KERALA STATE CIVIL SERVICE ACADEMY

Established under Centre for Continuing Education Kerala (CCEK)

MONTHLY CURRENT AFFAIRS MAGAZINE

March 2025

Scan the QR code

CITIES COALITION FOR CIRCULARITY (C-3)

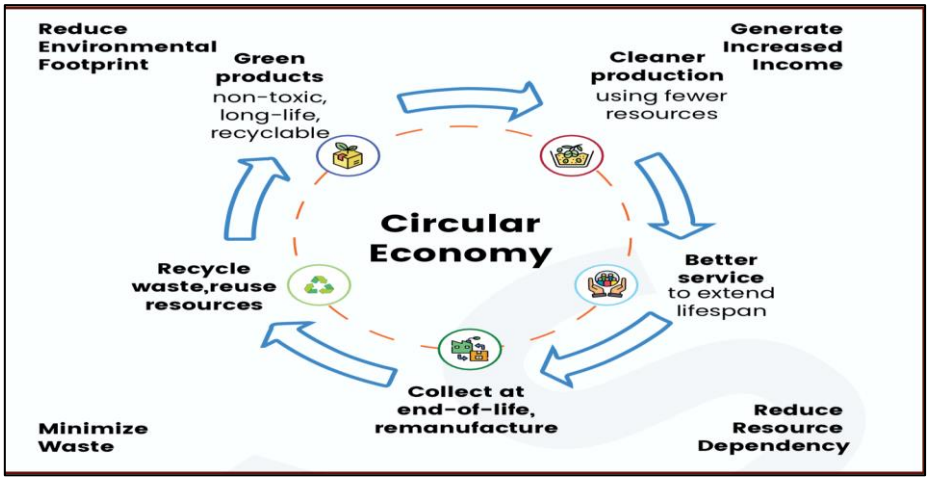
India launched the Cities Coalition for Circularity (C-3) at the 12th Regional 3R and Circular Economy Forum in Asia and the Pacific, held in Jaipur.

Background: –

- Prime Minister Modi, in a special written message to delegates at the launch, said India follows and strongly advocates the P (Pro-Planet People) approach and highlighted the role of 3Rs (reduce, reuse and recycle) and circular economy principles in ensuring sustainable urban development and resource efficiency.

Key takeaways

- The Cities Coalition for Circularity (C-3) is a multinational alliance established to promote city-to-city collaboration, knowledge-sharing, and partnerships with the private sector, focusing on advancing circular economy principles.



Key Objectives of C-3:

- City-to-City Collaboration: Facilitate cooperation among cities globally to share best practices and strategies for implementing circular economy models.
- Knowledge Sharing: Create a platform for exchanging technical expertise, innovative solutions, and successful case studies related to resource efficiency and waste management.
- Private Sector Partnerships: Engage businesses and industries in developing and adopting sustainable practices that contribute to a low-carbon economy.

About Regional 3R and Circular Economy Forum in Asia and the Pacific

- The Regional 3R and Circular Economy Forum in Asia and the Pacific is an annual platform established in 2009 by the United Nations Centre for Regional Development (UNCRD) to promote the principles of Reduce, Reuse, and Recycle (3R) and advance circular economy initiatives across the Asia-Pacific region.
- The Forum serves as a collaborative space for policymakers, industry leaders, researchers, and development partners to discuss and implement sustainable solutions for waste management and resource efficiency.
- The 12th edition of the Forum was inaugurated on March 3, 2025, in Jaipur, India, focusing on the theme "Realizing Circular Societies Towards Achieving SDGs and Carbon Neutrality in Asia-Pacific."

PRADHAN MANTRI SHRAM YOGI MAANDHAN YOJANA

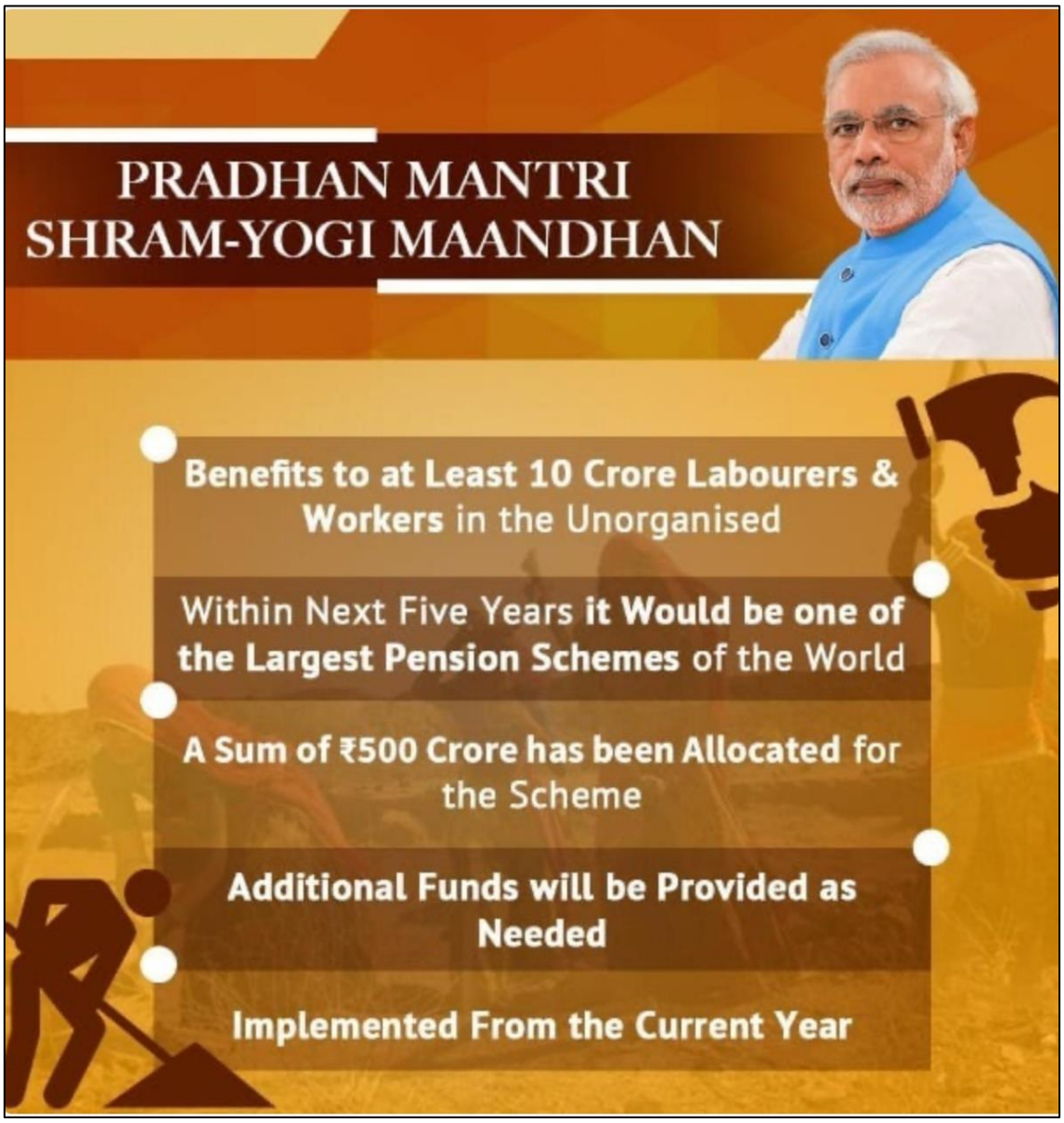
Pradhan Mantri Shram Yogi Maandhan Yojana (PM-SYM) completes six years.

Background:

- The scheme is a tribute to the workers in the Unorganized sectors who contribute around 50 per cent of the nation's Gross Domestic Product (GDP).

Key takeaways

- Pradhan Mantri Shram Yogi Maandhan (PM-SYM), is a voluntary and contributory pension scheme launched by the Government of India to provide social security to unorganised workers.
- The scheme is administered by the Ministry of Labour and Employment in collaboration with Life Insurance Corporation of India (LIC) and Common Service Centres e-Governance Services India Limited (CSC SPV) for seamless implementation.
- LIC is the Pension Fund Manager and responsible for Pension pay out.

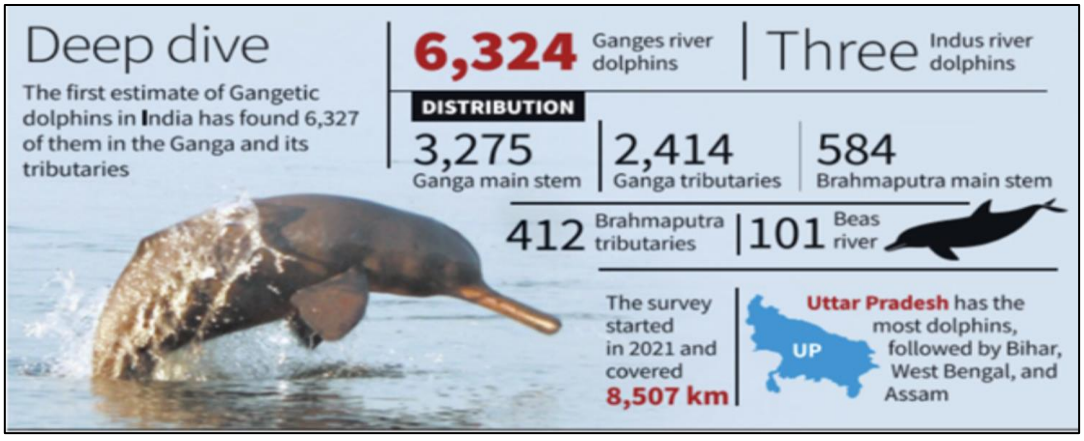


Key Features of PM-SYM

- Minimum Assured Pension: ₹3,000 per month after 60 years of age.
- Government Contribution: The Government of India matches the worker's contribution on a 1:1 basis.
- Voluntary and Contributory: The scheme is voluntary, allowing workers to contribute based on their affordability and requirement.
- Family Pension: If the beneficiary passes away, the spouse receives 50% of the pension amount as a family pension. Family pension is applicable only to spouse.
- Exit Provisions: Participants can exit the scheme under specified conditions.
- Easy Enrolment: Eligible workers can register at Common Service Centres (CSCs) or through the Maandhan portal.
- The contribution amount varies based on the age at the time of enrolment.
- To enroll in PM-SYM, individuals must meet the following eligibility conditions:
  - Age Requirement: 18 to 40 years.
  - Income Limit: Monthly income should be ₹15,000 or less.
  - Workers engaged Unorganised.
- Exclusion Criteria:
  - Should not be covered under the Employees' Provident Fund (EPF), Employees' State Insurance Corporation (ESIC), or National Pension Scheme (NPS).
  - Should not be an income taxpayer.
  - Should not be receiving benefits from any other government pension scheme.

GANGETIC DOLPHINS

The first estimate of Gangetic dolphins, the only riverine dolphins in India, has found 6,327 of them in the Ganga and its tributaries.



- For the survey, researchers travelled by boat at a constant speed using acoustic hydrophones — essentially underwater microphones — that pick up sounds emitted by the dolphins. The animals are blind and rely on echolocation to communicate and move.

Key takeaways

- The Gangetic Dolphin (Platanista gangetica) is a freshwater dolphin species endemic to the Ganges-Brahmaputra-Meghna and Karnaphuli-Sangu river systems of India and Bangladesh, and the Sapta Koshi and Karnali Rivers in Nepal.

- It is India's National Aquatic Animal and plays a crucial role in the river ecosystem.

- Conservation Status –
  - IUCN Red List: Endangered
  - Wildlife Protection Act, 1972: Schedule I (Highest protection)
  - CITES: Appendix I (Strict trade restrictions)
  - CMS (Bonn Convention): Appendix II

Characteristics :

- Blind due to poorly developed eyes; relies on echolocation for navigation and hunting.

- Can only survive in freshwater and requires deep, slow-flowing rivers.

- Indicator species for healthy river ecosystems.

Threats

- Habitat Degradation: Dams, barrages, and pollution (industrial, agricultural, and domestic waste) disrupt their natural habitat.

- Poaching: Hunted for oil and meat.

- Accidental Catch: Often gets entangled in fishing nets.
- Water Pollution: High levels of toxic metals, pesticides, and industrial effluents impact their survival.

Conservation Efforts in India

- Project Dolphin (2020): Launched under the Ministry of Environment, Forest and Climate Change (MoEFCC) to protect river and marine dolphins.
- Vikramshila Gangetic Dolphin Sanctuary (Bihar): India's only dolphin sanctuary.

VIRTUAL DIGITAL ASSETS

For the first time in India, the Income Tax Bill, 2025 explicitly treats Virtual Digital Assets (VDAs) as property and capital assets.

Background:

- The bill categorically states that VDAs, which include crypto assets, Non-Fungible Tokens (NFTs), and similar digital assets, should be considered property. This move aligns India with global practices, where digital assets are either classified as securities (like in the U.S.) or property (like in the U.K., Australia, and New Zealand).

Key takeaways

- VDAs are classified as capital assets. This means that any gains arising from their sale, transfer, or exchange will be taxed under capital gains provisions, similar to real estate, stocks, and bonds.
- For example, if an individual purchases Bitcoin at ₹10 lakh and sells it for ₹20 lakh, the ₹10 lakh profit will be subject to capital gains tax — either short-term or long-term, depending on the holding period.
- By treating VDAs as capital assets, the government ensures that transactions are subject to standard asset taxation principles, preventing their misuse as unregulated financial instruments.
- Continuing the precedent set in 2022, the bill imposes a 30% tax on income from VDA transfers.
- Unlike traditional capital assets, no deductions (other than the cost of acquisition) are allowed. This means that expenses related to mining, transaction fees, platform commissions, and gas fees cannot be deducted when calculating taxable income.
- For instance, if an investor buys Ethereum for ₹5 lakh and sells it for ₹7 lakh, the ₹2 lakh profit is taxed at a flat 30% — with no relief for transaction costs.
- Another crucial provision is the inclusion of VDAs in undisclosed income taxation and asset seizure regulations. If an individual fails to report VDA holdings in their tax filings, they can be classified as undisclosed income and taxed accordingly.
- Furthermore, Bill allows tax authorities to seize VDAs during investigations or tax raids, similar to how cash, gold, or real estate is confiscated in cases of tax evasion.
- As per the bill, any entity dealing in crypto assets — including exchanges, wallet providers, and even individual traders — is required to report transactions in a prescribed format.

COPPER RACE

Recently, the government announced the securing of a 9,000-sq-km block to explore copper and cobalt in a region in Zambia known for high-grade deposits.

Background: –

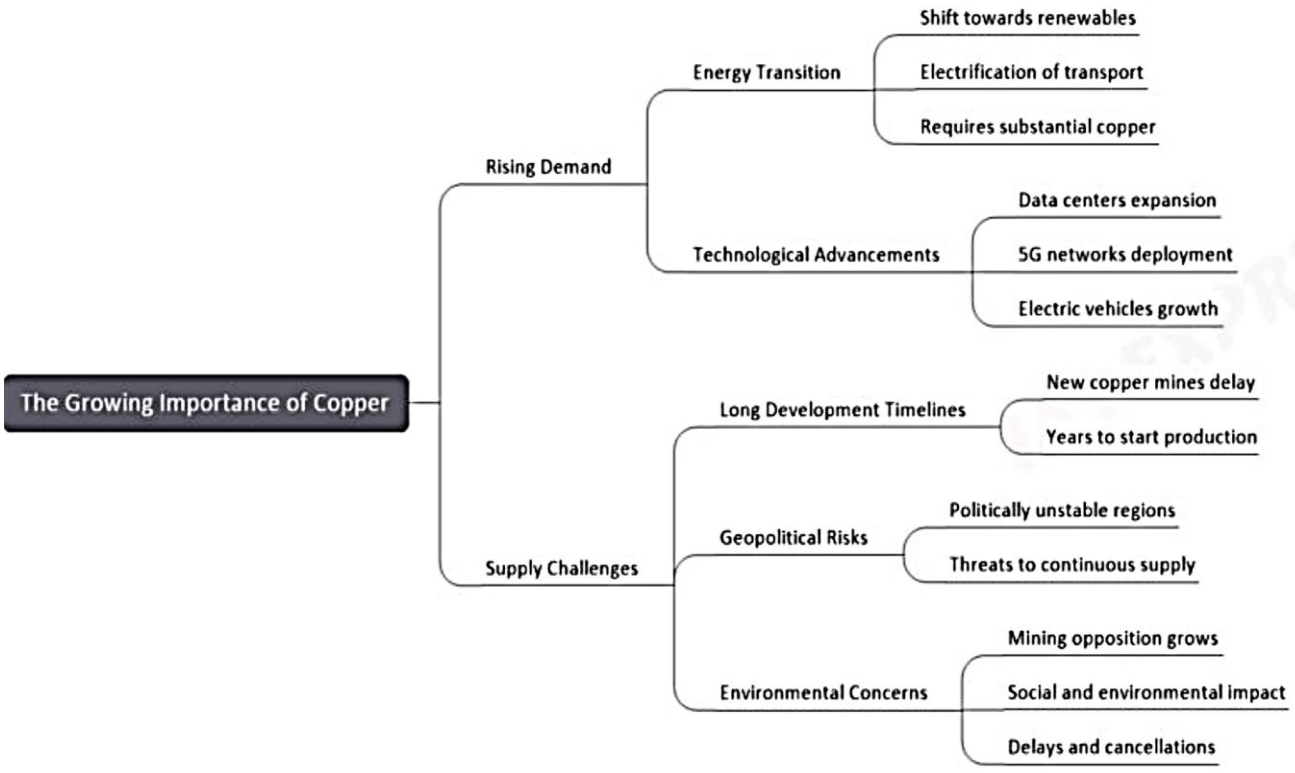
- With production in domestic mines faltering, the project is a crucial step for India to establish overseas mining operations.

- On February 25, the White House warned in a fact sheet that the "overreliance on foreign copper" could jeopardize U.S. With supply of copper ore tightening, China is moving to rein in smelting overcapacity – companies looking to build new smelters must secure long-term contracts with copper mines, many of which are in the Democratic Republic of Congo (DRC), Chile, and Peru.

Key takeaways

- With the demand for copper, led by electric vehicle (EV) batteries and clean energy technologies, projected to outstrip supply from mines by 2035, countries are scrambling to secure supply chains and strengthen domestic capabilities.

- While more recycling and alternative battery chemistries could ease pressure on primary supply, mining remains critical to meeting global demand.



India's overseas focus

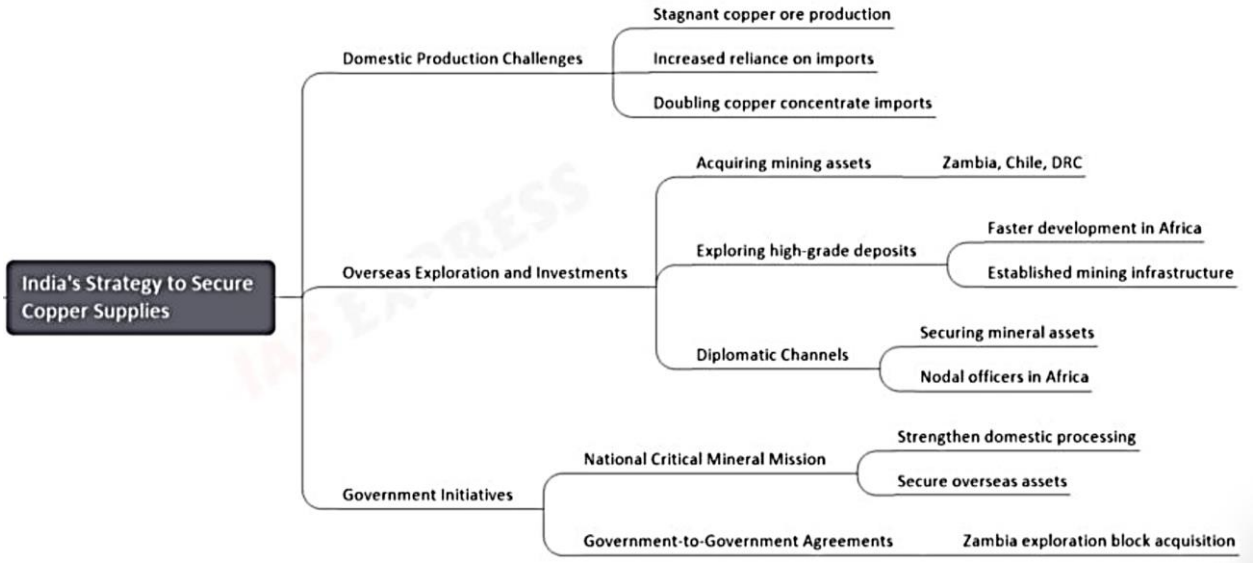
- Copper is listed as a critical mineral in India. Domestic ore production in 2023-24 was 3.78 million tonnes (mt), 8% lower than in 2018-19.

- Between April and January in the current financial year, ore production by government-owned Hindustan Copper Ltd (HCL), the sole domestic copper miner, was 6% lower year-on-year.

- Due to stagnant domestic ore production, India's copper concentrate imports have doubled in value terms to Rs 26,000 crore in 2023-24 from 2018-19.

- While India has large copper deposits, they require extensive exploration before mining can commence. Globally it takes up to 17 years on average to operationalise a copper mine.

- To meet demand in the short term, India has been looking to secure both greenfield and brownfield mineral assets in copper-rich countries such as Zambia, Chile, and the DRC.



Spotlight on Africa

- The share of Africa in the production of critical minerals such as copper, lithium, and natural graphite is rising.
- The continent already accounts for 70% of global cobalt production and 16% of global copper production. The DRC is on course to become the world's second-largest copper supplier by 2030.
- India has got the 9,000-sq-km block in Zambia's Northwestern province on a government-to-government basis. The Geological Survey of India (GSI) will explore the land, which is roughly six times the size of Delhi.
- Zambia is the seventh largest producer of copper in the world. (Chile, Peru and DRC are numbers 1, 2, and 3 respectively.)

ACCREDITED SOCIAL ACTIVISTS (ASHA)

Accredited Social Activists (ASHA) from across Kerala congregated in front of the Kerala Secretariat in a show of strength, demanding that they be paid a decent honorarium and incentive for the stellar work they were doing for the Health department at the grassroots.

Background: –

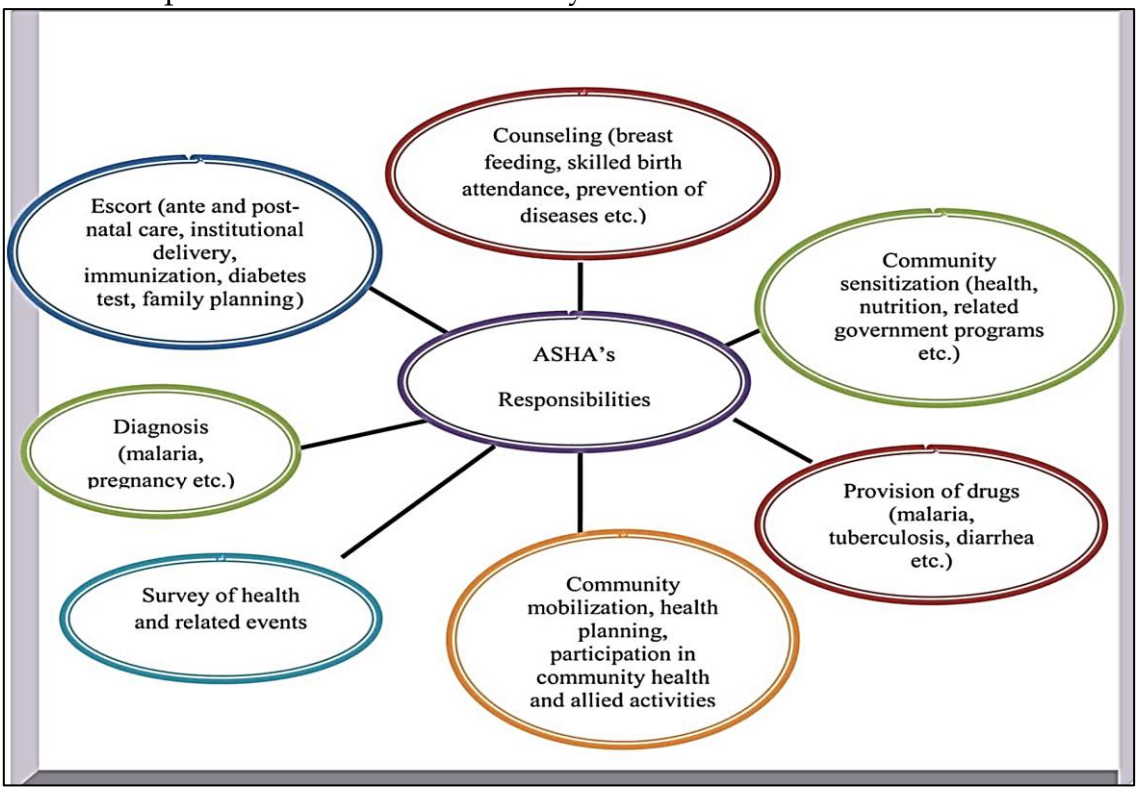
- ASHAs have been on agitation in front of the Secretariat since the past 11 days, demanding the pending payment of their meagre honorarium and incentives and also bringing into public focus the fact that they were an underpaid and overworked workforce of the Health department.

Key takeaways

- Accredited Social Health Activists (ASHAs) are community health workers instituted by the Government of India in 2005 under the National Rural Health Mission (NRHM).
- They serve as a crucial link between the healthcare system and rural populations, aiming to improve health outcomes by promoting access to healthcare services.

Selection and Training:

- Selection Process: ASHAs are selected through a rigorous process involving community groups, self-help groups, Anganwadi institutions, and local health officials. The selection emphasizes community involvement to ensure that ASHAs are trusted and effective in their roles.
- Training: Once selected, ASHAs undergo continuous capacity building through a series of training sessions designed to equip them with the necessary knowledge, skills, and confidence to perform their roles effectively.



Roles and Responsibilities:

- Health Education and Awareness: Educate the community on health issues such as maternal and child health, nutrition, sanitation, and immunization.

- Maternal and Child Health:
  - Encourage institutional deliveries and assist pregnant women in accessing antenatal and postnatal care.
  - Ensure immunization of children and pregnant women.
  - Provide basic care for newborns and counsel mothers on breastfeeding and nutrition.

- Family Planning and Reproductive Health:
  - Distribute contraceptives and provide information on family planning methods.
  - Counsel women and couples on reproductive health.

- Disease Prevention and Control:
  - Facilitate the detection and management of infectious diseases like tuberculosis (TB), malaria, and HIV/AIDS.
  - Support national health programs.

- Community Mobilization: Mobilize the community to participate in health programs and utilize healthcare services.
- Record Keeping and Reporting: Maintain records of health-related activities and disease outbreaks in their area.

Impact and Recognition:

- Scale: As of recent estimates, there are nearly one million ASHAs working across India, making it one of the largest community health worker programs globally.

- Global Recognition: In 2022, ASHAs were among the recipients of the WHO Director-General's Global Health Leaders Award, acknowledging their significant contributions to advancing global health.

DRAMATIC PERFORMANCES ACT, 1876

Prime Minister Narendra Modi recently asked why a colonial law, Dramatic Performances Act, 1876, continued to exist even 75 years after independence. He was speaking of government's efforts to repeal archaic and obsolete laws.

Background: –

- The repeal of obsolete laws has been a flagship exercise by the Modi government. Since 2014, it has repealed more than 2,000 such laws. Obsolete laws, by definition, are laws which are no longer in use.

Key takeaways

- Under the Dramatic Performances Act, "any play, pantomime or other drama performed or about to be performed in a public place" could be banned if the government was of the "opinion" that the play was "of a scandalous or defamatory nature", was "likely to excite feelings of disaffection to the Government established by law", or "to deprave and corrupt persons present at the performance".
- This law was among those enacted by the British to clamp down on the budding Indian nationalist sentiment following the visit of the Prince of Wales, Albert Edward, to India from 1875 to 1876. Other laws enacted during this period were the draconian Vernacular Press Act, 1878, and the sedition law of 1870.
- The law was formally repealed in 2018 as part of the Modi government's exercise to weed out obsolete laws. However, the Dramatic Performance Act had not been a "valid law" since at least 1956.
- In a ruling in 1956, the Allahabad High Court ruled that the law was inconsistent with the Constitution of India.

Why India continue to have colonial laws?

- Article 372 of the Constitution states that laws in operation at the time of Independence would continue to be in operation.
- However, colonial laws do not enjoy the presumption of constitutionality – which means that when a colonial law is challenged, the government must defend the law for it to be valid.
- Other laws – those enacted by the Parliament of independent India – are deemed constitutional unless declared otherwise, which means that when challenged in court, the onus is on the petitioner to prove that the legislation violates the Constitution.

WALLACE LINE

Kangaroos and cockatoos are synonymous with Australia and tigers and orangutans with Asia. Both these continents boast rich biodiversity that is also very unique. A simple yet popular way to understand these unique and distinct species distribution is Wallace line.

Background: –

- Named after the British naturalist Alfred Russel Wallace, who first identified it in the 19th century, the Wallace Line is a crucial concept for understanding biodiversity, evolution, and ecological distribution.

Key takeaways

- The Wallace Line is a significant biogeographical boundary that separates the distinct flora and fauna of Asia and Australasia.
- Location: The Wallace Line runs between the islands of Bali and Lombok in Indonesia, extending northward through the Makassar Strait between Borneo (Kalimantan) and Sulawesi, and further into the Philippine Sea.
- It marks the boundary between the Indo-Malayan ecozone (to the west) and the Australasian ecozone (to the east). These regions have distinct evolutionary histories and biodiversity.

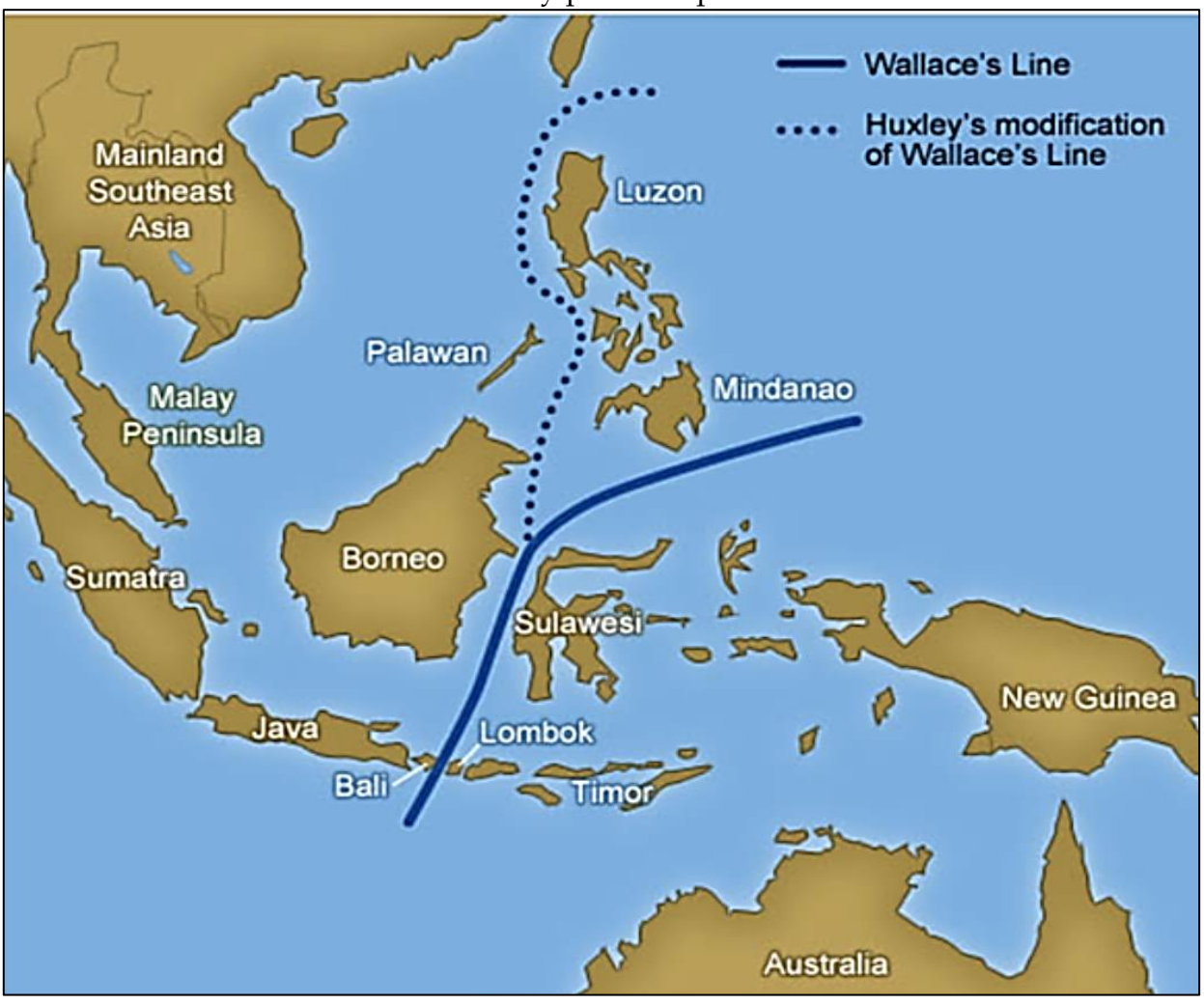
Key Features of the Wallace Line:

- Biodiversity Divide:
  - West of the Wallace Line: The flora and fauna are predominantly of Asian origin, including species like tigers, rhinoceroses, and primates.
  - East of the Wallace Line: The flora and fauna are predominantly of Australian origin, including marsupials, cockatoos, and eucalyptus trees.

- Evolutionary Significance: The Wallace Line represents a deep historical separation caused by plate tectonics and continental drift. The regions on either side of the line evolved in isolation for millions of years.
- Ecological Transition: The area between the Wallace Line and the Lydekker Line (further east) is known as Wallacea, a transitional zone with a mix of Asian and Australian species.

Factors Contributing to the Wallace Line:

- Geological History: During the Ice Ages, sea levels dropped, exposing land bridges that allowed species to migrate between continents. However, the deep Wallace Trench between Bali and Lombok acted as a barrier, preventing the mixing of Asian and Australian species.
- Ocean Currents: Strong ocean currents in the region further limited the dispersal of species across the line.
- Climatic Differences: Variations in climate and habitat types on either side of the line also contributed to the distinct evolutionary paths of species.



BLUE GHOST MISSION

U.S. company Firefly Aerospace successfully landed its spacecraft on the moon on Sunday, marking only the second private mission to achieve the milestone — and the first to do so upright.

Background: –

- Firefly Aerospace's Blue Ghost Mission 1 touched down shortly after 3.34 a.m. U.S. Eastern Time (0204 IST) near Mons Latreille, a volcanic formation in Mare Crisium on the moon's northeastern near side.
- The mission is part of a NASA-industry partnership aimed at reducing costs and supporting Artemis, the programme designed to return astronauts to the moon.

Key takeaways

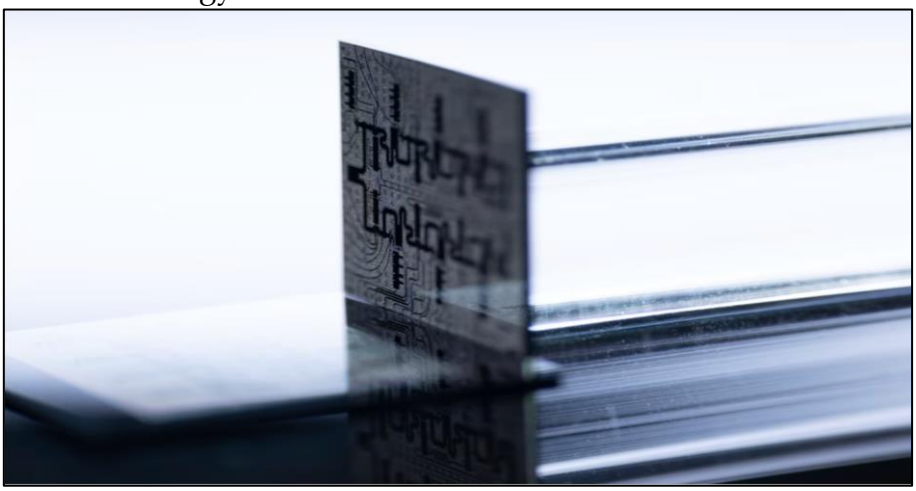
- Blue Ghost carries 10 instruments, including a lunar soil analyser, a radiation-tolerant computer and an experiment testing the feasibility of using the existing global satellite navigation system to navigate the Moon.
- Designed to operate for a full lunar day (14 earth days), Blue Ghost is expected to capture high-definition imagery of a total eclipse on March 14, when the earth blocks the sun from the moon's horizon.
- On March 16, it will record a lunar sunset, offering insights into how dust levitates above the surface under solar influence — creating the mysterious lunar horizon glow first documented by Apollo astronaut Eugene Cernan.
- Blue Ghost's arrival will be followed on March 6 by fellow Texas company Intuitive Machines' IM-2 mission, featuring its lander Athena.
- In February 2024, Intuitive Machines became the first private company to achieve a soft lunar landing — also the first U.S. landing since the crewed Apollo 17 mission of 1972.
- However, the success was tempered by a mishap: the lander came down too fast and tipped over on impact, leaving it unable to generate enough solar power and cutting the mission short.
- Until Intuitive Machines' first successful mission, only five national space agencies had accomplished this feat: the Soviet Union, the United States, China, India and Japan, in that order.

OCELOT

Amazon Web Services (AWS) announced Ocelot, its first-generation quantum computing chip, as it enters the race against fellow tech giants in harnessing the experimental technology.

Background:

- Quantum research is seen as a critical emerging field, and both the United States and China have been investing heavily in the area, with Washington also placing restrictions on exports of the sensitive technology.



Key takeaways

- Ocelot is a nine-qubit chip that has been internally fabricated by Amazon.
- Amazon's announcement comes a week after rival Microsoft introduced its own quantum computing chip 'Majorana 1' .

Key Features of Ocelot:

- Error Correction Efficiency: Ocelot is designed to address one of the primary challenges in quantum computing—error correction. Utilizing "cat qubits," the chip intrinsically suppresses certain types of errors, potentially reducing the resources required for error correction by up to 90% compared to traditional methods.
- Scalability: The chip's architecture is designed to be scalable, allowing for the development of practical, fault-tolerant quantum computers. AWS believes that this approach could accelerate the timeline to a practical quantum computer by up to five years.

