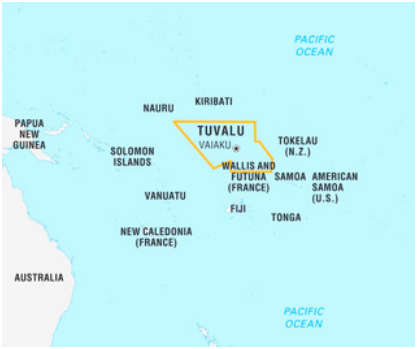
# International Maritime Organisation

**The United States President Donald Trump recently said that he was "outraged" that the International Maritime Organisation would be voting on whether to impose a carbon emissions price on global shipping and called it a "Global Green New Scam Tax."**

**About International Maritime Organisation**

- It is the United Nations' specialised agency responsible for the safety and security of shipping and the prevention of marine pollution by ships.
- With 176 Member States and three Associate Members, IMO is based in London.
- IMO is the global standard-setting authority for the safety, security, and environmental performance of international shipping.
- Its main role is to create a regulatory framework for the shipping industry that is fair and effective, universally adopted, and universally implemented.
- The IMO formulates regulations on shipping safety, maritime security, and environmental protection but does not enforce them.
- Once a member state adopts a regulation, it becomes part of that country's domestic law.
- It contributes directly to UN Sustainable Development Goal (SDG) 14, which focuses on the conservation and sustainable use of oceans and marine resources.
- The organisation also deals with legal matters such as liability, compensation, and facilitation of maritime traffic.
- Organisational Structure:
- The Assembly is the supreme governing body, comprising all member states. It meets every two years to approve the work programme, budget, and elect members to the Council.
- The Council acts as the Executive Organ, overseeing IMO's work in between Assembly sessions.
- The IMO has five major committees, which are responsible for policy development and regulation formulation, including the Marine Environment Protection Committee (MEPC).
- Funding is sourced through mandatory contributions by member states and also from voluntary donations and commercial revenue.

# Tuvalu Island




**The Government of Tuvalu has officially become the 90th State Member of the International Union for Conservation of Nature (IUCN) recently.**

**About Tuvalu**

- Tuvalu, formerly known as the Ellice Islands, is an island country in the west-central Pacific Ocean.
- It is the 4th smallest country in the world with 26 sq.km. of land.
- It sits about halfway between Australia and Hawaii.
- Its neighbours include Kiribati, to the north, and Fiji, to the south.
- It is a collection of small islands and atolls largely made out of coral reefs and volcanic rock.
- All islands are low-lying, with no point on Tuvalu being higher than 4.5 m above sea level. Thus, the islands are threatened by any future sea level rise.
- There are no rivers. Tuvalu's climate is hot and rainy.
- With the exception of tiny Vatican City, Tuvalu has the fewest inhabitants of any other independent nation.
- Capital: Funafuti
- Languages: Most people speak a language called Tuvaluan. English is widely used.
- Currency: Tuvalu dollar (equivalent to the Australian dollar)
- Political System:
  - Tuvalu became independent from the United Kingdom in October 1978.
  - It operates as a parliamentary democracy under a constitutional monarchy.
  - It is part of the Commonwealth Realm, with King Charles III recognized as King of Tuvalu. He is represented by a Governor-General, who is appointed upon the advice of the Prime Minister.
  - There are no political parties: the prime minister is chosen by and from the legislature.
- Economy:
  - Most people are subsistence farmers and are aided by remittances from relatives working overseas.
  - A small quantity of copra is produced for export, the sale of stamps accounts for modest earnings, and fees are collected from foreign fishing fleets.

# Mount Etna

**Researchers recently analyzed changes over time in the ratio of small earthquakes to bigger ones beneath Mount Etna and found a strong correlation with the volcano's activity over the past 20 years.**

**About Mount Etna**

- It is an active stratovolcano located on the island of Sicily in the Mediterranean Sea. (Sicily is a part of Italy.)
- It lies above the convergent plate margin between the African Plate and the Eurasian Plate.
- It is the tallest active volcano in Europe.
- It is the highest mountain in Italy south of the Alps.
- It is about 11,000 feet (3,350 meters) high.
- It covers an area of 1,190 sq.km. with a basal circumference of 140 km.
- The eruptive history of the volcano can be traced back 500,000 years, and at least 2,700 years of this activity has been documented.
- The ancient Greeks created legends about it.
- It is a UNESCO World Heritage Site.

# ASEAN

**The Prime Minister decided not to travel to Malaysia to attend the 47th ASEAN summit and will attend it virtually.**

**About ASEAN**

- It is an inter-governmental regional organisation formed to promote political, economic, and security cooperation among Southeast Asian nations.
- Established in 1967 with the signing of the Bangkok Declaration, its founding members were Indonesia, Malaysia, the Philippines, Singapore, and Thailand.
- ASEAN currently has 10 member countries: Indonesia, Malaysia, the Philippines, Singapore, Thailand, Brunei, Vietnam, Laos, Myanmar, and Cambodia.
- Headquarters: Jakarta, Indonesia
- The ASEAN Community comprises three pillars: the Political-Security Community, the Economic Community and the Socio-Cultural Community.
- Two of its core operating principles are consensual decision-making and noninterference in the internal affairs of its members.
- In line with ASEAN centrality, ASEAN sees itself as a platform for intergovernmental cooperation throughout the entire Asia-Pacific.

**Institutional Mechanisms of ASEAN**

- The ASEAN Summit is held annually, where member states discuss regional developments and set strategic policy directions. It is chaired by a rotating presidency.
- The ASEAN Coordinating Council (ACC) monitors the implementation of agreements and decisions, ensuring alignment across the member states.
- The ASEAN Secretariat, located in Jakarta, acts as the administrative body supporting and facilitating ASEAN's initiatives, coordination, and documentation.
- The ASEAN Regional Forum (ARF) is a key platform for dialogue on political and security issues involving both member countries and external partners.
- India joined the ARF in 1996, marking its formal inclusion in ASEAN-led security dialogue mechanisms.

# Key Facts About Timor Leste


**Recently, Timor Leste (East Timor) formally admitted to the Association of Southeast Asian Nations (ASEAN) in the group's first expansion since the 1990s.**

**About Timor Leste**

- Timor Leste or East Timor is an island country in the Eastern Lesser Sunda Islands, at the southern extreme of the Malay Archipelago in Southeast Asia.
- It also includes an exclave on this island's northwestern side that is bounded by West Timor of Indonesia.
- It is bounded by the Wetar Strait in the north and the Ombai Strait in the northwest, Timor Sea to southeast and Western Timor to the southwest.
- Climate and biodiversity: The area has a dry tropical climate and moderate rainfall. Hilly areas are covered with sandalwood.
- Scrub and grass grow in the lowlands, together with coconut palms and eucalyptus trees.
- Highest Point: Mount Tatamailau
- Rivers: The most significant rivers are the Lakla, Lies and Seical.
- Natural resources: Gold, petroleum, natural gas, manganese, marble
- Population: Most of the people are of Papuan, Malayan, and Polynesian origin
- Capital City: Dili

# Asia-Pacific Economic Cooperation

**US President Donald Trump and his Chinese counterpart Xi Jinping are likely to meet at the Asia-Pacific Economic Cooperation (APEC) summit in South Korea.**

**About Asia-Pacific Economic Cooperation (APEC)**

- It is a regional economic forum established in 1989 to leverage the growing interdependence of the Asia-Pacific.
- It aims to create greater prosperity for the people of the region by promoting balanced, inclusive, sustainable, innovative, and secure growth and by accelerating regional economic integration.
- The focus of APEC has been on trade and economic issues, and hence, it terms the countries as "economies".
- It has been operating on the basis of non-binding commitments, with decisions taken through commitments and consensus undertaken on a voluntary basis.
- There are no binding commitments or treaty obligations.
- Member Countries:
  - Currently, APEC has 21 members.
  - The criterion for membership, however, is that each member must be an independent economic entity, rather than a sovereign state.
  - The grouping's current members are Australia, Brunei, Hong Kong, New Zealand, Papua New Guinea, the Philippines, Indonesia, China, Japan, South Korea, Russia, Canada, the United States, Mexico, Peru, Chile, Malaysia, Vietnam, Singapore, Thailand, and Taiwan.
- The APEC Secretariat is based in Singapore and operates as the core support mechanism for the APEC process.
- APEC's member economies are home to more than 2.9 billion people and make up over 60 percent of global GDP.

# Critical Minerals

**India's first auction of deep-sea blocks of critical minerals, which are vital for electric vehicles, defence equipment and renewable energy, has been delayed indefinitely following a poor response from bidders.**

**About Critical Minerals**

- Critical minerals are those that are essential for modern technologies and national security but have supply chain risks due to their limited availability or geographical concentration.
- Their 'criticality' changes over time depending on technological demand and supply dynamics.
- Applications:
- They are used to manufacture advanced technologies, including mobile phones, computers, fibre-optic cables, semiconductors, banknotes, and defence, aerospace, and medical applications.
- Many are used in low-emission technologies, such as electric vehicles, wind turbines, solar panels, and rechargeable batteries.
- Some are also crucial for common products, such as stainless steel and electronics.
- Top Producers: Chile, Indonesia, Congo, China, Australia, and South Africa.
- Countries identify minerals critical for them based on their national priorities.
- In 2023, the Ministry of Mines released a list of 30 critical minerals for India.
- These minerals are Antimony, Beryllium, Bismuth, Cobalt, Copper, Gallium, Germanium, Graphite, Hafnium, Indium, Lithium, Molybdenum, Niobium, Nickel, PGE, Phosphorous, Potash, REE, Rhenium, Silicon, Strontium, Tantalum, Tellurium, Tin, Titanium, Tungsten, Vanadium, Zirconium, Selenium, and Cadmium.
- 24 minerals added to Part D of Schedule I of the Mines and Minerals (Development and Regulation) Act, 1957 (MMDR Act), granting Central Government exclusive auctioning powers.
- A Centre of Excellence for Critical Minerals (CECM) will regularly review the mineral list and advise policy.

**National Critical Mineral Mission (NCMM)**

- The Government of India launched the NCMM in 2025 to establish a robust framework for self-reliance in the critical mineral sector.
- The NCMM encompasses all stages of the value chain, including mineral exploration, mining, beneficiation, processing, and recovery from end-of-life products.
- Exploration:
- Under this mission, the Geological Survey of India (GSI) has been tasked with conducting 1,200 exploration projects from 2024-25 to 2030-31, with an aim of ensuring domestic production of at least 15 critical minerals (such as graphite, lithium, potash, REEs).
- The NCMM also aims for Indian companies to acquire 50 mining assets worldwide.
- To achieve these targets, it seeks to create a fast-track regulatory approval process for mining projects.
- Recycling: The NCMM seeks to set up an incentive scheme for mineral recycling with a budget of INR 1500 crore (USD 170 million), with a target of recovering 400 kilotonnes (kt) of recycled material.
- Stockpiling: The NCMM foresees the creation of a National Critical Minerals Stockpile comprising at least 5 critical minerals to mitigate the risks from global supply chain disruptions.
- Research:
- The NCMM seeks to promote research in critical mineral technologies with a target of achieving self-sufficiency in processing at least 5 critical minerals and generating 1000 patents across the critical mineral value chains by 2031.
- It also proposes setting up 4 regional mineral processing parks and 3 Centres of Excellence on Critical Minerals.
- Governance: The NCMM envisages the formation of an Empowered Committee on Critical Minerals that would coordinate and implement the initiatives under the NCMM.

# Sir Creek Dispute


**Recently, Defence Minister Rajnath Singh warned Pakistan against any aggression in the Sir Creek region, stating that India would give a "resounding and decisive response" that could alter "history and geography".**

**About Sir Creek**

- Sir Creek is a 96 km long tidal estuary located in the marshy Rann of Kutch region, separating Gujarat (India) from Sindh (Pakistan).
- It flows into the Arabian Sea and is a strategically sensitive zone due to its proximity to the international boundary.
- The area is significant for security, fishing rights, oil and gas exploration, and Exclusive Economic Zone (EEZ) determination.

**Nature of the Dispute**

- The dispute arises from differing interpretations of the 1914 Bombay Government Resolution signed between Sindh (then under British India) and the Ruler of Kutch.
- Pakistan's claim: The boundary lies on the eastern bank of the creek (giving the creek to Sindh).
- India's claim: The boundary should follow the thalweg principle (mid-channel line of navigable waters).
- Pakistan's counter-argument: Sir Creek is not navigable, hence the thalweg principle doesn't apply.
- India's stand: The creek is navigable during high tide, so international maritime norms apply.

# Dark Stars

**Astronomers recently unearthed evidence that some of the earliest luminous objects in the universe may be “dark stars”, stars powered not by nuclear fusion but by dark matter annihilation.**

**About Dark Stars**

- Dark stars are hypothetical objects that may have inhabited the early universe.
- Scientists believe that dark stars might be the oldest stars in the history of the universe and may represent the first phase of stellar evolution.
- These stars are giant, much larger than our sun or any of the other stars around today.
- A single dark star could be as much as 400 to 200,000 times wider than our sun and 500 to 1,000 times more massive.
- Dark stars aren't actually dark; they just don't emit any visible light.
- That's because instead of nuclear fusion, which is the process that converts hydrogen into helium in the core of an ordinary star, dark stars are powered differently.
  - Astronomers believe that dark matter heating is what powers them.
  - Because there’s no fusion happening inside them, they aren’t very hot.
  - Because dark stars don’t rely on core fusion to stave off gravitational collapse, they’re not extremely compressed like normal stars.
  - Instead, dark stars are likely giant, puffy clouds that shine extremely bright.
  - A single dark star from the early Universe could be as bright as an early galaxy containing many more standard stars.
- And even though they'd be massive — and potentially spewing gamma rays, neutrinos, and antimatter — so far, they've been too faint to be detected because they don't emit visible light.

# Baratang Island

**Recently, India's only mud volcano at Baratang in Andaman and Nicobar Islands has again erupted.**

**About Baratang Island**

- Location:  It is located in the North and Middle Andaman district, and it is nearly 150 km away from Port Blair.
- It is a very popular tourist spot because it is India's only mud volcano.
- It erupted recently in 2005 owing to the oceanic seismic shifts.
- The mud volcanoes in Baratang Islands are the only known volcanoes in the Indian sub-continent.
- It is also home to the Jarawa tribe, one of the indigenous tribes of the Andaman and Nicobar Islands.

**What is Mud Volcano?**

- Mud volcanoes, also called 'Mud Domes,' are formed by the eruption of mud slurries, water, and gases involving a series of geological processes.
- Unlike actual ingenious volcanoes, mud volcanoes don't throw out lava when they erupt.
- It is a geological formation where a mixture of mud, water, and gases (mainly methane, sometimes carbon dioxide or nitrogen) erupts to the surface, creating cone-like structures that resemble true volcanoes without molten lava.
- The sizes of mud volcanoes lie between one and two meters to 700 meters high and between one and two meters to 10 kilometers wide.
- Mud volcanoes also exist on the floor of the sea and can form islands and banks that alter the topography and shape of the coastline.

# Easter Island

**New research reveals Easter Island's moai statues were "walked" upright using ingenious engineering, not dragged or rolled.**

**About Easter Island**

- It is a Polynesian island located in the southeastern Pacific Ocean.
- Named Rapa Nui by its earliest residents, it is one of the most isolated inhabited islands in the world.
- It is a special Chilean territory situated about 3,540 km to the west of Chile and about 1,900 km to the east of Pitcairn Island.
- It covers a total area of 163.6 sq.km.
- It is a small, triangular-shaped volcanic island. It is about 24 km in length and has a maximum width of about 12 km at its widest point.
- The island comprises three extinct volcanoes, namely Terevaka, Poike, and Rano Kau.
- It faces a tropical rainforest climate.
- UNESCO named Easter Island a World Heritage Site on March 22, 1996, and major parts of the island have been protected under the Rapa Nui National Park.

**What are Moai Statues?**

- Rapa Nui is famous for its large megalithic statues called moai.
- They are shaped like large human heads and erected on stone pedestals.
- They are famous for their carved heads and “Pukao,” a hat-like covering made from a soft red stone.
- Some moai stand 40 feet tall and weigh 75 tonnes.
- They were carved in volcanic stone at quarries and then moved to their current locations across the island.
- Scholars believe the Rapa Nui people built the moai between the 13th and the 16th centuries and represented their revered ancestors.
- Over 900 moai have been found on the island to date.
- What do Moais represent?
    - They were built to honor chieftains or other important people who had passed away.
    - They were placed on rectangular stone platforms called ahu, which are tombs for the people that the statues represented.
    - The moais were intentionally made with different characteristics since they were intended to keep the appearance of the person they represented.

# Supermoon

**Recently, a rare celestial supermoon illuminated the skyline around the world.**

**About Supermoon**

- A supermoon occurs when a full moon or new moon coincides with the perigee or moon's closest approach to the earth in its elliptical orbit.
- Because the moon's orbit is not a perfect circle, its distance from the earth varies throughout the month by around 50,000 km.
- When the moon is near its perigee and also directly opposite the sun, the full moon appears about 14% larger and 30% brighter than when it is at its farthest point.
- The term "Supermoon" was coined by astrologer Richard Nolle in 1979, defining it as a special event when a full moon is within 90 percent of its closest point to Earth.
- Impact of Supermoon
  - Supermoons influence the tides, creating perigean spring tides.
  - These tides are slightly higher and lower than usual because the moon's stronger gravitational pull acts in concert with that of the sun.
  - These changes are typically modest, they can exacerbate coastal flooding when combined with storm surges.

# Coco Islands

**Recently, Myanmar has assured India that there is no Chinese presence at Coco Islands in Bay of Bengal.**

**About Coco Islands**

- Location: They are a small group of islands located in the Bay of Bengal.
- Great Coco Island, the largest in the group, lies just 55 km from India's strategic Andaman and Nicobar Islands.
- They are part of the Yangon Region of Myanmar.
- Geography: It is geologically an extended division of the Arakan Mountains or Rakhine Mountains, submerges as a chain of islands in the Bay of Bengal for a long stretch and emerges again in the form of the Andaman and Nicobar Islands.
- They are part of the same topography as India's Andaman & Nicobar Islands.

**History of Coco Islands**

- In the early 19th century, the British government in India established a penal colony in the Andaman for the convicts in the Indian subcontinent, and the Coco Islands were a source of food for it.
- The British government had reportedly leased out the islands to the Jadwet family of Burma.
- The leasing of control of the Coco Islands resulted in poor governance of the islands, which made the British government in India to transfer its control to the government of Lower Burma in Rangoon.
- In 1882, the islands officially became part of British Burma.
- The islands became a self-governing crown colony even after Burma was separated from British India in 1937.