AMIR KHUSRAU

In his address to the 25th edition of Jahan-e-Khusrau, Prime Minister Narendra Modi described the annual music festival that commemorates the Sufi poet-musician Amir Khusrau as imbued with the "fragrance of the soil of Hindustan".

Background: –

- Bestowed with the sobriquet of Tuti-yi-Hind, the 'Parrot of India', the 13th century mystic is seen as a father figure for North India's syncretic Ganga-Jamuni culture.

Key takeaways

- Khusrau made lasting contributions to Indian classical music, Sufi qawwali, and Persian literature, and is also credited for developing Hindavi, a precursor to modern Hindi and Urdu.
- Khusrau's father likely came to India from Central Asia as the Mongol hordes of Genghis Khan ravaged Transoxiana (corresponding to parts of modern-day Uzbekistan, Tajikistan, southern Kazakhstan,Turkmenistan and Kyrgyzstan).
- Abu'l Hasan Yamin ud-Din Khusrau, was born in 1253. Khusrau became a professional poet at age 20, and served as one until his death. He started out in the service of princes and nobles, before becoming a permanent fixture in the court of the Delhi Sultan.
- Amir Khusrau served at least five Sultans — Muiz ud din Qaiqabad, Jalaluddin Khalji, Alauddin Khalji, Qutbuddin Mubarak Shah, and Ghiyasuddin Tughlaq. He wrote in Persian, the language of the court, as well as Hindavi.
- Sultan Jalaluddin Khalji bestowed upon Khusrau the title of 'Amir'. Historian Ziauddin Barani wrote in Tarikh-i-Firuz Shahi that Jalaluddin held Khusrau "in great esteem", and Khusrau "served as keeper of the Qur'ān" in his court.
- Khusrau was the most beloved disciple of the Chishti Shaikh Nizamuddin Auliya.

Khusrau's lasting legacy

- 700 years after his death, the lyrical beauty, sophisticated wordplay, and exploration of diverse themes in Khusrau's poetry continues to enamour audiences.
- In form and content, Khusrau's poetry borrowed heavily from Persian and Turkic, as well as local influences, making him one of the most important figures in propagating a syncretic Hindu-Muslim culture — the so-called Ganga-Jamuni tehzeeb.
- He wrote highly of Hindus. "The Brahmans of India have greater wealth of philosophical thought than what Rumi had revealed to the World. As nobody has tried to learn from the Brahmans, their learning has not been revealed to the world," he wrote in his masnavi Nuh Siphir.
- Khusrau's ghazals and qawwalis are today sung in both sacred and secular contexts, at sufi dargahs and Bollywood musicals. His most popular compositions include Chhaap Tilak, Zehal-e-Maskeen, and Sakal Ban Phool Rahi Sarson.

LAKE TANGANYIKA

The Lake Tanganyika Basin is facing severe biodiversity threats. Recently, Burundi, the Democratic Republic of Congo, Tanzania, and Zambia initiated a five-year project aimed at addressing these transboundary challenges.

This initiative is supported by the UN Environment Programme (UNEP) and the Global Environment Facility (GEF). It focuses on sustainable natural resource management and biodiversity conservation within the basin.

Project Objectives

The project aims to enhance cooperation among the four countries. It will protect core conservation zones in three designated areas. Additionally, the initiative promotes sustainable fisheries and the restoration of degraded landscapes. The project has a budget of USD 14.5 million and is executed by UNOPS.

Key Intervention Areas

Several high-priority areas have been identified. These include establishing standards for fishing practices. This involves defining acceptable fishing gear, mesh sizes, and quotas. Protecting critical habitats is also a major focus. Community involvement in fisheries management will be increased. Furthermore, sustainable livelihood alternatives will be promoted.

Biodiversity Crisis

Globally, freshwater biodiversity is declining at an alarming rate. Over the past century, there has been an 84% decline in freshwater species. This poses risks to ecosystems and species survival. Factors contributing to this crisis include nutrient pollution, plastic waste, and overexploitation. Climate change further exacerbates these challenges.

Importance of Lake Tanganyika

Lake Tanganyika is a global biodiversity hotspot. It supports over 10 million people who rely on its resources. However, increasing human populations and resource usage threaten its biodiversity. The lake's health is crucial for both local communities and global ecosystems.

International Cooperation

The project builds on the Convention on the Sustainable Management of Lake Tanganyika. This agreement was adopted in 2003 and laid the groundwork for collaborative efforts. The current initiative represents step in collective responsibility for ecosystem protection.

Future Projections

By 2050, the value of lake ecosystem services may decrease by up to 20%. This decline could result from continued nutrient pollution and other environmental pressures. Addressing these issues will require substantial financial resources and coordinated action.

ANCIENT INDIA CONTRIBUTION TO SCIENCE

National Science Day is celebrated on February 28 to mark the contribution of Indian scientists to society's development. In 1986, the India Government designated this day to commemorate the announcement of the discovery of the "Raman Effect." CV Raman discovered the Raman effect on February 28, 1928, for which he was awarded the Nobel Prize in 1930.

Background: –

- On the occasion of National Science Day, a look at the significant contribution of ancient India in the field of science is essential.

Key takeaways

- The Indian origin of Zero: In the 6th and 7th Century C.E. Indian mathematician Brahmagupta was the first to clearly define zero (as what remains when a number is subtracted from itself) and explore all its properties. He also invented negative numbers as a concept.

- Decimal system of numerals: Decimal system was discoved by Indians. Even the Arabs themselves called mathematics "the Indian (art)" (hindisat).
- The atomic theory of Kanad: The sixth-century scientist of Vaisheshika School, Kanad had given his atomic theory that the material universe is made up of kanas, (anu/atom) which cannot be seen through any human organ. These cannot be further subdivided. Thus, they are indivisible and indestructible. This is similar to the modern atomic theory.
- Earthquake cloud theory: Varahamihira in his book Brhat Samhita has devoted a chapter on signs of earthquakes. He has tried to relate earthquakes to the influence of planets, undersea activities, underground water, unusual cloud formation, and abnormal behaviour of animals.

- Position of nine planets: Aryabhata was the first mathematician who discovered the position of nine planets and mentioned that they revolve around the sun. The mathematician has made a huge contribution to the place value system.
- Cyclic Method to solve algebraic equations: Bhaskaracharya in his book Siddanta Shiromani has introduced the Chakrawat Method or the Cyclic Method to solve algebraic equations.
- Medicine: Charak in his book Charak Samhita had given a description of a large number of diseases and gives methods of identifying their causes as well as the method of their treatment. He was the first who emphasise that digestion, metabolism, and immunity are important for health.
- Metallurgy: The Iron Pillar of Delhi stands as evidence of ancient India's advanced metallurgical knowledge, particularly in corrosion resistance. Wootz steel, primarily iron with a high proportion of carbon, is known for high durability and strength has originated in India.
- Surgery: Sushruta is often referred to as the "Father of Surgery". His works have immensely contributed to the field of surgery, especially cosmetic surgery. His work in the book "Sushruta Samhita" reflects his mastery of surgical techniques and human anatomy.
- Yoga: The Yoga Sutras of Patanjal has systematically presented the science of Yoga

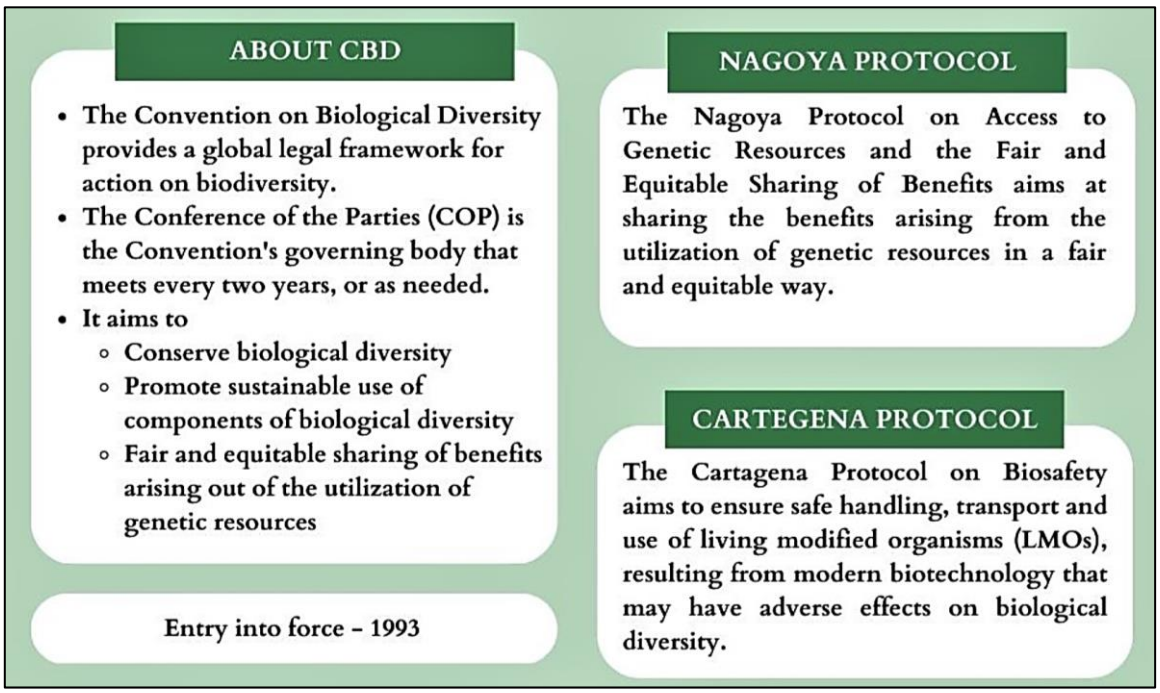
CBD

World leaders at 16th Conference of the Parties (COP16) to the Convention on Biological Diversity (CBD) in Rome have reached a historic agreement on financing global conservation goals.

Background: –

- The conference, which had been paused in Cali, Colombia, in 2024, resumed in Rome on February 25, 2025, where officials finalised the agreement after intense negotiations.

Convention on biological Diversity (CBD)



Key takeaways

- The Convention on Biological Diversity (CBD) is an international treaty established to promote the conservation of biological diversity, the sustainable use of its components, and the fair and equitable sharing of benefits arising from genetic resources.
- The CBD was opened for signature at the Earth Summit in Rio de Janeiro in 1992 and entered into force on December 29, 1993.
- As of now, it has been ratified by 196 parties, including 195 countries and the European Union, making it one of the most widely adopted international environmental agreements.
- The CBD has three main objectives, often referred to as the "three pillars" of the Convention:
    - Conservation of Biological Diversity: To protect ecosystems, species, and genetic diversity from threats such as habitat destruction, pollution, climate change, and invasive species.
    - Sustainable Use of Biological Resources: To ensure that the use of biological resources (e.g., forests, fisheries, and wildlife) is sustainable and does not lead to their depletion or degradation.
    - Fair and Equitable Sharing of Benefits Arising from Genetic Resources: To ensure that the benefits derived from the use of genetic resources (e.g., for medicines, agriculture, or biotechnology) are shared fairly and equitably with the countries and communities that provide these resources.

Supplementary Agreements under the CBD:

- Cartagena Protocol on Biosafety (2003): Focuses on the safe handling, transport, and use of living modified organisms (LMOs) resulting from modern biotechnology. It aims to protect biodiversity from potential risks posed by genetically modified organisms (GMOs).
- Nagoya Protocol on Access and Benefit-Sharing (2010): Provides a legal framework for the fair and equitable sharing of benefits arising from the use of genetic resources. It ensures that communities providing genetic resources receive compensation and recognition.
- Post-2020 Global Biodiversity Framework (2022): Adopted at the COP15 in Montreal, this framework sets ambitious targets for 2030 and 2050 to halt and reverse biodiversity loss. Key goals include protecting 30% of land and oceans, restoring degraded ecosystems, and mobilizing financial resources for biodiversity conservation.

Strategy on implementing Global Biodiversity Framework

• The governments agreed on the strategy to raise the funds needed to protect biodiversity and achieve the action targets of the Kunming-Montreal Global Biodiversity Framework (KMGBF).

• Parties to the Convention on Biological Diversity worked into the early morning hours to hammer out agreements on biodiversity finance, on planning, monitoring, reporting and review, and the full set of indicators to measure global and national progress towards implementing the KMGBF.

• The framework was finalised a little over two years ago – a historic UN-driven agreement to guide global action on nature through to 2030, which was hashed out at meetings in China's Kunming and Canada's Montreal in 2022.

• The Global Biodiversity Framework aims to address biodiversity loss, restore ecosystems and protect the rights of Indigenous Peoples, who suffer disproportionately from biodiversity loss and environmental degradation.

• The global framework also contains concrete measures to halt and reverse nature loss, including protection measures covering 30 per cent of the planet and 30 per cent of degraded ecosystems by 2030.

• Currently only 17 per cent of land and around eight per cent of marine areas are protected.

• After intense negotiations, Parties to the Convention agreed on a way forward in terms of resource mobilisation with a view to close the global biodiversity finance gap and achieve the target of mobilising at least $200 billion a year by 2030, including $20 billion a year in international flows by 2025, rising to $30 billion by 2030.

• This includes the commitment to establish permanent arrangements for the financial mechanism in accordance with Articles 21 and 39 of the Convention while simultaneously working on improving existing financial instruments.

• It outlines the main principles and steps that will shape the evolution of these existing financial instruments, and any others that may be created.

• It also includes a roadmap of the activities and decision-making milestones from now, through the 17th, 18th and 19th meetings of the Conference of the Parties to the Convention on Biological Diversity, until 2030.

• The deal will see global collaboration on raising finance for biodiversity, and details of the monitoring framework of the Global Biodiversity Framework targets finalised to accelerate nature recovery.

• An agreement on resource mobilisation creates a clear strategy for global collaboration on raising finance from all sources to fund the work necessary to achieve the goals and targets of the Kunming-Montreal Global Biodiversity Framework.

• The finalisation of a monitoring framework and the global approach to reviewing progress in delivering the Kunming Montreal Global Biodiversity Framework, will ensure a shared approach to tracking progress with transparency and accountability.

The next Conference of the Parties (COP17) will take place in 2026 in Yerevan, Armenia.

SVALBARD SEED VAULT

Over 14,000 new samples of food crop seeds are being added this week to a "doomsday" vault located on an island in Svalbard, Norway.

Background:

- These seeds are part of an effort launched in 2008 to back up thousands of the planet's essential plant species, ensuring a biodiverse future food supply.

Key takeaways

- The Svalbard Global Seed Vault (also known as the Doomsday Vault) is a secure seed bank located on the Svalbard archipelago, Norway. It serves as a global backup facility for preserving the genetic diversity of the world's crops, ensuring food security in case of natural or man-made disasters.

- Situated inside a mountain on Spitsbergen Island in the Arctic Circle (Norway).
- Chosen for its geopolitical stability, low seismic activity, and permafrost, which ensures natural preservation of seeds.
- The permafrost acts as a natural refrigerator, keeping the seeds viable for hundreds of years.
- The Svalbard Global Seed Vault is owned by Norway and managed in partnership between the Norwegian Ministry of Agriculture and Food, the regional genebank NordGen and the Crop Trust.
- Purpose and Objectives –
    - To safeguard global food security in case of:
        - Climate change
        - Natural disasters (earthquakes, floods, etc.)
        - War and conflicts
        - Biodiversity loss
    - To store duplicates of seeds from national, regional, and international gene banks.
    - To prevent the extinction of plant species essential for agriculture and food production.
- The vault can store 4.5 million seed samples, with a current storage of over 1.2 million seed varieties from over 100 countries.
- Seeds are stored in sealed three-layered foil packets inside temperature-controlled chambers at –18°C.

DPDP ACT AND DISABILITY RIGHTS

The Digital Personal Data Protection Act, 2023 (DPDP Act) is a very important piece of legislation in India. It aims to regulate the processing of digital personal data while balancing individual rights and lawful data processing needs.

Recently, the Ministry of Electronics and Information Technology (MeitY) has been consulting the public on the draft rules associated with this Act. Disability rights activists have raised concerns regarding a specific provision that they believe undermines the autonomy of Persons with Disabilities (PwDs).

Key Provisions of the DPDP Act

- The DPDP Act mandates that data fiduciaries must obtain verifiable consent from the guardian of any child or adult PwD before processing their personal data.
- This is outlined in Section 9(1) of the Act. The Act defines data fiduciaries as those processing personal data, while data principals are the individuals whose data is being collected.

Concerns of Disability Rights Activists

Activists argue that Section 9(1) infantilises PwDs. It assumes that having a legal guardian equates to an inability to make decisions, which contradicts the principles of self-determination. They contend that this provision could restrict PwDs' access to digital platforms, thereby infringing on their rights.

The Role of Guardians in Disability Rights

Legal guardianship for PwDs is governed by two primary laws – the Rights of Persons with Disabilities Act, 2016 (RPWD Act) and the National Trust for the Welfare of Persons with Autism, Cerebral Palsy, Mental Retardation, and Multiple Disabilities Act, 1999 (NT Act).

The RPWD Act allows for limited guardianship, supporting PwDs in specific legal decisions, while the NT Act provides for full guardianship. This difference creates confusion about the roles and responsibilities of guardians.

Implementation Challenges

The draft rules under the DPDP Act attempt to clarify how consent should be obtained from guardians. However, the lack of illustrative examples for PwDs raises doubts about practical implementation. Activists stress the need for clear guidelines to ensure that guardianship does not compromise the autonomy of PwDs.

Intersectionality and Digital Rights

Concerns about intersectionality arise when considering factors like gender and disability. For instance, a PwD woman may require a guardian's consent to purchase sanitary products online. This limitation can hinder access to essential services, raising questions about the adequacy of the DPDP Act in protecting the rights of all PwDs.

Data Privacy and Legal Responsibilities

Activists worry about the legal obligations placed on guardians regarding consent for data processing. Questions arise about the implications of guardianship on data privacy and the potential for conflicts of interest. If guardians act in their own interests, it could undermine the rights of the PwD they represent.

Accessibility of Digital Platforms

Despite the legal frameworks established, accessibility remains barrier for PwDs. A recent evaluation revealed that many popular digital platforms lack adequate accessibility features. This issue complicates the implementation of the DPDP Act, as inaccessible platforms can prevent PwDs from exercising their rights.

NEW SPECIES

Researchers recently discovering two new species of jumping spiders in India and a unique leaf-nosed bat in Sri Lanka. These findings highlight the ecological richness of the region and the need for further exploration and conservation efforts.

New Spider Species Discovery

- The University of Kerala has reported the discovery of two new species of jumping spiders, Epidelaxia falciformis and Epidelaxia palustris.
- This marks the first record of the genus Epidelaxia in India.
- The spiders were found in the Shendurney Wildlife Sanctuary During expeditions in late 2022 and early 2023.
- The females are notably characterised by a yellow triangular mark on their prosoma.
- Males exhibit distinct colour patterns.
- E. falciformis measures 4.39 mm, while E. palustris ranges from 3.69 mm to 4.57 mm in size.
- These spiders thrive in the dense foliage of the Western Ghats.

Significance of the Discovery

The discovery of these spiders enriches the biodiversity checklist of the Western Ghats. It puts stress on the ecological importance of this area, which is recognised for its unique flora and fauna. The research contributes to the understanding of arachnid diversity in India and marks the need for ongoing exploration and conservation efforts.

New Bat Species Identification

A separate team led by Bhargavi Srinivasulu from Osmania University has identified a new species of leaf-nosed bat named Hipposideros srilankaensis. This species is endemic to Sri Lanka and adds to the region's biodiversity.

Hipposideros srilankaensis features a broad noseleaf and unique cranial characteristics. The research included collaboration with bat biologists from India, Sri Lanka, and Thailand. The team conducted extensive surveys and genetic analyses to confirm the bat's distinctiveness.

Divergence of Hipposideros genus

- Genetic studies revealed divergence from other species in the Hipposideros genus.
- The study reclassified *Hipposideros brachyotus* as a distinct species endemic to India, separating it from *Hipposideros galeritus*.
- Research found genetic differences in *Hipposideros galeritus*populations across Southeast Asia, hinting at the presence of undiscovered species.

PREDATORY PRICING

Recently, the Competition Commission of India (CCI) proposed new regulations to replace the 2009 guidelines on predatory pricing. The draft regulations titled "The Competition Commission of India (Determination of Cost of Production) Regulations, 2025" aim to modernise the framework for assessing predatory pricing. This move aligns with contemporary economic theories and global best practices.

About Predatory Pricing

- Predatory pricing is defined as selling goods or services below cost by a dominant firm to eliminate competition.
- According to Section 4(2)(a)(ii) of the Competition Act, three conditions must be met for a pricing strategy to be classified as predatory – dominance in the market, pricing below cost, and intent to eliminate competitors.

Key Changes in the New Regulations

The most change is the removal of "market value," which caused confusion. The new regulations introduce "average total cost (ATC)" as the benchmark for assessing pricing. Other measures like average avoidable cost and long-run average incremental cost may also be considered based on industry specifics.

Cost Determination

The CCI or its director general can seek expert assistance to determine cost figures. If enterprises dispute these determinations, they can request an independent expert review at their own expense. This ensures transparency and fairness in the assessment process.

CCI's Approach to Market Dynamics

The CCI has historically applied the earlier regulations in limited cases and refrains from intervening in market pricing. Market prices should be dictated by competition and the dynamics among participants. This approach ensures consumers benefit from quality and fair pricing.

Legitimate Price Reductions

Price reductions can stem from various legitimate factors, such as promotional discounts or government subsidies. These do not constitute predatory pricing. The new regulations acknowledge that not all price reductions are anti-competitive.

Media and E-commerce Concerns

Certain media outlets have linked the new regulations to e-commerce practices, alleging unfair competition against traditional retailers. However, the CCI maintains that these regulations do not directly affect e-commerce platforms. Existing provisions of the Act will address any unfair practices.

INDIA'S ACHIEVEMENT IN TERMS OF BIOFUEL

Biofuels represent renewable energy fuels which are derived from organic sources such as biomass and organic waste.

These can be broadly categorized in three types: Liquid Biofuels (ethanol, biodiesels, bio-methanol etc.), Biogas (Bio-LNG,
Bio-CNG) and Solid Biomass.

India has achieved 19.6% ethanol blending in petrol as of January 2025 and is on track to reach 20%, five years ahead of its
original 2030 target.

Significance of Biofuels
Fulfilment of Energy Demand: India accounts for more than a quarter of net global primary energy demand growth between 2017-2040.

Environment Impact: Biofuel Promotion helped in reducing CO2 emissions by 519 lakh metric tons, and substituting 173 lakh metric tons of crude oil.
Energy Security: Ethanol blending programme has reduced import dependency and saved Rs. 85,000 crore in foreign exchange.
Circular Economy: Enables circularity by employing waste for wealth creation and delivering wider socioeconomic benefits.
Rural Development: Provides additional financial incentives to farmers through development of market for agricultural residues/wastes.

Challenges in biofuel production
Feedstock challenge: Lack of quality feedstock, competing demand for feedstock affecting food security and fragmented and complex waste supply chain.
Technological: Negligible commercial viability of advanced biofuel production.
Funding: High capital expenditure requirement and uncertainty of profit margins.
Key Initiatives: National Policy on Biofuels 2018, Pradhan Mantri JI-VAN Yojana, Galvanizing Organic Bio-Agro Resources Dhan
(GOBARdhan), SATAT Scheme on Compressed Bio Gas etc.

NARWHALS

Recent studies have revealed fascinating vital information about the behaviours of narwhals in the Arctic. These iconic marine mammals are known for their long, spiral tusks. Researchers have now observed how narwhals use these tusks for hunting Arctic char and interacting with their environment. The research marks the impact of climate change on narwhal behaviour and their adaptability to a warming Arctic.

About Narwhal

Scientific Classification:

- Scientific Name: *Monodon monoceros*
- Family: Monodontidae (same family as the beluga whale)

Distinctive Feature – Tusk:

- The tusk is a long, helical tooth that grows from the upper left canine of males.
- Only 15% of females develop a tusk.
- The tusk grows throughout the narwhal's life.
- Rare cases of two-tusked narwhals exist.

Habitat and Distribution:

- Found in the Arctic waters of Canada, Greenland, and Russia.
- They stay in pods (groups) and prefer cold waters.

Diet and Behavior:

- Carnivorous: Eats squid, cod, halibut, and small fish.
- Lives in colonies and has social behaviors.

Historical and Cultural Significance:

- Mentioned in old sailors' stories as the "unicorn of the sea."
- Carl Linnaeus classified it in *Systema Naturae* (1758).
- The name "narwhal" comes from the Old Norse word *nár*, meaning "corpse," due to its grayish, mottled skin.

Evolutionary History:

- Originally lived in tropical waters 11 million years ago.
- Shifted to Arctic waters during the Pliocene era due to food chain changes.

Tusk Utilisation

A new research revealed that narwhals use their tusks to hunt Arctic char. They demonstrated remarkable dexterity and speed while manipulating their tusks to stun or kill fish. The tip of the tusk was particularly effective in investigating and influencing the behaviour of their prey.

Documented Behaviours

Researchers identified 17 distinct behaviours exhibited by narwhals. These included hunting techniques, social learning, and playful interactions. Notably, narwhals were observed engaging in 'tusking' behaviour, where they raise and cross their tusks, possibly for social interaction or competition assessment.

Interactions with Other Species

The study also documented interactions between narwhals and other species. This included kleptoparasitism, where narwhals compete with glaucous gulls for food. Such interactions highlight the complex dynamics within the Arctic ecosystem.

Impact of Climate Change

The research sheds light on how narwhals are adapting to changes in their environment. As ice patterns shift and prey availability fluctuates due to global warming, understanding these behaviours becomes crucial. The findings tell the importance of ongoing research in assessing the impacts of climate change on marine life.

Significance of the Study

This study contributes to the understanding of narwhal behaviour and ecology. It opens avenues for further research on how these marine mammals cope with environmental changes. The use of drones in wildlife research has proven invaluable, allowing for non-invasive observation.

PROTON EXCHANGE MEMBRANE FUEL CELL (PEMFC)

Recently, the Centre for Fuel Cell Technology (CFCT) at the International Advanced Research Centre for Powder Metallurgy and New Materials showcased a mobile Proton Exchange Membrane fuel cell (PEMFC)-based backup power solution for telecom towers using a plug-and-play model.

- It is an **electrochemical device** that converts the **chemical energy of hydrogen** and **oxygen** into **electricity** through a series of redox reactions.
- Unlike traditional batteries, which store chemical energy internally, PEM fuel cells require a **continuous supply of hydrogen fuel and oxygen**(typically from the air) to sustain the chemical reaction and generate electricity.
- **Working Principle:** The working principle involves an **electrochemical reaction** where **hydrogen** gas is fed **into the anode, oxidized to release protons**, which then travel through a **polymer membrane** to the **cathode**, where they react with oxygen to produce electricity and water.
- They offer an environmentally friendly solution with high power density in a compact size.
- They run on hydrogen fuel, which can be stored and transported for refuelling, and require significantly less maintenance than traditional backup power sources.

Applications of Proton Exchange Membrane Fuel Cell

- It is an efficient and clean energy solution for powering telecom towers, particularly as a backup during grid outages.
- These fuel cells **provide reliable electricity** with quick start-up times and operate at relatively low temperatures, making them a viable alternative to diesel generators.
- An innovative hydrogen fuel cell-based backup power solution for telecom towers, **developed using a plug-and-play model** can support national renewable energy goals while ensuring seamless connectivity for millions and promoting clean energy in the telecom sector.
- **Portable power:** specific applications include laptops, mobile phones, battery chargers and unmanned aerial vehicles.

WOMEN'S ROLE IN INDIA'S FINANCIAL GROWTH STORY

NITI Aayog recently published a report titled From Borrowers to Builders – Women's Role in India's Financial Growth Story. This report marks the increasing participation of women in seeking credit and managing their financial health. As of December 2024, 27 million women were monitoring their credit scores. This reflects a 42% increase from the previous year, indicating rise in financial awareness among women in India.

Women's Financial Participation

- The report reveals that women's engagement in financial activities has tripled from 2019 to 2024.
- This trend is particularly strong in semi-urban and rural areas, where 60% of women borrowers reside.
- Women are increasingly taking loans for diverse purposes, including business, agriculture, and property.

Growth in Credit Monitoring

- Women's share of the self-monitoring credit base rose to 19.43% in December 2024.
- This increase from 17.89% in 2023 shows growing financial literacy.
- Notably, non-metro regions saw a 48% increase in women actively monitoring their credit compared to 30% in metro areas.

Regional

- Maharashtra, Tamil Nadu, Karnataka, Uttar Pradesh, and Telangana accounted for nearly half of all self-monitoring women.
- The southern region led with 10.2 million women.
- Northern states like Rajasthan and Madhya Pradesh exhibited the highest growth rates in active women borrowers over five years.

Loan Preferences and Trends

- Women's preferences for credit products include loans against property (36%), agricultural loans (26%), and business loans (25%).
- By December 2024, women made up 35% of business borrowers, with a 14% increase in business loan origination since 2019.

Challenges in Financial Access

Despite progress, challenges remain. Issues such as credit aversion, poor banking experiences, and barriers related to collateral hinder women's access to credit. Financial institutions must address these challenges by creating gender-smart financial products tailored to women's needs.

Socio-economic Impact

Women's financial participation is crucial for India's economic growth. Encouraging women entrepreneurship can create up to 170 million employment opportunities. This shift not only empowers women but also contributes to broader economic development.

The Role of Financial Institutions

Financial institutions are encouraged to design inclusive products that cater to women's unique financial needs. Initiatives like the Financing Women Collaborative aim to encourage an ecosystem that supports women entrepreneurs through access to credit and financial literacy.

Future Directions

To sustain this momentum, targeted interventions are essential. There is a need for programmes that promote financial literacy among younger women, who currently represent only 27% of retail credit consumers under 30. Bridging this gap will enhance financial security and encourage entrepreneurship.

TORKHAM BORDER CROSSING

Tensions have escalated between Pakistan and Afghanistan as security forces exchanged gunfire at the Torkham border crossing. This incident occurred on March 3, 2025, amidst a prolonged closure of the crossing due to a dispute over border post construction.

The Torkham crossing is crucial for trade and travel between the two nations, making the situation particularly dire for traders and civilians alike.

About Torkham Border Crossing

The Torkham crossing serves as a vital transit point between Pakistan and Afghanistan. It facilitates the movement of goods and people.

Historically, it has been a flashpoint for tensions due to border disputes, militant activities, and political disagreements. The crossing has been closed multiple times in the past, often leading to economic repercussions.

Economic Impact of the Closure

The Torkham crossing has been closed for over a week, stranding approximately 5,000 trucks filled with essential goods. Afghan traders are reportedly losing around $500,000 daily due to this closure. The disruption has implications for both economies, particularly as Afghanistan faces a humanitarian crisis exacerbated by food shortages.

Humanitarian Concerns

The ongoing conflict and border closure coincide with the holy month of Ramadan, a time when food imports typically surge. The Afghan population is already facing severe food insecurity, with millions at risk of hunger.

The situation is further complicated by the Taliban's governance, which has led to reduced international aid and sanctions affecting the banking sector.

Political Relations Between Pakistan and Afghanistan

The relationship between Pakistan and Afghanistan has been historically strained. Pakistan accuses Afghanistan of harbouring militants responsible for attacks on its soil, a claim denied by the Taliban. This mutual distrust complicates diplomatic efforts to resolve border disputes and improve trade relations.

PROJECT LION

The Indian government launched the Project Lion to protect and expand the population of Asiatic lions. The project was approved with a substantial budget of Rs 2,927.71 crore, reflecting the government's commitment to wildlife conservation.

Context

- The Asiatic lion population is currently concentrated in Gujarat, with a census reporting 674 individuals in 2020 (29% increase from 2015).
- This species is critically endangered, facing threats from habitat loss, poaching, and human-wildlife conflict.
- Project Lion aims to mitigate these challenges through various strategic measures.

Asiatic lion

- **IUCN status: Endangered**
- **Weight:** Asiatic Lions are lighter weighing 240 (female) and 450 pounds (male).
- **Mane:** They have sparser mane but have bushier tails.
- **Distribution:** Their range is limited to the **Gir Forest National Park** in India
- **Pride:** Males live with the females of their pride only for mating or for hunting.
- **Habitat:** Forest, savanna, shrubland, grassland, and desert.

African lion

- **IUCN status: Vulnerable**
- African lions weigh 345 (female) and up to 500 pounds (male)
- They have **bushier mane**
- African lions are spread over **sub-Saharan Africa and west africa**
- Males **live with the females of their pride.**
- Dry deciduous forest.

Objectives of Project Lion

The primary goal of Project Lion is to ensure the long-term survival of Asiatic lions. This includes habitat management, wildlife health monitoring, community involvement, and eco-tourism development. The project seeks to create a harmonious balance between human activities and wildlife conservation.

Key Components

Habitat Management:

- Barda Dungar Wildlife Sanctuary (100 km from Gir) will be developed as an alternative habitat. First lion spotted in Barda in 2023, confirming its potential as a habitat.
- Additional habitats were proposed in Saurashtra, including Girnar, Mitiyala, Jesor-Hipawadi, Hingolgadh, and Rajula to Jafrabad.

Wildlife Health Monitoring:

- Establishing health protocols to prevent disease outbreaks among lions.

- Veterinary Hospital in Sasan, Gir (National Wildlife Disease Diagnostic Centre) will be set up. It will monitor and prevent diseases like Canine Distemper Virus (CDV) and Babesia, which have posed threat to lions in 2018 and 2020.

Human-Wildlife Conflict Mitigation:

- 1,000 sq. km. of exclusive lion habitat planned by relocating human settlements.
- 11,000 machans (raised platforms) provided for farmers to prevent conflicts.
- More lion habitats proposed in Saurashtra, including Girnar, Mitiyala, Jesor-Hipawadi, Hingolgadh, and Rajula to Jafrabad.

Other Measures

- Involving local communities in conservation efforts to encourage coexistence.
- Drone monitoring, CCTV surveillance, and 33 rapid response units for lion protection.
- 100 new tracker positions to rescue lions.

Recruitment and Training

To boost conservation efforts, 237 beat guards were recruited in 2024. These guards play an essential role in patrolling protected areas and preventing conflicts. Their training includes wildlife safety protocols and community engagement strategies.

LINK BETWEEN LIGHTNING AND EARTH'S RADIATION BELTS

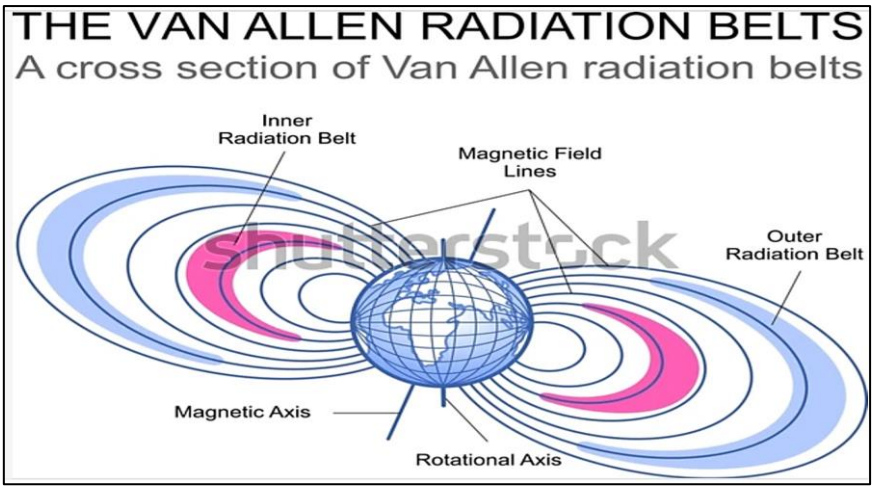
Recent studies have revealed intriguing connections between lightning and the Earth's radiation belts. High-energy particles, primarily electrons and protons, are present in two distinct Van Allen radiation belts encircling our planet.

These belts were first discovered in the 1950s and have since been a focus of scientific research. New findings suggest that electromagnetic waves generated by lightning can trigger bursts of electrons from the inner radiation belt into the atmosphere.

Discovery of the Van Allen Radiation Belts

In 1958, the Explorer 1 satellite launched by the United States led to the discovery of the Van Allen radiation belts. Professor James Van Allen and his team detected unexpectedly high levels of radiation around Earth.

They identified two main regions – the inner belt, composed of stable high-energy protons and electrons, and the outer belt, characterised by dynamic high-energy electrons.



Characteristics of the Radiation Belts

The inner radiation belt peaks at about 1,000 km from Earth. It remains relatively stable over time. The outer belt, located further away, varies in density and energy due to solar activity. This variability can change rapidly, affecting the radiation environment around Earth.

Recent Research and Findings

A recent study investigated high-energy electron bursts from the inner radiation belt. This research revealed unexpected electron activity in this region.

Previously, high-energy electrons were thought to be absent from the inner belt during certain periods. New data indicated that these electrons can be present, challenging previous assumptions.

The Role of Lightning

Lightning generates electromagnetic waves known as whistlers. These waves can travel from the atmosphere into space, interacting with electrons in the inner radiation belt.

The study found correlations between lightning activity and electron bursts, particularly following geomagnetic storms. Such storms, caused by solar eruptions, disrupt the radiation environment and populate the inner belt with high-energy electrons.

Implications for Space Weather

High-energy electrons can damage satellites and pose risks to astronauts. Knowing when and where these electrons are present is crucial for spacecraft design and safety. The findings highlight the interconnectedness of Earth's weather and space phenomena.

The Nature of Scientific Discovery

The research puts stress on the nonlinear nature of scientific discovery. Unexpected findings can lead to new insights and challenge existing theories. It serves as a reminder for scientists to remain open-minded when interpreting data.

BANJARA COMMUNITY

Recently Lok Sabha speaker highlighted Banjara community's role in protecting nature and tradition of the country.

About Banjara (Bepari, Mukeai, Laban) Community

Origins: Historically multireligious, multilinguistic nomadic trading caste who may have origins in Mewar region (Rajasthan).

Role as Trader Nomads:

They traded between villages, towns, and even across regions. Primary trade items included grain, pulses, sugar, salt, wood, andtimber.

Banjaras traveled in large groups called Tandas. Each Tanda was led by a chief known as Nayaka.

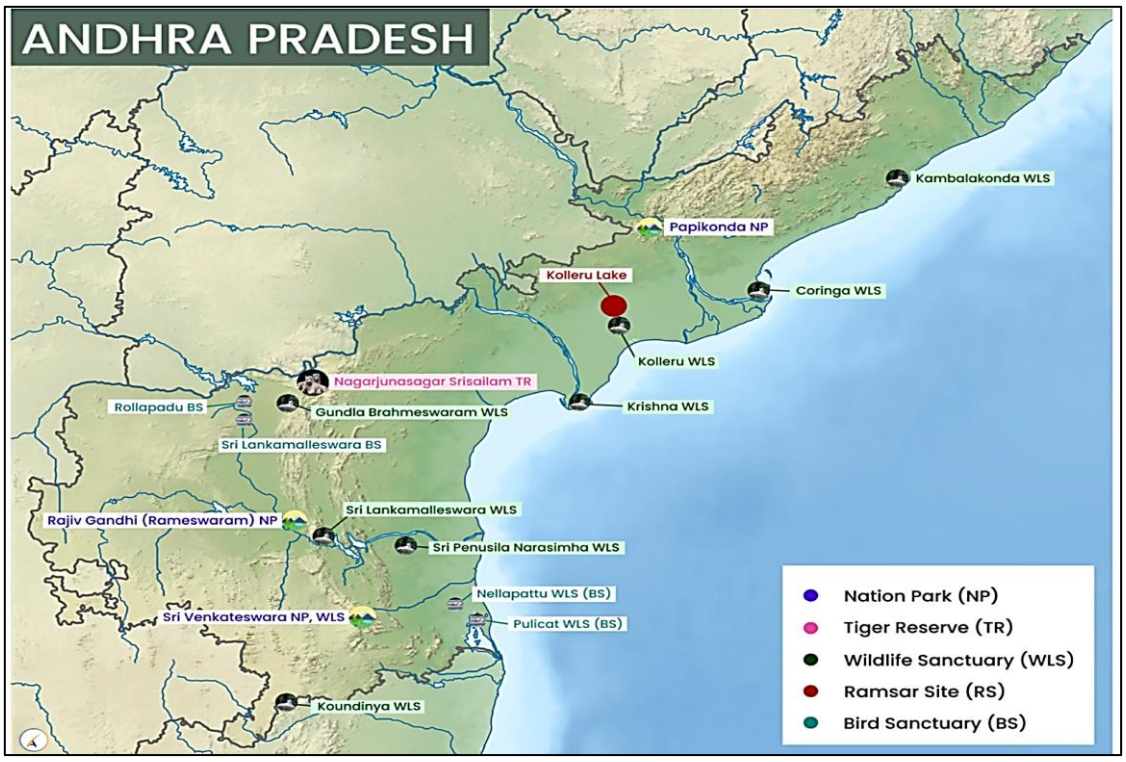
Historical Accounts:

Sultan Alauddin Khalji used Banjaras to transport grain to city markets.

Emperor Jahangir mentioned in Tuzuk-i-Jahangiri that they carried grains on bullocks from villages to towns. They supplied food grains to Mughal armies during military campaigns also.

SRI LANKAMALLESWARA SANCTUARY

Archaeological Survey of India has discovered ancient rock art and inscriptions within Sri Lankamalleswara sanctuary.



About Sri Lankamalleswara Wildlife Sanctuary :

It is located in Andhra Pradesh. It forms the catchment for river Pennar. Sanctuary is the only home for critically endangered bird Jerdon courser (nocturnal bird).

Flora: Red sanders and Sandalwood are important species.

Fauna: Panther, Jackal, Chinkara, Chowsingha, Sloth bear, etc.

Forest Type: Southern tropical dry deciduous forest in hills, scrub forest in plains, Southern dry mixed deciduous forest, Tropical thorn forests and Tropical dry evergreen forest

INTERNATIONAL CRIMINAL COURT

Former Philippine President Rodrigo Duterte was arrested on March 10th on a warrant issued by the International Criminal Court (ICC), which was investigating allegations that "crimes against humanity" had been committed during his so-called "war on drugs".

Background: –

- During his six-year term, 6,000 suspects were gunned down as part of his "war on drugs" campaign.
- A UN report subsequently revealed that most of the victims were young, poor urban males, and that "the police who do not need search or arrest warrants to conduct house raids, systematically forced suspects to make self-incriminating statements or risk facing lethal force,".

Key takeaways

- The International Criminal Court (ICC) is a permanent international tribunal established to prosecute individuals for serious crimes like genocide, war crimes, crimes against humanity, and aggression.
- The Rome Statute, the treaty that established the ICC, was adopted on 17 July 1998 and entered into force on 1 July 2002 after being ratified by 60 countries.
- As of January 2025, 125 countries are party to the Rome Statute, including Britain, Japan, Afghanistan, and Germany. India, China, and the United States are not members.
- So far, 32 cases have come before the ICC, which is composed of 18 judges who are elected by the member states and serve 9-year, nonrenewable terms.

The ICC is composed of four main organs:

- The Presidency: Responsible for the administration of the Court, except for the Office of the Prosecutor.
- Judicial Divisions:
    - Pre-Trial Division: Handles preliminary examinations, investigations, and issuance of arrest warrants.
    - Trial Division: Conducts trials and issues verdicts.
    - Appeals Division: Reviews appeals against decisions made by the Trial Division.
- Office of the Prosecutor (OTP): Responsible for conducting investigations and prosecutions.
- Registry: Provides administrative and operational support to the Court, including victim and witness protection, legal aid, and public outreach.

The ICC has jurisdiction over the following crimes:

- Genocide: Acts committed with the intent to destroy, in whole or in part, a national, ethnic, racial, or religious group.
- Crimes Against Humanity: Widespread or systematic attacks directed against civilians, including murder, enslavement, torture, and sexual violence.
- War Crimes: Serious violations of international humanitarian law during armed conflicts, such as targeting civilians, using child soldiers, and destroying property.
- Crime of Aggression: The use of armed force by a state against the sovereignty, territorial integrity, or political independence of another state.

Key Principles

- Complementarity: The ICC acts as a court of last resort, intervening only when national courts are unwilling or unable to prosecute.
- Individual Criminal Responsibility: The ICC prosecutes individuals, not states or organizations.
- Non-Retroactivity: The Court can only prosecute crimes committed after the Rome Statute entered into force (1 July 2002).
- Jurisdiction: The ICC can exercise jurisdiction if the crimes were committed by a State Party national, or in the territory of a State Party, or in a State that has accepted the jurisdiction of the Court; or the crimes were referred to the ICC Prosecutor by the United Nations Security Council (UNSC).

PARLIAMENTARY DISRUPTIONS

Parliament's productivity has declined sharply due to frequent disruptions, with the 17th Lok Sabha functioning at 88% and Rajya Sabha at 73% of the scheduled time.

In the 18th Lok Sabha (Winter 2024), productivity dropped further to 54.5% and 40%, respectively, of the scheduled time.

Reasons for Parliamentary Disruption:

Substantive Reasons:

Disruptions arise from controversial national or regional issues dominating public attention. E.g., **Hindenburg controversy.**

Opposition Grandstanding: Opposition disrupts proceedings to delay or block proposals, shifting focus from debate to publicity.

Anti-defection law (10th Schedule, introduced by the 52nd Constitutional Amendment) forces MPs to follow party whips,restricting debate and pressuring them to join disruptions.

Structural Reasons:

Increasing number of political parties reduce debate time, causing disruptions over unlisted issues.

Parliamentary framework lacks defined time limits for various business, like Question Hour, leading to delays

IMPLICATIONS OF PARLIAMENTARY DISRUPTION

Disruptions reduce debate time, undermining Parliament's ability to hold the government accountable and pass laws, resulting in hasty decisions.

Continuous disruptions lower public trust in Parliament, as MPs focus on blocking proceedings instead of solving key issues.

Each minute of Parliament costs ₹2.5 lakh. The 2021 logjam alone cost taxpayers ₹133 crore.

Measures to Address Parliamentary Disruption

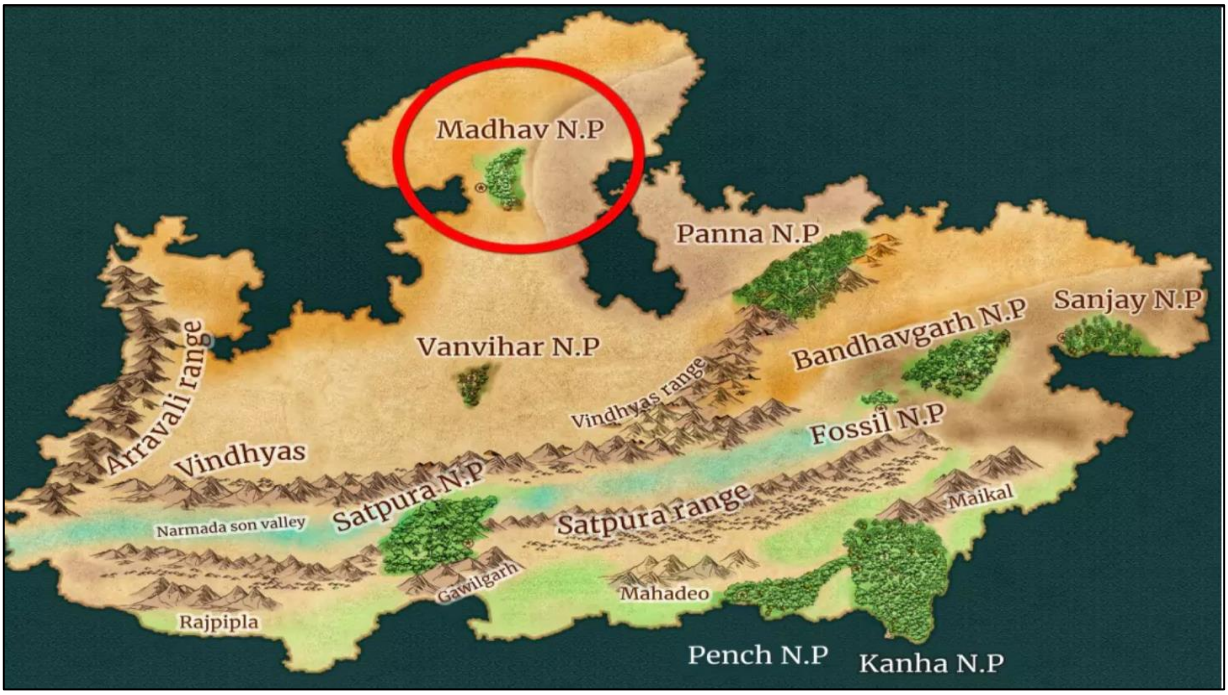
 **1. Raise Motion Thresholds** Require 20–30% of MPs' support to trigger motions, focusing on significant issues	 **2. Opposition Time** Dedicate specific days for opposition-led debates, like the UK's "Opposition Days"
 **3. More Sitting Days** Increase sittings from 60-70 to 120-140 days annually for better debate and legislation	 **4. Consensus-Building** Foster government-opposition cooperation for effective policy making
 **5. Define Disruptions** Clarify "disruptions" and "interruptions" in rules for clear behavioral standards	 **6. Strengthen Ethics Committees** Empower committees to monitor and report disruptions, ensuring accountability

MADHAV NATIONAL PARK

The Centre declared the Madhav National Park in Madhya Pradesh as the country's 58th tiger reserve on Sunday (March 9, 2025).

Background: –

- Three tigers, including two females, were introduced to the Madhav National Park in 2023 as part of the tiger reintroduction project in the State.
- Madhav National Park is country's 58th tiger reserve and also the ninth from the State of Madhya Pradesh.
- Notably, on December 2, 2024 India got its 57th tiger reserve in the Ratapani Wildlife Sanctuary of Madhya Pradesh.



Key takeaways

- Madhav National Park is a protected area located in the Shivpuri district of Madhya Pradesh, India.
- Established in 1959, Madhav National Park was originally a hunting ground for the erstwhile Scindia royal family. the park was named after Madho Rao Scindia, the Maharaja of Gwalior.
- Madhav National Park is situated in the northern part of Madhya Pradesh. It lies on the northern fringe of the Central Highlands of India, forming part of the Upper Vindhyan Hills intermixed with plateaus and valley sections.
- Notable lakes within the park include Sakhya Sagar and Madhav Sagar, both created by damming the Manihar River.
- Fauna: Madhav National Park hosts a variety of wildlife, including:
    - Mammals: Species such as the Indian gazelle (Chinkara), Chital (Spotted deer), Nilgai (Blue bull), Sambar deer, Four-horned antelope (Chousingha), Sloth bear, Leopard, Indian wolf, Jackal, Bengal fox, Dhole (Wild dog), Wild boar, and Porcupine.

- Reptiles: The park is home to reptiles like the Mugger crocodile, various turtle species, and snakes.
- Birds: The lakes attract numerous migratory birds during winter, including species of geese, ducks, and waders.

Historical Significance:

- George Castle: At the park's highest point (484 meters), George Castle was built in 1911 by Madho Rao Scindia for an anticipated visit by King George V, although the king never stayed there.

Conservation Efforts:

- Ramsar Site: In January 2022, a 248-hectare area around Sakhya Sagar Lake within the park was designated as a Ramsar site, recognizing its importance as a wetland of international significance.

SHARAVATI PUMPED STORAGE

After receiving a nod from the State Wildlife Board of Karnataka in January, the controversial Sharavathi pumped-storage project has now secured final approval from the state government.

Background: –

- The project has encountered environmental concerns, particularly due to its location within the Sharavathi Lion Tailed Macaque Sanctuary.

Key takeaways

- The project is situated on the Sharavathi River in Karnataka, India. The Sharavathi River is a vital source of hydroelectric power in the region and is known for the Jog Falls, one of the highest waterfalls in India.

Key Features:

- Capacity: The project is designed to generate 2,000 megawatts (MW) of power, utilizing eight units of 250 MW each.
- It leverages existing water bodies—the Talakalale and Gerusoppa reservoirs—as the upper and lower reservoirs, respectively. The Talakalale dam, standing at 62.48 meters, and the 64-meter high Gerusoppa dam are integral to the project's infrastructure.
- During periods of low electricity demand, water will be pumped from the lower reservoir to the upper reservoir using grid power. When electricity demand is high, water from the upper reservoir will be released to generate electricity.

Additional Information – Sharavathi River

- The Sharavathi River is a west-flowing river in Karnataka.
- It originates in the Western Ghats and flows into the Arabian Sea, making it an important river for Karnataka's water resources and biodiversity.

ANTI-DUMPING DUTY

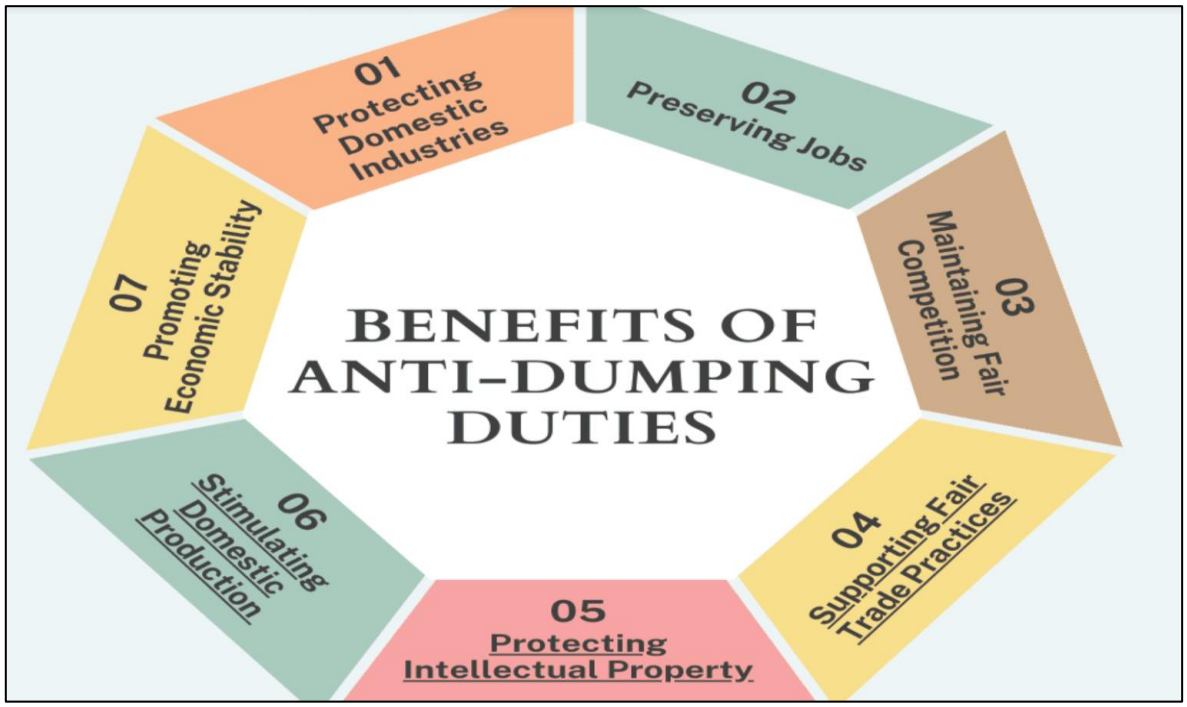
India has recently imposed an anti-dumping duty on water treatment chemicals from China and Japan.

About Anti-Dumping Duty:

- It is a **protectionist tariff** that a domestic government imposes **on foreign imports** that it believes are **priced below fair market value**.
- **Dumping** is a process wherein a **company exports a product at a price** that is **significantly lower than the price** it normally charges **in its home** (or its domestic) market.
- The duty is priced in an amount that equals the difference between the normal costs of the products in the importing country and the market value of similar goods in the exporting country or other countries that produce similar products.
- It is imposed **to protect local businesses** and markets from unfair competition by foreign imports.
- Thus, the purpose of anti-dumping duty is **to rectify the trade distortive effect of dumping** and re-establish fair trade.
- The use of anti-dumping measures as an instrument of fair competition is **permitted by the World Trade Organization (WTO).**
    - The **WTO allows** the government of the **affected country to take legal action against the dumping country** as long as there is evidence of genuine material injury to industries in the domestic market.
    - The **government must show that dumping took place, the extent of** the **dumping** in terms of costs, and **the injury or threat** to cause injury **to the domestic market.**
- While the intention of anti-dumping duties is to protect local businesses and markets, these tariffs **can also lead to higher prices for domestic consumers.**
- In India, the **Ministry of Finance makes the final decision** on whether to impose anti-dumping duties.

What is Countervailing duty (CVD)?

- It is a specific **form of duty** that the government imposes **to protect domestic producers by countering** the **negative impact of import subsidies.**
- CVD is thus an **import tax by** the **importing country on imported products.**
- **Why is CVD imposed?**
    - **Foreign governments** sometimes **provide subsidies to their producers** to **make their products cheaper** and boost their demand in other countries.
    - **To avoid flooding the market in the importing country** with these goods, the government of the importing country imposes CVD, charging a specific amount on the import of such goods.
- The duty nullifies and **eliminates the price advantage enjoyed by** an **imported product.**
- The **WTO permits** the imposition of **CVD** by its member countries.



Countervailing duty v/s Anti-dumping duty:

- **Anti-dumping duty** is imposed to **prevent low-priced foreign goods**from damaging the local market. On the other hand, **CVD** will **apply to foreign products** that have **enjoyed government subsidies,** which eventually leads to very low prices.
- While the anti-**dumping duty amount depends on** the **margin of dumping**, the **CVD** amount will completely **depend on the subsidy value** of the foreign goods.

DULCIBELLA CAMANCHACA

Marine biologists have discovered a new species of amphipod, named Dulcibella camanchaca, hidden in the extreme depths of the Atacama Trench.

Background: –

- The discovery of this species highlights the incredible diversity of life forms that have evolved to survive in the most extreme conditions on our planet.

Key takeaways

- Dulcibella camanchaca is a species of amphipod crustacean discovered in the Atacama Trench, one of the deepest parts of the ocean.
- This species was found at depths of nearly 8,000 meters (26,000 feet) in the South Pacific Ocean near Chile. The Atacama Trench is known for its extreme conditions, including crushing pressure, frigid temperatures, and complete darkness.

Physical Characteristics

- Size: Dulcibella camanchaca measures approximately 4 centimeters (1.6 inches) in length, making it larger than most amphipods found at similar depths.
- Appearance: This amphipod has specialized appendages designed for capturing and consuming smaller crustaceans, indicating its predatory nature.

Ecological Role

- Predatory Behavior: Unlike many deep-sea amphipods that scavenge for food, Dulcibella camanchaca is an active predator. It uses its specialized appendages to capture and consume smaller crustaceans.
- Adaptations: This species is adapted to the extreme conditions of the hadal zone, making it one of the deepest-living predators identified to date. The hadal zone encompasses ocean depths between 6,000 and 11,000 meters.

WORLD SUSTAINABLE DEVELOPMENT SUMMIT

Union Minister for Environment, Forest, and Climate Change, Bhupender Yadav, inaugurated the World Sustainable Development Summit (WSDS) 2025 in New Delhi on Wednesday.

Background: –

- Union Minister stressed that under the leadership of Prime Minister Modi, India has taken transformative steps with initiatives like the International Solar Alliance (ISA), the Coalition for Disaster Resilient Infrastructure (CDRI), and Mission Lifestyle for Environment (LiFE).

Key takeaways

- The World Sustainable Development Summit (WSDS) is an annual event organized by The Energy and Resources Institute (TERI), serving as a global platform to discuss and advance sustainable development and climate solutions.
- Established in 2001 as the Delhi Sustainable Development Summit (DSDS), it was rebranded to WSDS to reflect its broader international scope.
- WSDS 2025 Theme: 'Partnerships for Accelerating Sustainable Development and Climate Solutions'.
- This 24th edition emphasizes the critical role of collaborations among governments, businesses, civil society, and other stakeholders in driving meaningful progress toward sustainability goals.

Key Components of WSDS:

- Sustainable Development Leadership Award (SDLA): Since 2005, this award has honored global leaders for their contributions to sustainable development.
- Ministerial and High-Level Sessions: Panels featuring policymakers, business leaders, and academics discussing pressing environmental issues.
- Thematic Tracks: Focused discussions on specific sustainability challenges, engaging domain experts to propose actionable solutions.
- CEO Forum: A platform for industry leaders to brainstorm sustainable business practices.
- Youth Connect: Initiatives to engage young students in sustainability dialogues, fostering awareness and involvement.

CONVENTION ON CLUSTER MUNITIONS (CCM)

Lithuania quit an international convention banning cluster bombs, citing security concerns over neighbouring Russia in a move that has drawn criticism from human rights groups.

Background:

- NATO member Lithuania has said it wants to strengthen its defences following Russia's invasion of Ukraine, fearing it could be next if Moscow succeeds.

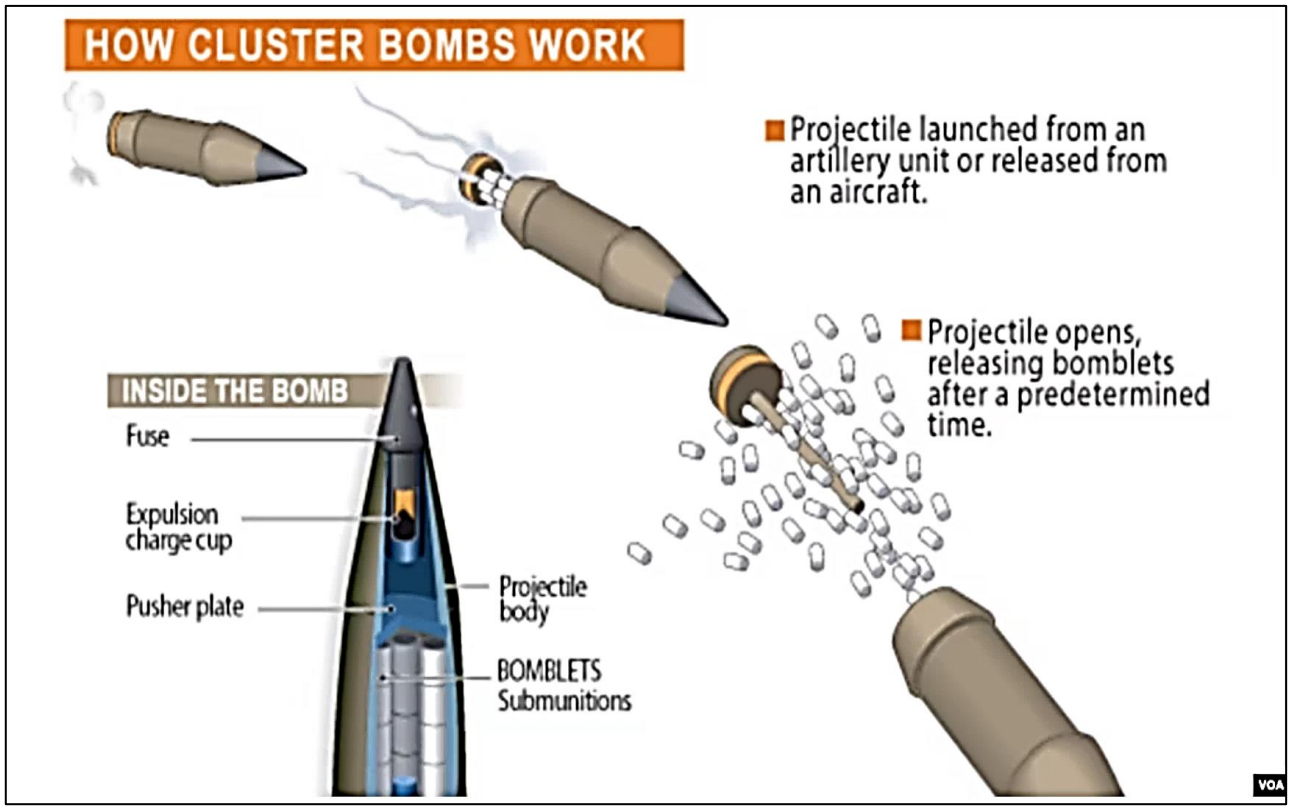
Key takeaways

- The Convention on Cluster Munitions (CCM) is an international treaty that prohibits the use, production, transfer, and stockpiling of cluster bombs, which pose severe risks to civilians.

Key Features of the Convention

- Adoption: 30 May 2008 in Dublin, Ireland.
- Entry into Force: 1 August 2010 (after 30 countries ratified it).
- Signatories: 123 countries (as of 2023), but major powers like the USA, Russia, China, and India have not signed.

- Main Provisions:
  - Total Ban on cluster munitions.
  - Stockpile Destruction within 8 years.
  - Clearance of Affected Areas within 10 years.
  - Assistance to Victims (healthcare, rehabilitation, and reintegration).



Why Cluster Munitions are Controversial?

- Wide Area Effect: Cluster bombs release multiple submunitions over large areas, causing indiscriminate damage.
- Failure Rate: Unexploded bomblets become de facto landmines, harming civilians for decades.
- Humanitarian Crisis: Countries like Laos, Vietnam, Syria, and Ukraine suffer from past cluster munition use.

India's Stand on CCM

- Not a Signatory: India has not signed or ratified the CCM.
- Reasons for Non-Signature:
  - Believes in the legitimate defense use of cluster munitions.
  - Calls for a balance between security and humanitarian concerns.
  - Reluctant to accept legally binding disarmament treaties without universal participation (as major powers like the USA and Russia are not part of it).

BANGUS VALLEY

The Jammu and Kashmir government announced a new set of rules for Bangus, a far-off tourist spot near the Line of Control (LoC) in north Kashmir, in a bid to promote it as an ecotourism destination.

Background: –

- The decision comes in the wake of unplanned and uncontrolled growth in concrete structures in the traditional tourist hotspots of Pahalgam, Gulmarg and Sonamarg in Kashmir.

Key takeaways

- Bangus Valley, also known as Bungus Valley, is a pristine and lesser-known destination located in the Kupwara district of Jammu and Kashmir, India.
- The name "Bangus" is derived from the Sanskrit words "Van" (forest) and "Gus" (grass), reflecting the valley's lush grassy landscapes.
- Situated approximately 100 kilometers northwest of Srinagar, the valley rests at an elevation of about 10,000 feet above sea level within the Pir Panjal mountain range.

- The valley is divided into two main sections:
  - Bodh Bangus (Big Bangus): The main valley, locally known as Bodh Bangus, covers an estimated area of about 300 square kilometers. It consists of a linear elliptical bowl aligned along the east-west axis.
  - Lokut Bangus (Small Bangus): A smaller valley known as Lokut Bangus lies on the northeastern side of the main valley.
  - Both valleys feature level green meadows surrounded by low-lying mountains covered with dense coniferous forests.

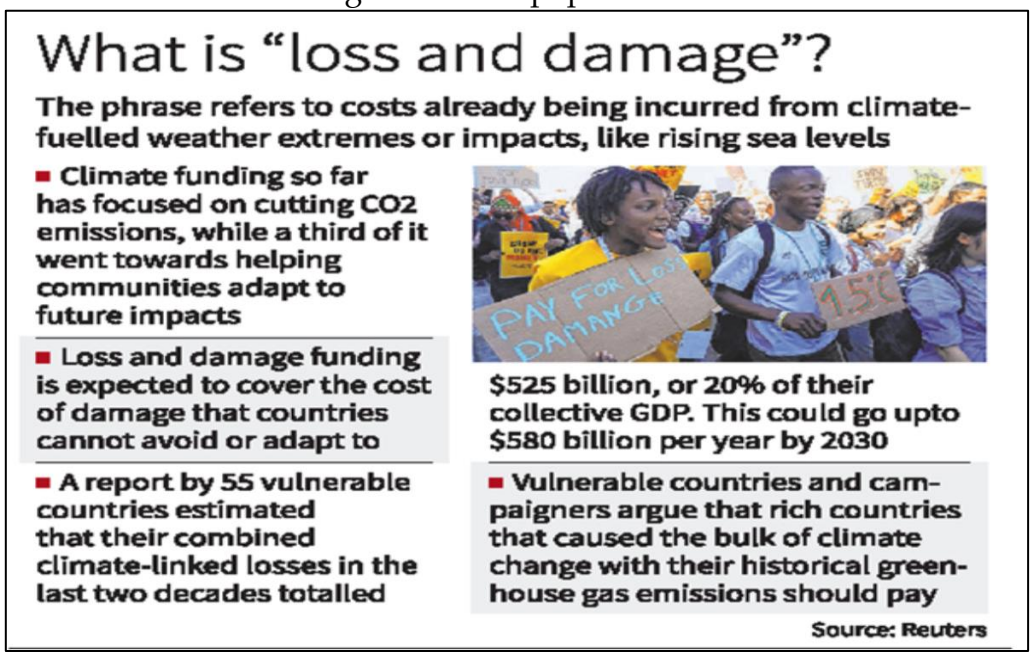
- The valley is encircled by the Rajwar and Mawar regions to the east, the Shamasbury and Dajlungun Mountains to the west, and the Chowkibal and Karnah Guli areas to the north.

LOSS AND DAMAGE FUND

In a setback to global climate justice efforts, the United States has withdrawn from loss and damage fund aimed at compensating developing countries for the damages caused by climate change.

Background: –

- As the largest historical emitter, the United States bears a significant share of the blame for the climate adversities affecting vulnerable populations worldwide.



Key takeaways

- The Loss and Damage Fund is a critical financial mechanism established to address the adverse impacts of climate change, particularly in vulnerable and developing countries.
- The concept of "Loss and Damage" was first introduced in the 1991 United Nations Framework Convention on Climate Change (UNFCCC) negotiations by island nations fearing existential threats due to climate change.
- It gained prominence under the Paris Agreement (2015), which recognized the need to address loss and damage separately from mitigation and adaptation.
- It was formally established at the COP27 (27th Conference of the Parties) held in Sharm El-Sheikh, Egypt, in November 2022.
- At COP28, the decision to operationalize the LDF was adopted by consensus, with several countries pledging significant amounts to the fund.
- For example, the United Arab Emirates committed USD 100 million, the United Kingdom committed GBP 40 million, and the European Union committed 225 million euros.
- Scope: The fund addresses both extreme weather events (e.g., hurricanes, floods) and slow-onset events (e.g., sea-level rise, desertification).
- Governance: The LDF is overseen by a Governing Board that determines how the fund's resources are disbursed. The World Bank serves as the interim trustee, hosting the fund for four years.
- Funding: The fund encourages voluntary contributions from developed countries but also invites developing countries to contribute. Financial support is provided in the form of grants and concessional financing

AI KOSHA

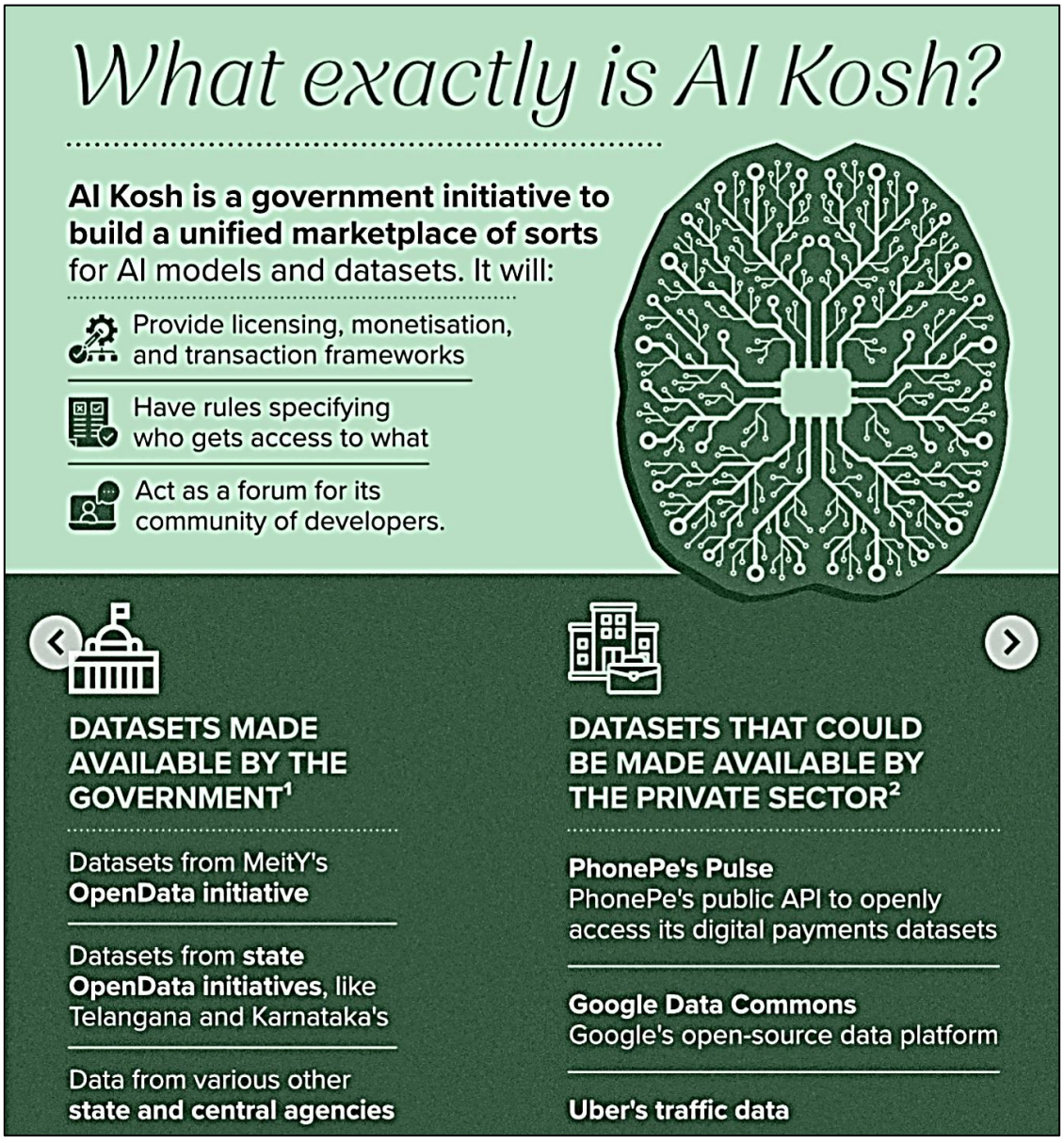
Union Minister for Electronics & Information Technology, Railways, and Information & Broadcasting, Shri Ashwini Vaishnaw marked a major milestone in India's AI journey with the launch of several key initiatives under the IndiaAI Mission during its anniversary celebration. Key among the newly introduced initiatives is AIKosha: IndiaAI Datasets Platform.

Background: –

- The launch of AIKosha signifies a major step in democratizing AI access, enabling research-driven innovation, and strengthening India's global AI leadership.

Key takeaways

- AIKosha, launched by India's Ministry of Electronics and Information Technology (MeitY), is a comprehensive platform designed to streamline access to high-quality, non-personal datasets, AI models, and development tools, thereby fostering AI innovation across the nation.



Key Features of AIKosha:

- Extensive Repository: The platform hosts over 300 datasets and more than 80 AI models from 12 organizations, providing a rich resource for model builders and developers to create India-centric AI solutions.
- AI Sandbox Capabilities: AIKosha offers integrated development environments equipped with tools and tutorials, enabling users to experiment, develop, and refine AI applications effectively.
- Secure and Accessible: The platform ensures data security through features like data encryption (both at rest and in motion), secure APIs, and firewalls for real-time threat filtering.
- It also emphasizes content discoverability and AI readiness scoring of datasets to assist users in selecting appropriate resources.

Objective and Impact:

- By providing a unified portal for seamless access to datasets, models, and tools, AIKosha aims to democratize AI development in India.
- It supports students, startups, researchers, academia, and government departments in building AI applications tailored to India's diverse linguistic and cultural landscape.
- This initiative is part of the broader IndiaAI Mission, which seeks to establish a comprehensive ecosystem catalyzing AI innovation through public-private partnerships.

REAL ESTATE REGULATORY AUTHORITY (RERA)

The Supreme Court criticised the functioning of the Real Estate Regulatory Authority (RERA) and termed it as "disappointing".

Background:

- This isn't the first time the court has criticised RERA's performance. In September 2024, the Supreme Court described RERA as a "rehabilitation centre for former bureaucrats," accusing it of undermining the Act's purpose.