# Sawalkote Hydropower Project

**The Centre recently recommended environmental clearance for the 1,856-MW Sawalkote Hydro Electric Project on the Chenab river in Jammu and Kashmir.**

**About Sawalkote Hydro Electric Project**

- It is a 1,856-MW run-of-the-river hydroelectric plant proposed on the Chenab River in the Ramban District of Jammu and Kashmir.
- It will be the largest hydroelectric project in the Union Territory and one of the biggest in North India.
- The project was first conceptualised in the 1980s and revised several times due to environmental and technical concerns.
- The project will be built by National Hydroelectric Power Corporation (NHPC) Limited at an estimated cost of Rs 31,380 crore.
- It will include a 192.5-metre-high concrete dam and underground powerhouses capable of producing about 7,534 million units of electricity every year.
- It is expected to enhance power availability in the Union Territory, especially during winters when electricity shortages are frequent.
- It also has the potential to turn J-K into a power-surplus region, creating scope for exporting surplus energy to the national grid.
- By regulating the flow of the Chenab River, the Sawalkote project could contribute to flood mitigation downstream, while also ensuring better water management for agriculture and domestic use.
- It is a key part of India's plan to fully utilise its share of water from the western rivers under the 1960 Indus Waters Treaty (IWT).

# Atacama Desert

**Scientists are studying a small, resilient flower Cistanthe longiscapa in Chile's arid Atacama that could hold genetic clues to help crops withstand worsening drought conditions driven by climate change.**

**About Atacama Desert**

- Location: It is the driest desert in the world, located in northern Chile.
- It is nestled between the Andes Mountains on the east and the Pacific Ocean on the west.
- It forms a continuous strip for nearly 1,000 km along the narrow coast of the northern third of Chile.
- Bordered by: It is bordered by Argentina, Peru, and Bolivia
- It also hosts 12 volcanoes, mainly located in the western outliers of the Andes.
- Rainfall: Average rainfall in this region is about 1 mm per year. Some locations within the desert have never had any rainfall whatsoever.
- Temperature: Temperatures are comparatively mild throughout the year. The average temperature in the desert is about 63 degrees F (18 degrees C).
- Natural Resources: This region has the largest natural supply of Sodium Nitrate, which can be used for producing fertilizers and explosives, amongst other things.
- Chinchorro Mummies: The oldest artificially mummified human remains have been found in the Atacama Desert.

**What is Cistanthe longiscapa?**

- It is a small, resilient flower known locally as "pata de guanaco," blooms during rare rainfall events in the Atacama desert.
- It has the ability to switch between different types of photosynthesis, making it a model plant for extreme environments.
- Under stress from drought, intense sunlight or salinity, the plant activates a water-saving method known as Crassulacean Acid Metabolism (CAM) metabolism.
- When conditions improve, it reverts to the more common C3 photosynthesis.

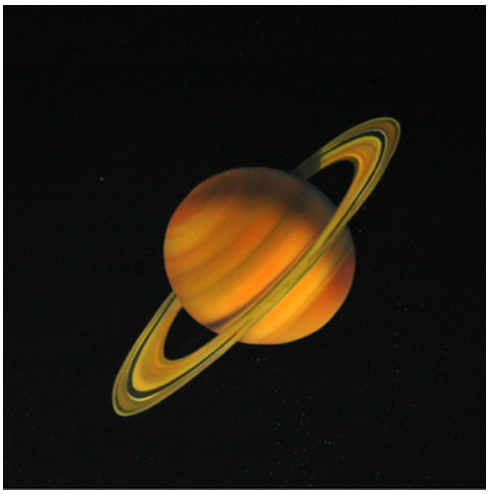
# Palau

**Palau recently hosted the world's first-ever live underwater interview.**

**About Palau**

- It is an island nation located in the western Pacific Ocean.
- It consists of a tightly clustered archipelago of approximately 300 islands with a total land area of 458 sq.km.
- It is geographically positioned both in the Northern and Eastern hemispheres of the Earth.
- Palau shares maritime borders with the Federated States of Micronesia to the east, with Indonesia to the south, with Philippines to the west, and with the international waters to the north.
- Located on Babeldaob (the largest island of Palau) is Ngerulmud – the capital of Palau.
- It is the world's least populous capital city.
- Koror is the largest and the most populous city of Palau. It acts as the main commercial center of Palau.
- Languages: Palauan, English, plus Japanese, Sonsorolese, and Tobian.
- Palau became independent in 1994, after being part of a United Nations trust territory administered by the US.
- It relies on financial aid from the US, provided under a Compact of Free Association, which gives the US responsibility for Palau's defence and the right to maintain military bases there.

# Celestial Body – Chiron



**Recently, astronomers for the first time observed a ring system formation around icy celestial body Chiron.**

**About Celestial Body –Chiron**

- Chiron is part of a class of objects called centaurs (which populate the outer solar system between Jupiter and Neptune), displaying characteristics of both asteroids and comets.
- It was discovered in 1977 by astronomer Charles Kowal.

**Features of Celestial Body –Chiron**

- It has a diameter of about 200 kilometers (125 miles) and takes about 50 years to complete one orbit around the sun.
- Ring system: Its observations clearly showed that it is surrounded by well-defined 4 rings. The three inner rings are embedded within dust swirling around in a disk-like shape.
- These rings are likely composed mainly of water ice mixed with small amounts of rocky material, like those of Saturn.
- Composition: It mainly consists of rock, water ice and complex organic compounds.
- Chiron exhibits occasional comet-like activity – ejecting gas and dust into space.
- A method called stellar occultation was used by a team including Brazilian, French and Spanish researchers to observe the rings.

# Gulf of Kutch


**According to a recent report, the long-term survival of dugongs in the Gulf of Kutch and the Andaman and Nicobar Islands is highly uncertain or challenging.**

**About Gulf of Kutch**

- It is an inlet of the Arabian Sea.
- It is located along the west coast of India, in the Jamnagar district of Gujarat.
- It divides Kutch and the Kathiawar peninsula regions of Gujarat.
- It stretches for 99 miles and is famous for the coral reefs surrounding the 32 islands.
- A unique feature of this region is the tidal range, which generates fast currents of about 2.5 m per second.
- It is a region with the highest potential of tidal energy generation.
- It is rimmed with mudflats, and many small islands rise from its waters.
- The Gulf of Kutch, occupying an area of 7300 sq.km. is biologically one of the most productive and diversified habitats along the west coast of India.
- The southern shore has numerous islands and inlets which harbor vast areas of mangroves and coral reefs with living corals.
- The northern shore with numerous shoals and creeks also sustains large stretches of mangroves.
- The western extremity of the Gulf consists of a vast complex of marshland criss-crossed by innumerous creeks.
- Marine National Park is situated on the southern shore of the Gulf of Kutch. It is the 1st National Marine Park of India.

**Key Facts about Dugong**

- Dugongs are the only herbivorous mammals found in India's marine ecosystems.
- It is known as the sea cow but resembles a cross between a seal and a whale, and is distributed through the Indo-Pacific region.
- Distribution:
- Dugongs range across 37 Indo-Pacific countries but have disappeared from many parts of their former range.
- They are found along the Indian coastline, primarily inhabiting warm waters around the Andaman and Nicobar Islands, the Gulf of Mannar, Palk Bay, and the Gulf of Kutch.
- Habitat: Due to their dependence on seagrass beds for habitat and food, dugongs are restricted to shallow waters, where they spend the day feeding on seagrasses of the genera Cymodocea, Halophila, Thalassia, and Halodule.
- The dugong is a long-lived species, able to live up to 70 years.
- Conservation status:
- IUCN Status: Vulnerable

# Calcium Carbide

**More than 60 people, primarily children, were hospitalized in Bhopal following severe injuries sustained from the use of makeshift "calcium carbide guns" during Diwali celebrations.**

**About Calcium Carbide**

- It is a compound with the chemical formula CaC2.
- It is commonly referred to as 'masala' in fruit markets.
- It is a grayish-black lump or crystalline powder with a garlic-like odor.
- It is manufactured by heating a lime and carbon mixture to 2000 to 2100°C (3632 to 3812°F) in an electric arc furnace.

**Calcium Carbide Uses**

- It is primarily known for its use in the production of acetylene gas through hydrolysis.
- Calcium carbide reacts vigorously with water to produce acetylene gas. Acetylene is a colourless, odourless, extremely flammable gas.
- It is used as a reducing agent and in steel manufacturing and metal cutting.
- Several countries use calcium carbide as an artificial ripening agent.

**Calcium Carbide Health Impacts**

- It can cause serious health issues such as dizziness, frequent thirst, irritation, weakness, difficulty in swallowing, vomiting, skin ulcers, etc.
- Additionally, acetylene gas is equally hazardous to those handling it.
- There are chances that calcium carbide may come in direct contact with fruits during application and leave residues of arsenic and phosphorus on fruits.
- It is banned under the Prevention of Food Adulteration Rules, 1955, and also under the Food Safety and Standards (Prohibition and Restrictions on Sales) Regulations, 2011, made thereunder.

# Loktak Lake

**Recently, a Nagaland University study has flagged an environmental worry for Manipur's Loktak Lake.**

**About Loktak Lake**

- Location: It is located in the state of Manipur.
- It is the largest freshwater lake in Northeast India.
- It is famous for the phumdis floating over it.
- The Keibul Lamjao National Park, home to the rare brow-antlered deer, is an integral part of the lake.
- Rivers like Khuga, Western, Nambul, Imphal, Kongba, Iril, Thoubal, Heirok, and Sekmai drain into this lake.
- It was designated as a wetland of international importance under the Ramsar Convention in 1990.
- It features under the Montreux Record in 1993, "a record of Ramsar sites where changes in ecological character have occurred, are occurring or are likely to occur".
- Flora and Fauna: Loktak Lake is home to 132 plant species and 428 animal species.
- It supports hydropower, fisheries, transport, and tourism.

**Issues Highlighted by the Study**

- Changes in land use, agriculture, settlements, and shifting cultivation have been deteriorating the water quality of rivers feeding the lake.
- These activities are threatening its biodiversity and the livelihoods of the local communities.

# Cloud Seeding

**Recently, a small aircraft known as the Cessna 206H conducted a cloud seeding trial in Delhi amid the recent spike in air pollution.**

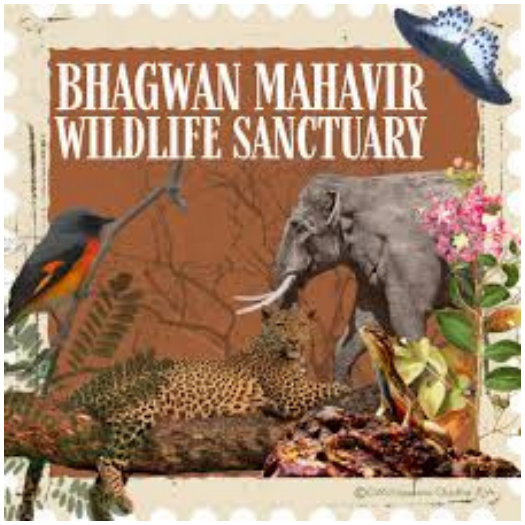
**About Cloud Seeding**

- It is a weather-modification technique used to modify suitable clouds with 'seed' particles to increase rainfall.
- To induce rain artificially, clouds are usually injected with salts like silver iodide, potassium iodide, or sodium chloride, which is the 'seed'.
- These salts are expected to provide additional nuclei around which more cloud droplets can form.
- They are dispersed into the cloud either using aircraft or through generators on the ground.

**Meteorological Requirements for Cloud Seeding**

- Sufficient moisture: The target clouds must contain an adequate amount of water vapour and liquid water to be condensed into precipitation.
- Cloud characteristics: Clouds targeted for seeding must have sufficient vertical thickness. For example, some cloud-seeding projects require clouds to be at least 1 kilometre thick.
- Favourable winds: Wind direction must transport the seeding material toward the intended area and wind speed must not be so high that it prevents clouds from growing tall or blows the seeding agents away from the target zone.
- Vertical air currents: Clouds with strong vertical updrafts are considered ideal because they help disperse the seeding agents and promote cloud development.

# Bhagwan Mahavir Wildlife Sanctuary




**Goa's State Board for Wildlife recently recommended that the proposal for wildlife clearance for iron ore handling at Kalem railway station in Bhagwan Mahaveer Wildlife Sanctuary and National Park be placed before the National Board for Wildlife (NBWL) for their "consideration".**

**About Bhagwan Mahaveer Wildlife Sanctuary**

- It is located on the eastern border of the state of Goa, near the village of Mollem.
- Set amidst the foothills of the Western Ghats, it covers an area of 240 sq. km, out of which 170 sq.km. is dedicated to the Mollem National Park built at the core of the sanctuary.
- Originally known as the Mollem Game Sanctuary, it was declared a wildlife sanctuary in 1969 and then renamed the Bhagwan Mahavir Wildlife Sanctuary.
- It is also home to the famous Dudhsagar waterfall, the Devil's Canyon, the Tambdi Surla temple, the Tambdi falls, and a number of other historic and religious sites.
- Vegetation: West Coast tropical evergreen forests, West Coast semi-evergreen forests, and moist deciduous forests.
- Flora: Teak, bamboo, cashew, and eucalyptus trees dominate the landscape.
- Fauna:
- The sanctuary is particularly known for its Leopards, Elephants, Deers & Gaur, or Indian Bison.
- The chief attraction of the sanctuary is the King Cobra, which is found here in abundance.
- It is home to around 200 species of various types of birds, like the Malabar pied hornbill, Indian black woodpecker, great Indian hornbill, kingfishers, paradise flycatcher, shrikes, grey jungle fowl, etc.

# Snow Leopard

**Himachal Pradesh has recorded 83 snow leopards (up from 51 in 2021) as per the latest survey by the Wildlife Wing of the State Forest Department in collaboration with the Nature Conservation Foundation (NCF).**

**About Snow Leopard (Panthera uncia)**

- Declared State Animal of Ladakh and Himachal Pradesh.
- Found across 12 range countries – Afghanistan, Bhutan, China, India, Kazakhstan, Kyrgyzstan, Mongolia, Nepal, Pakistan, Russia, Tajikistan, Uzbekistan.
- India is home to an estimated 500–700 snow leopards spread across the Himalayas and Trans-Himalayan region.
- Mascot of Khelo India Winter Games 2024: named Sheen-e She (Shan) in Ladakh.
- It is listed as Vulnerable on the IUCN Red List and is native to the mountain ranges of Central and South Asia.

**Key Characteristics Snow Leopard**

- Medium-sized cat, weight 30–55 kg.
- Height: 55–65 cm | Length: 90–115 cm.
- Fur: Smoky-grey with black rosettes, providing camouflage in rocky terrain.
- Paws: Large, act like natural snowshoes to prevent sinking.
- Tail: Extra-long, used for balance and warmth.
- Ears: Small and round, reducing heat loss.
- Nasal cavity: Wide, short—warms cold air before inhalation.
- Leaping ability: Can leap 10 meters (30 feet) in a single bound.
- Vocalisation: Cannot roar, unlike most big cats.
- Evolutionary relation: Closer to tigers than leopards.

**Key Details of the Survey**

- The exercise, covering 26,000 sq km across Spiti Valley, Kinnaur, Pangi, Lahaul, and Great Himalayan National Park, involved 271 camera traps.
- First official sighting of Pallas's Cat in Kinnaur and rediscovery of Woolly Flying Squirrel in Lahaul also reported.
- For the first time globally, indigenous women from Kibber contributed to data analysis, highlighting inclusive community participation in conservation.
- Himachal Pradesh is the first state in India to complete a population estimation of snow leopards, setting a cost-effective, scalable model for monitoring.

# CAQM

**With the paddy harvest season beginning in northern India, the Commission for Air Quality Management in the National Capital Region and Adjoining Areas (CAQM) has stepped up measures to curb stubble burning, one of the key contributors to winter air pollution in the Capital.**

**About Commission for Air Quality Management in National Capital Region and Adjoining Areas**

- It is a statutory body established under the Commission for Air Quality Management in National Capital Region (NCR) and Adjoining Areas, Act 2021.
- Mandate: Better coordination, research, identification, and resolution of problems surrounding the air quality index and for matters connected therewith or incidental thereto.
- It undertakes action for the prevention and control of Air pollution in Delhi-NCR & Adjoining Areas which impacts the air quality of the National Capital Territory (NCT) of Delhi.
- The Commission is required to coordinate its actions on monitoring of air quality with the government of Delhi and the adjoining states, which includes Punjab, Haryana, Rajasthan, and Uttar Pradesh.

**Commission for Air Quality Management Powers**

- Restricting activities influencing air quality.
- Investigating and conducting research related to environmental pollution impacting air quality, preparing codes and guidelines to prevent and control air pollution.
- Issuing directions on matters including inspections, or regulations, which will be binding on the concerned person or authority.
- All the directions and orders by the Commission are of binding nature, and any person, officer, or authority shall be bound to comply with the same.
- The commission is directly accountable to the parliament.

**Commission for Air Quality Management Composition**

- Chairperson: To be chaired by a government official of the rank of Secretary or Chief Secretary. He will hold the post for three years or until s/he attains the age of 70 years.
- It will also have five ex-officio members who are either Chief Secretaries or Secretaries in charge of the department dealing with environment protection in the States of Delhi, Punjab, Haryana, Rajasthan, and Uttar Pradesh.
- Three full time technical members.
- Three members from non-government organisations.
- Technical members from the Central Pollution Control Board (CPCB), the Indian Space Research Organisation, and NITI Aayog.

# Kanha Tiger Reserve


**Recently, three tigers, including two female cubs, have been found dead inside the Kanha Tiger Reserve (KTR) attributing the deaths to territorial fights among big cats.**

**About Kanha Tiger Reserve**

- Location: It is located in the "Maikal" ranges of the Satpuras in the state of Madhya Pradesh.
- It was declared a reserve forest in 1879 and revalued as a wildlife sanctuary in 1933. Its position was further upgraded to a national park in 1955.
- Corridor: It has an active corridor between Kanha and Pench Tiger Reserves. Kanha is also connected with the Achanakmar Tiger Reserve of Chhattisgarh State.
- Habitat: It is characterized mainly by forested shallow undulations, hills with varying degrees of slopes, plateaus, and valleys.
- Tribal Communities: The region is known for some of the ancient tribal communities, like the Gond and Baiga still inhabit the region.
- It is also the first tiger reserve in India to officially introduce a mascot, "Bhoorsingh the Barasingha".
- Flora: It is primarily a moist Sal and moist mixed deciduous forest where Bamboo, Tendu, Sal, Jamun, Arjun, and Lendia flourish.
- Fauna: The Park has a significant population of Royal Bengal Tigers, leopards, sloth bears, and Indian wild dogs.
- The Park is respected globally for saving the Barasingha (the state animal of Madhya Pradesh) from near extinction and has the unique distinction of harbouring the last world population of this deer species.

# Pulicat Lake

**Recently, Pulicat lake fishermen demand a long-term solution as silt threatens lake livelihoods.**

**About Pulicat Lake**

- It is a vast coastal shallow, brackish water lagoon along the coast of Bay of Bengal into which streams drain
- It is the second largest brackish water lagoon in India after Chilika, sprawling across Andhra Pradesh and Tamil Nadu.
- ThIS lagoon is separated from the Bay of Bengal by the Sriharikota island.
- It is fed by the Aarani River at the southern tip and the Kalangi River from the northwest. The Buckingham Canal, a navigation channel, passes through the lagoon.
- It was designated as a Ramsar site in 2002.
- Biodiversity: It is a unique ecotone that supports rich biodiversity — from aquatic life such as mudskippers, seagrass beds, and oyster reefs to more than 200 avian species,
- Flora: The green kingdom is represented with about 132 plant species like Walsura piscida; Manilkara elengi, Excoecaria agallocaha, Spinifex littoreus, Calamus viminalis, etc.
- Fauna: It includes migratory birds such as Eurasian curlews, oystercatchers, bar-tailed godwits, sand plovers, and greater flamingos.