Key takeaways

- The Real Estate Regulatory Authority (RERA) was established under the Real Estate (Regulation and Development) Act, 2016 to regulate and promote transparency in the real estate sector.
- RERA is applicable to residential and commercial real estate projects, including plotted developments.
- Objectives of RERA
    - Regulate the real estate sector and improve accountability.
    - Ensure timely completion of projects and prevent delays.
    - Promote transparency in property transactions.
    - Protect buyers' rights by setting grievance redressal mechanisms.
    - Encourage investment by creating a reliable framework.

Key Provisions of the RERA Act, 2016

- Establishment of RERA
  - States and Union Territories must establish a Real Estate Regulatory Authority for grievance redressal.
  - Functions include project registration, dispute resolution, and policy implementation.
- Mandatory Project Registration : Developers must register real estate projects (above 500 sq. m. or 8 apartments) before advertising or selling. Projects without RERA registration are illegal.
- Escrow Account Requirement : Builders must deposit 70% of funds collected from buyers into a separate escrow account to ensure funds are used for the same project.
- Timely Completion & Compensation : Developers must complete projects on time, failing which they face penalties or compensation liabilities.
- Consumer Protection & Rights
  - Buyers have the right to full project details, possession timeline, and compensation for delays.
  - False advertising by developers can lead to refunds or penalties.
- Establishment of Real Estate Appellate Tribunal : If dissatisfied with RERA decisions, consumers can approach the Real Estate Appellate Tribunal.

ONGOLE CATTLE

The population of Ongole cattle is dwindling in India, while its numbers and prestige are increasing in countries like Brazil.

Background: –

- In February, an Ongole purebred cow was sold for a whopping 4.38 million USD (25.7 million Brazilian Real or INR 40 crore) in Brazil.

Key takeaways

- Ongole Cattle are a renowned breed of indigenous cattle native to India, known for their strength, endurance, and adaptability. They are primarily found in the Prakasam district of Andhra Pradesh, particularly in the Ongole region, from which they derive their name.
- Physical Characteristics:
  - Size: Ongole cattle are large and robust, with a well-built muscular frame.
  - Color: They are typically white or light gray, with a distinctive hump on their back.
  - Dewlap: They have a prominent dewlap (loose skin under the neck), which helps them tolerate hot climates.

- Adaptability:
  - Ongole cattle are highly adaptable to tropical climates and can thrive in harsh, dry conditions.
  - They are resistant to many tropical diseases, making them ideal for regions with challenging environments.
- Utility:
  - Draught Purposes: Ongole cattle are primarily used as draught animals for plowing and transportation due to their strength and endurance.
  - Milk Production: While not high-yielding milk producers, they provide a moderate amount of milk with high fat content.
- Temperament: Ongole cattle are known for their docile nature, making them easy to handle and manage.

PASHU AUSHADHI INITIATIVE

The Pashu Aushadhi initiative is a new government programme aimed at providing affordable veterinary medicines in India.

This initiative is designed to support those involved in animal husbandry and dairying. It follows the successful model of the Pradhan Mantri Bharatiya Janaushadhi Kendras (PMBJK), which supply affordable generic medicines for human health.

Objective of Pashu Aushadhi

The primary goal of Pashu Aushadhi is to improve the health of livestock. The initiative aims to reduce the financial burden on farmers who often spend amounts on veterinary medicines.

By offering generic medicines, the programme seeks to lower costs and enhance livestock productivity.

Connection to Livestock Health and Disease Control Programme

Pashu Aushadhi is part of the revised Livestock Health and Disease Control Programme (LHDCP). Approved by the Union Cabinet, this programme has an outlay of Rs 3,880 crore for 2024-25 and 2025-26. A portion of this budget, Rs 75 crore, is allocated specifically for the Pashu Aushadhi initiative.

Current Livestock Statistics

According to the 20th Livestock Census, India's livestock population was approximately 535.78 million as of 2019. This figure includes a bovine population of around 302.79 million.

Diseases such as Foot and Mouth Disease (FMD) and Brucellosis impact livestock productivity. The initiative aims to address these issues through better access to medicines.

Operational Framework

The Pashu Aushadhi stores will be managed by cooperative societies and Pradhan Mantri Kisan Samriddhi Kendras (PMKSK). Guidelines for the operation of these stores will be released by the Department of Animal Husbandry and Dairying.

This structure aims to ensure efficient distribution and accessibility of veterinary medicines.

Inclusion of Traditional Medicines

In addition to generic medicines, Pashu Aushadhi Kendras will also offer ethnoveterinary medicines. These medicines are based on traditional knowledge and practices, aimed at treating various animal diseases. The National Dairy Development Board (NDDB) has identified several formulations for common ailments in bovines.

Focus on Disease Prevention

The initiative emphasises disease prevention through immunisation and access to quality medicines. By reducing the incidence of diseases, the programme aims to enhance the overall productivity of livestock. This is crucial for the livelihood of farmers and the agricultural economy.

GENETICALLY MODIFIED BANANA

Recently, the UK-based biotech company Tropic introduced a genetically-engineered banana that resists browning. This innovation aims to reduce food waste and its environmental impact.

Bananas are known for their rapid spoilage. Approximately 50% of the banana crop is wasted annually. The new banana variety remains fresh and yellow for longer, contributing to sustainability.

The Ripening Process of Bananas

Bananas undergo a vibrant life cycle. They transition from green to yellow and eventually brown. This change is driven by ethylene, a natural hormone. Bananas produce amounts of ethylene, even after harvest.

Ethylene activates genes that produce polyphenol oxidase (PPO). PPO interacts with oxygen, leading to the browning of bananas. Bruising during handling accelerates this process by increasing ethylene production.

Development of Non-Browning Bananas

Tropic's non-browning banana is created by altering banana genes. The modification silences the gene responsible for PPO production. This change does not halt ripening but preserves the fruit's appealing appearance.

The same technique was previously applied to Arctic apples, which also resist browning. This genetic engineering represents advancement in fruit preservation.

Environmental Impact of Food Waste

Food waste is a critical issue globally. In the UK, around 1.4 million edible bananas are discarded daily. This waste contributes to greenhouse gas emissions, exacerbating climate change. By preventing browning, Tropic's bananas may encourage consumption of older fruit.

This could lower food waste and its associated environmental costs. The company claims their bananas could reduce CO2 emissions equivalent to removing 2 million cars from roads each year.

Broader Implications for Agriculture

The success of non-browning bananas may influence other crops. Similar techniques have been applied to tomatoes, melons, kiwifruits, and mushrooms.

This could lead to a new era of genetically-engineered fruits that last longer and reduce waste. The agricultural sector may benefit from enhanced crop resilience and sustainability.

World's first GM banana : QCAV-4 banana, a genetically modified (GM) variety of the Cavendish banana that is highly resistant to Panama Disease TR4.

OVERSEAS CITIZEN OF INDIA

Prime Minister Narendra Modi's presented the Overseas Citizen of India (OCI) card to his Mauritius counterpart Navinchandra Ramgoolam and termed it a "proof of friendship" between two nations.

Background: –

- The Overseas Citizen of India (OCI) scheme was introduced in 2005 through an amendment to the Citizenship Act, 1955, to allow certain categories of foreign nationals of Indian origin to register as OCIs.

Key takeaways

- The Overseas Citizen of India (OCI) card grants several privileges similar to Indian citizens but does not confer full citizenship.

- Following categories of foreign nationals are eligible for registration as Overseas Citizen of India (OCI) Cardholder –
  - Who were citizens of India at the time of, or after, the commencement of the Indian Constitution (26 January 1950).
  - Who were eligible to become citizens of India on 26 January 1950.
  - Who belonged to a territory that became part of India after 15 August 1947.
  - who is a child or a grandchild or a great grandchild of such a citizen.
  - who is a minor child of such persons mentioned above
  - who is a minor child and whose both parents are citizens of India or one of the parents is a citizen of India.
  - Spouse of foreign origin of a citizen of India or spouse of foreign origin of an Overseas Citizen of India Cardholder (subject to certain conditions).

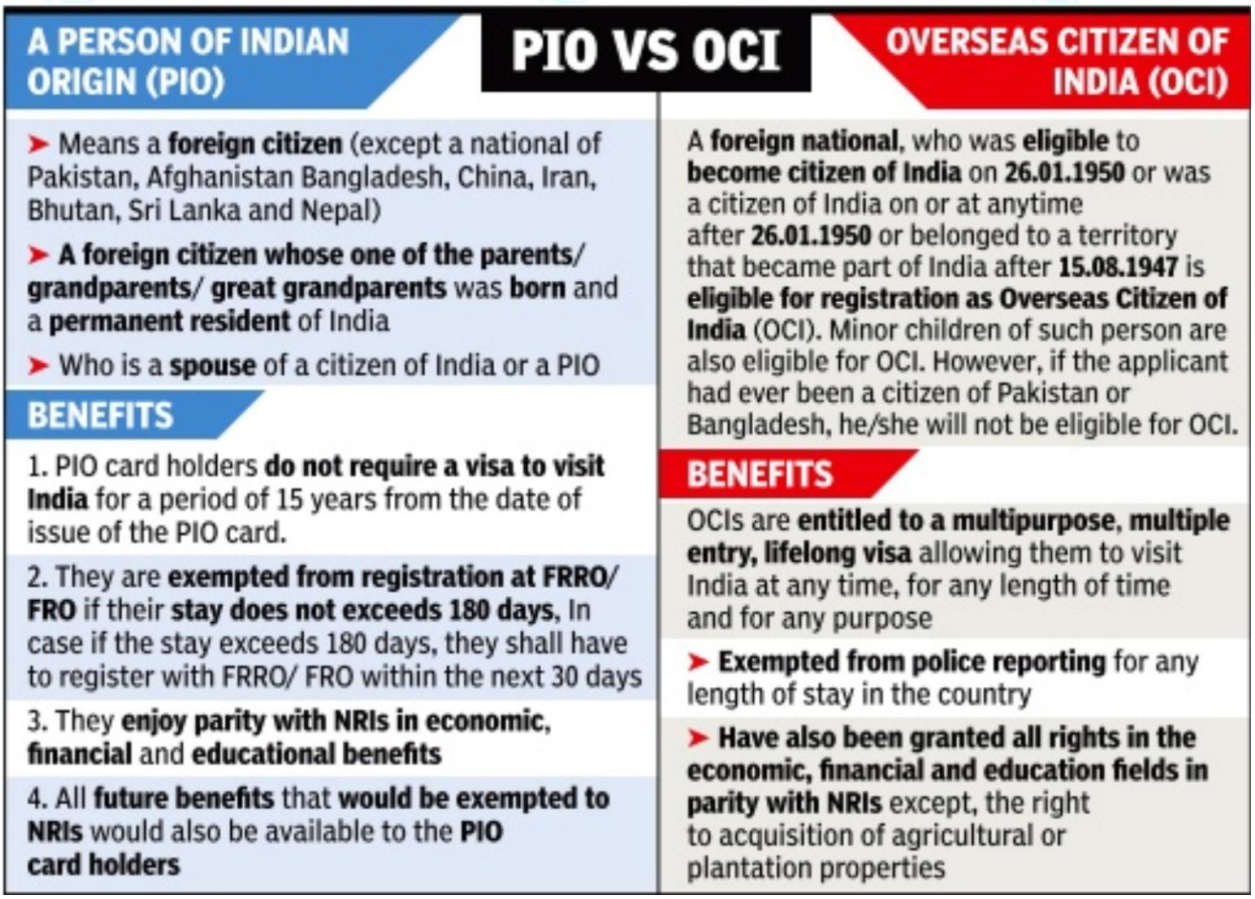
- However, no person, who or either of whose parents or grandparents or great grandparents is or had been a citizen of Pakistan, Bangladesh or such other country as the Central Government may, by notification in the Official Gazette, specify, shall be eligible for registration as an Overseas Citizen of India Cardholder.

Benefits of OCI

- Visa-Free Travel: OCI cardholders enjoy a multiple-entry, multipurpose lifelong visa to visit India.
- Residency Rights: They can live and work in India indefinitely.

- Economic Rights: OCI is entitled to general 'parity with Non-Resident Indians in respect of all facilities available to them in economic, financial and educational fields except in matters relating to the acquisition of Agricultural land or Farm house or Plantation properties.

- Exemptions: They are exempt from registering with the Foreigners Regional Registration Office (FRRO) regardless of the duration of their stay.



Restrictions on OCI

- No Political Rights: OCI cardholders cannot vote, hold constitutional offices (e.g., President, Vice-President, Judge of Supreme Court/High Court).

- The OCI Cardholder shall not be entitled for appointment to public services and posts in connection with the affairs of the Union or of any State except for appointment in such services and posts as the Central Government may, by special order, in that behalf, specify.

- No Agricultural Land: They cannot purchase agricultural or plantation properties in India.

- Revocation of OCI: The OCI card can be revoked if the holder violates Indian laws or engages in activities prejudicial to India's interests.

OCI vs. Dual Citizenship

- India does not allow dual citizenship under the Citizenship Act, 1955.
- OCI is not dual citizenship but a form of permanent residency with limited rights.
- OCI cardholders retain their foreign citizenship while enjoying certain benefits in India.

GEET GAWAI

The recent visit of Prime Minister Narendra Modi to Mauritius brought into light the enduring cultural ties between India and the island nation. The Prime Minister was welcomed with a traditional Bhojpuri performance known as Geet Gawai. This event puts stress on the rich heritage that the Indian diaspora has maintained in Mauritius. Geet Gawai is not just a performance but a vital expression of identity for many Mauritians of Indian descent.

What is Geet Gawai?

- Geet Gawai is a traditional Bhojpuri musical ensemble.
- It is performed mainly by women and is integral to various life events, particularly weddings.
- The performance begins with invocations to deities and involves singing uplifting songs.
- This tradition has been recognised by UNESCO as an Intangible Cultural Heritage of Humanity since December 2016.

Historical Context

The roots of Geet Gawai in Mauritius trace back to the arrival of Indian indentured labourers. From 1834 to the early 1900s, around five lakh Indians were brought to Mauritius.

Many were from the Bhojpuri-speaking regions of India. Their cultural practices, including Geet Gawai, have been preserved and celebrated over generations.

Cultural Practices and Rituals

Geet Gawai is performed during pre-wedding ceremonies. Female family members gather to sort items like turmeric and rice while singing devotional songs. The practice encourages community bonding and reinforces cultural identity among the Bhojpuri-speaking population.

It is a collective expression that has been passed down through generations.

Bhojpuri Language in Mauritius

Bhojpuri is one of the dominant languages in Mauritius. According to the 2011 Census, approximately 5.3% of the population speaks Bhojpuri.

The language is often used in political campaigns and cultural expressions. Efforts to promote Bhojpuri have been institutionalised through educational policies, including its introduction in primary schools.

Mauritius – A Mini India

Mauritius is often referred to as "Mini India" due to its population of Indian origin. The cultural influence of Indian traditions is evident in the daily lives of Mauritians. Many people wear traditional Indian attire and participate in cultural festivities that reflect their heritage.

Government Initiatives for Bhojpuri Promotion

The Government of Mauritius has taken several initiatives to promote Bhojpuri. The Bhojpuri-Speaking Union Act was established to support the language's use and cultural activities. Additionally, the Bhojpuri Mahotsav was launched to celebrate and preserve Bhojpuri culture, although it faced delays due to the pandemic.

WETLAND WISE USE

Jayshree Vencatesan, co-founder of Care Earth Trust, recently made history as the first Indian to receive the Ramsar Award for 'Wetland Wise Use'. This prestigious global accolade recognises exceptional contributions to sustainable wetland management.

The announcement coincided with International Women's Day, denoting the role of women in environmental conservation. Vencatesan was one of twelve women honoured for their impactful work in wetland preservation.

Background on Ramsar Awards

The Ramsar Awards celebrate individuals and organisations dedicated to the sustainable management of wetlands. Established under the Convention on Wetlands, these awards aim to encourage wise use of wetland resources. The award categories include 'wise use of wetlands', 'innovation', and 'influencing policy'.

Jayshree Vencatesan's Contributions

Vencatesan has dedicated decades to the conservation of India's wetlands. Her efforts focus particularly on the Pallikaranai Marsh in Chennai. She began her journey with a modest budget of $350 and a vision to protect marshlands often regarded as wastelands. Her work has documented the rich biodiversity of Pallikaranai Marsh, which is home to over 337 species of flora and fauna.

Women in Wetland Conservation

Leading an all-women research team, Vencatesan has not only protected wetlands but also inspired the next generation of female conservationists.

She emphasises the importance of equipping women with technical skills and decision-making roles in wetland management. This approach encourages inclusivity and enhances conservation efforts.

Challenges in Wetland Conservation

Vencatesan faces numerous challenges in her conservation efforts. She notes that complex legal and bureaucratic issues can hinder restoration projects. For example, outdated land titles and user rights can obstruct progress. These challenges highlight the need for streamlined processes in wetland management.

The Importance of Wise Use

The concept of 'wise use' is central to the Ramsar Convention. It refers to maintaining the ecological character of wetlands while promoting sustainable development.

Contracting Parties to the Convention commit to implementing national policies and public education to achieve wise use. This ensures the conservation of wetland ecosystems and the services they provide.

Future Directions for Wetland Management

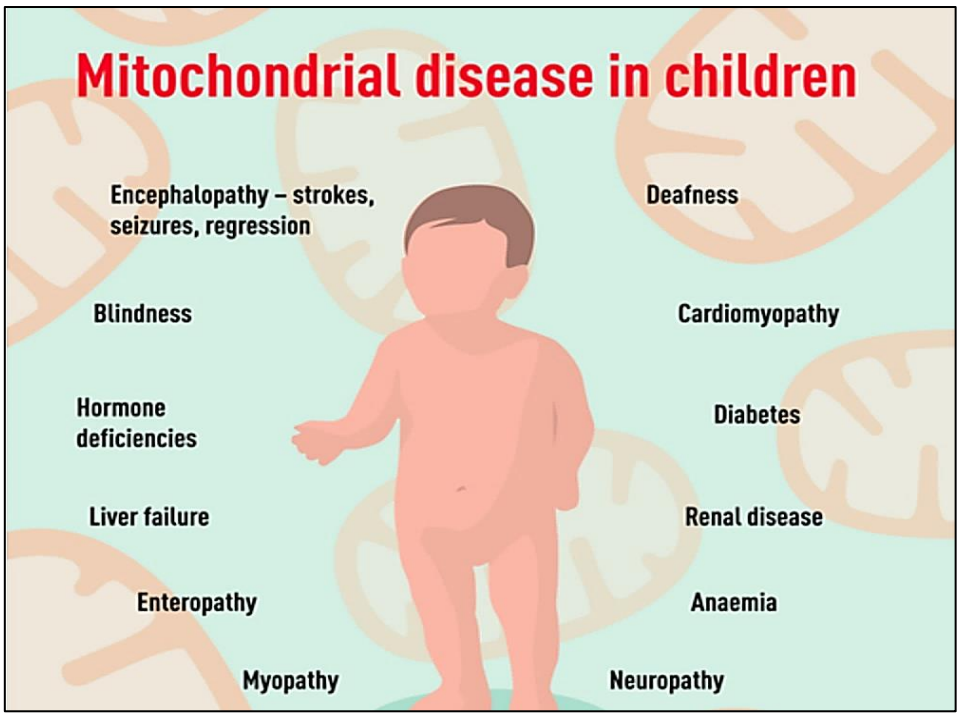
Vencatesan's work puts stress on the urgency of continued commitment to wetland conservation. As urban pressures increase, the need for effective management strategies becomes more critical.

The Ramsar Convention provides a framework for action, encouraging nations to adopt comprehensive wetland policies and management plans.

POLG MITOCHONDRIAL DISEASE

On March 1, 2025, Prince Frederik of Luxembourg passed away in Paris at the age of 22 after a long battle with POLG mitochondrial disease. His family announced the news later, denoting his struggle with this rare genetic disorder.

Diagnosed at 14, Frederik became an advocate for research and founded The POLG Foundation in 2022. The foundation aims to raise awareness and funds for POLG disease, which causes progressive multi-organ dysfunction and failure.



What is POLG Mitochondrial Disease?

- POLG mitochondrial disease is a genetic disorder caused by mutations in the POLG gene.
- The POLG gene is crucial for mitochondrial DNA replication.
- The disease impairs cellular energy production, leading to severe health issues.
- Symptoms vary widely and can include muscle weakness, seizures, and liver dysfunction.
- The disorder affects many organ systems, complicating diagnosis and treatment.

Symptoms and Diagnosis

Symptoms of POLG disease can range from mild to severe. Common symptoms include muscle weakness, visual impairment, and neurological decline. Diagnosis is often delayed due to the variability in symptoms. Many patients may not receive a correct diagnosis until the disease has progressed .

Challenges in Treatment

Treating POLG mitochondrial disease is complex due to its multi-systemic effects. Each patient may experience different symptoms based on the specific mutation of the POLG gene. Currently, there is no cure or effective treatment to reverse the disease. Management focuses on alleviating symptoms and improving quality of life.

CYCLONE ALFRED

Cyclone Alfred is currently approaching Australia's east coast, bringing unprecedented weather conditions. This cyclone is notable for its southern formation and slow movement. These characteristics pose risks to densely populated areas unaccustomed to tropical storms.

With sustained winds of 95 kilometres per hour and gusts reaching 130 kilometres per hour, the cyclone threatens regions from Double Island Point in Queensland to Grafton in New South Wales.

Formation and Characteristics of Cyclone Alfred

- Cyclones typically form in tropical regions.
- However, Alfred has emerged further south than usual.
- It is classified as a category 2 storm. This classification is based on wind intensity.
- The cyclone is expected to affect major urban centres, including Brisbane and the Gold Coast, which have not experienced a cyclone since 1974.
- The unusual path of Cyclone Alfred is attributed to a high-pressure system over the Tasman Sea, causing it to turn westward.

GANDIVA MISSILE

India's Defence Research and Development Organisation (DRDO) has officially named its latest air-to-air missile the Gandiva. This missile is advancement in aerial combat technology.

It is designed for beyond visual range (BVR) engagements, which are crucial in modern warfare. The Gandiva missile is expected to enhance India's military capabilities, particularly against potential adversaries.

Development and Features of Gandiva

- The Gandiva missile is currently under development.
- It boasts a striking range of 340 kilometres against high-altitude targets and 190 kilometres against lower-altitude targets.
- Its dual-fuel ducted ramjet engine allows for launch from various altitudes, making it versatile in combat scenarios.
- The missile can engage multiple aerial threats, including fighter jets and bombers.

Comparison with Global Competitors

Gandiva's capabilities surpass those of competitors. The Indian Air Force's current BVR missile, the French MBDA Meteor, has a range of 200 kilometres.

In contrast, Gandiva's range of 340 kilometres positions it ahead of China's PL-15 and the U.S. AIM-174 BVRAAM, which have ranges of 300 and 240 kilometres, respectively. This advancement is expected to shift the military balance in India's favour.

Integration with Indian Air Force

The Gandiva missile will be deployed on the Indian Air Force's Sukhoi Su-30MKI and the Light Combat Aircraft Tejas.

This integration is crucial for enhancing the operational effectiveness of these aircraft. Testing has shown promising results, including successful ground tests and flight tests to ensure proper integration with the aircraft systems.

INVASIVE SPECIES

Haryana's forests are under severe threat from invasive species, notably
Lantana camara and Prosopis juliflora. These species have invaded approximately 89 square kilometres of forested areas, impacting biodiversity. Experts warn that without intervention, these invaders could permanently alter the ecological landscape of Haryana's forests.

Invasive Species
Invasive species are non-native plants or animals that disrupt local ecosystems. In Haryana, five major invasive species dominate the landscape.

Lantana camara is the most aggressive, followed by Prosopis juliflora. Other notable invaders include Saccharum spontaneum, Ageratum houstonianum, and Leucaena leucocephala. Together, these species cover about 12% of Haryana's forests.

Impact on Biodiversity
The presence of these invasive species leads to a decline in native flora. Lantana camara competes for resources like nutrients and water, obstructing the growth of local plants.

This competition disrupts natural ecosystems and hinders wildlife movement. Animals struggle to navigate through dense thickets, affecting their migration and access to water.

Economic Implications
The spread of invasive species has economic consequences. Management costs increase as the species proliferate. Agricultural productivity may suffer due to changes in soil composition and nutrient availability. This economic burden marks the need for effective management strategies.

Management Strategies
Experts recommend immediate intervention to control the spread of invasive species. Suggested measures include active removal, community engagement, and reforestation projects.

Monitoring and educational campaigns can raise awareness about the ecological challenges posed by these invaders. The Haryana forest department is implementing mechanical removal and chemical applications as part of their management efforts.

Community Involvement
Engaging local communities in removal efforts is crucial. Community involvement can enhance the effectiveness of management strategies. Educating residents about the importance of preserving native flora can encourage a sense of responsibility towards forest conservation.

PLASTIC ICE VII

Scientists have confirmed the existence of Plastic Ice VII, a fourth form of water that emerges under extreme conditions. This revelation, led by Livia Bove from Sorbonne University, alters our comprehension of water's behaviour in harsh planetary environments.

What Is Plastic Ice VII?

- Plastic Ice VII is an exotic phase of ice that allows water molecules to rotate freely within a rigid crystalline structure.
- Unlike ordinary ice, which has a fixed arrangement of molecules, Plastic Ice VII maintains its crystalline form while enabling molecular rotation.
- This phase was initially predicted in 2008. Recent advanced neutron-scattering experiments have provided solid evidence of its existence.

Structure	Cubic crystalline lattice, similar to Ice VII
Molecular Motion	Picosecond rotational movement, unlike rigid ice
Formation Conditions	High temperature (450-600K) & high pressure (0.1-6 GPa)
Scientific Method Used	QENS (Quasi-Elastic Neutron Scattering)
Phase Transition	Transition from Ice VII to Plastic Ice VII, possibly leading to a superionic phase at even higher pressures.

Conditions for Formation

Plastic Ice VII forms under extreme conditions, specifically at pressures exceeding three gigapascals (GPa). This pressure is approximately 30,000 times greater than atmospheric pressure on Earth.

The temperatures required for its formation are above 450 Kelvin (177°C). Such conditions are typically found in the interiors of icy celestial bodies.

Discovery Techniques

The discovery of Plastic Ice VII involved sophisticated techniques. Researchers employed quasi-elastic neutron scattering (QENS) alongside diamond-anvil cells to study minute high-pressure samples.

These methods enabled scientists to observe molecular motion at the atomic level. Their analysis confirmed that while Plastic Ice VII retains a crystalline structure, its molecules rotate in specific, preferred directions.

Importance of the Discovery

The confirmation of Plastic Ice VII has deep implications for planetary science. Ice VII, an earlier known phase, exists deep within the icy moons of Jupiter and Saturn, such as Callisto, Ganymede, and Titan.

The existence of Plastic Ice VII indicates that water behaves in increasingly complex ways in extreme environments. This understanding could provide vital information about the potential for life in harsh planetary conditions and how water influences the structural integrity of celestial bodies.

The discovery of Plastic Ice VII may lead to advancements in materials science and planetary exploration. Understanding this exotic phase of ice could inspire the development of futuristic technologies that operate under extreme pressure conditions.

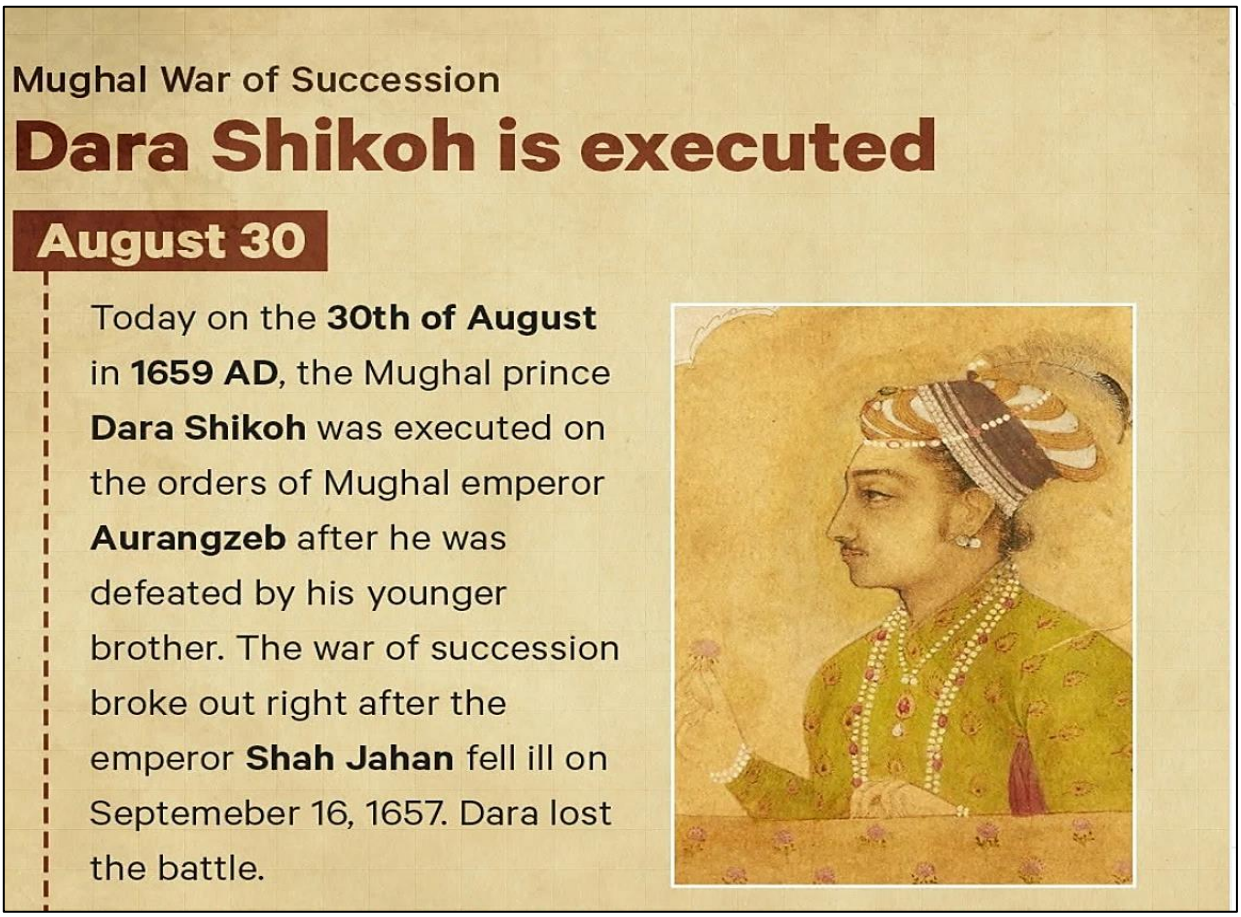
Researchers believe this new knowledge will enhance our understanding of water's role in various scientific fields, including astrobiology and material engineering.

DARA SHIKOH

Dara Shikoh is often invoked as the nemesis of Aurangzeb. March 20th marks the birth anniversary of Dara Shikoh, who was born in 1615.

Background: –

- Dara Shikoh was the eldest son of Mumtaz Mahal and Shah Jahan and was engaged in an intense battle of succession.



Key takeaways

- Dara Shikoh strove to develop cordial relationships between people by finding commonalities between Hinduism and Islam.
- His most important works, Majma-ul-Bahrain (Mingling of Two Oceans) and Sirr-i-Akbar (Great Mystery), are devoted to the cause of establishing connections between Hinduism and Islam.
- Dara Shikoh concluded that the "hidden book" mentioned in the Quran was none other than the Upanishads and believed that to understand the Quran, one needed to study the Hindu text.
- With the help of pandits, he translated 52 volumes of the Upanishads from Sanskrit to Persian into a tome called Sirr-e-Akbar (The Greatest Secret). He even drew an equation between Adam and Brahma — a view which, according to historians, led to him being branded a heretic and to his execution.
- However, he was defeated by his brother Aurangzeb in the War of Succession following Shah Jahan's illness. Thus he was executed on the orders of Aurangzeb under a fatwa issued by his clerics stating that he had apostatised from Islam.

War of Succession

- The Mughals did not believe in the rule of primogeniture, where the eldest son inherited his father's estate. They followed the custom of coparcenary inheritance or a division of the inheritance amongst all the sons.
- This became the ground for the war of succession during the Mughal Empire.
- The war of succession broke out in 1657 after Shah Jahan fell ill. Though all four brothers — Dara, Aurangzeb, Murad and Shuja — were locked in a bitter war, the first two were the serious contenders.
- Aurangzeb battled fiercely with his brothers, eventually sentencing all three to death and confining his father to a gilded prison for the last seven years of his life.

BETWA RIVER

The Betwa River is facing severe degradation, with declining water levels and ecological distress.

Background: –

- The Betwa River, historically known as Vetravati, has played a vital role in the cultural and historical landscape of Madhya Pradesh. It has supported civilizations, nourished the Vindhyas, and witnessed significant historical events.

Key takeaways

- The Betwa River is a tributary of the Yamuna River, flowing through Madhya Pradesh and Uttar Pradesh.
- Origin: Rises in the Vindhya Range near Barkhera village in Raisen district, Madhya Pradesh.
- Length: Approximately 590 km.
- Flow Path: Flows north-eastward, passing through Madhya Pradesh and Uttar Pradesh.
- Confluence: Joins the Yamuna River near Hamirpur, Uttar Pradesh.

The Betwa River, a major tributary of the Yamuna, has several tributaries, including Bina, Dhasan, and Jamni.

Significance

- Historical & Cultural Significance
  - Mentioned in ancient texts as Vetravati and associated with Mahabharata and Puranic traditions.
  - Important historical sites along the river include Orchha (Madhya Pradesh), known for its medieval temples and forts.
- Economic & Agricultural Importance
  - Supports irrigation and agriculture in Madhya Pradesh and Uttar Pradesh.
  - Major crops: Wheat, pulses, oilseeds.
  - Provides water for drinking and industrial purposes.

IUCN GREEN LIST

The IUCN Green List is seeing growth with the addition of four new listings from West Asia, marking a positive trend toward effective and equitable area-based conservation.

Background: –

- Four new sites included are Sharaan Nature Reserve and King Abdulaziz Royal Nature Reserve of Saudi Arabia, Aqaba Marine Reserve of Jordan and Sir Bu Nair Protected Area from UAE.

Key takeaways

- The International Union for Conservation of Nature (IUCN) Green List of Protected and Conserved Areas is a global initiative aimed at recognizing and promoting effective, equitable, and successful management of protected and conserved areas worldwide.

- It serves as a benchmark for quality in nature conservation, ensuring that these areas deliver tangible benefits for both people and nature.

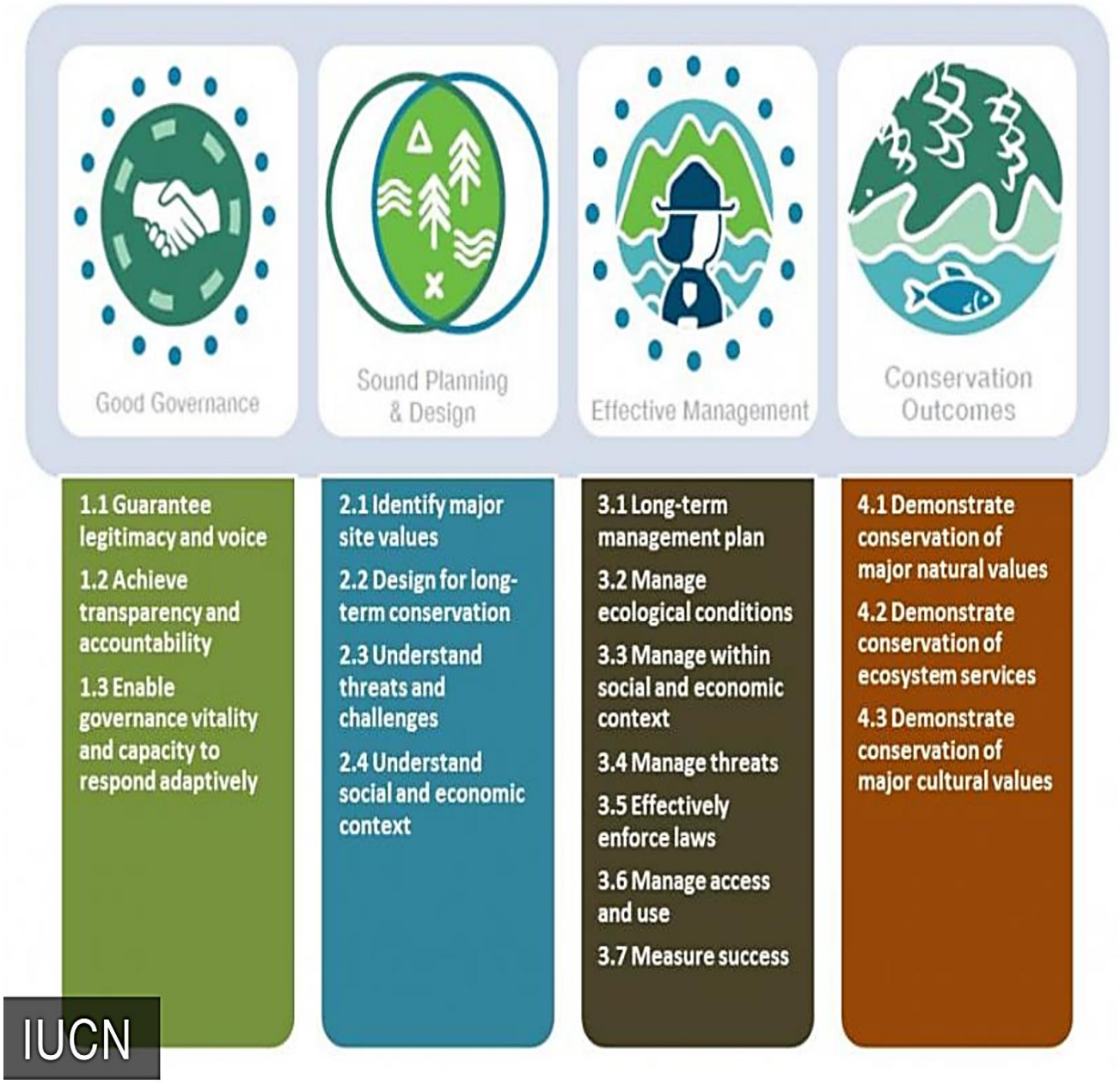
Objectives of the IUCN Green List:

- Enhance Conservation Outcomes: Increase the number of protected and conserved areas that achieve successful conservation results through effective management and governance.