# Painted Stork

**Recently, after a four-year hiatus, a pair of painted storks has been spotted in Kaziranga National Park and Tiger Reserve (KNPTR).**

**About Painted stork**

- It is a large wading bird belonging to the stork family.
- Distribution: These birds are found across the plains of tropical Asia, from the Indian Subcontinent extending into Southeast Asia, south of the Himalayas.
- Habitat: They favor freshwater wetlands, but they also frequent irrigation canals and agricultural fields, particularly during the monsoon when rice fields are flooded.
- They are not migratory and only make short-distance movements in some parts of their range in response to changes in weather or food availability or for breeding.
- Food: Painted storks are carnivores (piscivores). Their diet consists mainly of small fish, but also crustaceans, amphibians, insects, and reptiles.
- Conservation Status: It is classified as near threatened under the IUCN Red List

**Painted Stork Features**

- Painted storks are the only storks within the genus Mycteria that have a black pectoral band.
- Males and females are not sexually dimorphic; however, male painted storks tend to be slightly larger than female storks.

# Ortolan Bunting

**The rare European bird, the Ortolan Bunting, with just a single recorded sighting in Bengal, was spotted at Baruipur, situated in the southern periphery of the city, recently.**

**About Ortolan Bunting**

- It is a small Palearctic migrant songbird.
- Scientific Name: Emberiza hortulana
- Distribution: The bird is found in most of Europe, with populations found as far west as Mongolia and as far north as the Arctic Circle.

**Ortolan Bunting Habitat**

- Its habitat consists of open, cultivated, or uncultivated areas with sparse woody vegetation, up to an altitude of 2500 metres locally.
- It absolutely avoids forested areas, including during migration.
- The oceanic climate is not suitable for it.

**Ortolan Bunting Features**

- It is small, with a length of 6.3 to 6.7 inches and a wingspan of about 10 inches.
- The males have a greenish-gray head along with a yellow throat, swooping mustache, and ring around the eye.
- Its belly is brown and its back and rump are brown and streaked.
- The females and juveniles are smaller, have spots on the belly, and are duller overall.
- Like most buntings, the ortolan has a conical beak that’s good for cracking seeds.

**Ortolan Bunting Conservations Status**

- It is classified as 'Least Concerned' under the IUCN Red List.

# Chlorophytum Vanapushpam

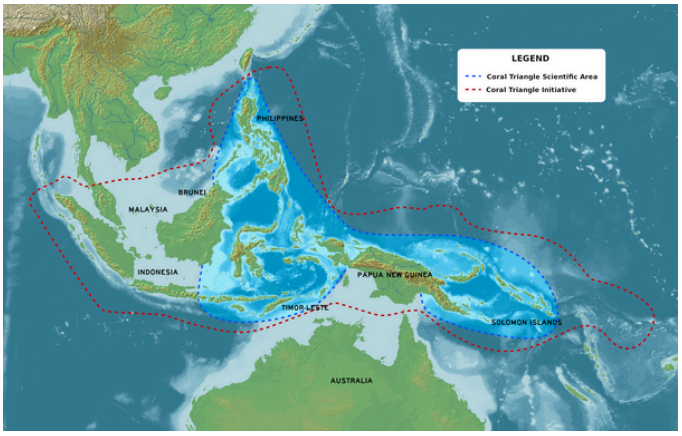
**Researchers during a field exploration in Idukki district's Vagamon hills have identified a new species of the genus Chlorophytum and named the new species as Chlorophytum vanapushpam.**

**About Chlorophytum Vanapushpam**

- It is a perennial herb belonging to the genus Chlorophytum (family Asparagaceae).
- It is a close relative of the safed musli.
- It has been found in the rocky hills of Vagamon and Neymakkad - parts of the Western Ghats regions of Idukki district - at elevations between 700 m and 2124 m.
- The species name vanapushpam is a composite of 'Vanam' and 'Pushpam,' the Malayalam for forest and flower respectively.
- Features of Chlorophytum vanapushpam:
  - It has white flowers in small clusters and slender leaves and grows up to 90 cm in height.
  - But unlike its more famous cousin Chlorophytum borivilianum, Chlorophytum vanapushpam lacks tubers.
  - Its seeds are about 4 to 5 mm across. Flowering and fruiting occurs from September to December.
- The Western Ghats region is thought to be a centre of origin of the genus Chlorophytum.
- A total of 18 species have been identified here so far, with many of them exhibiting medicinal properties.
- One of these is the Chlorophytum borivilianum, more familiar to Indians as the 'safed musli,' a herb widely used in traditional medical preparations and also popular as a leaf vegetable.

# Coral Triangle

**The Philippines is preparing to host Southeast Asia's first coral larvae cryobank which links research institutions in the Philippines, Taiwan, Indonesia, Malaysia, and Thailand to create a network of cryobanks across the Coral Triangle.**



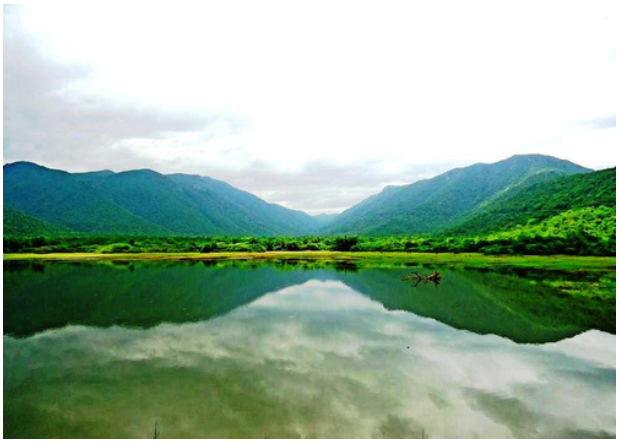

**About Coral Triangle**

- It is often referred to as the 'Amazon of the seas', is a huge marine area spanning over 10 million square kilometres.
- Countries of coral Triangle: It includes countries like Indonesia, Malaysia, Papua New Guinea, Singapore, the Philippines, Timor-Leste, and the Solomon Islands.
- Significance: The Triangle is home to more than three-quarters of the world's coral species, a third of all reef fish, the vast mangrove forests, and six of the seven marine turtle species.
- It also sustains the food security and livelihoods of more than 120 million people.
- Threats: Growing carbon emissions, destructive fishing, air, water, and soil pollution, and the accelerating effects of climate change are all driving coral bleaching, habitat loss, and species decline.

**What are Corals?**

- Corals are essentially animals, which are sessile, meaning they permanently attach themselves to the ocean floor.
- Corals share a symbiotic relationship with single-celled algae called zooxanthellae.
- The algae provide the coral with food and nutrients, which they make through photosynthesis, using the sun's light.
- They use their tiny tentacle-like hands to catch food from the water and sweep into their mouth.
- Each individual coral animal is known as a polyp and it lives in groups of hundreds to thousands of genetically identical polyps that form a 'colony'.

# Bhavani River

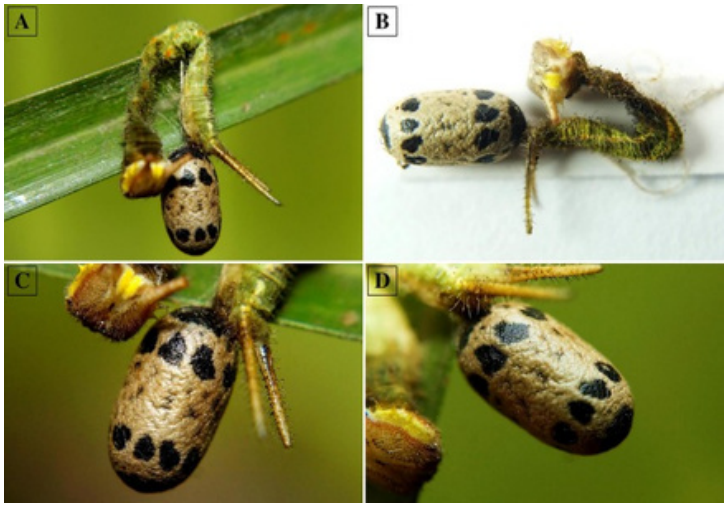


**The Tamil Nadu Forest Department is monitoring an injured makhna (tuskless male elephant) that has been standing in the river Bhavani along the Tamil Nadu-Kerala border.**

**About Bhavani River**

- It is a major tributary of the Cauvery River.
- It flows through the states of Kerala and Tamil Nadu.
- It is the second largest river in Tamil Nadu.
- Course:
  - It originates from the Western Ghats in the Nilgiri Hills, located in the Tiruppur District of Tamil Nadu.
  - From there, it flows into Kerala, passing through the Silent Valley National Park.
  - After flowing through Kerala, the river turns and flows back into Tamil Nadu.
  - The river confluences with the Cauvery river at the town of Bhavani in Tamil Nadu.
  - Bhavani Sangameshwarar Temple, situated at the meeting point of the Bhavani and the Cauvery Rivers, is a prominent pilgrim center.
- Total Length: 217 km.
- It is a perennial river.
- The drainage basin of the Bhavani River spans approximately 6,200 sq.km., covering parts of Tamil Nadu, Kerala, and Karnataka:
- Tamil Nadu: 87% of the basin area
- Kerala: 9% of the basin area
- Karnataka: 4% of the basin area
- About 90 percent of the river water is used for agriculture.
- Tributaries: The largest tributaries of the Bhavani River are West and East Varagar, which come from the Nilgiris.
- There are two major dams on the Bhavani River:
- Bhavani Sagar Dam
- Kodiveri Dam
- Source: TH... Read more at: https://vajiramandravi.com/current-affairs/upsc-prelims-current-affairs/2025/10/07/

# Nesolynx Banabitanae




**A new species of wasp named Nesolynx banabitanae was recently discovered in Salt Lake, West Bengal.**

**About Nesolynx Banabitanae**

- It is a new species of wasp.
- It was found in the lush environs of Central Park, Salt Lake, West Bengal.
- It was named ‘Nesolynx banabitanae' in honour of Banabitan, the local name for Central Park, where the wasp was first identified.
- The discovery marks only the seventh wasp species to be identified in India.
- It belongs to the Eulophidae family, a group known for its diverse parasitic behaviours.
- This particular species is a hyperparasitoid, meaning it parasitises other parasitoid wasps, adding a complex layer to the ecological interactions within its habitat.
- The wasp was found to be a hyperparasitoid of the ichneumonid parasitoid Charops aditya, which itself parasitises caterpillars of the common palmfly and Common castor butterflies.

# Paramyrothecium Strychni

**Recently, scientists have discovered a new species of phytopathogenic fungus, Paramyrothecium strychni in Kerala.**

**About Paramyrothecium Strychni**

- It is a fungus species associated with emerging leaf spots and blight disease of Strychnos dalzellii (Family-Loganiaceae) from Kerala.
- This new species has been discovered and established on the basis of morpho-cultural and multigene molecular phylogenetic evidence.
- According to Index Fungorum, a total of 25 species of Paramyrothecium are recognied worldwide, and most of them are reported as plant pathogens.
- Species of Paramyrothecium mostly cause leaf spots and blights in all kinds of plants.

**What is Strychnos Dalzellii?**

- It is an endemic medicinal plant of the Western Ghats.
- It is valued for its alkaloids with analgesic, anti-inflammatory, and antimicrobial properties. Traditionally, it is used in treating fever, digestive disorders, rheumatism, and nervous ailments.
- Strychnos dalzellii is locally known as Kanjiram or Modirakanjiram.
- Conservation Status: It is categorised as Vulnerable (VU) under the IUCN Red List.
- Threats: Habitat degradation, and overexploitation

# Sathyamangalam Tiger Reserve


**The Madras High Court recently ordered appropriate action against all illegal resorts and tourist lodges functioning within the prohibited zone of Sathyamangalam Tiger Reserve (STR).**

**About Sathyamangalam Tiger Reserve**

- It is located at the junction of the Eastern and the Western Ghats in the Nilgiri Biosphere Reserve, in the Erode District of Tamil Nadu.
- It covers an area of over 1,400 sq.km.
- It is contiguous with the Mudumalai Tiger Reserve, Bandipur Tiger Reserve (Karnataka), and BR Tiger Reserve and Wildlife Sanctuary (Karnataka).
- Together, these reserves-forming the Nilgiris biosphere landscape, have the biggest tiger population in the world, at over 280 tigers.
- The region was once part of the traditional hunting grounds of local rulers and also played a strategic role as a passage between Tamil Nadu and Karnataka, owing to its position along the historic Mysore–Tamil Nadu trade routes.
- The terrain is hilly and undulating with altitude ranging between 750 m and 1649 m.
- Climate:
- It is subtropical and dry.
- The summers are hot and dry; the monsoons are wet and cooler, with river flooding.
- Rivers: Some of the prominent rivers in the region include the Bhavani, Moyar, and Noyyal rivers.
- Tribal Communities: It is home to several indigenous tribal communities, including the Irula and Kurumba tribes.
- Vegetation: It consists of southern tropical dry thorn forests, mixed deciduous forests, semi-evergreen forests, and riparian forests.
- Flora: Prominent tree species include teak, sandalwood, bamboo, Terminalia, and Albizia, alongside medicinal plants and shrubs that support both wildlife and local communities.
- Fauna: The major species are Elephant, Tiger, Panther, Sloth bear, Gaur, Black Buck, Spotted deer, Wild boar, Black napped hare, Common langur Nilgiri langur, Striped neck mongoose, and Bonnet macaque.

# Araneus nox

**Recently, a survey by researchers in Idukki Wildlife sanctuary reported the first record of spider species Araneus nox in India.**

**About Araneus nox**

- It is an orb-weaving spider species belonging to the Araneidae family.
- It is also known as the Leathery Garden Orb-weaver.
- It was first documented in 1877 by French arachnologist Eugène Simon from Basilan in the Philippines.
- It is known for spinning near-perfect, vertically oriented circular webs on vegetation and tree branches.
- Habitat: It is mainly found in gardens, forests, and backyards
- Distribution: Southeast Asia including Cambodia, Laos, Myanmar, Thailand, and Vietnam and also in Philippines, Malaysia, Indonesia, Myanmar.
- Appearance: Its coloration can vary from light brown to jet black, sometimes featuring clusters of light brown setae on the abdomen's sides.
- It is a small and medium-sized orb-weaver with a distinctively textured, leathery abdomen.

**What are orb-weaving spiders?**

- They are of the family Araneidae (Argiopidae or Epeiridae) of the order Araneida, a large and widely distributed group noted for their orb-shaped webs
- The orb spiders are a large group of spiders that weave round, more or less symmetrical webs suspended in open-air spaces.

# Southern Right Whale

**Southern right whales are producing fewer calves, signaling environmental disruption due to climate change.**

**About Southern Right Whale**

- The southern right whale is one of four species, or types, of right whales.
- Like all whales, right whales are mammals that live in the ocean but breathe air at the surface.
- It is said that right whales got their name from whalers who considered them the “right” whales to hunt, because they were easy to kill and had body parts that were valuable.
- Scientific Name: Eubalaena australis.

**Southern Right Whale Distribution**

- They are found in the oceans of the Southern Hemisphere.
- They usually live in sheltered bays, but in summer they can be found in the cold water around Antarctica.
- Southern right whales visit the South African coast from May to November each year.

**Southern Right Whale Features**

- They are mostly dark gray or black.
- They can be up to 60 feet (18 meters) long, and they weigh about 60 tons.
- The head is very large. It is about one-quarter of the length of the animal.
- The head has distinctive white calluses, which are home to colonies of parasites.
- They have large amounts of fat called blubber that protects them from cold temperatures.

**Southern Right Whale Conservation Status**

- It is classified as 'Least Concern' under the IUCN Red List.

# Green Sea Turtle

**According to the International Union for Conservation of Nature (IUCN) the Red List status of the green sea turtle (Chelonia mydas) has improved from Endangered to Least Concern due to sustained conservation.**

**About Green Sea Turtle**

- It is the largest hard-shelled sea turtle.
- The common name of this species refers to the usually green fat found beneath its carapace, not to the color of its carapace, which is olive to black.
- Food: The diet of Green sea turtles changes with age. Juveniles are carnivorous, but as they mature they become omnivorous.
- Green turtles serve as keystone species in tropical marine ecosystems.
- Distribution: The species is found in tropical and subtropical waters around the globe.

**Features of Green Sea Turtle**

- They have a comparatively small head.
- They do not have teeth, but their jaws have modified “beaks” suited to their particular diet.
- They do not have visible ears but have eardrums covered by skin. They hear best at low frequencies, and their sense of smell is excellent.
- They spend almost all their lives underwater and come out of the water only when nesting.
- Lifespan: Estimated to be 60-70 years.
- Conservation Status: IUCN: Least Concern

# Naked Mole Rat

**A new study of the naked mole rat shows that these animals have evolved a DNA repair mechanism that could explain their longevity.**

**About Naked Mole Rat**

- It is a small, hairless burrowing rodent native to parts of East Africa.
- Distribution: They are predominantly found in southern Ethiopia, Kenya, Somalia, and Djibouti.
- Habitat: They inhabit drier parts of the tropical grasslands and savanna.
- Food: They are herbivores and feed primarily on very large tubers.
- Social Structure: It is eusocial, meaning they live in large colonies in which only one female breeds and the majority of workers (both males and females) spend their entire lives working for the colony.
- Conservation Status: IUCN: Least Concern

**Characteristics of Naked Mole Rat**

- It is famous for living an astonishingly long time, up to around 37 years, nearly 10x longer than mammals of similar size.
- It lacks pain sensitivity in its skin and has very low metabolic and respiratory rates.
- It is also remarkable for its longevity and its resistance to cancer and oxygen deprivation.
- Their lifestyle is more akin to that of bees and wasps and other eusocial insects.
- They live in underground burrows that may stretch to 5 km, in colonies of around 70 animals.
- It is cold-blooded, unable to control their body temperature and dependent on the prevailing outside temperature.

**Key Findings of Researchers**

- The cyclic GMP-AMP synthase (cGAS) functions differently in naked mole rats compared to humans and mice. (GMP –AMP synthesis which modulates various cellular processes)
- Key differences in cGAS function
- Humans and Mice: cGAS interferes with DNA repair, increasing the risk of aging and cancer
- Naked Mole Rats: cGAS enhances DNA repair, promoting genome stability and potentially contributing to their longevity.
- This is due to four amino acid substitutions in the cGAS structure that allow it to bind to DNA longer and facilitate repair by bringing together repair proteins FANCI and RAD50.