- Provide a Global Benchmark: Offer a globally consistent standard to measure and improve the performance of protected and conserved areas.

The IUCN Green List Standard is structured around four key components, each encompassing specific criteria:

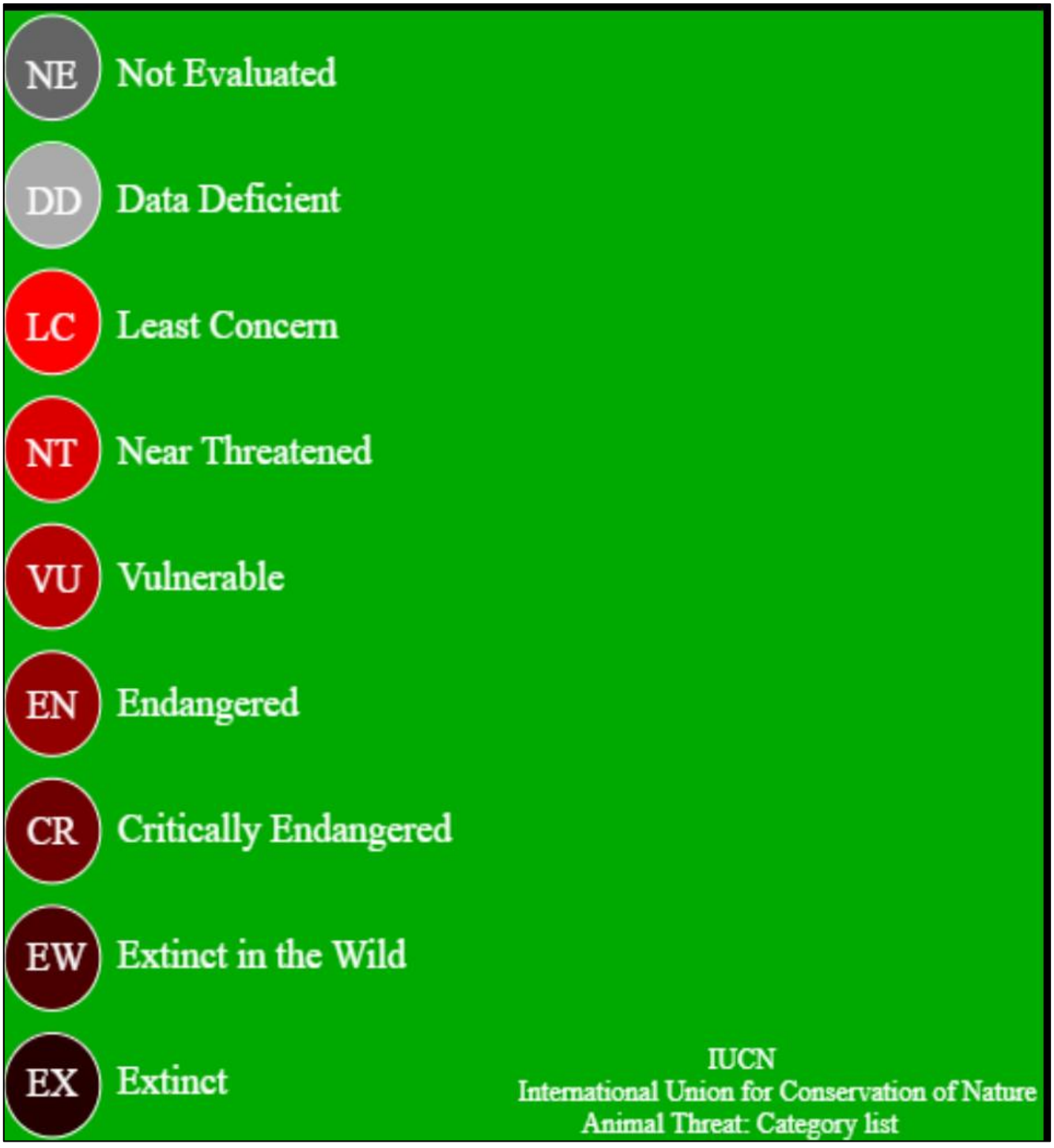
- Good Governance: Ensures that the area is managed transparently, inclusively, and accountably, respecting the rights of stakeholders and indigenous communities.
- Sound Design and Planning: Focuses on clear, long-term conservation goals based on a comprehensive understanding of the area's natural, cultural, and socio-economic values.
- Effective Management: Involves implementing strategies and actions that are efficient, adaptive, and based on the best available knowledge to maintain or enhance the area's values.
- Successful Conservation Outcomes: Measures the achievement of tangible and positive results in conserving the area's values, contributing to biodiversity and ecosystem health.



The path to Green List certification involves several stages:

- Application Phase: Protected areas submit an application and provide initial documentation demonstrating commitment to the Green List indicators.
- Candidate Phase: Upon acceptance, the site undergoes a thorough evaluation against all criteria, including stakeholder consultations and site visits.
- Green List Phase: Successful sites are awarded Green List status, recognized for their excellence in conservation, and are subject to periodic reviews to ensure ongoing compliance.
- There are no Indian sites listed on the IUCN Green List.

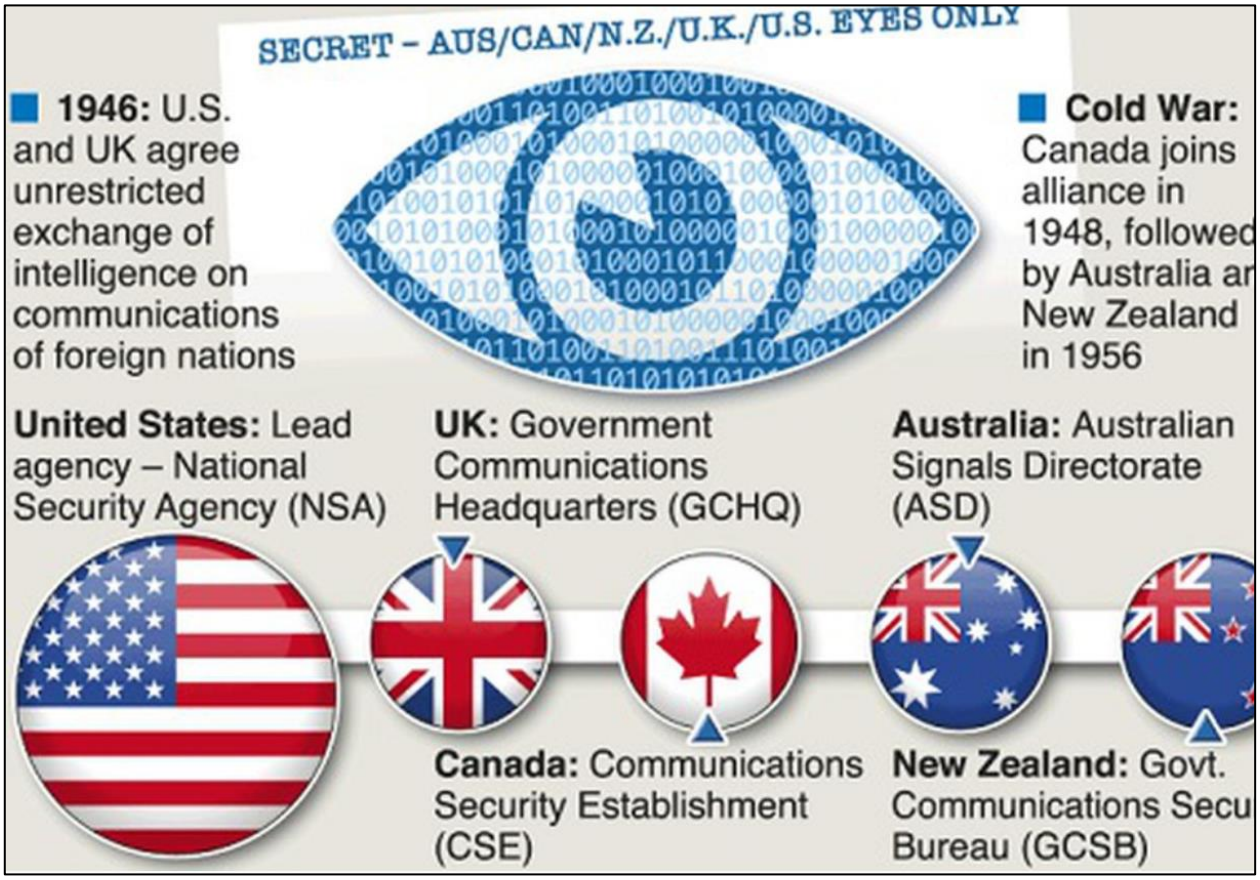
Red list



FIVE EYES ALLIANCE

In a major step for cooperation on global security, intelligence chiefs and national security advisers of several countries including three members of the Five Eyes alliance have gathered in New Delhi.

Besides key meetings, the intel chiefs will attend The Raisina Dialogue – a multilateral conference organised by the Observer Research Foundation and India's Ministry of External Affairs.



Background:

- Once a covert intelligence-sharing network, Five Eyes has evolved into an expansive global surveillance apparatus, operating with little accountability.
- While some nations have challenged its overreach, the dominance of the US and UK has ensured that, in most cases, its actions remain shielded from meaningful consequences.

Key takeaways

- The Five Eyes (FVEY) is an intelligence-sharing alliance comprising five English-speaking countries: United States, United Kingdom, Canada, Australia, New Zealand.

Origins and Evolution

- The alliance originated during World War II with the UKUSA Agreement (1946) between the United States and the United Kingdom, later expanding to include Canada, Australia, and New Zealand.

- It was initially focused on signals intelligence (SIGINT), particularly intercepting Soviet communications during the Cold War.
- Over time, the alliance has expanded its scope to counterterrorism, cyber threats, and geopolitical intelligence sharing.

Significance and Role

- The Five Eyes countries share classified intelligence, gathered through various means, including electronic surveillance, cybersecurity monitoring, and human intelligence.
- It is one of the most comprehensive intelligence alliances in the world, with vast capabilities in surveillance, counterespionage, and cybersecurity.
- The alliance also cooperates on emerging threats like China's growing technological influence, Russian cyber activities, and terrorism networks.

What is Raisina Dialogue?

The Raisina Dialogue is an **annual conference on geopolitics and geoeconomics,** which aims to address the most challenging issues faced by the world. It was structured along the lines of the **Shangri-La Dialogue**.

It is a **component of India's "intelligence diplomacy,**" which, though not prominently featured in the public eye, **plays a crucial role in the national security framework**, alongside the diplomatic corps and the armed forces.

The conference takes place in New Delhi and is attended by **people from political, business, media,** and **civil society backgrounds**.

2025 theme -Kālachakra - People, Peace and Planet"

The Dialogue is structured as a multi-stakeholder, cross-sectoral discussion, involving heads of state, cabinet ministers and local government officials, who are joined by thought leaders from the private sector, media and academia.

Delhi-based think tank **Observer Research Foundation (ORF)**, in partnership with the **Ministry of External Affairs,** hosts the conference.

The Shangri-La Dialogue:

The Shangri-La Dialogue is Asia's premier defence summit.

It is an inter-governmental security forum held annually by an London-based independent think tank, theInternational Institute for Strategic Studies (IISS).

In this unique meeting, ministers debate the region's most pressing security challenges, engage in important bilateral talks and come up with fresh solutions together.

It was launched for the first time in 2002 at the Shangri-La Hotel in Singapore.

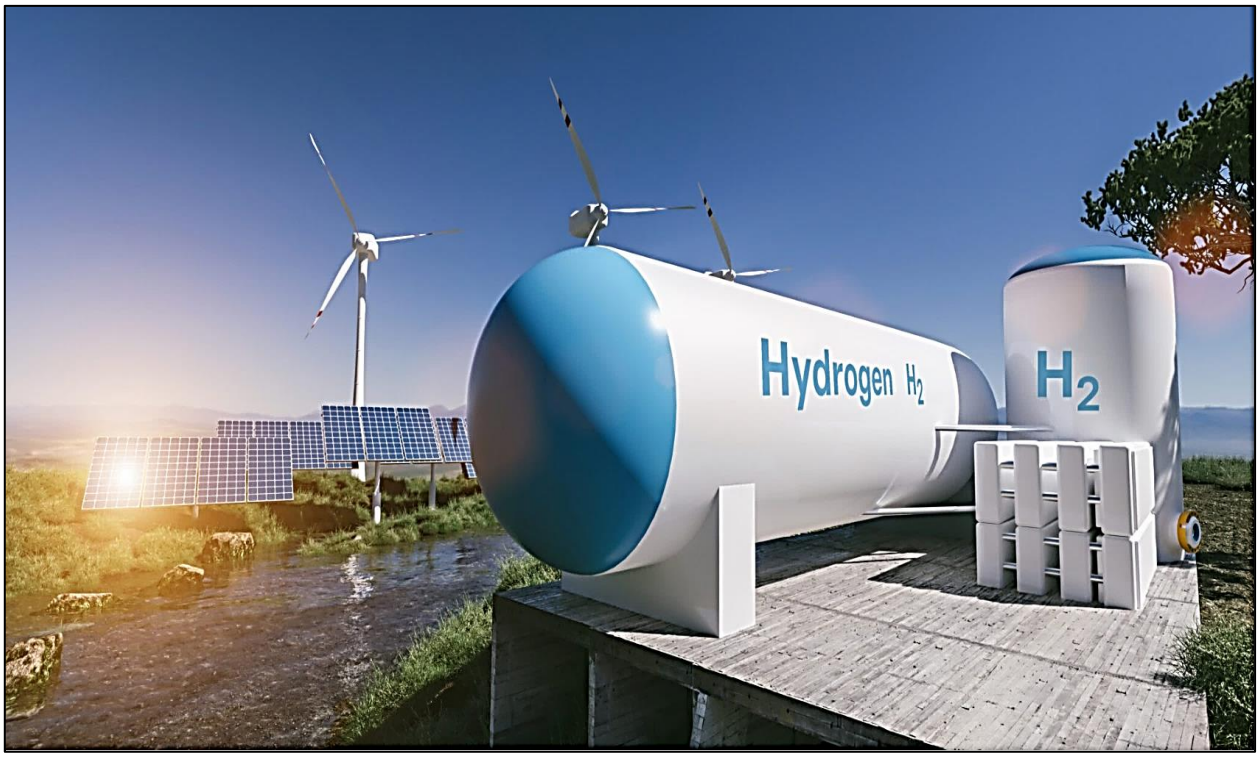
WHITE HYDROGEN

France has discovered a massive 46-million-ton white hydrogen reserve in the Moselle region, valued at $92 trillion.

Background: –

- Hydrogen is considered the future of clean energy. Unlike solar or wind energy, it produces only water when burned.

- The discovery challenges previous assumptions that hydrogen must be lab-produced, proving it exists naturally.



Key takeaways

- Based on its production method and environmental impact, hydrogen is classified into several types:

- Grey Hydrogen
  - Source: Produced from natural gas or fossil fuels using steam methane reforming (SMR).
  - Emissions: High carbon dioxide (CO_2) emissions since no carbon capture technology is used.
  - Usage: Currently, the most common form of hydrogen used in industry, refineries, and chemical production.

- Blue Hydrogen :

  - Source: Similar to grey hydrogen (produced from natural gas) but with Carbon Capture, Utilization, and Storage (CCUS) technology.

- Emissions: Lower than grey hydrogen, as up to 90% of CO_2 emissions are captured.
- Usage: Considered a transition fuel in the shift to green hydrogen.

- Green Hydrogen
  - Source: Produced using electrolysis of water, powered by renewable energy sources like solar or wind.
  - Emissions: Unlike others, this "white hydrogen" requires no industrial production and emits no CO_2.
  - Usage: The most sustainable form of hydrogen, used in fuel cells, transportation, and energy storage.

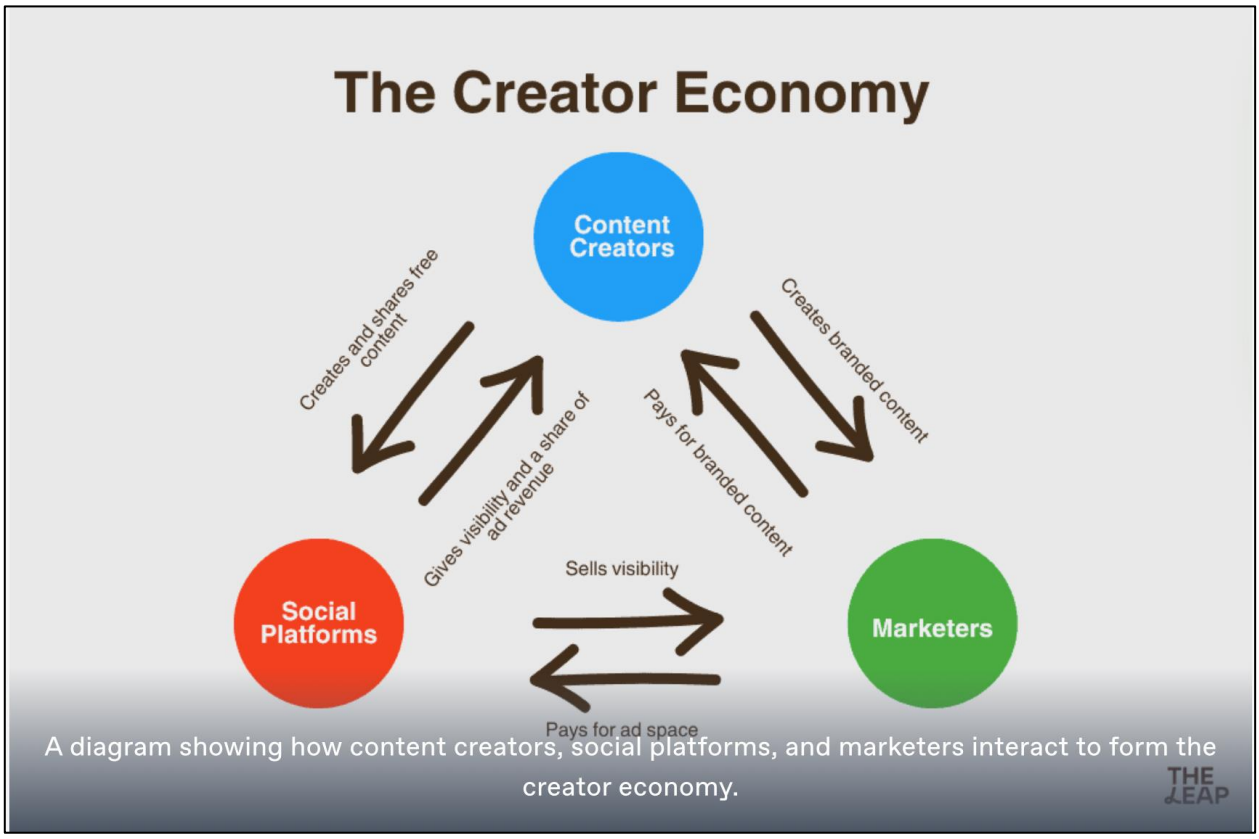
- White Hydrogen
  - Source: Naturally occurring underground hydrogen deposits.
  - Emissions: Zero, but not yet commercially viable due to extraction challenges.
  - Usage: Research is ongoing to explore its potential.

- White hydrogen has several advantages over other types of hydrogen
  - It causes no CO2 emissions when used as a fuel.
  - It is compatible with existing infrastructure and technologies for hydrogen production and utilization.
  - It is cheaper and more efficient than steam reforming or electrolysis.
  - It is abundant and renewable in nature.
- Its deposits have been found across the world, including in the US, eastern Europe, Russia, Australia, France and other countries.
- It is estimated that globally there could be tens of billions of tons of white hydrogen.

- Pink Hydrogen
  - Source: Produced via electrolysis powered by nuclear energy.
  - Emissions: Low, as nuclear power does not generate carbon emissions.
  - Usage: Can be a stable alternative where nuclear power is available.

CREATOR ECONOMY

India's creator economy is booming, fueled by easier internet access. The government has introduced a $1 billion fund and Rs 391 crore for the Indian Institute of Creative Technology to boost the industry.



Background: –

- In December last year, Prime Minister Narendra Modi said the creator economy is bringing new energy to India's efforts to become a $5 trillion economy.

Key takeaways

- The Creator Economy refers to the digital ecosystem where individuals monetize their skills, content, and influence via digital platforms such as YouTube, Instagram, TikTok, Patreon, and Substack.
- It includes influencers, bloggers, video creators, podcasters, artists, and educators who generate income through ads, sponsorships, subscriptions, digital products, and direct fan support.

Importance of the Creator Economy to India

- Economic Growth and Job Creation
  - India's creator economy is estimated to contribute significantly to the gig economy, offering self-employment opportunities to millions.
  - Platforms like YouTube and Instagram enable content creators to earn through ad revenue, brand partnerships, and merchandise sales.

- Democratization of Opportunities :
  - Unlike traditional media, digital platforms allow anyone with skills and creativity to succeed.
  - Small-town and rural creators are finding success, overcoming geographical limitations. Vernacular content (in Hindi, Tamil, Bengali, etc.) is booming, reaching diverse audiences.
- Cultural and Soft Power Impact :
  - Indian creators are shaping global narratives about Indian culture, food, travel, and traditions.

- Yoga instructors, Bollywood influencers, and digital storytellers increase India's soft power internationally.
- India's memes, dance trends, and viral content gain global recognition, enhancing cultural influence.

- Digital Entrepreneurship & Innovation
  - The creator economy fosters digital entrepreneurship, allowing creators to monetize through NFTs, courses, books, and memberships.
  - Indian startups are developing tools and platforms (e.g., Chingari, Koo) to empower creators and reduce dependence on global platforms.

- Financial Inclusion & Alternative Livelihoods:
  - Many creators are first-time earners, boosting financial inclusion, especially for women, students, and freelancers.
  - Platforms provide an alternative to traditional employment, enabling financial independence.

WHEAT PRODUCTION IN INDIA

India's wheat production is estimated to reach a record level of 115.3 million metric tonnes during 2024-25, which is about 2 per cent higher compared to the 113.3 million tonnes produced during 2023-24, showed the Second Advance Estimates of production of major crops released by the Ministry of Agriculture and Farmers' Welfare.

Background: –

- Wheat is the second largest crop after paddy in terms of area coverage. Uttar Pradesh is the top wheat-producing state in the country, followed by Madhya Pradesh, Punjab, Haryana, Rajasthan, Bihar, Gujarat and Maharashtra.

Key takeaways

- Wheat (Triticum aestivum) is the second most important staple food crop in India after rice. India is the second-largest producer of wheat in the world after China.

- The average yield of wheat in India is around 3.5 tonnes per hectare, which is lower than global averages due to factors like small landholdings and inadequate irrigation.

Climatic and Soil Requirements

- Climate: Wheat is a rabi crop, sown in winter (October-December) and harvested in spring (March-April).
- Ideal temperature: 10-15°C during sowing and 21-26°C during harvesting.

- Rainfall: Requires 50-75 cm of rainfall, well-distributed over the growing season.

- Soil: Grows best in well-drained loamy and clayey soils with a pH of 6.0-7.5.

Major Wheat-Producing States

- Uttar Pradesh: Largest producer, contributing about 30% of India's total wheat production.
- Punjab and Haryana: Known for high yields due to advanced farming practices and irrigation facilities.
- Madhya Pradesh: Rapidly growing production due to increased acreage and government support.
- Rajasthan: Significant production despite arid conditions, thanks to irrigation projects like the Indira Gandhi Canal.

BYRNIHAT

The recently released World Air Quality Report for 2024 has termed Byrnihat as the "most polluted city in the world".

Background: –

- The annual average PM2.5 concentration in Byrnihat was 128.2 micrograms per cubic m (µg/m3), many times the World Health Organization's annual air quality guideline of 5 µg/m3.

Key takeaways

- Byrnihat is located around 20 km from Guwahati and 65 km from Shillong, in Meghalaya's Ri-Bhoi district, where the hills of Meghalaya descend into Guwahati.

- Over the years, Byrnihat has developed into a regional industrial hub. The residential town is in Meghalaya, and the industrial units surrounding it are in both Meghalaya and Assam.

Contributing Factors:

- Rapid Industrialization: The establishment of numerous industries, including coke production, cement manufacturing, ferroalloys, steel production, distilleries, and brick kilns, has led to increased emissions.
- The availability of coal reserves in Meghalaya and proximity to Guwahati have attracted these industries.
- Unregulated Emissions: Many industrial units have been found operating without proper pollution control measures. Inspections revealed non-operation of pollution control devices and ineffective emission management.
- Vehicular Emissions: Byrnihat serves as a major transit hub, resulting in significant vehicular pollution. Heavy diesel vehicles, often not complying with norms, contribute to elevated levels of pollutants like PM2.5, PM10, and sulfur dioxide.
- Topographical Factors: The "bowl-like" topography of the region, with surrounding hills, inhibits the dispersion of air pollutants, exacerbating pollution levels.

GOLD SMUGGLING CASE

A Special Court of Economic Offences in Bengaluru rejected the bail plea of Kannada actor Ranya Rao, who was arrested for allegedly smuggling over 14 kilograms of gold on a flight from Dubai to Bengaluru.

Background: –

- Directorate of Revenue Intelligence (DRI) officials called it one of the biggest seizures of gold at Bengaluru airport in recent times.

Key takeaways

- Until its repeal in 1990, the Gold (Control) Act, 1968, curbed gold imports and placed heavy restrictions on the acquisition, possession, and disposal of gold in India.
- However, with liberalisation in 1990s, the government modified its approach, imposing an import duty on gold.
- Now, gold imports are largely governed under the Customs Act, 1962, and by the Central Board of Indirect Taxes and Customs (CBIC).
- The customs duty for gold may differ depending on the amount of gold carried by a passenger and the duration spent abroad before traveling back to India, as per the Baggage Rules, 2016 (issued under the Customs Act).
- Under these rules, a man residing abroad for over a year may carry up to 20 grams of jewellery duty free (with a value cap of Rs 50,000) and a woman may similarly carry up to 40 grams (with a cap of Rs 1 lakh).
- The CBIC also has specific guidelines for Indian passengers returning from Dubai after residing there for over six months, allowing them to carry up to 1 kg of gold as long as the applicable customs duty is paid.
- In 2003, the Supreme Court held that any article imported without complying with the relevant conditions or restrictions must be considered a "prohibited good". Such goods are liable to be confiscated under Section 111 and punished under Section 112 of the Customs Act.

- The punishment may include a fine of up to the value of the goods. Section 135 provides a punishment of up to 7 years imprisonment if the market price of the smuggled goods exceeds Rs. 1 lakh.
- Smuggling is also punishable under Section 111 (Organised Crime) of the Bharatiya Nyaya Sanhita, 2023, which punishes "trafficking in illicit goods" with imprisonment of at least five years, extendable to life imprisonment.
- The UAPA also carries the same punishment for smuggling as a "terrorist act" under Section 15 if it causes "damage to the monetary stability of India".

UN 80 INITIATIVE

UN Secretary-General Antonio Guterres has announced the 'UN80 Initiative'.

Background: –

- While announcing the initiative, Mr. Guterres said that the world is facing challenges on every front. He also voiced concern over shrinking resources and liquidity crisis amid an environment of uncertainty and unpredictability.

Key takeaways

- The UN80 Initiative is a comprehensive reform program launched by United Nations Secretary-General António Guterres as the organization approaches its 80th anniversary.
- This initiative aims to enhance the UN's efficiency, effectiveness, and responsiveness to global challenges.

Key Objectives of the UN80 Initiative:

- Identify Inefficiencies and Improvements: Rapidly pinpoint areas where the UN can optimize its operations to work more effectively.
- Review Implementation of Mandates: Thoroughly assess how mandates from member states are executed, especially given their significant increase in recent years.
- Strategic Structural Review: Conduct a comprehensive evaluation to implement deeper structural changes and realign programs within the UN System.

Rationale Behind the Initiative:

- The UN faces multiple challenges, including escalating conflicts, persistent poverty, human rights violations, and the rapid advancement of unregulated technologies like artificial intelligence.
- The UN has been grappling with a liquidity crisis for at least the past seven years, primarily because not all member states pay their dues in full or on time.

Leadership and Implementation:

- The UN80 Initiative will be spearheaded by Under-Secretary-General for Policy, Guy Ryder, leading a task force comprising top officials from across the UN system. The initiative encompasses all UN entities, including those based in Geneva, Nairobi, and Vienna.

NATIONAL WILDLIFE HEALTH ECONOMY

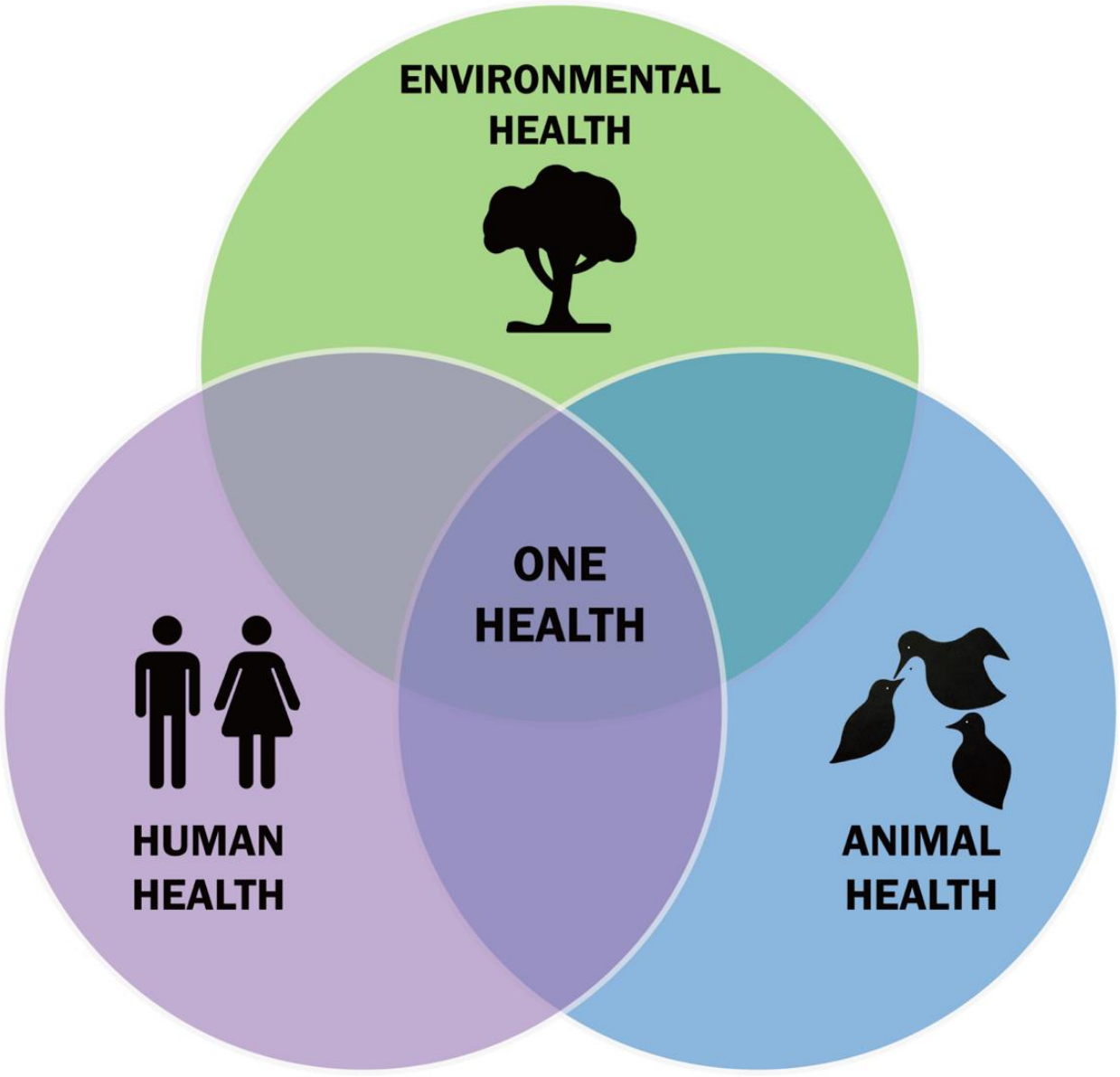
Five years after Covid-19 was declared a pandemic. the Indian government is reviewing a draft of a National Wildlife Health Policy (NWHP).

This policy suggests monitoring wildlife diseases, doing more research, and setting up new testing labs. The policy aims to integrate disease surveillance, research, and diagnostics for better pandemic preparedness.

Context

The NWHP is a response to the rising threat of zoonotic diseases. Over 60% of emerging infectious diseases in humans originate from animals.

The One Health approach is central to this policy. It aims to unify human, animal, and environmental health efforts. The policy aligns with India's National One Health Mission, enhancing cross-sectoral collaboration for disease control.



Structure and Implementation
The NWHP is being developed under the guidance of the Environment Ministry's Central Zoo Authority (CZA).

The Principal Scientific Adviser's office is facilitating expert consultations. A core working group has contributed to the policy formulation. Seven thematic working groups have made recommendations on various aspects of wildlife health.

Key Recommendations of the Policy
The policy includes several strategic recommendations. A comprehensive disease surveillance system focusing on terrestrial, marine, and avian ecosystems is proposed. This system aims to improve data collection and reporting across sectors. The establishment of a National Referral Centre for Wildlife (NRC-W) will centralise investigations into wildlife mortalities and outbreaks.

Wildlife Health Database and Information System
A national wildlife health database is recommended. This database will serve as a repository for real-time surveillance data.

It will integrate information from animal husbandry and human health databases. A wildlife health information system is also proposed to streamline reporting and enhance disease surveillance.

Diagnostic Labs and Community Engagement
The establishment of satellite diagnostic labs is aspect of the NWHP. These labs will facilitate timely disease detection and diagnostics near critical wildlife habitats.

Additionally, community engagement is crucial. Efforts will focus on improving vaccination rates among livestock near national parks to prevent disease transmission.

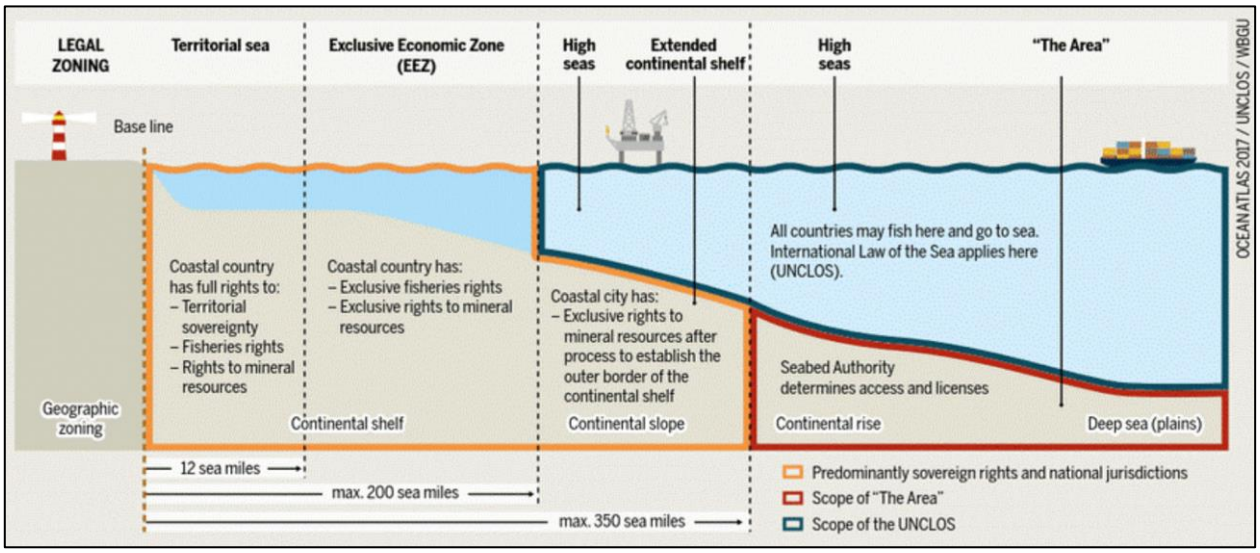
Importance of Cross-Sectoral Collaboration
Currently, wildlife disease surveillance operates in silos. The Environment Ministry coordinates wildlife protection, while the Ministry of Agriculture handles animal health.

The NWHP aims to bridge these gaps. A unified policy will enhance information exchange and collaboration among various stakeholders in wildlife health management.

INTERNATIONAL SEABED AUTHORITY (ISA)

The 30th Session of the International Seabed Authority (ISA) commenced on March 17, 2025, in Jamaica. Nearly 170 member states and the European Union convened to discuss deep-sea mining regulations.

This meeting comes amid increasing pressure from mining industries eager to exploit seabed resources. The ISA's primary responsibilities include developing a mining code and protecting the marine environment from potential damage due to mining activities.



About International Seabed Authority

- The International Seabed Authority (ISA) is an independent organization formed in 1994.
- It was created when the United Nations Convention on the Law of the Sea (UNCLOS) became effective in 1982.

- **Headquarters: Kingston, Jamaica**

- Its main role is to manage mining and related activities on the international seabed, which is the ocean floor beyond any country's territory.

- ISA coordinates and controls all activities related to mining minerals on the seabed that lies outside national borders. These activities should benefit all of humanity.

- ISA also ensures that the marine environment is protected from any harm caused by these deep-sea activities.

Structure:

- The **supreme authority** of the ISA **is the assembly,** in which all ISA members are represented.

- The assembly **sets general policies, establishes budgets**, and **elects a 36-member council**, which serves as the **ISA's executive authority.**

- The **council approves contracts with private corporationsand government entities for exploration and mining** in specified areas of the international seabed.

- The council **oversees implementation of the seabed provisions of the UNCLOS** and establishes provisional rules and procedures (subject to approval by the assembly) by which the **ISA exercises its regulatory authority**.

- The secretary-general of the ISA is nominated by the council and is elected by the assembly to a four-year term.

What is Deep-Sea Mining?

- Deep-sea mining involves extracting minerals from the ocean floor at depths greater than 200 metres.
- Resources targeted include copper, nickel, cobalt, and rare earth elements.
- The process raises environmental concerns due to potential harm to marine ecosystems.
- Currently, there is no comprehensive mining code in place, complicating the regulation of these activities.

Current Negotiations and Challenges

During the ongoing negotiations, numerous issues remain unresolved. A November 2024 study identified over 30 critical concerns regarding the draft mining code.

Key topics include environmental baseline data, compliance measures, and monitoring protocols. Experts have noted a lack of consensus on what constitutes acceptable environmental harm and how to enforce regulations effectively.

Environmental Concerns

The European Academies' Science Advisory Council has expressed doubts regarding the robustness of the current draft regulations. They argue that the potential for irreversible damage to marine ecosystems is . There is also a noted lack of scientific
understanding regarding the long-term impacts of deep-sea mining.

The Two-Year Rule

In 2021, Nauru Ocean Resources Inc. triggered the "two-year rule" by notifying the ISA of its intent to apply for a mining contract. This rule mandates that the ISA must adopt regulations within two years of such notification. The urgency of this situation has sparked debate about the need for a more sustainable approach to resource extraction.

Legal Implications

Concerns have been raised about potential lawsuits against the ISA if mining applications are rejected. Proponents of mining have cited the legal principle of legitimate expectations from investment law. However, experts argue that this principle does not apply to international organisations like the ISA.

Global Participation

As of January 2025, the ISA has granted 30 exploration contracts since 2001. India holds two contracts in the Indian Ocean and has submitted applications for additional contracts. Several European nations are also involved in sponsoring mining contracts, with Norway planning to exploit resources within its exclusive economic zone.

KANGER VALLEY NATIONAL PARK (KVNP)

Kanger Valley National Park (KVNP) has been added to the tentative list of UNESCO World Heritage Sites under the 'Natural' category.

This park, nestled in the Bastar district of Chhattisgarh, is renowned for its stunning landscapes, rich biodiversity, and geological features. Once plagued by Maoist violence, the region has transformed into a peaceful tourist destination.

Geographical Features

Kanger Valley National Park spans 200 square kilometres and features diverse topography. The elevation ranges from 338 to 781 metres above sea level. The park is characterised by its moist Peninsular Valley Sal forests, deep gorges, and winding streams.

The Kanger River flows through the park, enhancing its scenic beauty and ecological significance. It features a distinct karst landform and showcases a comprehensive lithological succession of the Indravati Group of rock formations. The national park has Tirathgarh Falls and Kanger River.

Biodiversity

KVNP is a biodiversity hotspot, hosting over 963 plant species and 49 mammal species. Notable fauna includes the giant squirrel, otters, and various deer species.

The park is also home to 201 bird species, including the endemic Bastar Hill Myna. Amphibians and reptiles add to the diversity, with 16 amphibian and 37 reptile species recorded.

Notable Caves

The park contains more than 15 limestone caves, including Kotamsar, Kailash, and Dandak. These caves are geological wonders, showcasing unique speleothems and serving as archaeological sites. They hold cultural significance for local tribes, particularly during festivals.

Tourism Potential

With its recent inclusion in the UNESCO tentative list, KVNP is poised to attract more visitors. Enhanced tourism can boost the local economy while promoting conservation efforts. The park's natural beauty and cultural heritage make it a unique destination for nature enthusiasts and researchers alike.

CARACAL

Recently, Rajasthan's Forest Minister Sanjay Sharma announced the first photographic record of a caracal in Mukundra Hills Tiger Reserve. This discovery marks the ongoing conservation efforts in the region.

The caracal, a medium-sized wild cat, is now classified as endangered with a population of fewer than 50 individuals in India. The sighting was part of the Winter Phase IV survey conducted in the reserve.

About Caracal

- The caracal is a nocturnal cat native to Africa, the Middle East, Central Asia, and South Asia.
- Its name derives from the Turkish word 'karakulak', meaning 'black ears', which is a distinctive feature.
- Caracals are known for their agility, speed, and ability to leap distances.
- They are skilled hunters, primarily preying on small ungulates and rodents.

Historical Significance

Caracals have been part of Indian wildlife for centuries. Historical texts like Khamsa-e-Nizami and Shahnameh reference these cats, indicating their value in hunting. They once thrived in 13 states of India across various biotic provinces.

Population Decline

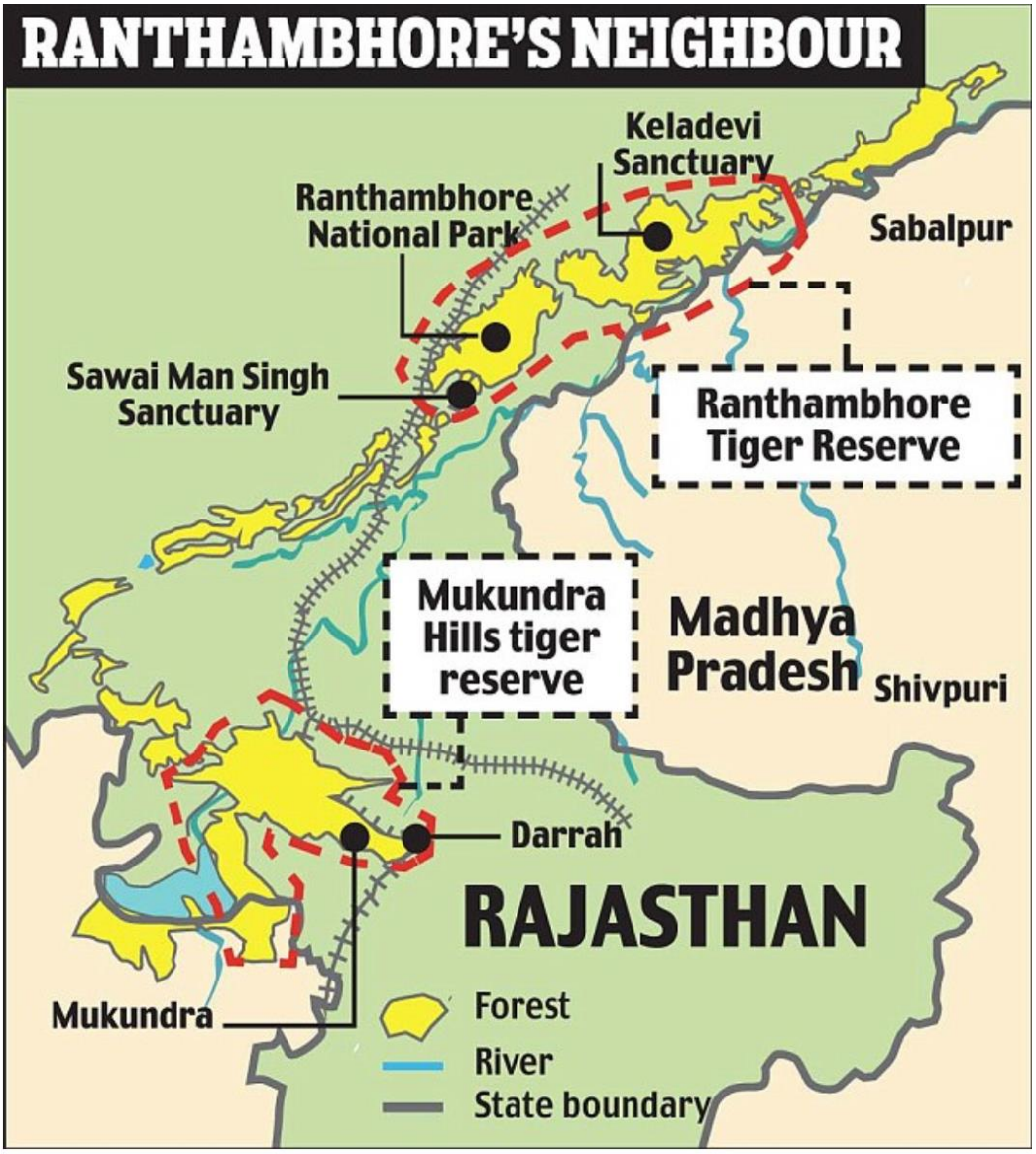
The caracal population in India has drastically declined over the years. Their numbers halved from pre-Independence times to 2000 and fell over 95% from 2001 to 2020. Currently, they inhabit only 16,709 square kilometres, a mere fraction of their historical range.

Conservation Status
In 2021, the National Board for Wildlife and the Union Ministry of Environment, Forest and Climate Change classified the caracal as critically endangered. Factors contributing to their decline include habitat loss due to urbanisation and illegal capture for the exotic pet trade.

Habitat and Ecology
The caracal's natural habitat includes the Chambal ravines, which have been deemed wastelands. This classification hampers restoration efforts. Caracals rely on their keen senses, particularly their large tufted ears, for hunting and communication. These features also aid in thermoregulation.

Threats to Survival
The main threats to caracals include habitat destruction and hunting. The International Union for Conservation of Nature (IUCN) lists them as a vulnerable species, indicating a continued decline in their population.

Mukundra Hills Tiger reserve



ISRO'S DE-DOCKING MISSION

On January 16, 2025, the Indian Space Research Organisation (ISRO) achieved milestone in space exploration by successfully docking two satellites, SDX01 and SDX02.

Following this, on January 30, ISRO completed a complex de-docking process. This achievement marks India's entry into an elite group of countries capable of such advanced space operations.

About Docking and De-docking

Docking involves two spacecraft connecting in space. It requires precise alignment of speed and orientation.

De-docking, while seemingly simpler, is equally complex. It requires controlled separation to prevent collisions in microgravity. Minor forces can lead to unintended drift.

The Complexity of De-docking

De-docking is not just about unhooking. It involves careful disengagement of latches and hooks. This process must be executed remotely. The spacecraft may have a pressurised tunnel that needs careful decompression. Precise low-force separation is critical.

Future Missions and Applications
ISRO's success in docking and de-docking sets the stage for future missions.

Key missions include Chandrayaan-4, aimed at lunar sample return, and Gaganyaan, India's first human spaceflight mission. Mastering docking technology is essential for in-space refuelling. This capability can extend satellite lifespans and reduce the need for new launches.

The SpaDex Mission Overview
The SpaDex mission was launched on December 30, 2024. It involved the two satellites SDX01 and SDX02. The mission aimed to demonstrate space docking technology with small spacecraft. It was launched using a Polar Satellite Launch Vehicle (PSLV).

Future Plans
ISRO plans to conduct further experiments starting March 15, 2025. The unified satellite is currently in an elliptical orbit. This allows for a limited window to conduct experiments every two months.

IMPACT OF AIR POLLUTION ON SOLAR ENERGY

India is experiencing challenges in harnessing solar energy due to air pollution and climate change. A study conducted by researchers at IIT Delhi marks how these factors impair solar panel performance.

As the fifth-largest solar power producer globally, India aims to generate 50% of its electric power from non-fossil sources by 2030.

This ambitious goal includes installing 500 GW of renewable energy capacity, with solar power contributing one-fifth of this target.

Climate Change Effects on Solar Efficiency
Climate change poses a direct threat to solar energy efficiency. The study indicates that solar photovoltaic energy is sensitive to weather conditions.

Variations in solar radiation due to atmospheric changes can impact energy generation. Factors such as clouds and air pollution can reduce the amount of solar radiation reaching solar panels.

Research Findings and Predictions
The study utilised data from 1985 to 2014 to project solar panel performance from 2041 to 2050. The researchers tested global climate models against observations from NASA's CERES project.

They explored two scenarios – one with moderate climate control efforts and another with weak climate action but strong air quality measures.

The findings suggest that by mid-century, solar panel efficiency could drop by 2.3% under moderate efforts. This decline translates to a loss of approximately 840 gigawatt-hours of electricity annually.

Temperature and Solar Panel Performance

Temperature plays important role in solar panel efficiency. The study found that rising ambient temperatures could increase solar cell temperatures by 2 degrees Celsius by mid-century.

High temperatures can affect the performance of solar cells, which operate best under cooler conditions. The research indicates that solar radiation is the primary factor influencing efficiency, followed by temperature and ambient wind speed.

Regional Variations in Solar Potential

Interestingly, certain regions in India, particularly parts of the northeast and Kerala, are expected to experience increased solar power potential. This is attributed to a predicted decrease in cloud cover in these areas.

The Need for Action

The study puts stress on the urgency of addressing climate change and improving air quality. Reducing greenhouse gas emissions is crucial for enhancing solar energy potential. Public participation in adopting sustainable practices, such as using electric vehicles and promoting tree planting, is essential.

UNIYALA KERALENSIS

Recently, researchers confirmed the existence of a new plant species, Uniyala keralensis, in the Agasthyamala Biosphere Reserve in Kerala.

This discovery marks the rich biodiversity of the Western Ghats, a UNESCO World Heritage Site. The species was first collected 27 years ago but was only classified recently. It is endemic to southwest India and showcases the ongoing importance of botanical research.

Taxonomy and Classification

Uniyala keralensis belongs to the Asteraceae family. It was previously misidentified as Vernonia multibracteata. The genus Uniyala was established following its separation from Vernonia. This new classification was based on detailed studies and comparisons with existing herbarium specimens.

Physical Characteristics

Uniyala keralensis is a shrub that can grow between one to three metres tall. It features light purple flowers that bloom from August to April. The leaves are larger compared to related species, with long petioles and fewer lateral veins. These characteristics aid in identifying the species.

Habitat and Distribution

This species is found in open areas on the western slopes of the Agasthyamala Biosphere Reserve

It thrives at elevations ranging from 700 to 1,400 metres. The current population is estimated to consist of nearly 5,000 individuals across four subpopulations, covering an area of 250 square kilometres.

Conservation Status

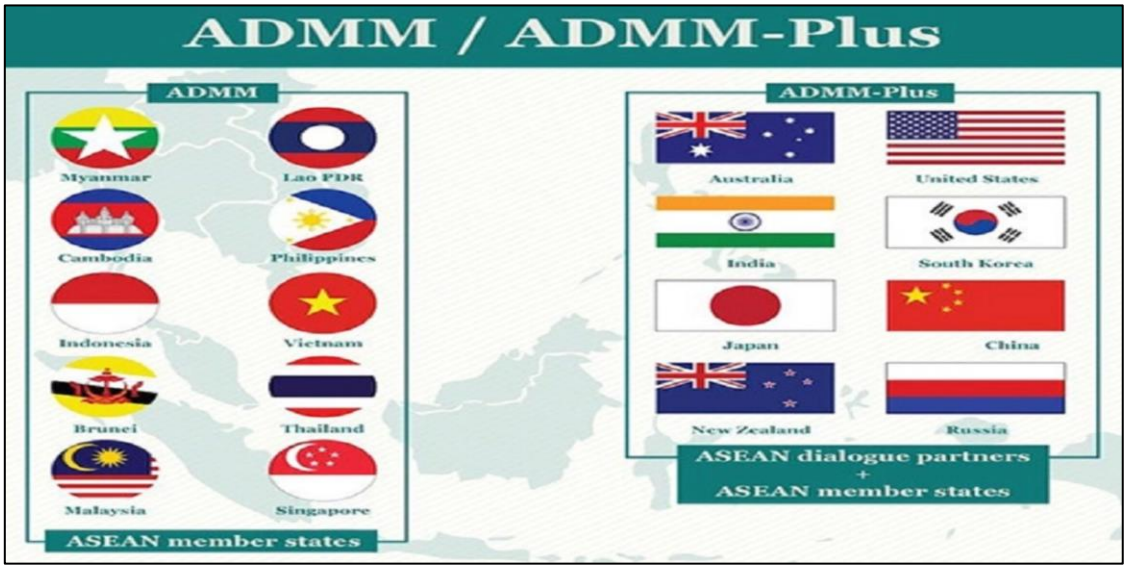
According to the International Union for Conservation of Nature (IUCN) Red List Criteria, Uniyala keralensis is classified as Data Deficient (DD). This status indicates that there is insufficient information to assess its risk of extinction. Continued research is essential to understand its ecology and conservation needs.

Importance of the Discovery

The discovery of Uniyala keralensis puts stress on the significance of biodiversity in the Western Ghats. It marks the need for ongoing exploration and research in these biodiversity hotspots. The new species adds to the existing knowledge of the region's flora and contributes to conservation efforts.

ASEAN DEFENCE MINISTERS' MEETING-PLUS (ADMM-PLUS)

The 14th ASEAN Defence Ministers' Meeting-Plus (ADMM-Plus) Experts Working Group (EWG) on Counter-Terrorism will take place in New Delhi on March 19-20, 2025. India and Malaysia will co-chair this meeting. This is the first time India will co-chair the EWG on Counter-Terrorism.



Background of ADMM-Plus

The ADMM-Plus is a security platform that includes ASEAN members and its eight dialogue partners. Established in 2010, it focuses on enhancing security cooperation in the Asia-Pacific region. The platform promotes stability and peace through dialogue and collaboration. Focuses on seven areas:

1. Counter-Terrorism
2. Maritime Security
3. Humanitarian Assistance & Disaster Management
4. Peacekeeping Operations
5. Military Medicine
6. Humanitarian Mine Action
7. Cyber Security

Role of EWGs

- Each EWG is co-chaired for 3 years (one ASEAN country + one dialogue partner).
- Co-chairs define objectives, policies, and guidelines for their cycle.
- At least two meetings per year and one practical exercise in the final year.

Participants

- **10 ASEAN members**: Brunei, Cambodia, Indonesia, Lao PDR, Malaysia, Myanmar, Philippines, Vietnam, Singapore, and Thailand.
- **8 dialogue partners**: Australia, New Zealand, South Korea (RoK), Japan, China, USA, and Russia + India.
- **Others**: Timor Leste and the ASEAN Secretariat.

Objectives of ADMM-Plus

The ADMM-Plus has several objectives. It aims to build capacity among ASEAN member states to tackle shared security challenges. The platform promotes mutual trust and transparency among defence establishments. It also seeks to enhance regional peace and stability through collaborative efforts.

Purpose of the Conclave

The primary goal of the conclave was to strengthen counter-terrorism strategies among member states. It aimed to share experiences and establish a robust framework for cooperation. The discussions also addressed the evolving security landscape in the region.

Focus Areas of Discussion

The discussions revolved around several key areas. These included counter-terrorism, maritime security, peacekeeping operations, humanitarian mine action, and cyber security. The EWG aimed to create a strategic plan for activities from 2024 to 2027.

NEW MICROPROCESSORS DEVELOPED BY INDIA

Recently, the Indian Space Research Organisation (ISRO) announced the development of two advanced 32-bit microprocessors, Vikram 3201 and Kalpana 3201.

These processors are designed for space applications and represent leap in India's indigenous technology capabilities. They were developed in collaboration with the Semiconductor Laboratory (SCL) in Chandigarh.

Background of Microprocessor Development
ISRO has a history of developing microprocessors for its launch vehicles. The Vikram 1601, a 16-bit microprocessor, has been operational since 2009. The new Vikram 3201 is an upgraded 32-bit version, fabricated using 180nm CMOS technology at SCL. This initiative aligns with India's "Make in India" campaign, promoting self-reliance in critical technology sectors.

Vikram 3201 Specifications
Vikram 3201 is India's first fully indigenous 32-bit microprocessor. It is designed to withstand the harsh conditions of space. The
processor supports floating-point computations and offers high-level language compatibility, particularly with Ada. The in-house development of software tools further enhances its functionality.

Kalpana 3201 Specifications
Kalpana 3201 is based on the SPARC V8 architecture. It is a Reduced Instruction Set Computer (RISC) microprocessor, compatible with open-source software. This design facilitates integration with various software development tools, making it versatile for different applications.

Testing and Validation
The Vikram 3201 microprocessor has undergone rigorous testing. It was validated in the Mission Management Computer during the PSLV Orbital Experimental Module (POEM-4) mission. This successful validation puts stress on its reliability for future space missions.

Additional Developments
ISRO, in collaboration with SCL, also developed other critical devices. These include a Reconfigurable Data Acquisition System and a Multi-Channel Low Drop-out Regulator Integrated Circuit. These innovations contribute to the miniaturisation of avionics systems in launch vehicles.

Future Prospects
The successful development of these microprocessors marks a milestone in India's space technology. It encourages Atmanirbharata, or self-reliance, in high-reliability microprocessors. This advancement is expected to enhance the capabilities of India's space missions and contribute to future technological innovations.

BONGOSAGAR 2025

The India-Bangladesh Naval Exercise Bongosagar 2025 took place in March 2025 in the Bay of Bengal. This event marked step in strengthening the bilateral military relationship between India and Bangladesh.

The exercise aimed to enhance maritime security through collaborative operations and interoperability between the two navies. INS Ranvir, a destroyer from the Indian Navy, and BNS Abu Ubaidah, a frigate from the Bangladesh Navy, were the main vessels involved.

Objectives of the Exercise

The primary goal of Bongosagar 2025 was to improve joint operational capabilities. This included enhancing coordination for maritime security challenges. The exercise aimed to facilitate seamless operations between the Indian Navy and the Bangladesh Navy.

Nature of Activities

The exercise featured a diverse range of activities. These included surface firing exercises, tactical manoeuvres, and underway replenishment.

Additional operations like Visit-Board-Search-Seizure (VBSS) drills and communication exercises were also conducted. These activities were designed to test and improve the operational readiness of both navies.

Importance of Interoperability

Interoperability between the two navies was a key focus. This capability allows for coordinated responses to maritime threats. Enhanced communication and tactical planning were essential for achieving effective joint operations.

Strengthening Bilateral Ties

Bongosagar 2025 played important role in encouraging closer ties between India and Bangladesh. The exercise aimed to build trust and confidence in joint operations. This collaboration is vital for addressing regional security concerns.

Regional Security Implications

The exercise contributes to the broader Security and Growth for All in the Region (SAGAR) initiative. This initiative promotes stability and security in the Indian Ocean region. By enhancing naval cooperation, both countries aim to counter global security challenges effectively.

Historical Context

This was the fourth edition of the Bongosagar exercise and the fifth Coordinated Patrol (CORPAT). Previous exercises laid the groundwork for this enhanced collaboration. Continuous engagement through such exercises is essential for maintaining maritime security in the region.

ASTRA MISSILE

Recently, the Aeronautical Development Agency (ADA) successfully conducted a test launch of the Astra missile from the Light Combat Aircraft (LCA) AF MK1 prototype. This milestone event occurred off the coast of Chandipur, Odisha. The successful launch demonstrated the missile's accuracy and effectiveness, marking progress in India's indigenous defence capabilities.

About the Astra Missile

- The Astra is a Beyond Visual Range Air-to-Air Missile (BVRAAM) developed by the Defence Research and Development Organisation (DRDO).
- It is designed to engage targets at distances exceeding 100 kilometres.
- The missile features advanced guidance and navigation systems, enabling it to strike targets with exceptional precision.

Integration with Indian Air Force

- The Astra missile has already been inducted into the Indian Air Force (IAF).
- It enhances India's air defence capabilities . The missile is also being integrated with the indigenous LCA Tejas and the Indian Navy's Mig-29 in a phased manner.

Test Launch Details

The test launch showcased a direct hit on a flying target. All subsystems of the missile performed optimally, meeting mission parameters and objectives. This successful trial confirms the missile's advanced capabilities. The maiden test of the Astra from the LCA was conducted in August 2023.

Collaboration and Development

The development of the Astra missile involved collaboration among various organisations. The teams from ADA, DRDO, Hindustan Aeronautics Limited (HAL), and other agencies worked tirelessly. The project also received support from the Centre for Military Airworthiness and Certification (CEMILAC) and the Directorate General of Aeronautical Quality Assurance (DG-AQA).

Significance of BVR

Beyond Visual Range (BVR) missiles are critical for modern air combat. They allow fighter aircraft to engage enemy targets from distances beyond 20 nautical miles or 37 kilometres. This capability provides a tactical advantage, enabling aircraft to neutralise threats without direct exposure to enemy air defences.

H7N9

The United States has recently reported its first outbreak of the H7N9 bird flu since 2017. This outbreak occurred on a poultry farm in Mississippi and has raised concerns regarding food safety and public health.

The H7N9 strain is known for its high mortality rate in humans. It has prompted discussions on the potential for a new pandemic, especially as another strain, H5N1, continues to affect poultry and humans globally.

Avian influenza, commonly known as bird flu, is caused by influenza viruses that primarily infect birds. These viruses can occasionally infect humans and other animals. The H7N9 strain was first identified in 2013 in China. It has been linked to severe respiratory illness in infected individuals.

This virus does not appear to transmit easily from person to person, and sustained human-to-human transmission has not been reported.

Impact on Poultry and Food Prices

The spread of avian influenza has devastated poultry flocks around the world. This disruption has led to increase in egg prices, reaching record highs. The economic impact extends beyond poultry to other livestock, including dairy cows, raising concerns about broader food supply issues.

Human Health Risks

The H7N9 virus has a high fatality rate among infected individuals. Since its emergence, 616 deaths have been reported from 1,568 confirmed cases.

Most human infections have been linked to exposure to live poultry or contaminated environments. However, the World Health Organisation has indicated that the virus does not easily transmit from person to person.

Government Response and Preparedness

The response to bird flu outbreaks has faced challenges. In the early days of the Trump administration, coordination between federal and state agencies weakened.

However, efforts have since resumed. The United States Department of Agriculture has allocated $1 billion to combat the spread of avian influenza. This funding aims to enhance surveillance and response capabilities.

INCENTIVE SCHEME FOR PROMOTION OF LOW-VALUE BHIM-UPI TRANSACTIONS (P2M)

The scheme will cover UPI Person-to-Merchant (P2M) transactions and will be implemented at an outlay of 1,500 crore for FY 2024-25.

Key Highlights of the Scheme

Incentive: Incentive of 0.15% per transaction will be provided for transactions upto Rs.2,000 pertaining to category of small merchants.

Incentive is paid to the Acquiring bank (Merchant's bank) and shared with Issuer Bank (Customer's Bank), Payment Service Provider Bank and App Providers.

Objective:

Promotion of indigenous BHIM-UPI platform.

Achieving the target of 20,000 crore total transaction volume in FY 2024-25.

Penetration of UPI in tier 3 to 6 cities, especially in rural & remote areas by promoting innovative products such as feature phone based (UPI 123PAY) & offline (UPI Lite/UPI LiteX) payment solutions.

Key Benefits: Enable small merchants to avail of UPI services at no additional cost.

Earlier, in 2020, Merchant Discount Rate was made zero for BHIM-UPI transactions.

♦ MDR refers to the rate at which merchants are charged for accepting Debit Card and Credit Card payments and funds paid via net banking and Digital Wallets.

About Bharat Interface for Money (BHIM), 2016

A payment app that enables easy transactions using the Unified Payments Interface (UPI).

UPI is a system that powers multiple bank accounts into a single mobile application (of any participating bank) Developed by National Payments Corporation of India (NPCI) to drive digital payments.

IN HOUSE JUDICIAL INQUIRY

Chief Justice of India (CJI) Sanjiv Khanna initiated an unprecedented three-member in-house inquiry into the conduct of Delhi High Court judge Justice Yashwant Varma following allegations that wads of currency notes were found in his official residence where a fire broke out on March 14.

Background: –

- The internal inquiry of the judiciary follows a process that is distinct from that of impeachment under the Constitution.

Key takeaways

- The process of impeachment of a judge of the Supreme Court is laid down in Article 124(4) of the Constitution of India.
- Article 218 says the same provisions shall apply in relation to a judge of the High Court.
- Under Article 124(4), a judge can be removed by Parliament through a laid-down procedure on only two grounds: "proved misbehaviour" and "incapacity".
- For an impeachment motion against an SC or HC judge to be accepted, at least two-thirds of those "present and voting" in both Lok Sabha and Rajya Sabha must vote in favour of removing the judge — and the number of votes in favour must be more than 50% of the "total membership" of each House.
- If Parliament passes such a vote, the President will pass an order for the removal.

In-house procedure

- The need for an internal mechanism was felt in 1995, after allegations of financial impropriety surfaced against then Bombay High Court Chief Justice A M Bhattacharjee.
- After the Bombay Bar Association moved a resolution calling for the judge's resignation, a writ petition was filed before the Supreme Court seeking to restrain the Bar from protesting.
- While hearing the case, SC noted there was no process to hold a judge accountable for "bad conduct inconsistent with the high office", when such conduct did not meet the high bar of impeachment set by Article 124 of the Constitution. To fill the gap, the SC decided to formulate an in-house procedure.
- SC constituted a five-member committee to devise the procedure "for taking suitable remedial action against judges, who by their acts of omission or commission, do not follow the accepted values of judicial life, including the ideals expressed by the Supreme Court in the Restatement of Values of Judicial Life".
- The committee submitted its report in 1997. It was adopted with amendments in a full court meeting of the SC in 1999.

Process revisited in 2014

- In 2014, when a woman additional district and sessions judge from Madhya Pradesh filed a complaint of sexual harassment against a sitting judge of the High Court, the SC revisited its in-house procedure.
- SC summarised and explained this process through "seven steps" (Additional District and Sessions Judge 'X' v. Registrar General High Court of Madhya Pradesh).
- Essentially, this process begins when the Chief Justice of a HC, the CJI, or the President of India receives a complaint. The CJ of the HC or the President will forward the complaint to the CJI.
- This complaint can be dropped at any stage, if not found serious enough by the CJI. However, to test the veracity of the complaint, the CJI can seek a preliminary report from the CJ of the HC concerned.

- If the CJ of the HC, in the preliminary report, recommends a "deeper probe", the CJI may examine the recommendation and the statement of the judge facing the accusations, and then decide to order a three-member inquiry, comprising two other HC Chief Justices and one HC judge.
- Once the inquiry has been concluded, the committee will submit its report to the CJI. This report must state whether:
    - There is any substance to the allegations against the concerned judge and,
    - If there is sufficient substance to the allegations, whether they are serious enough that they require initiation of removal proceedings against the judge.
- If the committee concludes that the misconduct is not serious enough to warrant removal proceedings, the CJI may "advise" the judge concerned, and direct that the committee's report be placed on record.
- If the committee decides that the allegations are serious enough to initiate removal proceedings, the CJI will advise the concerned judge to resign or retire voluntarily.
- If the judge does not accept, the CJI will direct the HC Chief Justice not to assign any judicial work to said judge.
- If the judge does not abide by the CJI's advice to resign or retire, the CJI will inform the President and the Prime Minister of the committee's finding that removal proceedings should be initiated.

LAPIS LAZULI

Background: –

- Lapis lazuli has been found in many countries but the highest quality rock comes from Afghanistan's Badakhshan province.

Key takeaways

- Lapis Lazuli is a deep-blue metamorphic rock prized for its intense color and historical significance.
- Historical Name – Sanskrit: Rajavarta ("king's gem").
- Key Features :
    - Color: Deep royal blue (intensity of the blue depends on the amount of sulfur in lazurite) with golden specks (due to pyrite inclusions).
    - Composition: Primarily lazurite, with calcite (white) and pyrite (golden flecks).
    - Hardness: 5–5.5 on the Mohs scale (relatively soft).
    - Geological Formation: Found in metamorphic limestone deposits.
- Major Sources
    - Afghanistan: The finest quality, especially from the Sar-e-Sang mines in Badakhshan (used since ancient times).
    - Chile: Lower-grade material with more calcite.
    - Russia: Lake Baikal region.
    - Other locations: Pakistan, Myanmar, Italy, and the USA.

Historical Importance

- Traded via the Silk Road to Egypt, Mesopotamia, and India.
- Afghanistan's lapis lazuli reached Harappan cities (evidence from Lothal).

'THE UNITED NATIONS WORLD WATER DEVELOPMENT REPORT 2025

Soaring temperatures are leading to rapid and largely irreversible changes in the mountain ranges of the world, according to a new UNESCO report.

Background: –

- The 'The United Nations World Water Development Report 2025 – Mountains and glaciers: Water towers' was released to mark the first-ever World Day for Glaciers on March 21.

Key takeaways

Glacier Melting

- Glaciers are disappearing faster than ever, with the last three-year period seeing the largest glacial mass loss on record.
- Scientists measure the state of a glacier by measuring how much snow falls on it and how much melt occurs every year, according to the World Glacier Monitoring Service (WGMS).
- Since 1975, glaciers, which do not include the Greenland and Antarctica ice sheets, have lost more than 9,000 billion tonnes of mass.
- Warmer temperatures are not the sole cause of glacier melting. Increased wildfires and dust storms deposit black carbon and particulates on ice, darkening surfaces and enhancing solar radiation absorption. This alters the surface energy balance, accelerating melt rates, especially in high solar radiation areas, as noted in the UNESCO report.

Accelerating Permafrost Thaw

- Permafrost is any ground that stays frozen — 0 degrees Celsius or lower — for at least two years straight.
- Rising temperatures are melting permafrost rapidly. Mountain soils with permafrost contain approximately 4.5% of the global soil organic carbon, according to the UNESCO report. As the permafrost thaws, this organic carbon is released into the atmosphere, exacerbating climate change.
- Moreover, permafrost in mountain regions also stabilises rock slopes, moraines (material left behind by a moving glacier), and debris-covered slopes. However, due to permafrost melting, slopes become more vulnerable to erosion, increasing the risk of landslides and other hazards.

Decline In Snow Cover:

- According to the UNESCO report, snow cover in nearly all mountain regions has reduced, especially in spring and summer, with an expected further decrease in the coming decades.
- Snow cover is the total of all the snow and ice on the ground. It includes new snow and previous snow and ice that have not melted.

Erratic Snowfall Patterns:

- In some regions, the elevation at which rainfall transitions to snowfall is shifting upwards due to atmospheric warming, the UNESCO report says. "Lower elevations and warmer climates are therefore undergoing greater decreases in snow cover depth and duration," the report added.
- Some mountain ranges are experiencing an increase in rainfall over snowfall, shorter snow duration, earlier snowmelt, and a reduction in snow-covered areas.

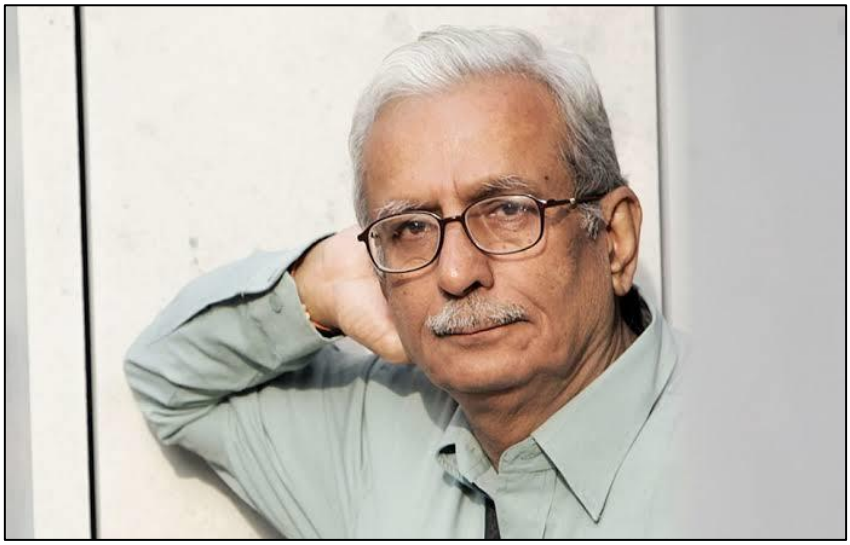
Why is this significant?

- Mountains, which cover 33 million sq km of the Earth's surface, are crucial for sustaining life. For instance, around 2 billion people downstream depend on mountains for freshwater resources from melting glaciers.

- "Water flows from mountains will become more erratic, uncertain and variable. Changes in the timing and volume of peak and low flow periods, increased erosion and sediment loads will affect water resources downstream, in terms of quantity, timing and quality," the UNESCO report said.
- Glacier melting and permafrost thaw also increase the risk of glacial lake outburst floods (GLOFs). GLOFs are sudden and catastrophic floods caused by the failure of natural dams, usually formed by glacial moraines or ice, which contain glacial lakes.
- According to WGMS, melted ice of glaciers accounts for 25 to 30% of the currently observed increase in global sea levels.

JNANPITH AWARD

Vinod Kumar Shukla wins the 59th Jnanpith Award, India's highest literary honour.



Background:

- The 88-year-old author of novels such as Naukar ki Kameez, about a clerk forced to submit to professional hierarchies, and Khilega Toh Dekhenge, about a teacher who arrives in a village with eccentric residents, is the 12th Hindi writer to win the award and the first from Chhattisgarh.

Key takeaways

- The Jnanpith Award is India's highest literary honor, awarded annually by the Bharatiya Jnanpith to an author for outstanding contributions to Indian literature.
- Instituted in 1961, the award is bestowed only on Indian writers writing in Indian languages included in the Eighth Schedule to the Constitution of India and English, with no posthumous conferral.
- Until 1982 the award was presented for a specific work; thereafter, it was given for a writer's overall contribution to literature. Since then the award has typically been given every year to one author, although in some years it has been jointly offered to two.
- The first Jnanpith Award was given in 1965 to G. Sankara Kurup for his contributions to Malayalam literature.
- The prize carries a cash award, a citation, and a bronze replica of Vagdevi (Saraswati), the goddess of learning.

ERI SILK

Minister of State for the Ministry of Development of North Eastern Region, Dr. Sukanta Majumdar, in a written reply to the Rajya Sabha, stated that the North Eastern Handicrafts and Handlooms Development Corporation Ltd. (NEHHDC) has received the Oeko-Tex certification from Germany for eri silk.

Background: –

- Eri silk, known for its eco-friendly and sustainable qualities, is gaining recognition in the luxury textile market. Its chemical-free production and ethical sourcing make it a preferred choice for conscious consumers and premium brands.

Key takeaways

- Eri silk is a unique, non-violent (Ahimsa) silk produced mainly in Northeast India, particularly in Assam, Meghalaya, Nagaland, and Manipur. Unlike other silk varieties, Eri silk is obtained without killing the silkworm, making it eco-friendly and sustainable.

Origin and Production

- Silkworm: Eri silk is derived from the domesticated silkworm Samia ricini, which feeds on castor leaves.
- Ethical Process: Unlike traditional silk production, Eri silk allows the moth to emerge from the cocoon naturally, making it a cruelty-free alternative.
- Geographical Indication (GI): Eri silk has been recognized as a GI-tagged product from Assam, highlighting its authenticity and regional importance.

Characteristics

- Texture: Eri silk has a woolly, cotton-like texture, making it distinct from other silks like Mulberry or Tussar.
- Durability: Known for its strength and elasticity, Eri silk is highly durable and resistant to wrinkles.