# Sundarbans National Park

**Recently, the International Union for Conservation of Nature (IUCN) revealed that Sundarbans National Park has experienced a deterioration in its conservation outlook status from 'Good with Some Concerns' to 'Significant Concerns' in the last five years.**

**About Sundarbans National Park**

- Location: It is located in the southeastern region of West Bengal, near Kolkata, and forms part of the Gangetic Delta.
- It is part of the larger Sundarbans mangrove forest, one of the largest in the world.
- It was established in 1973 under India's Project Tiger initiative to protect the endangered Royal Bengal Tiger.
- It was designated as a World Heritage Site by UNESCO in 1987 for its natural ecosystem and tiger habitat.
- It was declared as a Biosphere Reserve in 1989 by the Government of India.
- In 2001, it was included in the UNESCO World Network of Biosphere Reserves for its role in biodiversity conservation and sustainable development.
- In 2019, the Sundarbans Wetland was recognized as a Ramsar Site, adding its importance for migratory birds and environmental sustainability.
- Rivers: The Sundarbans delta is formed by the coming together of three rivers, Ganga, Brahmaputra and Meghna.
- Flora: Some of the common species of plants which are found include Sundari tree, Golpati, Champa, Dhundul, Genwa and Hatal.
- Fauna: Royal Bengal Tiger, fishing cats, macaques, leopard cats, Indian grey mongoose, wild boar, flying fox, pangolin, and Indian grey mongoose.

# Indian Wolf

**Recently, the International Union for Conservation of Nature (IUCN) has for the first time evaluated the Indian wolf (Canis lupus pallipes) separately.**

**About Indian Wolf**

- It is a subspecies of the Grey Wolf found in the Indian subcontinent and Southwest Asia.
- Habitat: It prefers scrublands, semi-arid grasslands, and pastoral agro-ecosystems.
- Behavior: Indian wolves generally live in smaller packs rarely exceeding 6-8 individuals.
- They are also relatively less vocal and have rarely been known to howl and are territorial and hunt during the night.
- Appearance: Intermediate in size between the Tibetan and Arabian wolves, but lacks a thick winter coat due to adaptation to warmer climates.
- Distribution: Indian wolves are found in India, Pakistan, Afghanistan, Nepal, Bhutan, Israel, Turkey, Iran, and Syria.
- Threats: It faces a steady decline driven by habitat loss, shrinking prey base, and human persecution.

**Conservation Status of Indian Wolf**

- IUCN:  Vulnerable
- CITES: Appendix I
- Wildlife (Protection) Act, 1972: Schedule I

# Impatiens Rajibiana

**A team of the Botanical Survey of India recently discovered 'Impatiens rajibiana', a new species of balsam flower.**

**About Impatiens Rajibiana**

- It is a new species of balsam flower.
- It was discovered in the natural forests of Shergaon in the West Kameng district of Arunachal Pradesh.
- The plant was discovered growing in moist, shaded forest areas of Shergaon at an elevation of over 2,000 meters.
- It belongs to the family Balsaminaceae, commonly known as balsams.
    - Many balsam species are endemic, occurring only in the region and often in limited numbers.
    - India currently has around 230 known balsam species, including well-known varieties like Impatiens balsamina (garden balsam or touch-me-not).
    - Between 2013 and 2017, over 16 new species were discovered in Arunachal Pradesh alone, including Impatiens godfreyi and Impatiens sashinborthakurii.

# Silent Valley National Park


**Six new species of dragonflies and damselflies were found in Silent Valley National Park during an odonate survey held recently.**

**About Silent Valley National Park**

- It is a stretch of pristine wet evergreen forest located along the southwest corner of the Nilgiris in South India, in the State of Kerala.
- It is one of the last undisturbed tracts of tropical rainforest in India.
- It constitutes the centerpiece of the Nilgiri Biosphere Reserve, sanctified as a World Heritage Site by UNESCO in 2012.
- It covers an area of approximately 237.52 sq.km.
- The altitude of the park varies between 658 to 2383 meters.
- It is nourished by the Kunthipuzha River, which meanders through the dense forest.
- The valley is said to be "silent" because of the absence of the cicadas, a type of insect that produces a loud buzzing sound in many forests.
- Vegetation: It has four types of vegetation "West Coast tropical evergreen forest, southern sub-tropical broad-leaved hill forest, montane wet temperature forest, and grasslands.
- The park's dense forests, riverine ecosystems, and high-altitude grasslands provide a habitat for a variety of species, many of which are endemic to the Western Ghats.
- Flora:
  - The flora of the valley includes about 1000 species of flowering plants, 107 species of orchids, 100 ferns and fern allies, 200 liverworts, 75 lichens, and about 200 algae.
  - Plants of high medicinal value as well as the towering Culinea trees are also found here.
- Fauna:
  - The park is famous for its population of lion-tailed macaques, an endangered primate species that is endemic to the Western Ghats.
  - Other notable mammals include the Nilgiri langur, Malabar giant squirrel, Indian elephant, tiger, leopard, and gaur (Indian bison).
  - The park is also home to over 200 species of birds, including the great Indian hornbill, Nilgiri wood pigeon, and several species of eagles and owls.

# Blackbuck

**Over the last five years, the Chhattisgarh government has successfully reintroduced the blackbuck back into the state's forests through its five-year reintroduction plan.**

**About Blackbuck**

- It is a species of antelope native to India and Nepal.
- Scientific Name: Antilope cervicapra
- Distribution:
- It is widespread in the states of Rajasthan, Gujarat, Madhya Pradesh, Tamil Nadu, Odisha, and other areas throughout peninsular India.
- It has been declared as the state animal by the governments of Punjab, Haryana, and Andhra Pradesh.
- Habitat: The blackbuck mostly lives in open grasslands, dry scrub areas, and thinly forested areas.

**Blackbuck Features**

- It is a medium-sized antelope.
- It is known for its beautiful spiraling horns. Only the male blackbucks have these horns. They can grow quite long, sometimes over 20 inches.
- Male blackbucks are usually dark brown or black on their backs and sides. They have white fur on their bellies, inner legs, and around their eyes. This creates a striking contrast.
- Young males and females are lighter in color, often yellowish-brown.
- They have very good eyesight and are also very fast runners, which comprise their main defense against predators. They can reach speeds of up to 50 miles per hour.
- They are gregarious and social animals with herds generally ranging from 5 to 50 animals.

**Blackbuck Conservation Status**

- It is classified as 'Least Concerned' under the IUCN Red List.

# Rakchham Chitkul Wildlife Sanctuary

**An international bird-watching programme was recently organised at the scenic Rakchham area of the Rakchham-Chitkul Wildlife Sanctuary in Himachal Pradesh.**

**About Rakchham Chitkul Wildlife Sanctuary**

- It is located in the Kinnaur district of Himachal Pradesh.
- It is spread over an area of 30.98 sq.km.
- It is situated at an elevation ranging from 3200 to 5486 meters above sea level.
- It is a part of the Western Himalayan range.
- It is surrounded by snow-capped mountains, lush green valleys, and gushing rivers.
- The perilous Lamkhanga Pass is one of the many trekking routes that pass through this sanctuary.
- This pass connects the Himachal Pradesh province of Kinnaur to the Uttarakhand region of Gangotri.
- Unlike the climate of other sanctuaries in Himachal Pradesh, the sanctuary is located in a dry zone, hence it does not experience monsoons.
- Flora: Some of the common flora found in the sanctuary include rhododendrons, oak trees, pine trees, and medicinal herbs.
- Fauna: It is also home to various species of wildlife, such as snow leopards, Himalayan black bears, musk deer, and numerous bird species.

# Carabid Beetle

**Recently, researchers found that carabid ground beetles act as potential bio indicators to track soil micro plastics.**

**About Carabid Beetle**

- They are commonly known as ground beetles due to their habitat and behavior.
- Ground beetles (Carabidae) are an important family of invertebrates known to strongly influence food web structure, often as key predators or prey species.
- It belongs to the family Carabidae.
- Habitat: Carabid beetles are found in a wide variety of habitats, including forests, grasslands, agricultural fields, wetlands, and even urban areas.
- They are adapted to diverse climatic conditions, from temperate to tropical regions.

**Features of Carabid Beetle**

- Appearance: They are known for their long legs and powerful mandibles which enable them to be voracious predators.
- They are infamous for their pungent smell, which they emit when they're threatened.
- Diet: They are mainly dependent on garden pests, including snails, caterpillars, slugs, and other small invertebrates.
- Life cycle: Ground beetles have four distinct life stages: egg, larva, pupa, and adult.
- Reproduction: Reproduction in carabids is typically sexual, with internal fertilization.
- Ecological Role: They are important for the biological control of insect pests on farms.

# Indian Scops-Owl

**In a rare and remarkable discovery, birdwatchers recently recorded the first-ever sighting of the Indian scops owl near the Daroji Sloth Bear Sanctuary in Karnataka.**

**About Indian Scops-Owl**

- It is a small woodland owl species, native to the southern regions of Asia.
- Scientific Name: Otus bakkamoena
- Distribution: It is found in India, Nepal, Pakistan, Sri Lanka, and Iran.
- Habitat:
- It is found in a variety of habitats, including forests, scrublands, and agricultural areas.
- It is a non-migratory species and tends to stay in the same area throughout the year.

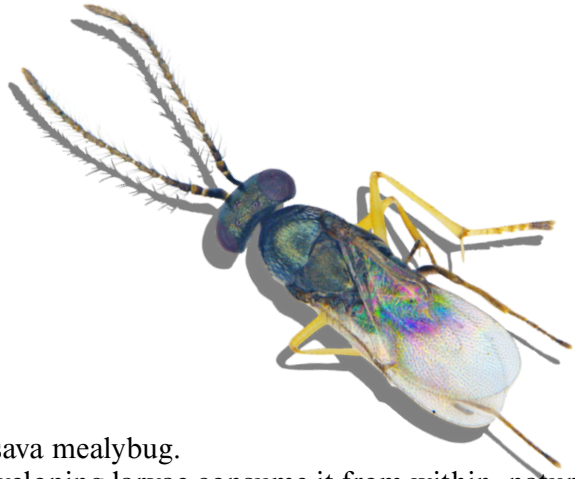
**Indian Scops-Owl Features**

- It measures between 17-20 centimeters in height and has a wingspan of around 45 centimeters.
- Its body is stocky, with a round head and short tail.
- It has striking physical features, including its large, bright yellow eyes with black pupils.
- The feathers are soft and fluffy, providing insulation against the cool night air.
- The overall coloration of the owl's feathers is a mixture of browns and greys, with intricate patterns of dark and light stripes and spots.
- A nocturnal hunter, the Indian Scops-Owl feeds predominantly on insect prey.

**Indian Scops-Owl Conservation Status**

- It is classified as 'Least Concern' under the IUCN Red List.

# Anagyrus lopezi



**Two years after scientists from the National Bureau of Agricultural Insect Resources (NBAIR), released a tiny parasitic wasp Anagyrus lopezi into South India's tapioca fields, the crop that once faced near devastation from an invasive pest is now thriving again.**

**About Anagyrus lopezi**

- It is a tiny parasitic wasp which specifically targets the cassava mealybug.
- Working: The wasp lays its eggs inside the pest, and the developing larvae consume it from within, naturally reducing mealybug numbers without harming other crops.
- The parasitoids spread naturally beyond the release points, up to 30–40 km, gradually bringing the mealybug population under control.
- It was imported from the International Institute of Tropical Agriculture (IITA), Benin, West Africa.

**Key Facts about Tapioca (Cassava)**

- It is a major horticulture crop cultivated in Tamil Nadu, Kerala, and Puducherry.
- It is cultivated throughout the tropical world for its tuberous roots, from which cassava flour, breads, tapioca, a laundry starch, and an alcoholic beverage are derived.

**Climatic Conditions Required for Tapioca**

- Soil: Any well-drained soil, preferably red lateritic loamy soil.
- Climate: It thrives best in a tropical, warm, humid climate
- Rainfall: Well-distributed rainfall of over 100 cm per annum.
- This crop can be cultivated upto an elevation of 1000 m.
- All parts of cassava/tapioca – leaves, stem, tuber and rind – contain the compounds called cyanogenic glucosides (CNGs).

# Barnawapara Wildlife Sanctuary


**After being declared locally extinct for about 50 years, the blackbuck has made a remarkable comeback at Barnawapara Wildlife Sanctuary in Chhattisgarh thanks to a focused five-year revival plan.**

**About Barnawapara Wildlife Sanctuary**

- It is located in the northern part of the Mahasamund district of Chhattisgarh.
- It is named after the Bar and Nawapara forest villages, which are in the heart of the sanctuary.
- It is spread over an area of 245 sq. km.
- The tributaries of Mahanadi are the source of water. The River Balamdehi forms the western boundary, and the Jonk River forms the northeastern boundary of the sanctuary.
- Flora:
- The flora chiefly comprises tropical dry deciduous forest, with Teak, Sal, Bamboo and Terminalia being the prominent trees.
- Other major plants found in the sanctuary include Semal, Mahua, Ber, and Tendu.
- Fauna: It is home to neelgai, wild boar, tigers, leopards, Indian bison, porcupines, pythons, antelopes, sambhar and cheetal, along with 150 species of birds, including parrots, blackbucks, herons, egrets, peafowl, etc.

# Kopi Luwak

**A recent study revealed that civet-processed Robusta coffee, known as Kopi Luwak, differs significantly from naturally harvested Robusta beans in its fatty acid composition and total fat content, providing new scientific insight into the unique aroma and flavour that make it famous.**

**About Kopi Luwak**

- Kopi Luwak, also known as Civet Coffee, is one of the world's most expensive and exclusive coffees.
- It's made from beans that have been partially digested and excreted by the Asian Palm Civet.
- After the civet eats ripe coffee cherries, the beans are excreted, collected, washed, dried, and then roasted to produce coffee with a unique, smooth, and silky texture.
- The beans' fermentation process results in a coffee with distinctive flavor notes of chocolate, caramel, and nuts, accompanied by low acidity.
- The distinct flavour may derive from the animal's gut and digestive fluids.
- Gastric juices and enzymes from the civet's stomach increase the level of citric acid in the beans, resulting in a coffee with a lemony tanginess and a more delicate aroma.
- This rare coffee is highly sought after and is considered a luxury item.
- However, the production of Kopi Luwak has sparked ethical concerns.
- Civets are sometimes kept in small cages and are force-fed coffee cherries, leading to calls for more ethical and sustainable production methods.
- Despite these concerns, Kopi Luwak remains a highly prized delicacy, and can cost more than US$1,300 per kilogram.

**Key Facts about Asian Palm Civet**

- The Asian Palm Civet, also known as the Toddy Cat or Common Palm Civet, is a small, nocturnal mammal that is found throughout South and Southeast Asia, including India, Sri Lanka, Indonesia, and the Philippines.
- It is a member of the Viverridae family, which also includes other civet and mongoose species.
- Scientific Name: Paradoxurus hermaphroditus.
- Features:
  - It has a long, slender body, short legs, and a pointed snout.
  - It weighs between 2 to 5 kg and measures around 53 to 71 cm in length, including the tail.
  - Its fur is brownish-gray with black spots, and it has a white mask-like marking around its eyes.
  - It is a nocturnal animal and feeds on a variety of prey, including insects, small mammals, and fruits.
  - They are also known for their strong sense of smell and excellent climbing skills, allowing them to easily climb trees and forage for food.
  - They are not very social animals.

**Conservation Status:**

- IUCN Red List: Least Concern

# Pseudorhombus bahudaensis

**A team of researchers from the Estuarine Biology Regional Centre of the Zoological Survey of India recently discovered a new fish species named Pseudorhombus bahudaensis in the Bahuda estuary in Odisha.**

**About Pseudorhombus bahudaensis**

- It is a new species of flounder fish.
- It was discovered in the Bahuda estuary in Odisha.
- It bears close resemblance to Pseudorhombus arsius, commonly known as the Gangetic largetooth flounder.
- Scientists believe the species may be widespread across the Indo-Pacific region.

**What is a Flounder?**

- Flounder is not a specific fish but rather a group of fish, specifically flatfish, that encompass different species and different families, though they all belong to the order Pleuronectiformes.
- They are bottom-dwelling fish, where they lie on their wide, flat bodies and have both eyes on one side of their heads (either the left or right, depending on the species).
- Flounder are a migratory species, mainly living in inshore water to a depth of around 50 m, and can move between saltwater and freshwater environments.

# Pilot Whales

**Recently, more than two dozen pilot whales have died after becoming stranded on a remote beach in New Zealand.**

**About Pilot Whales**

- Pilot whales are one of the largest members of the Delphinidae family.
- There are two species of pilot whales: Short-finned pilot whales (Globicephala macrorhynchus) and Long-finned pilot whales (G. melas),
- Habitat: Short-finned pilot whales found in tropical and warm-temperate waters, while long-finned species inhabit cold-temperate and sub-polar oceans.
- Distribution: They are distributed in the Pacific Ocean, Atlantic Ocean and seas near Australia, New Zealand, Japan, and India.

**Features of Pilot Whales**

- They are characterized by a round bulging forehead, a short beaklike snout, and slender pointed flippers.
- Both long-finned and short-finned pilot whales are about 4–6 metres (13–20 feet) long.
- Males of both species are larger than females.
- These whales live in groups numbering from dozens to hundreds or even thousands of individuals and feed mainly on squid.
- These groups are based on matrilineal lines – meaning that calves stay with their mothers through adulthood.
- Conservation Status: IUCN: Least concern

# Panna Tiger Reserve


**Vatsala', considered to be Asia's oldest elephant, died recently at the age of more than 100 years at the Panna Tiger Reserve in Madhya Pradesh.**

**About Panna Tiger Reserve**

- Location: It is located in the Vindhyan mountain range in the northern part of Madhya Pradesh.
- Standing over an area of 542 sq.km., it is the only tiger reserve in the entire Bundhelkhand region.
- It falls in biogeographic zones of the Deccan Peninsula and the Biotic Province of the Central highlands.
- It was declared a Project Tiger Reserve by the Government of India in 1994.
- Landscape:
  - It is characterized by a 'Table Top' topography.
  - It consists of extensive plateaus and gorges.
  - Two plateaus run parallel to each other from southwest to northeasterly direction.
- River: The Ken River flows from south to north through the reserve.
- The reserve is also dotted with two-thousand-year-old rock paintings.
- The region surrounding the reserve is home to various indigenous tribes, each with its distinct culture and traditions. The Baiga and Gond tribes are among the prominent ones.
- Flora:
  - The dominant vegetation type is dry deciduous forest interspersed with grassland areas.
  - In the north, it is surrounded by teak forest, and in the east, it is surrounded by Teak-Kardhai mixed forest. It is the northernmost boundary of the natural distribution of teak (Tectona grandis).
  - The tree species Acacia catachu dominates the dry, steep slopes of the plateaus here.
- Fauna:
  - It supports a sizable population of Tiger, Sloth Bear, Leopard, and Striped Hyena.
  - Other prominent carnivores are Jackal, Wolf, Wild Dog, Jungle Cat, and Rusty Spotted Cat.