MUSK VS FREE SPEECH

Elon Musk-owned X (formerly Twitter) has challenged the government's use of Section 79(3)(b) of the Information Technology Act, 2000 (IT Act) to moderate and order the removal of content on social media.

Background: –

- X has asked the court to direct the government that orders to block content can only be issued under Section 69A of the Information Technology (IT) Act, 2000, and not by invoking Section 79(3)(b) of the Act.

Key takeaways

- In Shreya Singhal v Union of India (2015), the Supreme Court struck down Section 66A of the IT Act which criminally punished, among other things, sending false information "for the purpose of causing annoyance or inconvenience". SC said the provision was vague, giving the government unchecked powers to restrict the freedom of speech.
- After this decision, Section 69A of the IT Act became the primary law governing the matter. This section allows the Centre to issue orders blocking "any information generated, transmitted, received, stored or hosted in any computer resource", but unlike 66A, it contains safeguards against misuse.
- For blocking content under Section 69A, the Centre must deem it "necessary". This "necessity", however, is only justifiable under grounds provided in Article 19(2) of the Constitution which "imposes reasonable restrictions" on the freedom of speech "in the interests of the sovereignty and integrity of India, the security of the State, friendly relations with Foreign States, public order, decency or morality or in relation to contempt of court, defamation or incitement to an offence".
- The Centre must record its reasons in the blocking order so that it can be challenged in court.

Govt's use of Section 79

- The SC in Shreya Singhal also clarified the application of another provision — Section 79 of the IT Act. The provision is a "safe harbour" measure that exempts an "intermediary" (such as X) from liability for information published on the platform by a "third party", that is, users of the platform.
- But Section 79(3)(b) states that the intermediary could be held liable if it does not immediately remove such unlawful information "upon receiving actual knowledge, or on being notified by the appropriate Government or its agency".
- The apex court limited the scope of this provision, ruling that the requirement under Section 79(3)(b) will only kick in once a court order has been passed to that effect, or the government issues a notification stating that the content in question is related to grounds provided in Article 19(2).
- But in 2023, the Ministry of Electronics and Information Technology (MeitY) issued a directive to all ministries, state governments, and the police saying that information blocking orders could be issued under Section 79(3)(b).
- A year later in 2024, MeitY launched a portal called "Sahyog" where the aforementioned authorities could issue and upload blocking orders.
- X's challenge argues that MeitY's orders are an attempt to "bypass the multiple procedural safeguards" provided under Section 69A. The petition relies upon the SC's ruling in Shreya Singhal, and says that content can only be censored though the process given under Section 69A or through a court order.

OKJOKULL GLACIER

Two satellite photos taken 33 years apart show the disappearance of Okjökull glacier in Iceland that was the first ice mass to be declared dead as a result of human-caused climate change.

Background: –

- Because of inconsistent monitoring and debates about the true sizes of glaciers, it is unclear exactly how many glaciers have been lost due to climate change, according to the National Snow and Ice Data Center.

Key takeaways

- Okjökull, often referred to as "Ok Glacier," was a glacier located atop the Ok volcano in western Iceland.
- In the late 19th century, it spanned approximately 16 square kilometers. However, due to rising global temperatures, it experienced significant shrinkage over the 20th century. By 2012, its area had diminished to merely 0.7 square kilometers.
- In 2014, glaciologists declared Okjökull "dead," as it no longer possessed the characteristics essential for a glacier, notably the ability to move under its own weight. This marked the first instance in Iceland where a glacier lost its status due to climate change.

Additional Information

- In 2023, Iceland created the world's first iceberg graveyard, where ice-like headstones were constructed for the 15 major glaciers listed on the Global Glacier Casualty List, all of which are either dead or critically endangered, according to the United Nations.
- The Global Glacier Casualty List (GGCL) is a comprehensive initiative aimed at documenting glaciers worldwide that have disappeared or are critically endangered due to climate change.
- Established in 2024 through a collaboration between Rice University, the University of Iceland, the Iceland Glaciological Society, the World Glacier Monitoring Service, and UNESCO, the GGCL seeks to preserve the names and stories of these glaciers, highlighting their cultural, economic, and environmental significance.

MUNICIPAL BONDS

Municipal bond issuances in India are expected to raise more than ₹1,500 crore in the Financial Year (FY) 2025-FY2026, primarily driven by the Government's push, according to a report by ICRA.

Background: –

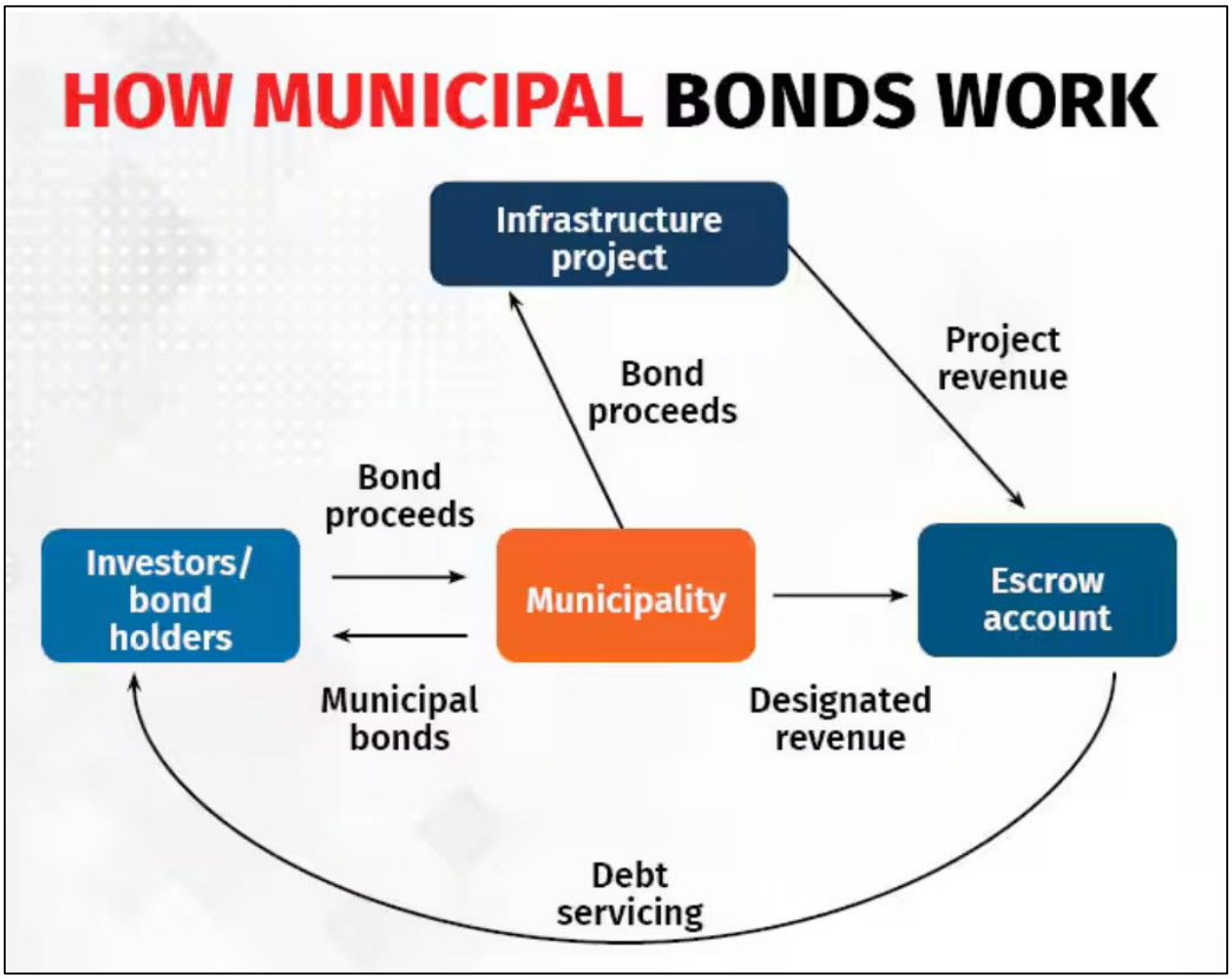
- The municipal bond market in India has gained significant traction in recent years, especially since FY2018.
- Approximately 17 municipal bonds worth ₹2,600 crore have been issued since FY2018, with an average bond size of ₹150 crore.

Key takeaways

- Municipal bonds are debt instruments issued by Urban Local Bodies (ULBs) to raise funds for urban infrastructure development.

Growth of the Municipal Bond Market in India

- Since FY2018, the total amount raised through municipal bonds has exceeded ₹2,600 crore, a significant rise compared to less than ₹1,000 crore raised between FY1998-FY2005.



- Government Initiatives:
  - In 2015, SEBI introduced the "Issue and Listing of Debt Securities by Municipalities" Regulations, defining the status of municipal bonds and increasing investor interest.
  - In FY2018, the Government of India (GoI) launched an incentive scheme, offering ₹13 crore per ₹100 crore bond issuance, encouraging ULBs to adopt this financing mechanism.
- Credit Ratings & Payment Security:
  - All municipal bonds issued since FY2018 have had strong structured payment mechanisms, helping them secure an AA rating, despite varying credit profiles of ULBs.
  - The structured mechanisms have ensured timely repayment and enhanced investor confidence.

Challenges in the Municipal Bond Market

- High Dependence on Government Grants: ULBs still rely heavily on state and central grants.
- Lack of Financial Transparency: ULBs struggle with timely financial disclosures and proper documentation, affecting investor confidence.
- Liquidity & Secondary Market Absence: Municipal bonds lack a secondary market, limiting their tradability and attractiveness to investors.
- Regulatory Compliance: The high compliance burden makes it difficult for smaller ULBs to issue bonds.
- Weak Credit Quality: Many ULBs lack robust financial management, making them less creditworthy in capital markets.

SQUAD ALLIANCE

Bearing the brunt of China's aggressive expansionist tactics in the South China Sea, the Philippines now wants India to join the relatively new `Squad' strategic alliance.

Background:

- Pointing to China's "illegal, coercive and disruptive Grey Zone" tactics to claim territory and build militarised artificial islands in the South China Sea region, Philippines chief of staff of armed forces said countries like India and South Korea should also be included in the squad.

Key takeaways

- The "Squad Alliance" is an informal grouping that focuses on security in the South China Sea, aiming to counter China's growing influence and aggressive activities in the region.
- The current members include the Philippines, Japan, Australia, and the United States. The alliance emphasizes military collaboration, intelligence sharing, and joint maritime exercises within the South China Sea.
- The 'Squad' was conceptualized during the Shangri-La Dialogue in June 2023, with defense chiefs from the member countries convening to discuss collaborative security measures.
- The primary objectives of the 'Squad' include:
    - Maritime Security: Conducting joint maritime patrols and exercises to ensure freedom of navigation and adherence to international maritime laws.
    - Intelligence Sharing: Enhancing information exchange among member nations to improve situational awareness and coordinated responses to regional threats.
    - Capacity Building: Strengthening defense capabilities through collaborative training and resource sharing.
- Notably, in April 2024, the 'Squad' nations conducted cooperative maritime patrols within the Philippines' exclusive economic zone, marking a significant development amid ongoing tensions in the South China Sea.
- Recognizing the evolving security dynamics, the Philippines has advocated for the inclusion of India and South Korea into the 'Squad' alliance.

Distinction from the 'Quad'

- While the 'Quad' (Quadrilateral Security Dialogue) comprises the United States, Japan, Australia, and India, focusing on broader strategic cooperation in the Indo-Pacific, the 'Squad' is more narrowly centered on traditional security and defense collaboration, particularly addressing maritime security challenges in the Western Pacific.

ACID LEAK IN ZAMBIA

Zambian officials are confronting the devastating fallout of an acid leak at a Chinese-operated mine, which has polluted a vital river and could impact millions of people.

Background: –

- The incident occurred on February 18 when a dam storing acidic waste from a copper mine in northern Zambia collapsed.

- Investigators estimate that around 50 million litres of waste, containing strong acid, dissolved solids, and heavy metals, flowed into a tributary linked to the Kafue River, Zambia's most important waterway.

Key takeaways

- Zambian President has appealed for expert assistance, describing the spill as a crisis that endangers both people and wildlife along the Kafue River, which runs over 1,500 kilometres through the nation.
- China dominates Zambia's copper mining sector; Zambia is among the top 10 copper producers globally.

- Zambia is heavily indebted to China ($4 billion debt) and had to restructure loans after defaulting in 2020.
- Chinese-owned mines in Zambia have been criticized for poor environmental and safety standards.

About Zambia

- Location: Landlocked country in Southern Africa.
- Borders: Tanzania (N), Malawi (NE), Mozambique (SE), Zimbabwe (S), Botswana (S), Namibia (SW), Angola (W), DR Congo (NW).
- Capital: Lusaka

Geography & Natural Resources

- Major Rivers:
  - Zambezi River (forms Victoria Falls, a UNESCO World Heritage site).
  - Kafue River (key water source, recently polluted by mining spill).
  - Luangwa River (supports biodiversity & agriculture).
- Climate: Tropical Savanna (distinct wet and dry seasons).
- Copper (key economic driver) – Zambia is Africa's 2nd largest copper producer (after DR Congo).

INDIA'S FIRST FROZEN ZOO

Darjeeling's Padmaja Naidu Himalayan Zoological Park has launched India's first frozen zoo. This innovative facility aims to preserve the genetic material of endangered Himalayan species.

In collaboration with the Centre for Cellular and Molecular Biology in Hyderabad, the zoo will store DNA samples in liquid nitrogen at minus 196 degrees Celsius. This initiative seeks to protect species like red pandas and snow leopards from extinction.

About Frozen Zoo

- A frozen zoo is a type of genetic cryobank that safely stores DNA, sperm, eggs, and embryos from endangered animals.
- The main purpose is to protect their genetic variety.
- This helps species that are at risk of disappearing.
- The materials are kept at very low temperatures to keep them usable.

Genetic Preservation

The process involves collecting tissue samples from both wild and captive animals, including those that die naturally or in accidents. A special lab has been set up at the zoo for this purpose. Samples are first stored at -20°C, and then preserved long-term at -196°C. This process started in July last year.

Future Applications

The genetic material in the frozen zoo can help in breeding endangered animals. Scientists can use surrogate mothers to bring back species. Techniques like artificial insemination, embryo transfer, and in-vitro fertilization may also be used. These methods are important as animal habitats shrink and climate change affects ecosystems.

Global Context

Frozen zoos exist in a few places worldwide, with fewer than a dozen in total. The first one was set up in 1975 by Kurt Benirschke at the Institute for Conservation Research in San Diego. Today, it holds over 8,400 samples from 800 species. A major breakthrough in 1999 saw the first successful transfer of a frozen embryo between species. At the Audubon Institute, an African wild cat kitten named Jazz was born to a domestic tabby cat.

Importance of Genetic Conservation

The frozen zoo in Darjeeling plays important role in conservation efforts. It aims to prevent species like the red panda and snow leopard from becoming extinct. By preserving their genetic blueprints, future generations can potentially restore these species to their natural habitats. This initiative marks the importance of genetic conservation in the face of ongoing environmental challenges.

HEAT ACTION PLANS

Most of the heat action plans (HAPs) put forth by multiple Indian cities lack long-term strategies to tackle the growing threat of extreme heat in the country, a new study has found. It also said that the cities having such strategies did not implement them effectively.

Background: –

- The study, 'Is India Ready for a Warming World? How Heat Resilience Measures Are Being Implemented for 11% of India's Urban Population in Some of Its Most At-Risk Cities', was carried out by the Sustainable Futures Collaborative (SFC), a New Delhi-based research organisation.

Key takeaways

- A heat action plan is essentially an early warning system and preparedness plan for extreme heat events. The Plan presents immediate as well as longer-term actions to increase preparedness, information-sharing, and response coordination to reduce the health impacts of extreme heat on vulnerable populations.

- In response to a Lok Sabha question, Minister of Science and Technology and Minister of Earth Sciences had said that the National Disaster Management Authority (NDMA) was implementing HAPs in 23 states that were prone to heatwave conditions, in collaboration with state authorities.

- The response also showed that between 2020 and 2022, deaths due to heat stroke had increased in the country. While the number stood at 530 in 2020, it jumped to 730 in 2022. However, in 2024, it came down to 269 suspected heatstroke deaths and 161 confirmed heatstroke deaths, according to the NDMA.

How was the new study carried out?

- For their analysis, the researchers identified cities with populations over 1 million (based on the 2011 Census) that were expected to experience the largest increases in dangerous heat index values, which combine temperature and humidity, relative to their recent historical average.

- These cities were Bengaluru, Delhi, Faridabad, Gwalior, Kota, Ludhiana, Meerut, Mumbai, and Surat. The researchers conducted interviews with government officials responsible for implementing heat actions in these nine cities.

- They also interviewed representatives from disaster management, health, city planning, labour departments, as well as city and district administrators.

What did the study find?

- The analysis found that although all the nine cities had short-term emergency measures — such as access to drinking water and changing work schedules — long-term actions were either entirely absent or poorly implemented.

- Long-term measures such as "making household or occupational cooling available to the most heat-exposed, developing insurance cover for lost work, expanding fire management services for heat waves, and electricity grid retrofits to improve transmission reliability and distribution safety" were missing in all the cities, the study said.

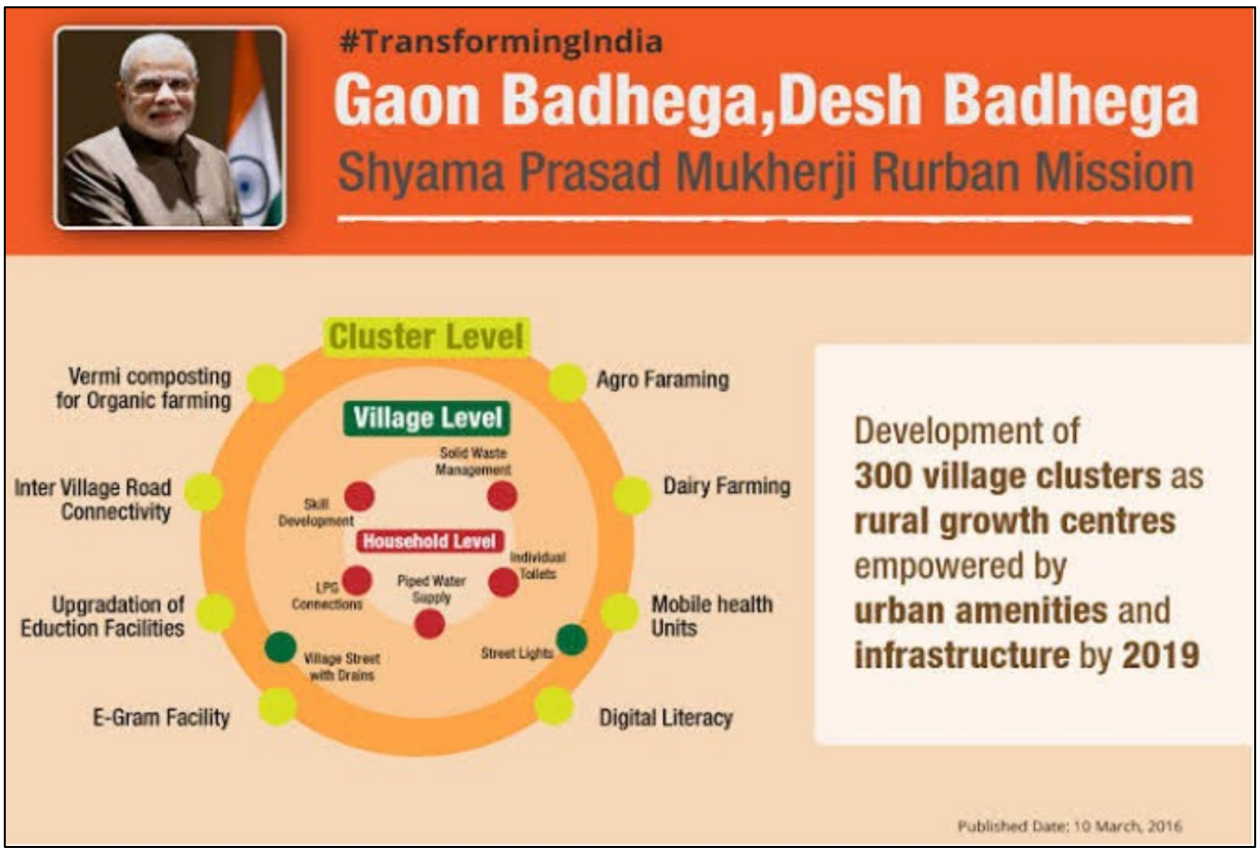
- The cities implemented actions like the expansion of urban shade and green cover and the creation of open spaces that dissipate without focusing on populations and areas that experience the greatest heat risk, according to the analysis.

- It also noted that the long-term strategies being implemented focus largely on the health system, and not on the prevention. The study highlighted that there was a requirement that more funding was required to implement long-term actions.

SHYAMA PRASAD MUKHERJI RURBAN MISSION (SPMRM)

Recently, Telangana has achieved notable success in the Shyama Prasad Mukherji Rurban Mission (SPMRM). As of January 25, 2025, it ranks fourth in India with a score of 91.87.

This mission, initiated by the Government of India, aims to develop 300 clusters of villages. It strives to bridge the rural-urban divide while maintaining rural community life.



About SPMRM

The SPMRM targets the development of rural areas by providing urban-like facilities. It encompasses 34 states and union territories. The mission focuses on creating clusters that improve local economies and living standards. Telangana's commitment includes 17 clusters with an investment of ₹1885.11 crores.

Funding Mechanism

Funding for the mission is primarily achieved through the convergence of various government schemes. At least 70% of the total investment comes from these schemes. The Ministry of Rural Development also provides Critical Gap Funding (CGF), covering up to 30% of the investment. Maximum allocations are ₹30 crores for non-tribal clusters and ₹15 crores for tribal clusters.

Cluster Characteristics

A 'Rurban cluster' comprises geographically connected villages. Clusters have populations ranging from 25,000 to 50,000 in plain areas and 5,000 to 15,000 in hilly or tribal regions. They are designed around growth centres like large villages or block headquarters, facilitating economic transformation.

Development Focus

SPMRM aims to enhance sectors like agriculture, tourism, animal husbandry, and fisheries. Essential services include skill development, health facilities, upgraded schools, sanitation, piped water supply, and waste management. Digital citizen service centres are also part of the initiative.

Rural Population Context

India's rural population stands at 833 million, about 68% of the total population. The rural demographic has grown by 12% from 2001 to 2011. Many rural areas consist of clusters of settlements, offering potential for economic growth and competitive advantages.

Mission Vision and Outcomes

The mission's vision is to develop clusters that preserve rural community life while providing urban amenities. The main objectives include stimulating local economic development, enhancing basic services, and creating well-planned Rurban clusters. Expected outcomes involve bridging the rural-urban divide, reducing poverty and unemployment, and attracting investment to rural areas.

AFRICAN PENGUINS

The African penguin, a unique species endemic to southern Africa, is facing alarming population declines. Recent legal actions in South Africa have initiated measures to protect these penguins and their breeding sites.

A landmark court ruling on March 18, 2025, imposed a 10-year ban on commercial fishing around six vital breeding colonies. This decision aims to address the critical threats to their food supply, particularly from sardine and anchovy fishing.

Population Decline and Threats

- The African penguin population has decreased by over 60% since the 1980s.
- Factors contributing to this decline include overfishing, oil pollution, and predation.
- The number of breeding pairs plummeted from over 140,000 in the late 1950s to just over 25,000 by 2009.
- Conservationists warn that without intervention, these penguins could face extinction in the wild by 2035.

Recent Legal Measures

The High Court of South Africa's ruling prohibits commercial fishing within a 20 km radius of breeding colonies on Robben Island and Bird Island. More stringent restrictions apply to other colonies.

The ruling is a response to a legal action initiated by conservation organisations, including Birdlife South Africa and SANCCOB. It aims to ensure the long-term survival of the African penguin and other marine species.

Breeding and Nesting Habits

African penguins breed year-round, with peak periods occurring between March and May in South Africa. They typically form monogamous pairs, with 80-90% remaining together across breeding seasons.

Females lay two eggs, which both parents incubate for 38-40 days. After hatching, parents alternate feeding and guarding duties until the chicks are old enough to join crèches for protection.

Physical Characteristics

African penguins are smaller than their Emperor counterparts. They measure 60-68 cm in length and weigh between 3.7-4 kg. Their distinctive black and white plumage includes a black band across the breast. Juveniles have grey feathers, while adults possess a characteristic circle of featherless skin around their eyes.

Feeding and Predation

The diet of African penguins consists mainly of squid, sardines, and anchovies. They face threats from various predators, including leopards, feral cats, and birds such as the kelp gull.

At sea, seals and sharks also prey on them. This complex food web marks the importance of marine ecosystem management in conservation efforts.

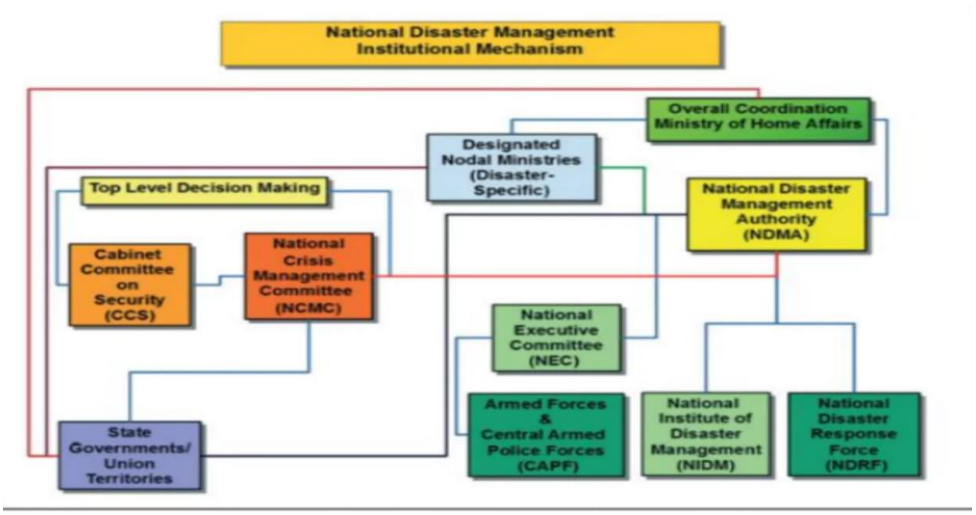
Conservation Status

African penguins have been classified as endangered by the IUCN since 2010. The recent court ruling is step towards reversing their population decline. It not only benefits the penguins but also supports other marine predators and the sustainability of fish species crucial to the ecosystem.

DISASTER MANAGEMENT AMENDMENT BILL 2024

The Disaster Management (Amendment) Bill 2024 has recently been passed by the Indian Parliament. It aims to enhance the functionality of disaster management authorities at various levels.

The Bill amends the Disaster Management Act of 2005, which established the National Disaster Management Authority (NDMA), State Disaster Management Authorities (SDMA), and District Disaster Management Authorities.



Objective

The primary goal of the Bill is to strengthen the disaster management framework in India. It seeks to shift from a reactive approach to a proactive one. This includes risk reduction and improved real-time monitoring through artificial intelligence.

Structure of Disaster Management Authorities

The Bill outlines the roles of NDMA, SDMA, and District Disaster Management Authorities. Each authority is responsible for disaster management at their respective levels. NDMA operates at the national level while SDMA and district bodies function at state and local levels respectively.

Disaster Management Plans

Under the amended Bill, NDMA and SDMA are mandated to prepare disaster management plans themselves. Previously, this task was assigned to National and State Executive Committees. These plans are crucial for coordinating disaster response and recovery efforts.

New Functions of Authorities

The Bill introduces new responsibilities for NDMA and SDMA. They are now required to assess disaster risks, provide technical support to lower authorities, and develop national and state disaster databases. These databases will contain vital information on disaster risks, funding, and preparedness plans.

Urban Disaster Management Authorities

The Bill allows state governments to create Urban Disaster Management Authorities. These authorities will focus on disaster management in urban areas, particularly in state capitals and cities with municipal corporations.

State Disaster Response Force

The Bill empowers state governments to establish a State Disaster Response Force (SDRF). The SDRF will have defined functions and terms of service. This move aims to enhance local disaster response capabilities.

Statutory Status to Existing Committees

The Bill grants statutory status to existing bodies like the National Crisis Management Committee (NCMC) and the High Level Committee (HLC). The NCMC will coordinate responses to major disasters while the HLC will oversee financial assistance during disasters.

Appointments and Regulations

The Bill allows NDMA to specify the number and type of officers it requires. This change aims to streamline the appointment process and enhance operational efficiency.

Legislative Context and Debates

The passage of the Bill was met with various opinions. Supporters brought into light its potential to improve disaster management. Critics raised concerns about centralisation and funding allocation, particularly to opposition-ruled states.

SONIC WEAPONS

Sonic weapons have emerged as contentious tools in crowd control. Recent protests in Serbia have brought into light their potential use. President Aleksandar Vucic denied allegations of using a banned sonic weapon against demonstrators.

This raises questions about the legality and ethics of such devices. Sonic weapons can produce loud sounds designed to disperse crowds. They have been in use since the early 1990s, with military applications becoming prominent in the 2000s.

Definition and Functionality

Sonic weapons, also known as acoustic weapons, emit loud sounds over long distances. They can produce both audible and inaudible sound waves. These devices are capable of delivering voice messages or other sounds. The technology has evolved since its inception, focusing on crowd control and military applications.

Types of Sonic Weapons

There are three primary types of sonic weapons:

- **Long-range Acoustic Device (LRAD):** Developed by Genasys Inc, LRAD can project sound intelligibly over 8,900 metres. It can reach sound levels of 160 decibels, causing pain and potential hearing damage.
- **Mosquito:** This device emits high-pitched sounds that are painful to younger individuals, typically teenagers and those in their twenties. It is ineffective for older adults due to natural hearing loss.
- **Infrasonic Weapon:** A newer technology that produces low-frequency sounds. These sounds are typically inaudible but can induce disorientation and pain. Research is ongoing regarding its effectiveness as a weapon.

Health Effects of Sonic Weapons

Sonic weapons can inflict serious harm. They may cause eardrum damage and hearing loss. Prolonged exposure can lead to tinnitus, headaches, and nausea. The severity of these effects depends on distance from the source and duration of exposure. Human rights organisations express concern over the indiscriminate nature of these weapons. They can harm not only targeted individuals but also bystanders and law enforcement personnel.

Ethics

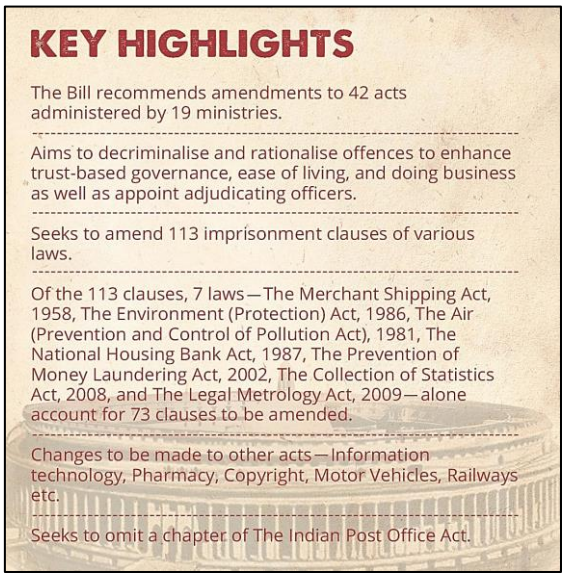
The use of sonic weapons raises legal and ethical questions. In many jurisdictions, their use is restricted or banned. The potential for causing harm to innocent individuals complicates their deployment in crowd control situations. Critics argue that sonic weapons can violate human rights, particularly during protests.

Military Applications

Sonic weapons have been adopted by military forces, notably in conflict zones like Iraq. Their ability to control crowds without lethal force is appealing. However, the consequences of their use remain a subject of debate. The long-term health effects on individuals exposed to sonic weapons are not well-documented.

JAN VISHWAS BILL 2.0

The Jan Vishwas Bill 2.0, introduced by the Union government, aims to reform India's complex legal framework. This initiative is part of a broader effort to enhance the ease of living for citizens. The Vidhi Centre for Legal Policy has brought into light the extensive nature of India's laws. With 370 laws containing criminal provisions, many punishments seem disproportionate to the offences. The focus is now shifting towards decriminalisation and creating laws that are humane and enforceable.



Criminal Provisions

India's legal system comprises 882 central laws, of which 370 include criminal provisions. These laws cover 7,305 crimes. A number of these offences carry severe penalties, including life imprisonment and the death penalty. However, many laws govern everyday activities, such as parenting and community gatherings. The current legal landscape is overwhelming and often punitive.

Excessive Criminalisation

The existing laws often impose harsh penalties for minor infractions. Citizens can face imprisonment for trivial actions, such as failing to report animal deaths or improperly storing e-cigarettes. These laws blur the lines between serious and minor offences. This creates confusion and allows for arbitrary enforcement by authorities.

Disproportionate Punishments

There is a notable disparity in punishment severity. For instance, the Mental Healthcare Act prescribes the same jail time for minor record-keeping failures as for serious medical offences. Such inconsistencies undermine the justice system and distort societal incentives. Citizens often remain unaware of these laws, leaving them vulnerable to exploitation.

Impacts on Society

The harsh legal provisions disproportionately affect the poor. Conviction rates are low, and the judicial process itself can be punitive. Many individuals suffer from the consequences of laws that do not align with societal norms. The Jan Vishwas Bill aims to address these issues by promoting a legal framework that is fair and comprehensible.

Principles of Legal Reform

The Vidhi report outlines four key principles for reform:

1. Protection of societal values
2. Justifiable harm prevention.
3. Effective legal solutions
4. Proportionality in responses.

These principles are essential for creating laws that serve the public interest and uphold human rights.

Future Directions

The Jan Vishwas Bill 2.0 seeks to establish a legal environment that prioritises restorative justice over punitive measures. The goal is to reduce the number of undertrial prisoners and streamline the legal process. As India strives for progress, the focus must be on creating laws that enhance the quality of life for its citizens.

VLSRSAM

On March 26, 2025, the Defence Research & Development Organisation (DRDO) and the Indian Navy successfully conducted a flight test of the Vertically-Launched Short-Range Surface-to-Air Missile (VLSRSAM). This test took place at the Integrated Test Range (ITR) in Chandipur, Odisha. It marks advancement in India's defence capabilities.

About VLSRSAM

The VLSRSAM is an indigenously developed missile designed for short-range air defence. It is capable of engaging various aerial threats at low altitudes. The missile employs advanced technologies including an indigenous Radio Frequency seeker. This enhances its target acquisition and engagement capabilities.

Flight Test Details

The flight test was executed from a land-based vertical launcher. The missile was aimed at a high-speed aerial target at close range. It successfully demonstrated its Near-Boundary-Low Altitude capability. The missile's agility and accuracy were brought into light during the test, as it executed a high turn rate to destroy the target.

System Components

The test involved multiple components deployed in a combat configuration. These included the missile, Multi-Function Radar, and Weapon Control System. All components operated as expected, validating their effectiveness in real-time conditions. Flight data was captured using various range instruments developed at ITR Chandipur.

Significance of the Test

Defence Minister Rajnath Singh praised the achievement, calling it a testament to India's defence research and development capabilities. He noted that the VLSRSAM will serve as a force multiplier for the Indian Navy. This development strengthens India's position in regional security dynamics.

Future Implications

The successful test of the VLSRSAM is expected to enhance the technological edge of the Indian Armed Forces. It reflects India's commitment to self-reliance in defence manufacturing. The missile's modern technologies are anticipated to boost air defence mechanisms.

FIRESAT PROJECT

The first satellite under the FireSat project was launched by Google recently. It has successfully entered low Earth orbit. The project aims to create a constellation of over 50 satellites that will use artificial intelligence to identify and track wildfires as small as 5×5 metres.

About FireSat

FireSat is designed to enhance early detection of wildfires. The first satellite was built by Muon Space, a California aerospace startup. It is equipped with six-band multispectral infrared cameras. These cameras are specifically tuned to detect heat signatures from wildfires from considerable distances.

Goals and Phases of the Project

The initial phase involves launching three satellites by next year. This three-satellite constellation will revisit any point on Earth twice daily. The long-term goal is to expand to 50 satellites. This will allow for high-resolution imagery of the Earth every 20 minutes. Such frequent updates are crucial for emergency responders to act swiftly.

Collaborative Efforts and Funding

FireSat is a collaborative initiative involving multiple partners. Key players include Google Research, Muon Space, Earth Fire Alliance, and the Moore Foundation. Google.org has committed $13 million to support the project. This funding is aimed at developing the satellite constellation and the AI technology necessary for effective wildfire monitoring.

Importance of Advanced Detection

Current satellite imagery used for wildfire detection often lacks resolution and is updated infrequently. Traditional aerial photography faces similar limitations. FireSat aims to fill this gap by providing five-metre resolution imagery and real-time updates. This capability is expected to improve the ability to monitor wildfires and their intensity.

Climate Change Impact

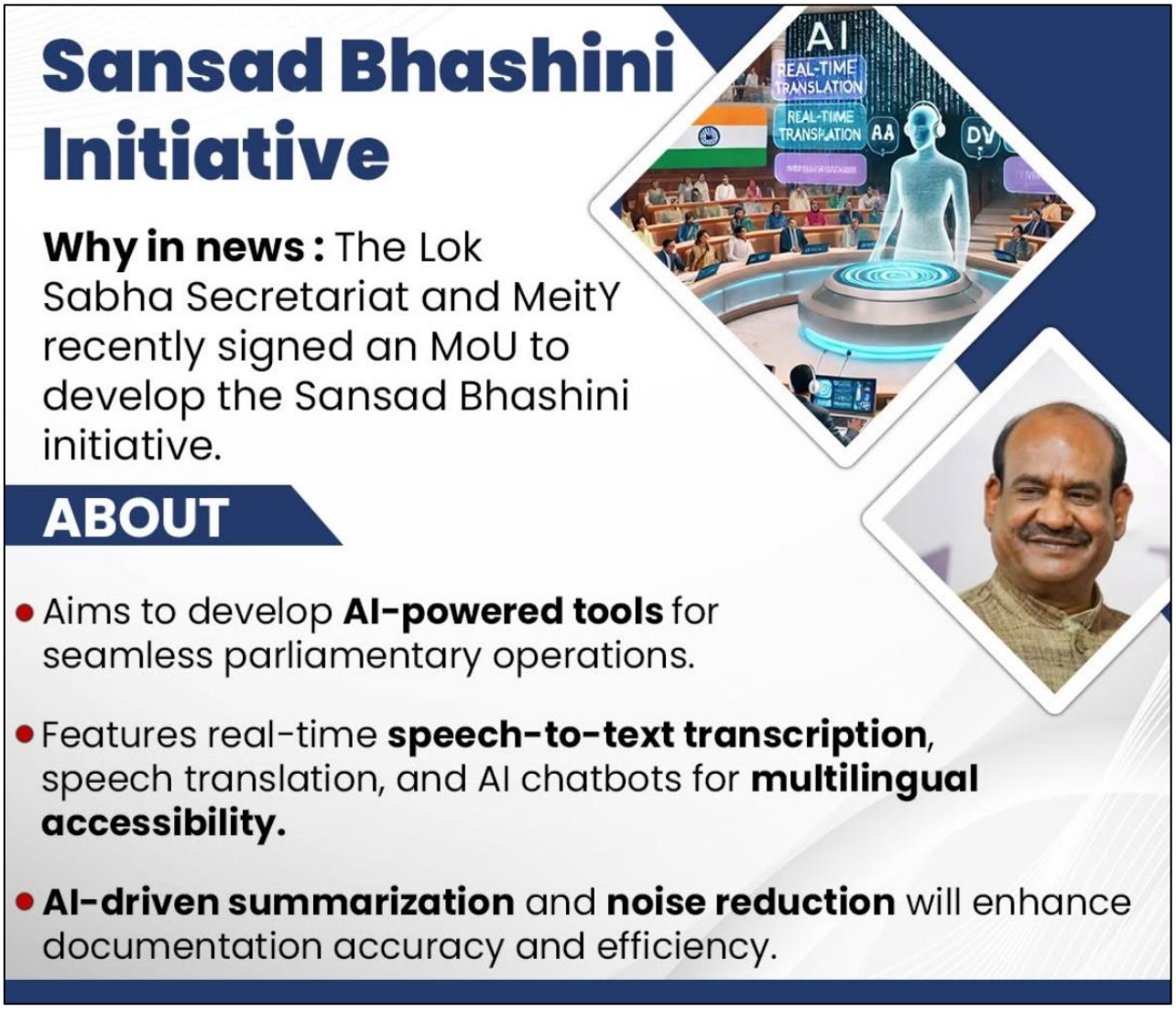
Rising global temperatures due to climate change are increasing the frequency and severity of wildfires. Recent wildfires in southern California resulted in loss of life and economic damage. The urgency for advanced detection systems like FireSat is telld by these events.

Future Prospects

The FireSat initiative holds promise for revolutionising wildfire management. By leveraging cutting-edge technology, it aims to provide timely information to disaster management authorities. This could lead to more effective prevention and mitigation strategies in the face of escalating wildfire threats.

SANSAD BHASHINI

The Lok Sabha Secretariat and MEITY signed an agreement for 'Sansad Bhashini,' an initiative that uses AI to support multiple languages and improve parliamentary work. The initiative is designed to improve access to parliamentary documents for Members of Parliament (MPs) and citizens alike.



Key Features of the Initiative

The initiative includes several innovative features. One major aspect is the seamless translation of parliamentary documents. This includes legacy debates, committee meetings, and agenda files. Another important feature is the AI-powered chatbot. This tool will assist MPs and officials in retrieving procedural rules and documents quickly.

Real-Time Speech Translation

Sansad Bhashini incorporates real-time speech translation capabilities. This allows parliamentary discussions to be instantly available in multiple languages. The system will convert spoken debates into written text. It will also provide live transcription, enhancing the accessibility of parliamentary discussions.

Automatic Summarisation of Debates

An automatic summarisation feature will assist in quicker decision-making. This will help in better record-keeping by providing concise summaries of lengthy debates. The summarisation will aid MPs and researchers in accessing relevant information swiftly.

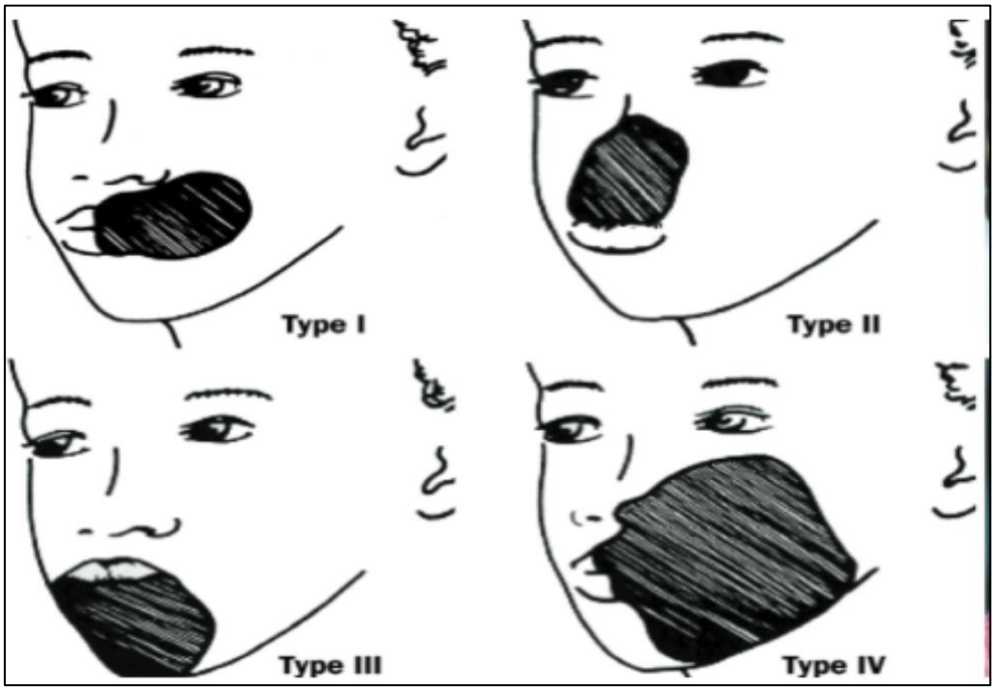
Benefits of Sansad Bhashini

The Sansad Bhashini will enhance the efficiency of parliamentary operations. MPs will find it easier to access necessary documents. The initiative will also promote transparency and inclusivity in governance. By making information available in various languages, it will engage a broader audience.

NOMA DISEASE

Noma, also known as cancrum oris, is a severe, gangrenous disease primarily affecting children aged 2 to 6 years. It is classified as a neglected tropical disease by the World Health Organization (WHO) as of December 2023. Noma is most prevalent in sub-Saharan Africa but has also been reported in parts of Asia and the Americas.

The disease is characterised by rapid progression, often leading to severe disfigurement and social stigma.



Pathogenesis

- Noma's development is linked to non-specific polymicrobial organisms.
- The primary risk factors include malnutrition, poor oral hygiene, underlying infections, and extreme poverty.
- Children with weakened immune systems, including those suffering from diseases like HIV, are particularly vulnerable.
- The condition often arises during periods of nutritional vulnerability, such as weaning.

Stages of Noma

The WHO classifies noma into five clinical stages:

- Stage 0 – Simple gingivitis
- Stage 1 – Acute necrotising gingivitis
- Stage 2 – Oedema
- Stage 3 – Gangrene
- Stage 4 – Scarring
- Stage 5 – Sequelae

The disease typically begins with an intraoral ulcer or gingivitis, which can escalate rapidly if left untreated.

Treatment Approaches

Early detection is crucial for effective treatment. At the acute necrotising gingivitis stage, interventions include improved oral hygiene, antibiotics, and nutrition supplements.

Proper treatment can prevent long-term complications. However, survival rates are low; approximately 15% of children survive acute noma. Survivors often face severe disfigurements, requiring reconstructive surgery and ongoing rehabilitation.

Global Response and Challenges

Accurate estimations of noma's prevalence are difficult due to high case fatality rates, weak health systems, and social stigma. The WHO's historical data from 1998 suggested a global incidence of 140,000 cases per year, but the true burden remains largely unknown.

The WHO has initiated programmes to enhance awareness, improve health surveillance, and integrate noma control into broader health initiatives. In 2012, the UN Human Rights Council recognised the neglect surrounding noma as a potential violation of children's rights. Efforts to combat this disease include ensuring food security, vaccinations, and treatment of concurrent illnesses.

Future Directions

The WHO aims to strengthen health systems to better manage and prevent noma. This includes training healthcare workers and increasing community awareness. The integration of noma into existing health frameworks is essential for effective monitoring and intervention.

Thus, noma remains public health challenge, particularly in impoverished regions. Continued advocacy and resource mobilisation are critical for combating this neglected disease.

CHANDRAYAAN-4

Chandrayaan-4 is India's fourth lunar mission, set to launch in October 2027. The Indian Space Research Organisation (ISRO) aims to achieve a remarkable feat by not only soft landing on the Moon but also collecting lunar samples and returning them to Earth. This mission represents advancement in India's space exploration capabilities.

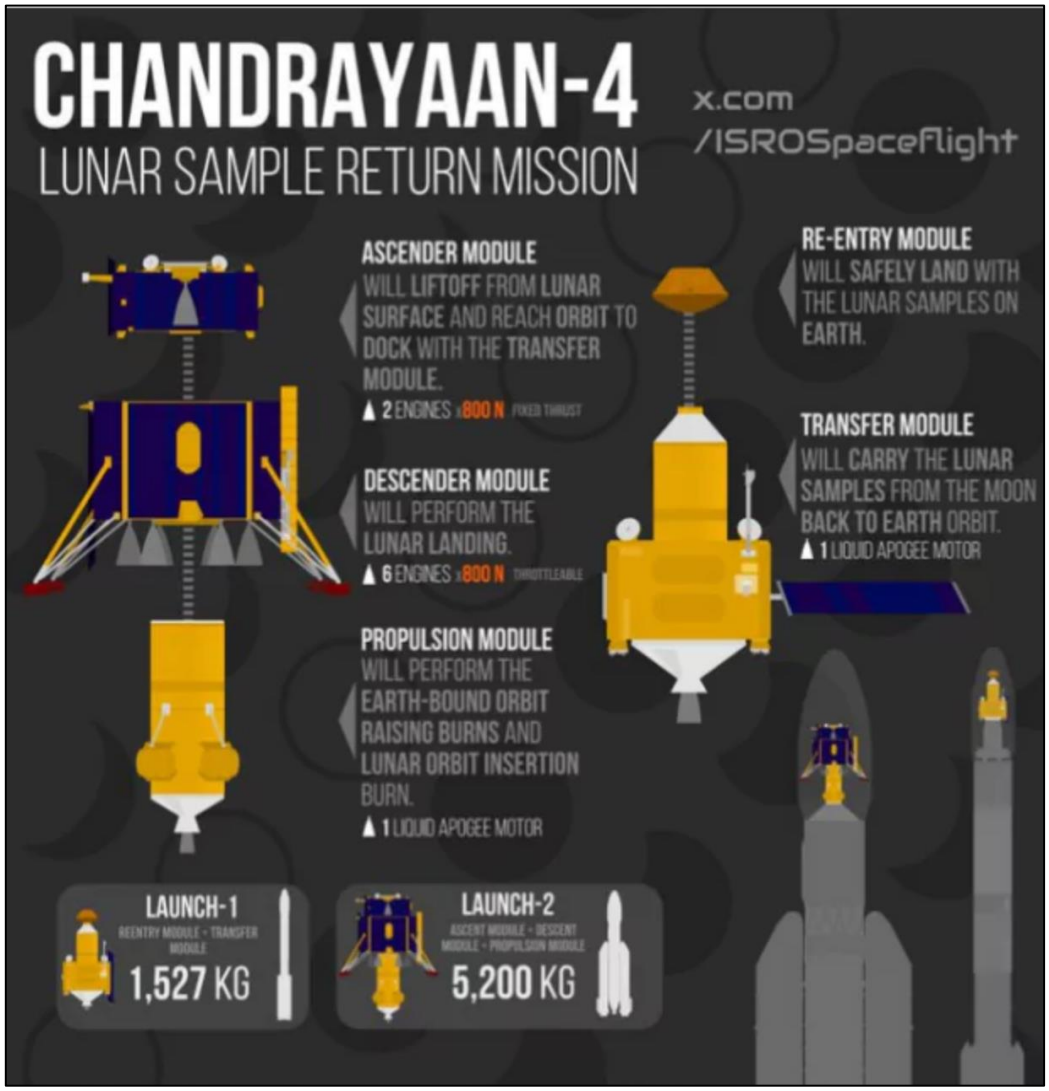
Mission Details

Chandrayaan-4 will consist of two crafts, each weighing approximately 4,750 kg. Instead of a single massive craft, ISRO will use two LVM3 rockets for launch. The mission will involve intricate docking and undocking procedures in space, enhancing India's technological expertise.

Funding and Goals

The Indian Government has allocated Rs 2,104 crores (around $240 million) for this mission. The primary objective is to collect samples from the Moon's southern polar regions, an area of great scientific interest.

This mission aims to join the ranks of the USA, Russia, and China, which have successfully conducted lunar sample return missions.



Importance of Lunar Samples
Lunar samples provide invaluable data for scientific research. While robotic crafts can conduct in-situ studies, they are limited in the equipment they can carry. Returning samples to Earth allows for advanced analysis in sophisticated laboratories, leading to a deeper understanding of the Moon's composition and history.

Technological Innovations
Chandrayaan-4 will demonstrate new technologies, including a Surface Sampling Robot and a drilling mechanism. These advancements will enable the collection of both surface and sub-surface samples. The mission aims to be self-reliant, with all critical technologies developed domestically.
Mission Components and Operations
The mission consists of five modules – the Ascender Module (AM), Descender Module (DM), Re-entry Module (RM), Transfer Module (TM), and Propulsion Module (PM). After launching, the crafts will dock in an elliptical Earth orbit to form an integrated craft. The DM and AM will then perform a powered descent to land on the Moon.
Sample Collection Process
Upon landing, the DM will deploy a robotic arm to scoop lunar samples. A drilling mechanism will gather sub-surface materials. The samples will be securely stored in containers to prevent contamination during their return journey to Earth.

Return Journey to Earth
After sample collection, the AM will ascend to lunar orbit and transfer samples to the RM. The TM and RM will then undock and perform manoeuvres to return to Earth. The RM will separate and execute a ballistic re-entry, landing safely on Earth.

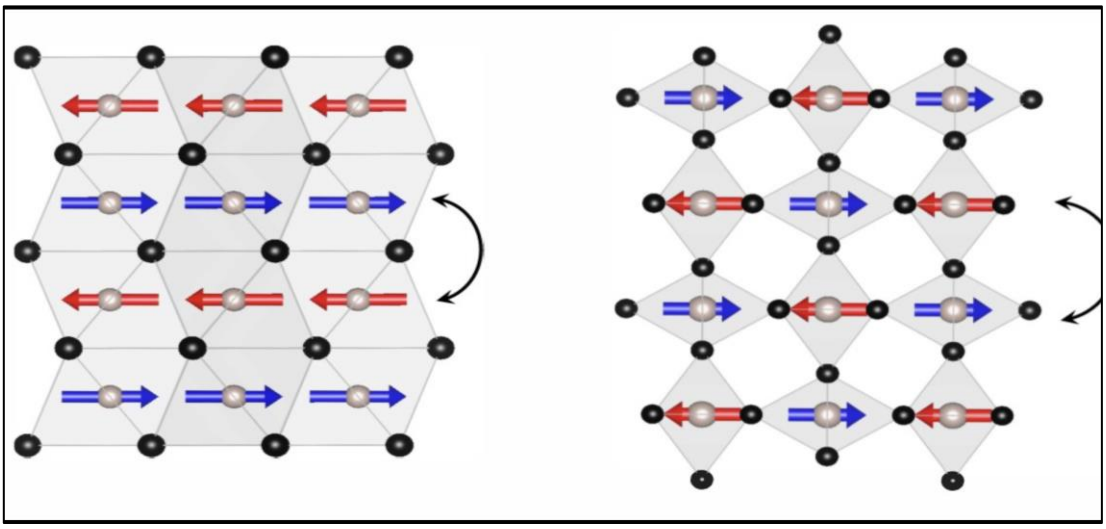
Future Implications
Chandrayaan-4 is expected to pave the way for future manned missions to the Moon. It will also encourage skill development and create employment opportunities in India's space sector. The mission will enhance the capabilities required for landing Indian astronauts on the Moon in the future.

ALTERMAGNETISM

Researchers from Sweden have discovered a new type of magnetism called altermagnetism. This discovery has the potential to enhance electronic device performance. Altermagnetism could increase memory device operation speeds by up to a thousand times. This breakthrough may lead to faster and more efficient technologies.

About Altermagnetism
Altermagnetism features magnetic building blocks that are antiparallel. However, these blocks have a slightly rotated crystal structure. This unique arrangement distinguishes altermagnetism from traditional forms of magnetism.

It combines properties of ferromagnets and antiferromagnets into one material. This results in a magnetic configuration that appears inactive from a distance but exhibits unique characteristics at the nanoscale.



Experimental Confirmation
A synchrotron experiment at the MAX IV facility in Sweden confirmed the properties of altermagnets. This facility produces high-intensity X-rays by accelerating electrons.

Researchers used X-ray illumination on a thin wafer of manganese telluride. They observed patterns of magnetic activity that had not been documented before. This experiment bridged theoretical concepts and practical applications.

Nanoscale Magnetic Patterns
The synchrotron facility allowed scientists to capture nanoscale magnetic patterns. They used a specialized microscope to detect electrons emitted from the material. This process created detailed images of altermagnetic features. The images revealed a distinctive twist in the arrangement of magnetic moments.

Impact on Memory Technology
Magnetic materials are crucial for current memory technology. Many data-storage systems rely on ferromagnets. Altermagnets could replace these materials, enhancing speed and reducing energy consumption. Researchers believe that altermagnets could allow operation speeds up to a thousand times faster than current microelectronic components.

Environmental and Economic Implications
The discovery of altermagnetism may have environmental and economic benefits. Altermagnets can be manufactured in thin films, integrating easily into existing technologies.

They do not rely on rare resources, which could lower costs and reduce the environmental impact of tech manufacturing. This innovation addresses the challenges of efficiency and performance in microelectronics.

Future Research Directions
The next phase involves refining methods to control altermagnetism. Experts note that integrating new discoveries into electronics can take time. However, the findings tell the importance of exploring new avenues in physics. This research may lead to innovative solutions for modern technological challenges.

STOCKHOLM WATER PRIZE

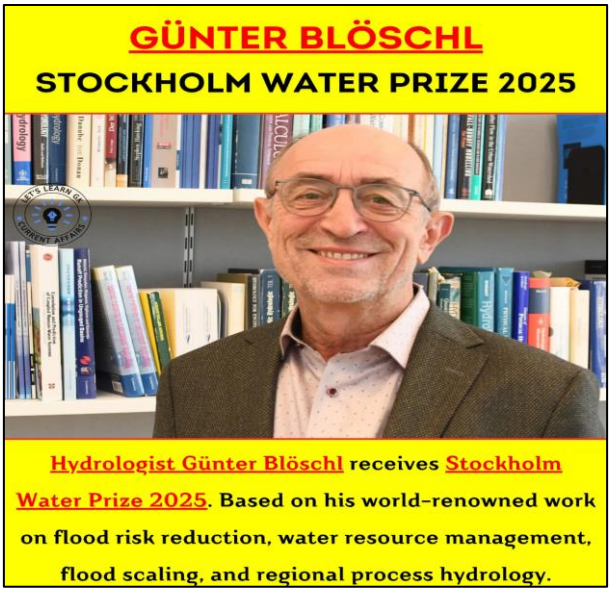
Günter Blöschl, a renowned hydrologist, has been awarded the prestigious Stockholm Water Prize in 2025. This recognition marks his contributions to flood risk management and water resource engineering.

His work has transformed the understanding of floods and their relationship with climate change. Blöschl's extensive research and innovative methodologies have greatly influenced global flood prediction and mitigation strategies.

Contributions to Hydrology

Blöschl's research focuses on climate-induced flood risks. He has developed a comprehensive 500-year flood database that analyses historical flood patterns.

This work has revealed that the last two decades have been more flood-prone than previous centuries. His studies link climate change to increasing flood frequency and severity.



Innovative Research and Findings

Blöschl's innovative hydrological models and databases have reshaped flood risk management. He emphasises that floods are influenced by both climate and regional processes.

His findings advocate for adaptive solutions to flood management, moving away from one-size-fits-all approaches. This perspective is crucial as floods are increasingly recognised as global phenomena.

Sociohydrology and Policy Impact

Blöschl is a co-founder of sociohydrology. This field examines the interactions between society and water resources. His research aids policymakers in making informed decisions regarding flood control and disaster preparedness. His work has led to improved disaster forecasting and water management practices worldwide.

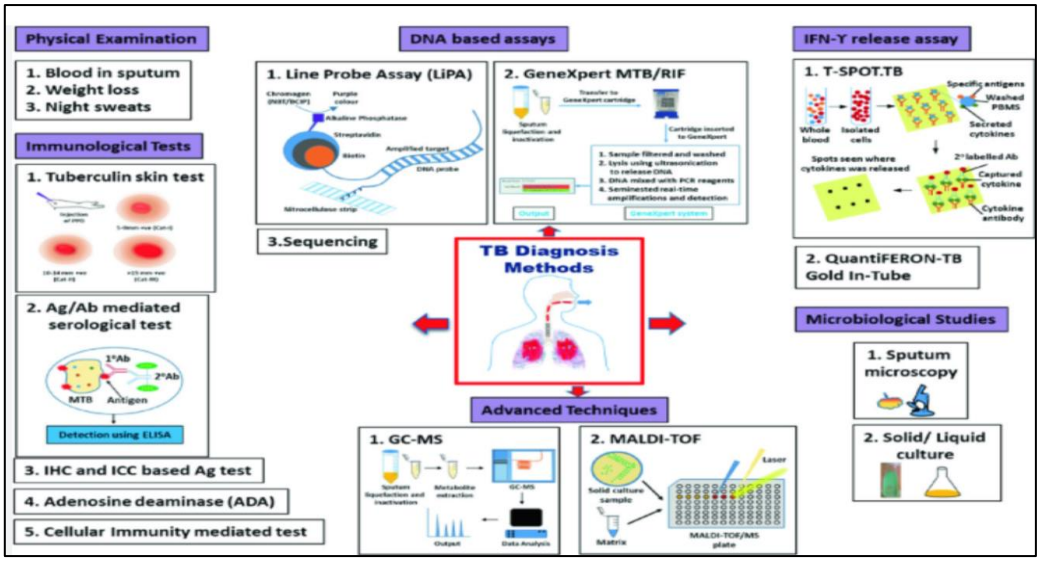
Recognition and Awards

The Stockholm Water Prize, often termed the "Nobel Prize of Water," is awarded annually for contributions to water sustainability. Blöschl will receive this honour from King Carl XVI Gustaf of Sweden during World Water Week in August. His recognition puts stress on his influence on international flood policies and climate adaptation strategies.

DARE2ERAD TB PROGRAMME

The Department of Biotechnology (DBT) has advanced its efforts in combating tuberculosis (TB) through genomic sequencing initiative. As of March 2025, DBT has sequenced 10,000 samples of Mycobacterium tuberculosis, part of a larger goal to sequence 32,500 samples.

This initiative aims to enhance understanding of drug-resistant TB and its unique genomic features in India. The project aligns with the government's ambition to eradicate TB by 2025, ahead of the World Health Organisation's target of 2030.



Dare2eraD TB Programme

Launched on World TB Day in March 2022, the Dare2eraD TB programme focuses on eradicating TB through genomic research. It is a collaborative effort involving the Ministry of Science & Technology and the Ministry of Health & Family Welfare. The initiative includes the Indian Tuberculosis Genomic Surveillance Consortium (InTGS), which plays a very important role in monitoring TB strains.

Objectives of the Programme

The primary objectives are:

- To sequence 32,200 strains of Mycobacterium tuberculosis from active TB patients.
- To create a centralised biorepository of clinical MTB strains in India.
- To map genetic diversity of TB isolates and their treatment outcomes.
- To associate mutations in MTB with drug resistance patterns.
- To assess household transmission dynamics of TB.
- To combine genomic data with epidemiological insights for public health applications.

Expected Outcomes

The initiative aims to:

- Serve as a pilot for routine whole genome sequencing in TB diagnosis.
- Identify prevalent MTB lineages across India.
- Understand the relationship between MTB variations and treatment outcomes.
- Catalogue existing and emerging drug resistance mutations.
- Reveal novel genetic variations associated with drug resistance.
- Inform public health strategies based on transmission dynamics.

Current Statistics and Challenges

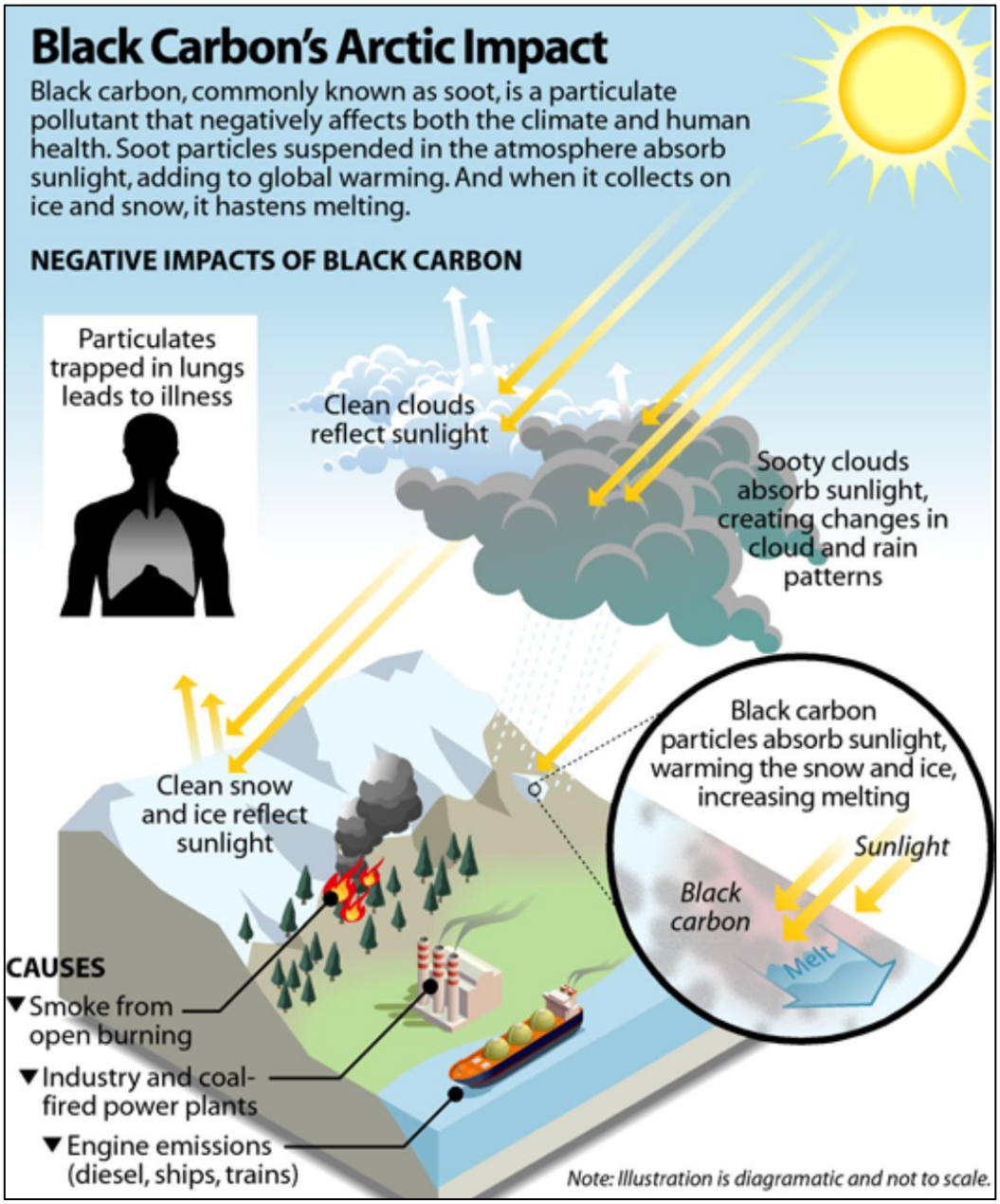
India accounts for 28% of new TB cases globally. In 2022, the TB incidence was 1,990 cases per million, a decline from 2,370 in 2015. However, drug-resistant TB remains challenge, with 7% of sequenced samples showing resistance to a single drug. The majority of TB cases are among individuals aged 18-45, with many being diabetic or underweight.

Future Directions

The DBT aims to complete sequencing of all samples by October 2025. This genomic data will enhance TB management and treatment strategies, contributing to the broader mission of TB elimination in India.

BLACK CARBON

Recent studies highlight the critical role of black carbon in climate change. A report by the Clean Air Fund and the International Centre for Integrated Mountain Development reveals that black carbon, a potent climate pollutant, is responsible for nearly half of global warming.



It poses severe threats to water security for billions, particularly in the fragile ecosystems of the Hindu Kush Himalayas.

What is Black Carbon?

Black carbon is a short-lived climate pollutant formed from incomplete combustion of fossil fuels, biofuels, and biomass. It is a component of fine particulate matter (PM 2.5) and contributes to air pollution. Its presence in the atmosphere accelerates global warming and impacts health.

Sources of Black Carbon Emissions

The primary sources of black carbon emissions include residential solid fuel burning and brick kilns. In the Hindu Kush Himalaya region, these activities account for 45% to 66% of emissions. Other contributors include rice mills and the sugar industry. South Asia alone sees 60% of its emissions from residential fuel combustion.

Health and Economic Impacts

Black carbon emissions have dire health consequences. In 2021, they were linked to over eight million premature deaths globally. Economically, black carbon pollution costs over 6% of global GDP annually, disproportionately affecting the poorest communities.

Effects on Climate and Weather Patterns

Black carbon accelerates the melting of glaciers and ice sheets, particularly in the Arctic and Hindu Kush Himalayas. This contributes to rising sea levels and disrupts monsoon patterns in South Asia, increasing the risk of flooding and extreme weather events. These changes threaten food security and livelihoods.

Barriers to Action

Despite the serious risks posed by black carbon, efforts to combat it are inadequate. The report identifies six major barriers – political, scientific, financial, regulatory, industrial, and communication-related. Current policies only achieve a 3% reduction in emissions, far below the potential 80% reduction achievable by 2030.

Proposed Solutions

The report advocates for urgent measures to reduce black carbon emissions. Suggested actions include:

- Requiring cleaner fuels for ships in Arctic waters.
- Integrating black carbon reduction targets into national clean air policies.
- Implementing comprehensive waste management solutions that reduce both black carbon and methane.
- Increasing funding for research on black carbon's impacts, especially for vulnerable communities.

AIKEYME

The Indian Navy is set to conduct maritime exercise named AIKEYME, aimed at enhancing defence cooperation with several African nations. This initiative aligns with Prime Minister Narendra Modi's vision, termed MAHASAGAR, promoting security and growth across regions.

The exercise will take place off the coast of Dar-es-Salaam, Tanzania, co-hosted by the Indian Navy and the Tanzania Peoples Defence Force.

About AIKEYME

AIKEYME stands for Africa-India Key Maritime Engagement. It is designed to strengthen maritime security and enhance interoperability among participating nations. The exercise will involve ten African countries: Tanzania, Comoros, Djibouti, Eritrea, Kenya, Madagascar, Mauritius, Mozambique, Seychelles, and South Africa.

Objectives of the Exercise

The primary goal is to tackle maritime security threats such as piracy and illegal fishing. AIKEYME aims to encourage collaboration through information sharing and surveillance. The exercise will also focus on capacity building among African navies, enhancing their operational readiness.

Structure of the Exercise

AIKEYME will unfold over six days, comprising two main phases – the harbour phase and the sea phase. The harbour phase includes table-top exercises on piracy and information sharing. It will also feature training in seamanship and visit board search and seizure (VBSS) operations. The sea phase will involve seamanship evolutions, search and rescue operations, small-arms firing, and helicopter operations.

Indian Ocean Ship (IOS) Sagar Initiative

Alongside AIKEYME, the Indian Navy has launched the Indian Ocean Ship (IOS) Sagar initiative. Under this programme, the INS Sunayna will be deployed to the southwest Indian Ocean. This vessel will have a combined crew from India and nine African nations, enhancing joint operational capabilities.

Training and Capacity Building

Personnel from the nine African countries will undergo a two-week training capsule at various naval professional schools in Kochi. This training will prepare them for roles aboard INS Sunayna and ensure effective collaboration during the exercise.

Strategic Importance

AIKEYME and IOS Sagar reflect India's commitment to becoming a preferred security partner in the Indian Ocean Region. These initiatives are crucial in countering China's growing influence in Africa and addressing regional security challenges, including piracy and threats from Houthi rebels.

TAVASYA

India celebrated advancement in its naval capabilities with the launch of the stealth frigate 'Tavasya' on March 22, 2025. This event, held at Goa Shipyard Limited, marks a very important moment in India's indigenous shipbuilding journey. The launch was officiated by Raksha Rajya Mantri Shri Sanjay Seth, denoting India's commitment to self-reliance in defence.

Project 1135.6 series

'Tavasya' is the second vessel in the Project 1135.6 series, also known as the Talwar-class frigates. This project stems from a collaboration between India and Russia, originally based on the Krivak III-class design. The first ships were built in Russia, but the follow-on vessels are now constructed in India, showcasing the country's growing self-sufficiency in defence production.

Specifications of Tavasya

The frigate measures 124.8 meters in length, 15.2 meters in beam, and has a draught of 4.5 meters. It displaces approximately 3,600 tons and can reach speeds up to 28 knots. The vessel employs a combined gas turbine propulsion system for efficient cruising and high-speed manoeuvrability.

Stealth and Combat Capabilities

Designed with radar-absorbing materials, 'Tavasya' boasts a reduced radar cross-section, enhancing its stealth features. It is equipped with advanced weaponry, including the BrahMos supersonic cruise missile system, Shtil-1 surface-to-air missiles, and a 100 mm A-190 naval gun. The ship also includes anti-submarine capabilities with torpedo tubes and rocket launchers.

Indigenous Development

The construction of 'Tavasya' signifies India's progress in localising critical defence technologies. The successful integration of systems like the BrahMos missile and sonar suites reflects the maturity of India's shipbuilding ecosystem. This aligns with the government's vision of Atmanirbhar Bharat, or self-reliant India.

Future Implications

With 'Tavasya' and its sister ship 'Triput', which was launched in July 2024, India is advancing its naval modernization efforts. These frigates are designed for multi-role operations, enhancing the operational flexibility of the Indian Navy across various maritime theatres.

SEA DRAGON 2025

The Sea Dragon 2025 naval exercise is multilateral drill focusing on anti-submarine warfare. It commenced on March 4, 2025, off the coast of Guam, hosted by the United States Navy's 7th Fleet. This exercise involves key naval forces from the United States, Japan, Australia, and South Korea. It aims to enhance coordination in maritime security operations in the Indo-Pacific region.

Historical Evolution of Sea Dragon

The Sea Dragon exercise began in 2019 as a bilateral initiative between the United States Navy and the Royal Australian Air Force. In 2020, it expanded to include Japan, South Korea, and New Zealand. The participation of India started in 2021, marking shift in the exercise's scope. By 2024, it became a Quad + South Korea exercise, excluding Canada.

Participants in Sea Dragon 2025

The 2025 edition features theUnited States Navy, Indian Navy, Japan Maritime Self-Defence Force (JMSDF), Royal Australian Air Force (RAAF), and Republic of Korea Navy (ROKN) Each nation deploys advanced Maritime Patrol and Reconnaissance Aircraft (MPRA) for joint training.

Objectives of Sea Dragon 2025

The primary objectives include:

- Enhancing tactical coordination among participating navies.
- Strengthening anti-submarine warfare (ASW) capabilities.
- Improving maritime security in the Indo-Pacific region.
- Conducting simulated submarine hunting exercises.
- Promoting military cooperation among allied forces.

Nature of the Exercise

Sea Dragon is designed specifically for anti-submarine warfare. Participating nations deploy their MPRA equipped with advanced sensors. The training involves mock drills and real-world submarine detection exercises. Each nation's pilots exchange strategies to improve submarine tracking techniques.

Grading System and Awards

The performance of participating nations is assessed based on their submarine detection efficiency. The nation with the highest points receives the Dragon Belt Award. The JMSDF has won this award since 2022.

Significance for India and the Indo-Pacific

For India, Sea Dragon 2025 enhances anti-submarine warfare skills and strengthens defence ties with Quad nations. It prepares India for future joint naval operations. For the Indo-Pacific region, the exercise ensures stability, promotes freedom of navigation, and enhances regional defence collaboration.

കേരള സ്റ്റേറ്റ് സിവിൽ സർവീസ് അക്കാദമി

Prelims Cum Mains (PCM)

ഡിഗ്രി / പിജി പഠനത്തോടൊപ്പം, ജോലിയോടൊപ്പവും പരിശീലനം

(Regular & Weekend)

Civil Service Foundation Course

ഹയർ സെക്കൻഡറി വിദ്യാർത്ഥികൾക്ക്

Talent Development Course

ഹൈസ്കൂൾ വിദ്യാർത്ഥികൾക്ക്

വിശദ വിവരങ്ങൾക്കും അഡ്മിഷനും kscsa.org എന്ന വെബ്സൈറ്റ് സന്ദർശിക്കുക

PCM CENTRES

Trivandrum	8281098864
Kollam	8281098867
Ernakulam	8281098873
Palakkad	8281098869
Malappuram	8281098868
Kozhikode	8281098870
Kannur	8281098875

OTHER CENTRES

Pathanamthitta	8281098872
Alappuzha	8281098871
Kottayam	8281098863
Idukki	8281098863
Thrissur	8281098874
Wayanad	9496810543
Kasaragod	8281098876

CENTRE FOR CONTINUING EDUCATION KERALA

ANATHARA LANE, CHARACHIRA KOWDIAR PO.THIRUVANANTHAPURAM KERALA. PIN - 695003

DIRECTORCCEK@GMAIL.COM

KSCSA