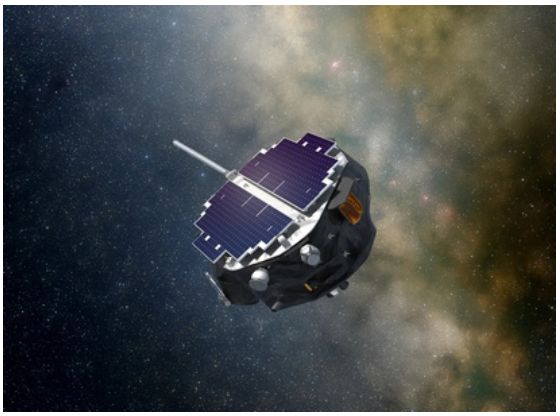
# False Smut Disease

**According to reports, the paddy crop, which is at the maturing and harvest stage, has been infested with false smut disease, causing widespread damage across Punjab.**

**About False Smut Disease**

- False smut (haldi rog) is an important fungal disease of rice (paddy).
- It is caused by the fungus Ustilaginoidea virens.
- It is also known as Lakshmi disease or Oothupathi disease of rice.
- The disease is hard to stop, because fungus infects the crop during the flowering stage, and symptoms of the disease are evident after emergence of rice panicles.
- The typical symptom of the disease is black fungal mycelium growth in paddy grains, which become covered with yellow fungal growth in the field.
- Mature spores are orange and turn yellowish green or greenish black in colour.
- Only a few grains in a panicle are usually infected, and the rest are normal.
- It doesn't directly impact other plant parts.
- It causes chalkiness of grains, which leads to reduction in grain weight. It also reduces seed germination.
- The percentage of infected panicles and the extent of infection within each panicle significantly impact yield loss.
- Favorable Factors for False Smut in Paddy Crops?
- Warm and humid weather: Temperatures between 25-30°C and high humidity (>80%) promote fungal growth.
- Presence of infected plant debris: Spores can survive on leftover stubble and straw from previous harvests.
- High nitrogen content in soil: Excessive nitrogen application can increase susceptibility.
- Control of false smut of rice through fungicide application is feasible; however, high usage of fungicides has led to the resistance development in causal agents besides environmental pollution.

# Interstellar Mapping and Acceleration Probe



**Recently, NASA launched the Interstellar Mapping and Acceleration Probe (IMAP) to show how solar particles are energised and shield us.**

**About Interstellar Mapping and Acceleration Probe**

- Its goal is to map the heliosphere's boundary, trace energetic particles, and improve space weather forecasting.
- The heliosphere is a huge bubble created by the Sun's wind that encapsulates our entire solar system.
- IMAP will support real-time observations of the solar wind and energetic particles, which can produce hazardous conditions in the space environment near Earth.
- It is situated at the first Earth-Sun Lagrange point (L1), at around one million miles from Earth toward the Sun.
- IMAP will also send data in near real-time to help scientists monitor space weather conditions.
- Interstellar Mapping and Acceleration Probe will
- Uncover fundamental physics at scales both tiny and immense.
- Improve forecasting of solar wind disturbances and particle radiation hazards from space.
- Draw a picture of our nearby galactic neighborhood.
- Help determine some of the basic cosmic building materials of the universe.
- Increase understanding of how the heliosphere shields life in the solar system from cosmic rays.

**Components of Interstellar Mapping and Acceleration Probe**

- IMAP is equipped with 10 scientific instruments, each designed to detect different types of particles or phenomena in space.
- Some of them are energetic neutral-atom detectors (IMAP-Lo, IMAP-Hi, IMAP-Ultra), which capture neutral atoms that were once charged ions but were changed by acquiring electrons.
- Other instruments detect charged particles directly, magnetic fields, interstellar dust, and solar-wind structures.

# Lecanemab Drug


**Recently, Australia approved Lecanemab drug for early Alzheimer's diseases.**

**About Lecanemab Drug**

- It is a monoclonal antibody drug to treat early stages of Alzheimer's.
- It is designed to slow early Alzheimer's progression by targeting amyloid proteins in the brain.
- It was developed to tackle the causes of Alzheimer's disease rather than only relieving the symptoms.

**Working of Lecanemab Drug**

- It uses antibodies to recognise amyloid in the brain and works with the brain's immune cells to clear amyloid protein build-up from the brains of people living with early-stage Alzheimer's disease.
- These amyloid protein build-ups are thought to be toxic to brain cells, causing them to get sick and eventually die, leading to the symptoms of Alzheimer's disease.
- Lecanemab is given to patients intravenously, which means into a vein through a drip bag.
- Recent clinical trials show a 27 per cent reduction in disease progression.
- Issues with : High cost and potential side effects, including brain swelling, limit its accessibility and raise safety concerns.

**What is Alzheimer's Disease?**

- Alzheimer's disease is a brain disorder that slowly destroys memory and thinking skills and, eventually, the ability to carry out the simplest tasks.
- It is the most common cause of dementia, a general term for memory loss and other cognitive abilities serious enough to interfere with daily life.
- Alzheimer's disease accounts for 60-80% of dementia cases.
- It involves parts of the brain that control thought, memory, and language.
- The condition usually affects people aged 65 years and over, with only 10% of cases occurring in people younger than this.

# Biomedical Research Career Programme Phase III

**Recently, the Union Cabinet has approved the continuation of the Biomedical Research Career Programme (BRCP), Phase-III.**

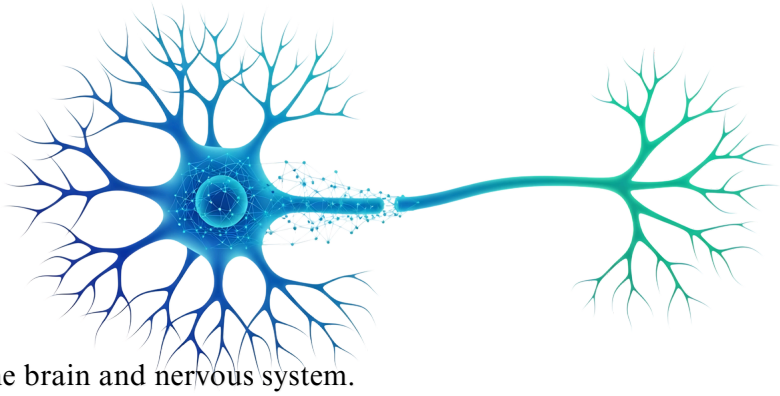
**About Biomedical Research Career Programme Phase III**

- It will nurture top-tier scientific talent for cutting-edge biomedical research and promote interdisciplinary research for translational innovation.
- It is being implemented in partnership between the Department of Biotechnology (DBT) and the Wellcome Trust (WT), United Kingdom and the SPV, India Alliance
- Time Period: Between 2025-26 and 2030-31 with an additional six-year support period until 2037-38.
- Funding: It will have a total outlay of ₹1,500 crore, of which DBT will contribute ₹1,000 crore and the Wellcome Trust ₹500 crore.
- In Phase-III, the following programmes are proposed to be implemented:
- Early Career and Intermediate Research Fellowships in basic, clinical and public health: These are globally recognized and tailored for the formative stages of a scientist's research career.
- Collaborative Grants Programme: These include Career Development Grants and Catalytic Collaborative Grants for 2-3 Investigator teams for early and mid-senior career researchers respectively with strong research track record in India.
- Phase III will also focus on strengthening mentorship, networking, public engagement, and developing new and innovative national and international partnerships.

**What is the Biomedical Research Career Programme" (BRCP) ?**

- It was first launched in in 2008-2009 through the DBT/Wellcome Trust India Alliance (India Alliance), a dedicated Special Purpose Vehicle (SPV)
- It offered research fellowships, based in India, for biomedical research at the world class standards.
- Subsequently, Phase II was implemented in 2018/19 with an expanded portfolio.

# Neurons



**A new study (2025) has identified dendritic nanotubes (DNTs) in the brains of mice and humans, a new form of neuron-to-neuron connection.**

**About Neurons**

- Neurons (nerve cells) are the fundamental units of the brain and nervous system.
- They are responsible for:
- Receiving sensory input from the environment.
- Sending motor commands to muscles.
- Processing and transmitting electrical and chemical signals.
- Structure of Neuron:
- Dendrites → receive incoming signals.
- Cell Body (Soma) → integrates signals.
- Axon → carries impulses away from the cell body.
- Axon Terminals → release neurotransmitters at synapses.
- Neuronal Communication
- Traditionally, neurons communicate via synapses where neurotransmitters cross gaps.
- New Discovery: Neurons may also connect via nanotubes (DNTs), enabling:
- Direct electrical signal transfer.
- Protein transport (including amyloid-beta, linked to Alzheimer's).

# Anusandhan National Research Foundation (ANRF)

**The Anusandhan National Research Foundation (ANRF) has launched a tool called SARAL (Simplified and Automated Research Amplification and Learning) to make scientific research more accessible and understandable.**

**About Anusandhan National Research Foundation (ANRF)**

- Established under: ANRF Act, 2023, functioning under the Department of Science & Technology (DST).
- Subsumed body: The Science and Engineering Research Board (SERB) has been merged into ANRF.
- Core objective: To seed, grow, and promote R&D, and foster a research and innovation culture across universities, colleges, research institutions, and R&D labs in India.
- Strategic role: Acts as an apex body providing high-level strategic direction to research, in line with the National Education Policy (NEP), 2020.
- Funding target: ₹50,000 crore for the period 2023–2028, with ~70% expected from private sector contributions.
- Broader vision: Develop an AI Science & Engineering Open India Stack to revolutionize sectors like drug and chemical discovery, aerospace design, advanced materials, climate and weather studies.
- Single-window system: Envisaged as a single-window clearance mechanism for R&D funding in academic and research institutions.
- SARAL uses Artificial Intelligence (AI) to generate simplified summaries of complex research papers in the form of videos, podcasts, posters, and presentations for wider outreach.

# Trichloroethylene (TCE)


**Long-term exposure to the industrial solvent trichloroethylene (TCE) outdoors may be linked to an increased risk of Parkinson's disease, according to a recent study.**

**About Trichloroethylene**

- It is a volatile, colorless liquid organic chemical.
- TCE does not occur naturally and is created by chemical synthesis.

**Trichloroethylene Applications**

- It is used primarily to make refrigerants and other hydrofluorocarbons and as a degreasing solvent for metal equipment.
- TCE is also used in some household products, such as cleaning wipes, aerosol cleaning products, tool cleaners, paint removers, spray adhesives, and carpet cleaners and spot removers.
- Commercial dry cleaners also use trichloroethylene as a spot remover.

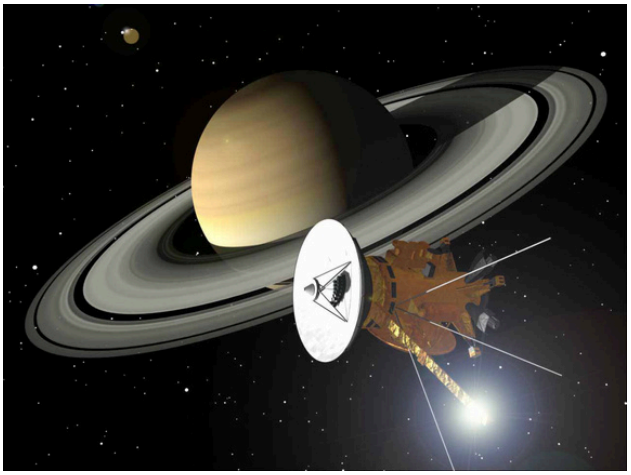
**How are People Exposed to Trichloroethylene?**

- TCE may be found in the air, water, and soil at places where it is produced or used.
- It breaks down slowly and remains in the environment for a long time.
- It readily passes through soil and can accumulate in groundwater.
- People in the general population can be exposed to TCE by inhaling it in indoor and outdoor air, drinking contaminated water, or eating foods that have been washed or processed with contaminated water.

**Impact of Trichloroethylene on Human Health**

- People with prolonged or repeated exposure to TCE could experience liver problems and may have an increased risk of developing liver or kidney cancer.
- TCE also has genotoxic and immunotoxic potential, and some studies indicate that it may be a teratogen.
- There is also increasing evidence supporting the association between TCE exposure and non-Hodgkin lymphoma, and several reproductive and developmental toxicity endpoints, including infertility in males and females, impaired fetal growth, and cardiac teratogenesis.

# Cassini Spacecraft



**A fresh look at data collected by NASA's Cassini spacecraft has uncovered more evidence that Saturn's moon Enceladus may be able to support life.**

**About Cassini Spacecraft**

- It is a joint project of NASA, the European Space Agency and the Italian space agency (ASI).
- Cassini was a sophisticated robotic spacecraft sent to study Saturn and its complex system of rings and moons in unprecedented detail.
- It was launched on October 15, 1997. It was one of the largest interplanetary spacecraft.
- The mission consisted of NASA's Cassini orbiter, which was the first space probe to orbit Saturn, and the ESA's Huygens probe, which landed on Titan, Saturn's largest moon

**Objectives of Cassini Spacecraft**

- Saturn—Study cloud properties and atmospheric composition, winds and temperatures, internal structure and rotation, ionosphere, origin, and evolution
- Rings—Observe their structure and composition, dynamical processes, interrelation of rings and satellites, dust and micrometeoroid environment.
- Titan—Study abundances of atmospheric constituents, distribution of trace gases and aerosols, winds and temperatures, composition and state of the surface, and upper atmosphere
- Saturn's Magnetosphere—Study its structure and electric currents; composition, sources, and sinks of particles within it; dynamics; interaction with the solar wind, satellites, and rings; Titan's interaction with solar wind and magnetosphere

**Components of Cassini Spacecraft**

- The instruments on board Cassini included radar to map the cloud-covered surface of Titan and a magnetometer to study Saturn's magnetic field.
- The disk-shaped Huygens probe was mounted on the side of Cassini and carried six instruments designed to study the atmosphere and surface of Titan.

**Key Facts about Enceladus**

- It is named after a giant in ancient Greek mythology,
- It is one of the innermost moons of the ringed gas giant Saturn.
- It has a diameter of 313 miles (504 km) and orbits Saturn at a distance of roughly 148,000 miles (238,000 km).
- Scientists believe Enceladus possesses the chemical ingredients needed for life and has hydrothermal vents releasing hot, mineral-rich water into its ocean, the same type of environment that may have spawned Earth's first living organisms.
- Its ocean resides under a crust of ice about 12-19 miles (20-30 km) thick.

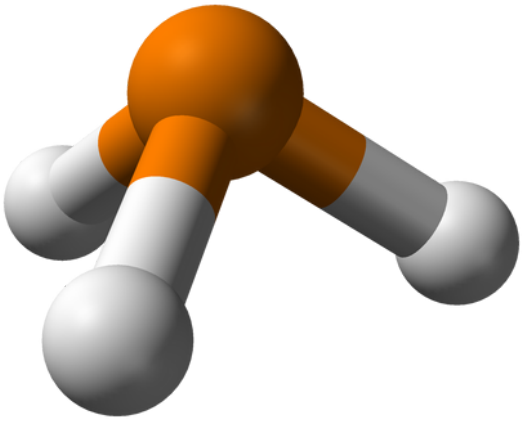
# Mono Ethylene Glycol


**The textile industry has appealed to the government not to levy anti-dumping duty on Mono Ethylene Glycol (MEG), which is one of the main raw materials used in the production of polyester fibre and filament.**

**About Mono Ethylene Glycol**

- It is an organic compound with the formula C2H6O2.
- It is also called ethylene glycol or just glycol.
- It is a slightly viscous liquid with a clear, colourless appearance and a sweet taste that emits virtually no odour.
- It's miscible with water, alcohols, and many other organic compounds.
- It is produced from the reaction between water and ethylene oxide.
- It is hygroscopic, meaning it can absorb water from its surroundings, and this property makes it useful as a dehydrating agent in various applications.
- MEG has a relatively low toxicity and is considered safe for many industrial and commercial uses.
- Uses:
- MEG is most commonly used in the manufacture of polyester fibre, fabrics, and polyethylene terephthalate (PET) resin used for the production of plastic bottles.
- Other industrial uses are as a coolant, heat transfer agent, antifreeze, and hydrate inhibitor in gas pipelines.

# Phosphine



**Recently, astronomers using the James Webb Space Telescope have detected phosphine (PH3) in the atmosphere of brown dwarf Wolf 1130C.**

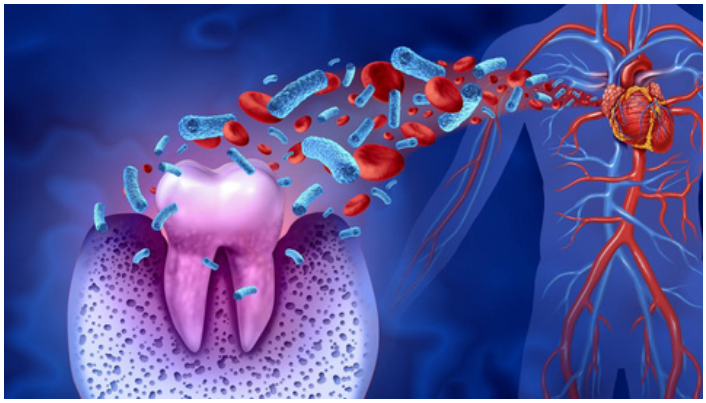
**About Phosphine**

- It is a chemical compound made of one phosphorus atom and three hydrogen atoms.
- Formation: Phosphine on Earth is developed naturally by bacteria that live in very low-oxygen environments.
- To produce phosphine, Earth bacteria take up phosphate from minerals or biological material and add hydrogen.
- It is also found in the atmospheres of Jupiter and Saturn.
- It is also called hydrogen phosphide.
- Uses of Phosphine: It is used in semiconductor and plastics industries, in the production of a flame retardant, and as a pesticide in stored grain.

**Properties of Phosphine**

- It is a colourless, flammable, extremely toxic gas with a disagreeable garlic like odour.
- It is slightly soluble in water.
- It is formed by the action of a strong base or hot water on white phosphorus or by the reaction of water with calcium phosphide (Ca3P2).
- It is structurally similar to ammonia (NH3), but phosphine is a much poorer solvent than ammonia and is much less soluble in water.

# Viridans Streptococci



**The new study, by a research team at Tampere University in Finland, examined coronary arteries from 121 sudden-death autopsies and found Viridans streptococci were the most frequent species, present in about 42% of both autopsy and surgical cases.**

**About Viridans Streptococci**

- It is a group of common oral bacteria.
- It can form sticky bacterial layers called biofilms deep inside atherosclerotic plaques, remaining hidden from the immune system until the moment of rupture.
- Viridans streptococci are commensals in the gastrointestinal, respiratory and female genital tracts and are most prevalent in the oral cavity.
- It is a group of gram-positive cocci that are commonly associated with infective endocarditis (IE) and typically colonize previously damaged cardiac tissue.
- Viridans Streptococcal Biofilm Evades Immune Detection and Contributes to Inflammation.
- Importantly, the bacterial clusters were often arranged in biofilms, protective layers that allow bacteria to survive unnoticed by the body's immune system.

**How do Oral Bacteria Trigger Heart Attacks?**

- The biofilm formed by this bacteria remains hidden, parts of it can break loose. Once released, the bacteria trigger inflammation in the artery wall.
- This weakens the fibrous "cap" covering the fatty plaque, making it more likely to rupture.
- Plaque rupture is a critical event that leads to clot formation and, ultimately, a heart attack.

# Indian Radio Software Architecture Standard


**Recently, the Defence Research and Development Organisation (DRDO), in collaboration with the Integrated Defence Staff and the Tri-Services released Indian Radio Software Architecture (IRSA) standard 1.0.**

**About Indian Radio Software Architecture Standard**

- It provides a standardised software architecture defining how different radio systems communicate securely and efficiently.
- It is India's first national specification defining a standardized software architecture for Software Defined Radios.
- Vision: To position IRSA as a global benchmark — enabling India to shape the future of SDR technology and export IRSA-compliant solutions to friendly nations.
- It is a comprehensive software specification for Software Defined Radios (SDR), defining standardized interfaces, APIs, execution environments, and waveform portability mechanisms, SDR Interoperability, Certification and Conformance.
- India's IRSA now joins the elite group of global SDR frameworks — alongside the US Software Communications Architecture (SCA), Europe's ESSOR, and NATO's STANAG SDR standards.
- It is prepared as per Standardization of Indigenous Software Defined Radio initiative of Directorate of Standardization (DoS) under Department of Defence Production (DDP) in Ministry of Defence (MOD) India.

**What is Software Defined Radio?**

- SDR is a radio communication system that employs reconfigurable software-based components for the processing and conversion of digital signals.
- Unlike traditional radio communication systems, these radio devices are highly flexible and versatile.
- This is an emerging technology used to connect an ever-increasing wireless world.

# Bridgeoporus Kanadii

**From the forests of northeast India's Arunachal Pradesh state, researchers have described a new-to-science species of fungus named Bridgeoporus kanadii.**

**About Bridgeoporus Kanadii**

- It is a new species of fungi discovered in Arunachal Pradesh.
- It has exceptionally large fruiting bodies that can hold the weight of a person. Some fruiting bodies measured over three meters in radius.
- The species is named in honor of Indian mycologist Kanad Das for his contributions to Indian macrofungi.
- The only other known species in Bridgeoporus, B. nobilissimus, is native to North America and has fruiting bodies up to about 1.5 meters. B. kanadii doubles that in size.
- Bridgeoporus fungi play a vital role in forest regeneration by helping to decompose dead wood.
- Most of the B. kanadii the researchers spotted in Arunachal Pradesh were growing on dead fir trees.
- Though the fungus is massive and visually striking, it is inedible and offers no direct economic use.

# Qubit

**Caltech has built the world's largest neutral-atom qubit array—6,100 qubits—pushing quantum computers closer to error correction and full-scale computation.**


**About Qubit**

- A qubit, or quantum bit, is the basic unit of information used to encode data in quantum computing.
- It can be best understood as the quantum equivalent of the traditional bit used by classical computers to encode information in binary.
  - In classical computing the information is encoded in bits, where each bit can have the value zero or one.
  - In quantum computing the information is encoded in qubits. A qubit is a two-level quantum system where the two basis qubit states are usually written as $|0\rangle$ and $|1\rangle$.
  - A qubit can be in state $|0\rangle$, $|1\rangle$, or (unlike a classical bit) in a linear combination of both states.
  - The name of this phenomenon is superposition.
- The term "qubit" is attributed to American theoretical physicist Benjamin Schumacher.
- Qubits are generally, although not exclusively, created by manipulating and measuring quantum particles (the smallest known building blocks of the physical universe), such as photons, electrons, trapped ions, superconducting circuits and atoms.
- Enabled by the unique properties of quantum mechanics, quantum computers use qubits to store more data than traditional bits, vastly improve cryptographic systems and perform very advanced computations that would take thousands of years (or be impossible) for even classical supercomputers to complete.

# Maitri II Station

**Recently, the Finance Ministry has granted approval for Maitri II — the country's newest research station proposed to come up in eastern Antarctica.**

**About Maitri II Station**

- It is India's newest research station proposed to come up in eastern Antarctica.
- It will be larger than Maitri I, with plans to design it as a green research base.
- The proposal includes using renewable energy sources — solar power for summer expeditions and wind energy to harness the strong Antarctic winds — to run the station's operations.
- It is planned to deploy automated instruments onboard Maitri II which will keep recording data and relay it to mainland India, even if the station remains unmanned for some period.
- The construction of the research station is expected to be completed by January 2029.
- Nodal Agency: National Centre for Polar and Ocean Research (NCPOR) under the Ministry of Earth Sciences (MoES) is the nodal agency responsible for operating and organising missions to Antarctica and the Arctic.

**Key Facts about Maitri Station**

- It has been hosting researchers since 1989, and is located along the Schirmacher Oasis — a 20 km-long ice-free landmass in East Antarctica.
- It comprises the main building, a fuel farm, a fuel station, a lake water pump house, a summer camp, and several smaller containerised modules.
- Maitri can accommodate between 25 and 40 scientists, depending on mission requirements and season.
- India's other research base in Antarctica: Dakshin Gangotri (first base in Antarctica), operated for a few years. Bharati which is operational since 2012.

# Astra Mark 2 Missile

**The Defence Research and Development Organisation (DRDO) recently announced its intention to extend the range of its Astra Mark 2 air-to-air missile to more than 200 kilometres.**

**About Astra Mark 2 Missile**

- It is a Beyond Visual Range (BVR) air-to-air missile.
- It is being developed by the Defence Research and Development Organisation (DRDO).
- In addition to various laboratories of DRDO, more than 50 public and private industries, including Hindustan Aeronautics Limited, have contributed towards successful realisation of the weapon system.
- The Astra Mark-1 air-to-air missile with a strike range of around 90-100 kms is already in the Indian Air Force and is already integrated with the LCA Tejas and the Su-30 MKI fighter jets.
- The Astra Mark 2 would give the Indian Air Force an edge over the adversaries in air-to-air combat and can also be offered as an export product to friendly foreign countries.

**Astra Mark 2 Missile Features**

- While Astra Mark-1 is a single pulse, smokeless solid-fueled motor, the Astra Mark-2 is going to be a dual pulse missile, giving it a higher range.
- Astra Mk-1 is 3.6 m (12 ft) long with a diameter of 178 mm (7.0 in) and weighs 154 kg with a maximum range of 110 km. Astra Mark 2 will be a bigger missile with a diameter of 190 mm and weigh close to 175 kg.
- It can go up to a distance of 150 to 180 km and can travel at around Mach 4.5.
- It is equipped with a indigenous Radio Frequency (RF) Seeker from Su-30 Mk-I.

# Crew Escape System


**ISRO has developed a cost-effective, single-stage Test vehicle powered by the Vikas engine to validate the crew escape system (CES).**

**About Crew Escape System**

- It is an emergency escape measure designed to quickly pull the crew module along with the astronauts to a safe distance from the launch vehicle in the event of a launch abort.
- The CES is classified into two types based on the way it extracts the crew module:
- Puller type: It is used in Gaganyaan, where the CES pulls the crew module away from the launch vehicle;
- Pusher type: It is used in vehicles like SpaceX's Falcon 9, where the crew module is pushed away using compact, high-thrust liquid-fuel engines.
- The U.S.'s Saturn V, Russia's Soyuz, and China's Long March vehicles also use puller-type CES designs.

**Working of Crew Escape System**

- Once the CES has moved the crew module a safe distance away from the failing vehicle, the module will be released and decelerated by a multistage parachute system.
- It will reduce the module's velocity in steps, ensuring it splashes down safely in the sea without exceeding the crew's physiological limits upon impact.
- Typically, the crew will remain inside the module until splashdown.
- The Integrated Vehicle Health Management system (IVHM), which is a network of sensors, electronics, and software, will aid in taking a decision to activate the CES when a contingency arises.
- It will monitor all vital parameters of vehicle systems and crew health in real time.
- Based on the synthesised information and the flight regime, it will ensure prompt anomaly detection, minimise false alarms, and activate the CES early enough to protect the crew.

# Mission Drishti

**Space-tech start-up GalaxEye will launch the world's first multi-sensor Earth observation (EO) satellite 'Mission Drishti' in the first quarter of next year.**

**About Mission Drishti**

- It is the world's first multi-sensor Earth observation (EO) satellite.
- It is India's largest privately built satellite and also the highest-resolution satellite developed in the country.
- It is planned by Bengaluru based space startup – GalaxEye

**Key Features of Mission Drishti**

- It is carrying synthetic aperture radar (SAR) and high-resolution optical payloads, will make available Earth observation data through any weather and at any time of the day.
- It is envisioned to deploy 8-12 satellites by 2029.
- It is engineered as a remote-sensing Earth observation system, optimised for spatial, spectral and temporal resolutions to capture high-precision imagery.
- The satellite weighs 160 kg and offers 1.5 metre resolution.
- It has successfully undergone stringent structural tests at ISRO’s U R Rao Satellite Centre, demonstrating its resilience to the extreme environment of space.
- Range of applications: It will enable governments, defence agencies and industries to perform advanced geospatial analysis across a wide range of applications, including;
- Border surveillance, disaster management, defence, infrastructure monitoring, agriculture financial and insurance assessment etc.

# Rhodamine-B

**Recently, scientists at Raman Research Institute (RRI) have developed a powerful and cost-effective technique that uses the coffee-stain effect to identify harmful dyes such as Rhodamine B.**

**About Rhodamine B**

- It is a synthetic dye known for its bright pink colour.
- Characteristics:
- It is a water-soluble chemical compound.
- It appears green in powder form; it turns vivid fluorescent pink when it comes in contact with water.

**Applications of Rhodamine B**

- It is commonly used in industries such as textiles, paper, and leather.
- Its application extends to scientific research due to its fluorescent properties.

**Impacts of Rhodamine B on Human Health**

- It can cause DNA damage, leading to mutations and potentially triggering cancerous growths.
- Animal research has demonstrated tumor development in organs like the liver and bladder following prolonged exposure to the dye.
- In sensitive individuals, they can lead to allergic reactions such as itching, redness, and skin thickening.
- Long-term exposure to synthetic dyes like Rhodamine B can result in chronic allergic reactions and permanent skin pigmentation changes.
- The chemical is toxic for humans and can cause oxidative stress on cells and tissues if ingested.

# CMS-03 Satellite

**The Indian Space Research Organisation (ISRO) will launch military communications satellite CMS-03 from the Satish Dhawan Space Centre in Sriharikota.**

**About CMS-03 Satellite**

- It is a communication satellite, also known as GSAT-7R, and will be launched by the Launch Vehicle Mark 3 (LVM3).

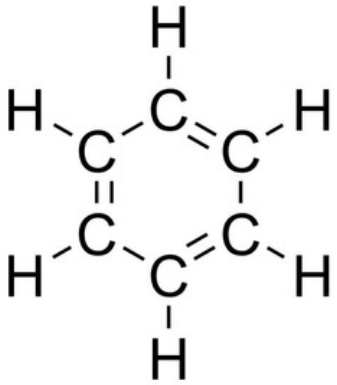
**Features of CMS-03 Satellite**

- It is a multi-band communication satellite that will provide services over a wide oceanic region including the Indian landmass.
- It is weighing about 4400kg, will be the heaviest communication satellite
- It will be launched to Geosynchronous Transfer Orbit (GTO).
- It will provide sharper connectivity and increased bandwidth for civil, strategic, and maritime users.

**What is Geosynchronous Orbit?**

- It is a prograde (in the direction of Earth's rotation), low inclination, High Earth orbit around Earth.
- A spacecraft in this orbit appears at a constant longitude above the Earth.
- The geosynchronous orbit is also called the Clarke orbit, as it was first popularised by the science fiction author Arthur C. Clarke.

# Benzene




**Two centuries after Benzene discovery, the simple yet revolutionary molecule benzene continues to shape our world.**

**About Benzene**

- Benzene is a colorless liquid with a sweet odor.
- Discovered by: In 1825, the English scientist Michael Faraday, isolated a new substance from the oily residue of the illuminating gas used to light London and August Kekulé proposed a revolutionary cyclic structure for benzene.

**Properties of Benzene**

- It evaporates into the air very quickly and dissolves slightly in water.
- It is highly flammable and is formed from both natural processes and human activities.
- Natural sources of benzene include volcanoes and forest fires.
- It forms the base for styrene, phenol, cyclohexane, nylon, and polystyrene.
- It belongs to the BTEX family (Benzene, Toluene, Ethylbenzene, Xylene) of so called aromatics because of their sweet, pleasant smell.

**Applications of Benzene**

- Some industries use benzene to make other chemicals which are used to make plastics, resins, and nylon and synthetic fibers.
- Benzene is also used to make some types of rubbers, lubricants, dyes, detergents, drugs, and pesticides.
- Impact on Health: Long-term exposure to Benzene leads to acute myeloid leukaemia, aplastic anemia, and myelodysplastic syndrome.

# SJ-100


**The Hindustan Aeronautics Limited (HAL) and Russia's United Aircraft Corporation (UAC) recently signed a Memorandum of Understanding for production of civil commuter aircraft SJ-100.**

**About SJ-100**

- It is a new generation short-haul jet aircraft of Russian origin.
- Earlier called the Sukhoi Superjet 100, it originally was designed by the now-merged Russian aircraft company Sukhoi Civil Aircraft.
- It is a twin-engine, narrow-body aircraft.
- The aircraft is primarily used for commercial purposes.
- As on date, over 200 SJ-100 aircraft have been manufactured.
- The aircraft are being operated by more than 16 airlines across the world, nine of them being from Russia.
- It is capable of accommodating 103 seats and has a flight range of 3,530 kilometres.
- The aircraft has been touted as having low operating costs for airlines.
- It can operate at extreme weather conditions, from -55 degrees Celsius to +45 degrees Celsius.

# Bathukamma Festival

**Recently, in Telangana, the celebrations of Bathukamma Festival, organised by the state Government, have set two new Guinness World Records.**

**About Bathukamma Festival**

- Bathukamma is a floral festival celebrated by the women folk of Telangana.
- History Behind Bathukamma
- The term “Bathukamma” translates to “Mother Goddess Come Alive”, reflecting the divine feminine energy and protection.
- Folklore connects the festival to legends of Goddess Gauri and her miraculous survival as well as King Dhramangada and Queen Satyavati of the Chola dynasty.
- Historically, the Kakatiya dynasty emphasized Bathukamma as a celebration of feminine strength and agricultural prosperity.
- Every year this festival is celebrated usually in September–October of the Gregorian calendar.
- It is celebrated for nine days during Durga Navratri and the 9-day festivities will culminate on "Saddula Bathukamma" or "Pedda Bathukamma" festival.
- Bathukamma is followed by Boddemma, which is a 7-day festival.
- It has been declared as the Telangana State Festival.

# Thumri Music

**Recently, Thumri lost a towering voice with the demise of Pandit Chhannulal Mishra (1936–2025), Padma Vibhushan awardee and one of the last great exponents of the Purab Ang of Banaras Gharana.**

**About Thumri Music**

- Thumri is a semi-classical vocal form of Hindustani music, often called the “lyric of Indian classical music”.
- It originated in Eastern Uttar Pradesh (mainly Lucknow and Benares) during the 18th century CE, developed by Sadiq Ali Shah.
- Themes: Primarily about love, separation, and devotion, often centered on Radha-Krishna episodes.
- Language: Usually sung in Braj Bhasha, Awadhi, and Hindi dialects, with touches of Urdu and Sanskrit.
- Distinct Feature: Freedom in improvisation; emphasis on bhava (emotion) over strict adherence to raga grammar.
- Associated Dance Form: Closely linked with Kathak, enhancing its narrative expression.
- Influences: Draws from Hori, Kajri, Dadra, Jhoola, Chaiti, etc.
- Types of Thumri:
- Purbi Thumri (Eastern/Slow tempo): More emotional and lyrical, usually associated with Banaras Gharana.
- Punjabi Thumri (Fast tempo): Energetic, lively, linked with Patiala Gharana.
- Major Gharanas of Thumri:
- Banaras Gharana – Girija Devi, Rasoolan Bai, Siddheshwari Devi, Chhannulal Mishra.
- Lucknow Gharana – Courtly refinement under Nawabs, Begum Akhtar.
- Patiala Gharana – Vibrant style with rhythmic play.

# Kolam Tribes

**Recently, a pilot bamboo plantation project was initiated to restore traditional livelihoods of Kolam tribal people in Adilabad district of Telangana.**

**About Kolam Tribe**

- Kolam tribes, also known as Kolamboli, Kulme and Kolmi, occupy a major portion of Madhya Pradesh.
- These tribal groups are reckoned as scheduled tribes and apart from Madhya Pradesh they reside in some parts of Maharashtra and Andhra Pradesh.
- They are listed as Particularly Vulnerable Tribal Group (PVTG).
- History:
  - Around the twelfth century, the Kolam served as priests for the Gond, representing some of their important gods.
  - It is generally accepted that the Kolam descended from the original population in the area.
  - Since they now live near the Gond, they have adopted much of the Gond lifestyle.

**Society and Tradition of Kolam Tribe**

- The Kolam people are divided into different clans, like Chal Deve, Pach Deve, Saha Deve, and Sat Deve.
- Marriages between the same clans are not permissible.
- The Kolams use the name of their clans as their surnames.
- Their society is patrilineal, meaning that the line of descent is traced through the males.
- Occupation: The Kolam are mainly farmers and forest workers. In times past, they used shifting cultivation on the hill slopes.
- Language: They speak a Dravidian language called Kolami, and nearly all of the adults also speak Marathi, Telugu, or Gondi.
- For writing they uses the famous Devnagari script.
- The Kolam people celebrate different rituals that include Matya or Churaghali, Bai-Baki, Sati, Jaitur Pooja, Waghai Pooja etc.

# Sabarimala Temple

**President Droupadi Murmu recently made a historic visit to the Lord Ayyappa temple in Sabarimala, becoming the first woman head of state to offer prayers at the renowned hilltop shrine**

**About Sabarimala Temple**

- Located in the Western Ghats in the Pathanamthitta District of Kerala, the Sabarimala Sree Dharma Sastha Temple is an ancient temple dedicated to Lord Ayyappa.
- Ayyappa, also known as Dharma Shasta, is the son of Shiva and Mohini, the feminine form of Vishnu.
- The temple is situated on a hilltop amidst 18 hills at an altitude of 4,134 ft above sea level.
- It is surrounded by mountains and dense forests that are a part of the Periyar Tiger Reserve.
- It is not open throughout the year.
- It is one of the largest annual pilgrimage sites in the world, with an estimated 40 to 50 million pilgrims visiting the temple every year, especially during the annual Mandalam-Makaravilakku season.
- It is said that the pilgrims have to follow a 41-day vratham (austerity period) before going to Sabarimala.
- It is one of the few Hindu temples in India that is open to all faiths.
- There is a place near the temple, east of Sannidhanam (the abode of Lord Ayyappa), dedicated to Vavar (a Sufi and a close friend of Lord Ayyappa) which is called Vavaru Nada, an epitome of religious harmony.

**Sabarimala Temple Architecture**

- It showcases a beautiful blend of traditional Kerala and Dravidian architectural styles.
- The main temple stands on a 40 feet high plateau and consists of a sanctum sanctorum with a copper-plated roof and four golden finials, two mandapams, and a flagstaff.
- The main staircase to the Sabarimala Temple is made up of 18 sacred steps.

**Sabarimala Case**

- Women in their ‘menstruating years’ (between 10 to 50 years) were customarily prohibited from entering the temple.
- In 2018, the Supreme Court ruled that the Sabarimala temple's exclusion of women aged 10 to 50 was unconstitutional.
- The verdict triggered widespread protests and remains under review by a larger bench.

# Remission of Duties and Taxes on Exported Products Scheme


**The Government recently extended the Remission of Duties and Taxes on Exported Products (RoDTEP) incentive scheme for exporters until March 31, 2026.**

**About Remission of Duties and Taxes on Exported Products (RoDTEP) Scheme**

- It was introduced through an amendment to the Foreign Trade Policy 2015-20, and it became effective for exports starting January 1, 2021.
- The primary aim of this scheme is to offset the taxes and duties incurred on exported goods that wouldn't otherwise be credited, reimbursed, or refunded in any way, and are integrated into the exported goods.
- It is designed to reimburse exporters for embedded duties, taxes, and levies that are not otherwise refunded under any other existing scheme.
- It is compliant with World Trade Organization (WTO) norms and is implemented via a comprehensive end-to-end digital platform to ensure transparency and efficiency.
- It was enforced to repeal and reduce taxes on exported products, thereby encouraging exports and increasing the number of exports in the country.
- The scheme is administered by the Department of Revenue, Ministry of Finance.
- It replaced the Merchandise Export Incentive Scheme (MEIS), in response to the US challenging Indian export subsidies under the MEIS at the WTO.
- Tax Reimbursement under RoDTEP Scheme:
- The Scheme provides a mechanism for reimbursement of taxes, duties, and levies, which are currently not being refunded under any other mechanism at the central, state, and local levels, but which are incurred by the export entities in the process of manufacture and distribution of exported products.
- This not only includes the direct cost incurred by the exporter but also the prior stage cumulative indirect taxes on goods.
- RoDTEP Scheme Eligibility Criteria:
- All sectors are covered under the scheme.
- Labor-intensive sectors will be accorded priority.
- Both manufacturer exporters and merchant exporters (traders) are eligible for the scheme.
- There is no turnover threshold for availing of benefits under the scheme.
- The exported products should have India as their country of origin to be eligible for benefits under the scheme.
- Special Economic Zone Units and Export Oriented Units are also eligible.
- The scheme also applies to goods that have been exported via courier through e-commerce platforms.
- Re-exported products are not eligible under this scheme.
- Process of Refund:
- Rebates under the scheme are provided to eligible exporters as a percentage of the freight on board (FOB) value of exports.
- Remission is issued in the form of transferable e-scrips (a type of certificate with some monetary value) maintained in an electronic credit ledger by the CBIC (Central Board of Indirect Taxes and Customs).
- e-scrips used to pay basic customs duty on imported goods. The credits can also be transferred to other importers.
- Speedy Clearance Through Digitalization: Faster clearance through a digital platform will be facilitated through a monitoring & audit mechanism, with an IT-based risk management system that would physically verify the exporters' records.

# Mission for Aatmanirbharta in Pulses

**Recently, the Union Cabinet has approved the Mission for Aatmanirbharta in Pulses.**

**About Mission for Aatmanirbharta in Pulses**

- It is aimed at boosting domestic production and achieving self-sufficiency (Aatmanirbharta) in pulses.
- Time Period: The Mission will be implemented over a six-year period, from 2025-26 to 2030-31.

**Key Features of Mission for Aatmanirbharta in Pulses**

- Comprehensive strategy: The mission covers research, seed systems, area expansion, procurement, and price stability.
- Focus on quality seeds: It focuses on developing and disseminating the latest varieties of pulses which are high in productivity, pest-resistant and climate-resilient. Multi-location trials will be carried out in major pulse-growing states to ensure regional suitability.
- Seed Production: To ensure availability of premium quality seeds, states will prepare five-year rolling seed production plans.
- The breeder seed production will be supervised by the Indian Council of Agricultural Research (ICAR).
- Foundation and certified seed production will be done by state and central level agencies, and closely tracked through the Seed Authentication, Traceability & Holistic Inventory (SATHI) portal.
- Capacity building: Structured training programmes for farmers and seed growers to promote sustainable techniques and modern technologies.
- Post-harvest infrastructure: To strengthen markets and value chains, the Mission will help develop 1000 processing units, thereby reducing crop losses, improving value addition.
- A maximum subsidy of Rs. 25 lakhs will be available for setting up of processing, packaging units.
- Cluster-Based Approach: Tailoring interventions to the specific needs of each cluster to enhance productivity, and promote geographic diversification of pulse production.
- Procurement: Assured maximum procurement of Tur, Urad, and Masoor under Price Support Scheme (PSS) of PM-AASHA.
- NAFED and NCCF will undertake 100% procurement in participating states for the next four years from farmers who register with these agencies and enter into agreements.
- Additionally, to safeguard farmer confidence, the Mission will establish a mechanism for monitoring global pulse prices.

# Urban Flood Risk Management Programme


**Recently, a high-level committee headed by the Union Home Minister approved the Urban Flood Risk Management Programme (UFRMP) Phase-2.**

**About Urban Flood Risk Management Programme**

- The programme will complement the states in mitigating the risk of urban flooding in the cities through uniform structural and non-structural intervention measures.
- Cities Involved (11 cities) -- Bhopal, Bhubaneshwar, Guwahati, Jaipur, Kanpur, Patna, Raipur, Trivandrum, Vishakhapatnam, Indore and Lucknow
- Selection Criteria: The 11 cities were selected on the basis of their status of being the most populous cities/state capitals, primarily prone to floods, as well as consideration of other physical, environmental, socio-economic and hydro-meteorological factors
- Funding: The funding pattern will be on a cost-sharing basis between the Centre and the states according to the NDMF guidelines, i.e., 90 per cent from the Centre and 10 per cent from the states.
- Activities under Urban Flood Risk Management Programme
- Structural measures of Interlinking of water bodies to Stormwater Management, Construction of flood protection wall, Erosion Control and Soil Stabilisation using Nature-Based Solutions (NBS),etc.
- Non-structural measures such as Flood Early Warning System and Data Acquisition System and capacity building, etc.

# National Dam Safety Authority

**After two years of political and administrative controversy over the structural ability of the barrages of the Kaleshwaram project, the government recently decided to repair the three barrages based on the suggestions of the National Dam Safety Authority (NDSA).**

**About National Dam Safety Authority**

- It is a statutory body set up by the Central Government under the Dam Safety Act, 2021.
- It operates with a clear mandate to regulate, oversee, and inspect dams.
- It is headed by a chairman and assisted by five members to lead its five wings - policy and research, technical, regulation, disaster and resilience, and administration and finance.
- It has its headquarters at New Delhi.
- Functions of the Authority include:
- implementing the policies formulated by the National Committee on Dam Safety;
- resolving issues between State Dam Safety Organisations (SDSOs), or between a SDSO and any dam owner in that state;
- specifying regulations for inspection and investigation of dams;
- providing accreditation to agencies working on construction, design, and alteration of dams.
- One of the standout features of the NDSA's approach is its commitment to establishing and enforcing comprehensive safety standards.
- These standards encompass various aspects, including structural integrity, environmental impact, and emergency response protocols.
- The NDSA actively engages in nationwide awareness programs to educate citizens about dam safety.
- In the face of natural calamities or unforeseen events, the NDSA ensures that comprehensive emergency response plans are in place.

# Jal Jeevan Mission

**The Union government plans to map all drinking water assets including pipelines created under its Jal Jeevan Mission (JJM) on PM Gati Shakti, a Geographic Information System (GIS)-based platform.**

**About Jal Jeevan Mission**

- It was launched on August 15, 2019.
- JJM is envisioned to provide safe and adequate drinking water through individual Functional Household Tap Connections (FHTCs) by 2024 to all households in rural India.
- It is based on a community approach to water and will include extensive Information, Education and communication as key components of the mission.
- Nodal Ministry: Ministry of Jal Shakti.

**Components of Jal Jeevan Mission**

- Development of in-village piped water supply infrastructure to provide tap water connections to every rural household.
- Bottom-up planning: Community engagement in planning, implementation and Operation and Maintenance (O&M)
- Women empowerment: Involvement of women in planning, decision-making, implementation, monitoring, and O&M
- Focus on future generations: Provision of tap water supply to schools, tribalhostels, and anganwadi (daycare) centers
- Skill development and employment generation: Local people are skilled for building and maintaining water supply structures
- Greywater management: Reuse and recycle waste water for source sustenance
- Source sustainability: Promote groundwater recharge and water conservation
- Water Quality: Ensure safe drinking water to reduce water-borne ailments

**Funding Pattern for Jal Jeevan Mission**

- 50:50 between Centre and States
- 90:10 for Himalayan and North-Eastern States.
- In case of UTs, 100% of the funding is provided by the Central government.

# Online National Drugs Licensing System

**While 18 State drug control authorities across the country have adopted the Online National Drugs Licensing System (ONDLS) for processing drug-related licences, no State has yet fully complied with the Corrective and Preventive Action (CAPA) guidelines, confirmed a source in the Union Health Ministry recently.**

**About Online National Drugs Licensing System (ONDLS) Portal**

- It is a digital, single-window platform for processing various drug-related licences in India.
- It is developed by the Centre for Development of Advanced Computing (CDAC) in coordination with the Central Drugs Standard Control Organisation (CDSCO), Directorate General of Health Services, Ministry of Health and Family Welfare, and State/UT Drugs Regulatory Authorities.
- It is designed to create a uniform, transparent, and accountable process for drug licensing across all States and Union Territories.
- It handles applications submitted by the applicants for issuance of manufacturing and sales licenses, including Blood Banks, and other certificates like COPP, GMP, WHO-GMP, Market Standing certificate, etc., and post-approval changes.
- ONDLS will help in the establishment of uniformity w.r.t. the requirement of submission of documents for different types of applications as well as issuance of licenses/permissions throughout India.

# Marine Stewardship Council

**About 10 Indian marine and saline fish and shrimp varieties are set to get the global Marine Stewardship Council (MSC) certification soon.**

**About Marine Stewardship Council (MSC) Certification**

- The Marine Stewardship Council (MSC) is an international non-profit organisation that sets globally recognised, science-based standards for sustainable fishing and seafood traceability.
- The MSC certification program recognises and rewards sustainable fishing practices and is helping create a more sustainable seafood market.
- Assessment: The MSC certification scheme is based on independent third-party assessments and is built on three principles: Stock health, Environmental impacts, Effective management.
- This certification is open to all fisheries that wish to voluntarily demonstrate that their operations are sustainable, regardless of their location, size and fishing gear.
- Validity: The certification is valid for 5 years, but subjected to annual surveillance audits.
- It is the only wild-capture fisheries certification based on the Food and Agriculture Organisation's (FAO) Code of Conduct for Responsible Fishing and Guidelines for the Eco-labelling of Fish and Fishery Products from Marine Capture Fisheries.
- Astamudi clam (Paphia malabarica) is India's first Marine Stewardship Council (MSC) certified fisheries.

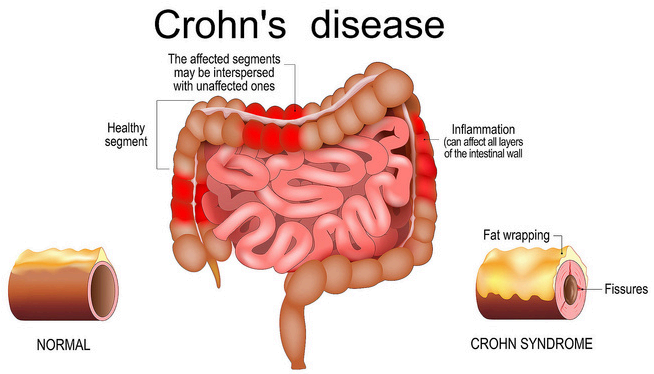
# Plutonium Management and Disposition Agreement


**About 100 wild boars were found dead in Nangal Wildlife Sanctuary in March this year, and the postmortem report of the dead wild boars indicates that the wild boars might have died due to toxic waste in Nangal Lake, which is part of the sanctuary.**

**About Plutonium Management and Disposition Agreement**

- It is an agreement between the United States and Russia signed in 2000.
- It came into force in 2011.
- It aimed at reducing vast stockpiles of weapons-grade plutonium left over from thousands of Cold War nuclear warheads.
- After dismantling thousands of warheads after the Cold War, both Moscow and Washington were left with huge stockpiles of weapons-grade plutonium which was costly to store and posed a potential proliferation risk.
- The aim of the PMDA was to dispose of the weapons-grade plutonium, by converting it into safer forms - such as mixed oxide (MOX) fuel or by irradiating plutonium in fast-neutron reactors for electricity production.
- It committed both the United States and Russia to dispose of at least 34 tonnes of weapons-grade plutonium each.
- Russia in 2016 suspended implementation of the agreement, citing U.S. sanctions and what it cast as unfriendly actions against Russia, NATO enlargement, and changes to the way the United States was disposing of its plutonium.
- Russia said at the time that the United States had not abided by the agreement after Washington moved, without Russian approval, to simply dilute the plutonium and dispose of it.

# Crohn’s Disease




**Recent research suggests that diets high in ultra processed foods (UPFs) may worsen inflammation in the gut and raise the risk of Crohn’s disease flare ups.**

**About Crohn's Disease**

- It is a chronic inflammatory bowel disease (IBD) that causes swelling and irritation of the tissues, called inflammation, in the digestive tract.
- It can affect any part of your digestive tract, which runs from your mouth to your anus. But it usually affects your small intestine and the beginning of your large intestine.
- The inflammation often spreads into the deeper layers of the bowel.
- Crohn’s disease can be both painful and debilitating. Sometimes, it may lead to serious or life-threatening complications.
- The symptoms of Crohn's disease can vary, depending on where and how severe your inflammation is. The most common symptoms include:
- Diarrhea
- Cramping and pain in your abdomen
- Weight loss
- It is more likely to develop in people between the ages of 20 and 29.
- Experts aren’t sure what causes Crohn’s disease but think genes, abnormal immune reactions, and the microbiome play a role.
- Treatment:
- There’s no known cure for Crohn’s disease, but therapies can greatly reduce its symptoms and even bring about long-term remission and healing of inflammation.
- With treatment, many people with Crohn’s disease can function well.

# AgriEnIcs Programme

**Recently, the Ministry of Electronics and Information Technology (MeitY) has announced the transfer of technology under the AgriEnIcs Programme.**

**About AgriEnIcs Programme**

- It is a national programme of the Ministry of Electronics and Information Technology (MeitY).
- Objective: It involves research, development, deployment, demonstration, and commercialization of technologies in the agriculture and environment domain.
- It serves as a national platform for R&D and technology translation in agriculture and environmental management.
- By integrating AI, IoT, machine vision, and sensor networks, the initiative aims to bring digital precision to sectors that directly impact farmers and communities.
- The programme's collaborative framework—uniting research institutions, industry partners, and government agencies.
- Nodal Agency: The programme is being implemented by the Centre for Development of Advanced Computing (C-DAC), Kolkata, as the nodal agency with participating agencies from Academic Institutes, R&D laboratories, and Industries.

**What is C-DAC?**

- It is the apex research and development wing of the Ministry of Electronics and Information Technology.
- It was established in 1988.
- Purpose: Its main purpose was to carry out research and development in Electronics, IT and other associated areas.
- It was set up to build Supercomputers in the context of denial of import of Supercomputers by the USA.
- C-DAC built India's first indigenously built supercomputer Param 8000 in 1991.

# SAKSHAM System

**The Indian Army has initiated procurement of the indigenously developed 'Saksham' Counter-Unmanned Aerial System (CUAS) Grid System.**

**About SAKSHAM System**

- The Situational Awareness for Kinetic Soft and Hard Kill Assets Management (SAKSHAM) is an indigenously developed Counter-Unmanned Aerial System (UAS) Grid System.
- It is a modular, high-end Command and Control (C2) system operating on the secure Army Data Network (ADN).
- It ensures comprehensive airspace security across the newly defined Tactical Battlefield Space (TBS), which now includes the Air Littoral (airspace up to 3,000 metres, or 10,000 feet, above ground level).
- It is developed by Bharat Electronics Limited (BEL).

**Features of SAKSHAM System**

- Real time detection and tracking: It is designed to detect, track, identify, and neutralise hostile drones and unmanned aerial systems in real time.
- Integrated Recognised UAS Picture: It creates a real-time, integrated Recognised UAS Picture (RUASP) for commanders, merging sensor data, counter-drone systems, and AI-driven analytics.
- AI-enabled predictive analysis: It consists of real-time threat detection and AI-enabled predictive analysis, integration of CUAS sensors and weapons for synchronised response, automated decision support and 3D battlefield visualization.
- It can integrate its own as well as hostile UAS data, C-UAS sensors, and soft- and hard-kill systems on a common GIS-based platform.
- The system will also receive inputs from the Akashteer System, further enhancing situational awareness by mapping all airspace users; friendly, neutral, or hostile; within the combat zone.

# Tele-MANAS

**Recently, on the occasion of the World Mental Health Day 2025, Union Minister of Health and Family Welfare launched several new initiatives for the National Tele Mental Health Programme (Tele MANAS).**

**About Tele MANAS**

- Tele Mental Health Assistance and Networking Across States (Tele MANAS) offers a wide range of mental health services.
- It was started by the Ministry of Health and Family Welfare in 2022.
- Aim: To provide universal access to equitable, affordable, and quality mental health care through a 24x7 tele-mental health service, forming a key digital component of the National Mental Health Programme (NMHP).
- This service is available across all Indian States and Union Territories, with assured linkages to ensure seamless care.
- The service is structured in a two-tier system to optimize care delivery and enhance support.
- Tier 1 comprises state Tele MANAS cells staffed with trained counsellors and mental health specialists. These professionals provide immediate support through: Tele-Counseling and Tele-Consultation.
- Tier 2 comprises specialists from District Mental Health Programme (DMHP) facilities and medical colleges, offering additional resources for physical consultations and audiovisual consultations via e-Sanjeevani.
- Tele MANAS launched its mobile app and video consultation services to enhance access to mental health support.
- This app serves as a comprehensive platform offering mental health resources, including self-care tips, stress management strategies, and tools to recognize early distress signals.
- It is enhanced with Multi-lingual user interface, Chatbot feature (Asmi), Accessibility, Emergency Module.
- It will now be available in 10 regional languages, in addition to the English and Hindi languages.
- These languages include Assamese, Bengali, Gujarati, Kannada, Malayalam, Marathi, Tamil, Telugu, Odia, Punjabi.

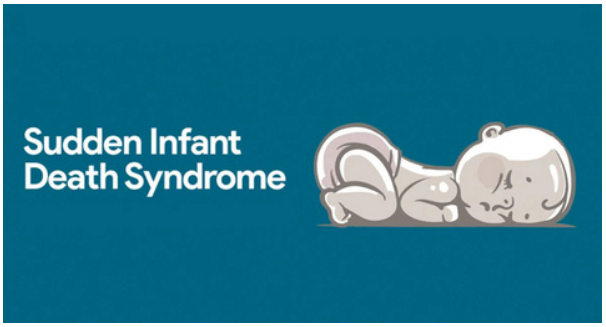
# Virtual Museum of Stolen Cultural Objects

**Recently, UNESCO launched the Virtual Museum of Stolen Cultural Objects at UNESCO's MONDIACULT conference.**

**About Virtual Museum of Stolen Cultural Objects**

- It is an innovative digital platform which reconnects communities with their stolen cultural treasures.
- Aim: The project aims at designing the first virtual immersive reality museum of stolen cultural objects at a global scale.
- It will contribute to raising awareness among the general public to the consequences of illicit trafficking of cultural property and contribute to the recovery of stolen objects.
- It was launched at the World Conference on Cultural Policies and Sustainable Development (MONDIACULT 2025).
- The museum is financially supported by the Kingdom of Saudi Arabia, and the project was developed in collaboration with the INTERPOL.
- The digital museum currently displays almost 240 missing objects from 46 countries.
- Sculptures from Indian temple
- The museum depicts two objects submitted from India: Two 9th-century sandstone sculptures from Mahadev Temple, Pali, Chhattisgarh
- The first, a Nataraja figure, is described as showing Shiva in his cosmic dance.
- The second figure, of Brahma, the creator, is shown seated in lalitasana with three visible faces and four arms holding sacred emblems like a rosary and the Vedas.

# Sudden Infant Death Syndrome




**Sudden Infant Death Syndrome (SIDS) is a leading cause of infant mortality globally and October is marked as Sudden Infant Death Syndrome month.**

**About Sudden Infant Death Syndrome**

- It is the term used to describe the sudden and unexpected death of an infant that is less than one year old, for which no cause can be found even after an investigation.
- It is sometimes known as ‘cot death’ or ‘crib death’, even though cots and cribs are not the cause of these deaths.
- The most SIDS deaths occur during the first six months of a baby’s life.
- It occurs slightly more in baby boys and happens when the baby is asleep.

**Risk Factors for SIDS**

- Premature birth or low birth weight;
- A family history as babies who have had a sibling who died of SIDS are at a higher risk; Exposure to smoking/secondhand smoke during or after pregnancy;
- Unsafe sleeping positions or environments and poor prenatal care.

**Possible Causes of Sudden Infant Death Syndrome**

- Problems of under-development of the part of the brain that helps control breathing and waking during sleep.
- It may also be a genetic vulnerability or a vulnerability to environmental stresses.
- Vaccines do not cause SIDS.

# SAIME Initiative

**Recently, a model of Sustainable Aquaculture in Mangrove Ecosystems (SAIME) in West Bengal's Sundarbans has been conferred Global Technical Recognition by the Food and Agriculture Organization (FAO) of the United Nations.**

SAIME
SUSTAINABLE AQUACULTURE
IN MANGROVE ECOSYSTEMS

**About SAIME Initiative**

- The Sustainable Aquaculture in Mangrove Ecosystems (SAIME) is a multi-stakeholder partnership (MSP) to strengthen transformative processes in shrimp trade as a basis for the protection of mangrove ecosystems in West Bengal.
- It is a climate-adaptive and conservation-linked livelihood initiative that integrates brackish water shrimp-based aquaculture with mangrove restoration.
- It is an ecosystem-based, climate-adaptive, and conservation-linked livelihood approach.
- Implemented by: It has been implemented in collaboration with Global Nature Fund (GNF), Nature Environment and Wildlife Society (NEWS), Naturland, and Bangladesh Environment & Development Society (BEDS),

**What are Mangroves?**

- Mangroves are salt-tolerant trees and shrubs that grow in coastal intertidal zones, primarily in tropical and subtropical regions.

**Characteristics of Mangroves**

- Salt Tolerance: They possess specialised root structures, such as salt-filtering roots and salt-excreting leaves, to manage high salinity levels.
- Aerial Roots (Pneumatophores): These roots help in respiration by obtaining oxygen from the air in waterlogged soils.
- Prop Roots: Provide stability against tidal waves and storm surges.
- Vivipary (Seed Germination): Seeds germinate while still attached to the parent tree to overcome the challenge of germination in saline water.
- Efficient Carbon Sequestration: Mangroves are among the most carbon-rich ecosystems, playing a vital role in mitigating climate change.
- Ecological Significance: Mangrove forests act as a crucial buffer between land and sea, providing habitat for various marine and terrestrial species.

# Henley Passport Index


**India's passport has slipped to 85th rank in Henley Passport Index 2025, down five places from the previous year.**

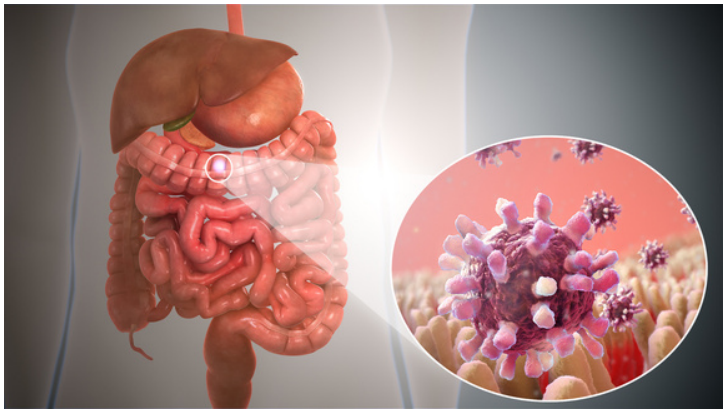
**About Henley Passport Index**

- It is a popular ranking of global passports that measures passport strength by the number of destinations that holders can visit without a prior visa.
- The index ranks countries based on statistics provided by the International Air Transport Association (IATA).
- It started in 2006 as the Henley & Partners Visa Restrictions Index (HVRI).
- The index includes 199 different passports and 227 different travel destinations
- Significance: The stronger the passport, the more countries its holders can enter without a prior visa — a privilege that reflects diplomatic ties, economic influence, and international trust.

**Key Highlights of Henley Passport Index 2025**

- Globally, Singapore leads the 2025 list with visa-free access to 193 destinations, followed by South Korea (190) and Japan (189).
- Several European nations, including Germany, Italy, Spain, Luxembourg, and Switzerland, share the next few ranks with access to around 188–189 countries.
- The United States has slipped out of the top 10 for the first time in two decades, ranking 12th this year with access to 180 destinations.
- Afghanistan sits at the bottom (106th) offering visa-free access to just 24–26 countries.

# Gastroenteritis



**A recent study on the impact of the indigenous rotavirus vaccine in India found marked reductions in rotavirus-based gastroenteritis in sites across the country.**

**About Gastroenteritis**

- Gastroenteritis is an inflammation of the lining of the stomach and intestines.
- It is usually not serious in healthy people, but it can sometimes lead to dehydration or cause severe symptoms.
- What causes gastroenteritis? There can be many different causes of gastroenteritis:
  - Viruses
  - Bacteria
  - Parasites
  - Chemicals
  - Reactions to certain medicines and food
- Viral gastroenteritis is the most common type. It can be caused by many different viruses, including noroviruses and rotaviruses.
- When gastroenteritis is caused by consuming foods or drinks contaminated with viruses, bacteria, parasites, or chemicals, this is called food poisoning.
- The viruses, bacteria, and parasites that cause gastroenteritis can also spread from person to person.
- The symptoms of gastroenteritis include:
  - Diarrhea
  - Pain or cramping in your abdomen (belly)
  - Nausea
  - Vomiting
  - Sometimes fever
- Treatment:
  - Usually, people with gastroenteritis get better on their own, with rest and plenty of fluids and electrolytes.
  - Your provider may suggest that you take a probiotic.
  - Studies suggest that some probiotics may help shorten a case of diarrhea.
  - People with more severe symptoms may need medicines to control nausea or vomiting.
  - Providers may also give other medicines for certain types of gastroenteritis, such as antibiotics for some bacterial types and antiparasitic medicines for some parasitic types.

# Green Crackers

**Recently, the Supreme Court has permitted only green crackers to be sold in Delhi-NCR region.**

**About Green Crackers**

- Green crackers are fireworks developed by the government's Council of Scientific and Industrial Research-National Environmental Engineering Research Institute (CSIR-NEERI).
- Green crackers were developed after the Supreme Court banned conventional firecrackers in 2017.
- Three types of green crackers have been developed – SWAS (Safe Water Releasable), STAR (Safe Thermite Cracker), and SAFAL (Safe Minimal Aluminium),

**Features of Green Crackers**

- They are made by reducing the size of the shells, eliminating ash, using fewer raw materials, and adding dust-suppressing additives.
- There are two main categories of green crackers: improved crackers that modify existing formulations to cut emissions; and new formulation crackers that replace polluting ingredients altogether.
- Metals, which form part of particulate matter, are either minimized or eliminated to reduce toxicity.
- Chemical composition of Green Crackers
- Green crackers, on the other hand, exclude barium compounds, and have drastically-reduced aluminium and sulphur content.
- They rely on cleaner oxidisers and formulations that limit the release of harmful particulates.
- Conventional firecrackers use chemicals such as barium, sulphur, potassium nitrate, and aluminium, which produce bright colours and loud noises. They also release heavy metals and toxic gases into the air.

**Advantage of Green Crackers**

- They produce brightness and sound comparable to conventional firecrackers (around 100 to120 dB) and reduce particulate matter (PM), SO2, and NO2 emissions by at least 30 per cent.

**Identification of green crackers**

- Genuine green crackers can be identified through two mandatory features introduced by CSIR-NEERI which include the official Green Fireworks logo printed on the packaging, and
- a unique QR code that can be scanned using the 'CSIR-NEERI Green QR Code' mobile app.
- Scanning the code provides details about the manufacturer, formulation, and NEERI certification status of the product.

# Skilling for AI Readiness (SOAR) Programme


**India is taking a major step toward building an AI-ready generation through the Skilling for AI Readiness (SOAR) programme.**

**About Skilling for AI Readiness (SOAR) Programme**

- It was launched by the Ministry of Skill Development and Entrepreneurship (MSDE).
- It aims to integrate artificial intelligence learning into India's school education and training ecosystem, preparing both students and teachers for a rapidly evolving digital world.
- SOAR's long-term vision is to position India as a global leader in AI by preparing its youth for AI-driven careers and entrepreneurial ventures.

**Features of SOAR Programme**

- It focuses on school students from classes six to twelve and educators across India.
- It is offering three targeted 15-hour modules for students and a 45-hour module for teachers.
- These courses introduce foundational AI and machine learning concepts, along with data literacy and the ethical use of technology.
- In support of this vision, the Union Budget 2025–26 has earmarked ₹500 crore to establish a Centre of Excellence in Artificial Intelligence for Education.
- The centre will focus on developing AI-based learning tools, promoting multilingual AI resources for Indian languages, and fostering innovative classroom practices.
- It will also strengthen AI curriculum development across technical institutions and complement existing efforts by IITs and AICTE-approved colleges that already offer advanced courses in machine learning, deep learning, and data analytics.

# Intrusion Detection System

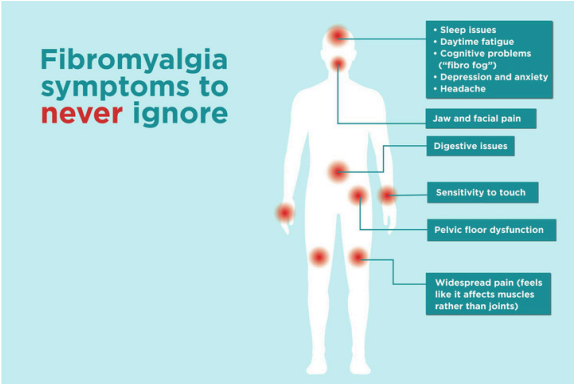
**Recently, the Northeast Frontier Railway (NFR) has successfully completed trial works of the Intrusion Detection System (IDS) in four key sections.**

**About Intrusion Detection System**

- The IDS initiative aims to strike a balance between operational efficiency and environmental protection.
- Objective: It is designed to protect wildlife and maintain operational efficiency, especially in areas where railway lines pass through forested and elephant-inhabited zones.
- It runs parallel to tracks at a distance of 10 metres.
- Launched by: This initiative has been launched by the Northeast Frontier Railway (NFR) under the Ministry of Railways.
- Working of Intrusion Detection System
  - Technology: It uses advanced optical fibre sensing technology to detect elephant movement near railway tracks,
  - Real Time Alert: It generates real-time alerts for train drivers and control rooms to take timely preventive action.
  - When elephants come close to the railway tracks, the vibrations generated by their movement are detected by the sensor cables, which then transmit signals to the control room.

# Fibromyalgia

**Fibromyalgia condition is often misunderstood, but it is real and is believed to affect 2 to 3% of the population globally.**




**About Fibromyalgia**

- It is a long-term (chronic) health condition that causes pain and tenderness in the muscles and soft tissues of the body.
- It is often accompanied by fatigue, sleep disturbances, memory issues and mood problems such as stress, anxiety and depression.
- It causes musculoskeletal pain and fatigue

**Causes for Fibromyalgia**

- The cause of fibromyalgia is not known, but studies show that people with the disorder have a heightened sensitivity to pain, so they feel pain when others do not.
- People with fibromyalgia usually experience symptoms that come and go in periods called flare-ups.

**Symptoms of fibromyalgia**

- The two most common symptoms of fibromyalgia are pain and fatigue. Other symptoms include,
- Headaches and migraines, digestive problems such as diarrhoea and constipation, restless leg syndrome, as well as face and jaw pain such as temporomandibular jaw disorders.

**Treatment of Fibromyalgia**

- While there is no cure for fibromyalgia, a variety of medications can help control symptoms.
- Treatment typically involves a combination of exercise or other movement therapies, psychological and behavioural therapy, and medications.

# Network Survey Vehicle


**Recently, the National Highway Authority of India (NHAI) has announced that it will deploy Network Survey Vehicles (NSVs) in 23 states.**

**About Network Survey Vehicle**

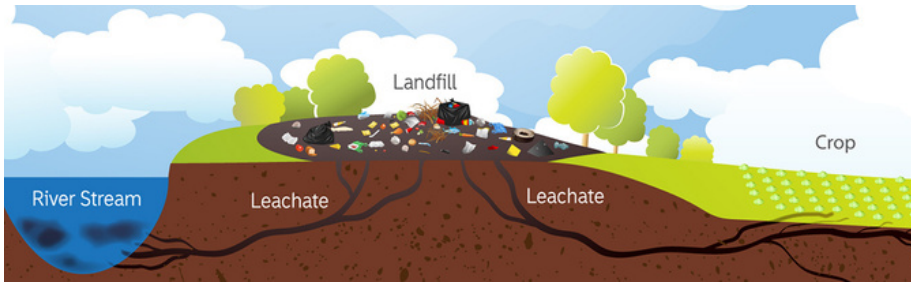
- It is a specialized infrastructure management tool comprising vehicles equipped with advanced sensors and data acquisition systems.
- These vehicles systematically collect data on road inventory and condition of National Highways.

**Working of Network Survey Vehicle**

- It is usually a specialised van or SUV equipped with multiple sensors and instruments.
- It consists of Laser, Global Positioning System (GPS), Video image processing tools, High-resolution cameras, Inertial Measurement Units (IMU), and DMI (Distance Measuring Indicator).
- The survey will capture 13 types of defects, including crack measurement, ravelling, patch area, potholes, edge break, roughness, rutting, lane marking, etc.
- It will also cover details like carriageway type, road type, pavement and shoulder width, topography, median details, right of way, utilities, land use, etc.
- The data will be collected for all projects involving 2/4/6 and 8 lanes with NSV before the start of work and thereafter at regular intervals of six months.
- Data collected through NSV survey will be uploaded on NHAI's 'AI' based portal Data Lake, where it will be analysed to transform data into knowledge and subsequent actionable insights.

# Leachate

**Environmentalists, wildlife activists, and locals recently sought immediate intervention by the Union Environment Ministry into the recurring illegal discharge of highly toxic, untreated leachate into the Aravalis.**




**About Leachate**

- Leachate is a highly toxic and contaminated liquid usually generated from municipal landfills.
- This toxic liquid accumulates at the bottom of the landfill.
- Landfill leachate water forms through waste decomposition, water infiltration, and chemical reactions within a landfill.
- The composition of leachate varies depending on the type of waste in the landfill, the landfill's age, and environmental conditions such as rainfall and temperature.
- In general, leachate generally contains a mix of organic pollutants, inorganic compounds, heavy metals, and microbial contaminants.
- The chemical composition of leachate makes it dangerous; It can contaminate the environment and pose serious health risks if not properly managed.
- Leachate management is critical to landfill operations due to its potential to spread pollution and contaminate virgin groundwater sources.
- Strict environmental regulations mandate proper leachate collection and disposal to prevent environmental degradation.

# Rashtriya Vigyan Puraskar

**The Centre recently announced the Rashtriya Vigyan Puraskar (RVP) — its Padma-style national awards for scientific achievement — with 24 individual awards and one team award.**

**About Rashtriya Vigyan Puraskar**

- Modelled on the Padma awards, the Rashtriya Vigyan Puraskar is one of the highest recognitions in the field of science, technology, and innovation in India.
- Objective: To recognize the notable and inspiring contribution made by the scientists, technologists, and innovators individually or in teams in various fields of science, technology, and technology-led innovation.
- Eligibility:
  - Scientists/technologists/innovators working in government or private sector organizations or any individual working outside any organization, who have made distinguished contributions in terms of path-breaking research or innovation or discovery in any field of science, technology, or technology-led innovation shall be eligible for the awards.
  - People of Indian Origin staying abroad with exceptional contributions benefiting the Indian communities or society shall also be eligible for the awards.
- The awards shall be given in the following four categories:
  - Vigyan Ratna (VR) award will recognize lifetime achievements & contributions made in any field of science and technology.
  - Vigyan Shri (VS) award will recognize distinguished contributions in any field of science and technology.
  - Vigyan Yuva-Shanti Swarup Bhatnagar (VY-SSB) award will recognize & encourage young scientists up to the age of 45 years who made an exceptional contribution in any field of science and technology.
  - Vigyan Team (VT) award to be given to a team comprising three or more scientists/researchers/innovators who have made an exceptional contribution working in a team in any field of science and technology.
- It shall be given in the 13 domains, namely Physics, Chemistry, Biological Sciences, Mathematics & Computer Science, Earth Science, Medicine, Engineering Sciences, Agricultural Science, Environmental Science, Technology & Innovation, Atomic Energy, Space Science and Technology, and Others.
- The representation from each domain/field, including gender parity will be ensured.

# Dogri Language

**In recent years, growing concern has emerged over the gradual decline of the Dogri language in the Jammu region.**


**About Dogri Language**

- It is an Indo-Aryan language, part of the larger Indo-European family of languages.
- It is spoken in India, chiefly in the Jammu region of Jammu and Kashmir.
- It is also spoken in the state of Himachal Pradesh and in northern Punjab, other parts of Jammu and Kashmir, and elsewhere.
- The earliest written reference to Dogri (using the paleonym Duggar) is found in the Nuh sipihr ("The Nine Heavens"), written by the poet Amir Khosrow in 1317 CE.
- It has its origin in the old Indo-Aryan language, i.e., language of the Vedas and Laukik Sanskrit.
- Like other modern Indo-Aryan languages, Dogri has also passed through Old Indo-Aryan (Sanskrit) and Middle Indo-Aryan (Pali, Prakrit, and Apabhramsha) stages of development and entered the modern Indo-Aryan stage around the 10th century A.D.
- Hence, it shows its three-fold process of development of its sound structure, expressing its affinity with Shaurseni Prakrit.
- Initially written in the Takri script, Dogri now uses the Devanagari script, which is also utilized by several other Indian languages.