



KERALA STATE CIVIL SERVICE ACADEMY

Established under Centre for Continuing Education Kerala (CCEK)

MONTHLY CURRENT AFFAIRS MAGAZINE

OCTOBER 2024



Scan the QR code



JAL HI AMRIT SCHEME LAUNCHED

Recently, the **Ministry of Housing and Urban Affairs** approved the **Jal Hi AMRIT Scheme** to promote efficient **water management**.

It is being launched under **AMRUT 2.0 reforms**. It **incentivises** states and Union Territories (UTs) to manage **sewage treatment plants (STPs)** efficiently, ensuring the production of **good-quality, recyclable treated water**.



STPs purify water by removing sewage and contaminants, making it suitable to be released into natural water sources.

Clean Water Credits will be awarded in terms of Star-rating between 3 stars to 5 stars certificate valid for six months.

STPs with Clean Water Credits of 3-star and above in different groups as below will be given financial incentives.

According to the Central Pollution Control Board (March 2021), India's current water treatment capacity is 27.3% and the sewage treatment capacity is 18.6 % (with another 5.2 % capacity in development).

Both Swachh Bharat Mission 2.0 and AMRUT 2.0 focuses on waste water management.

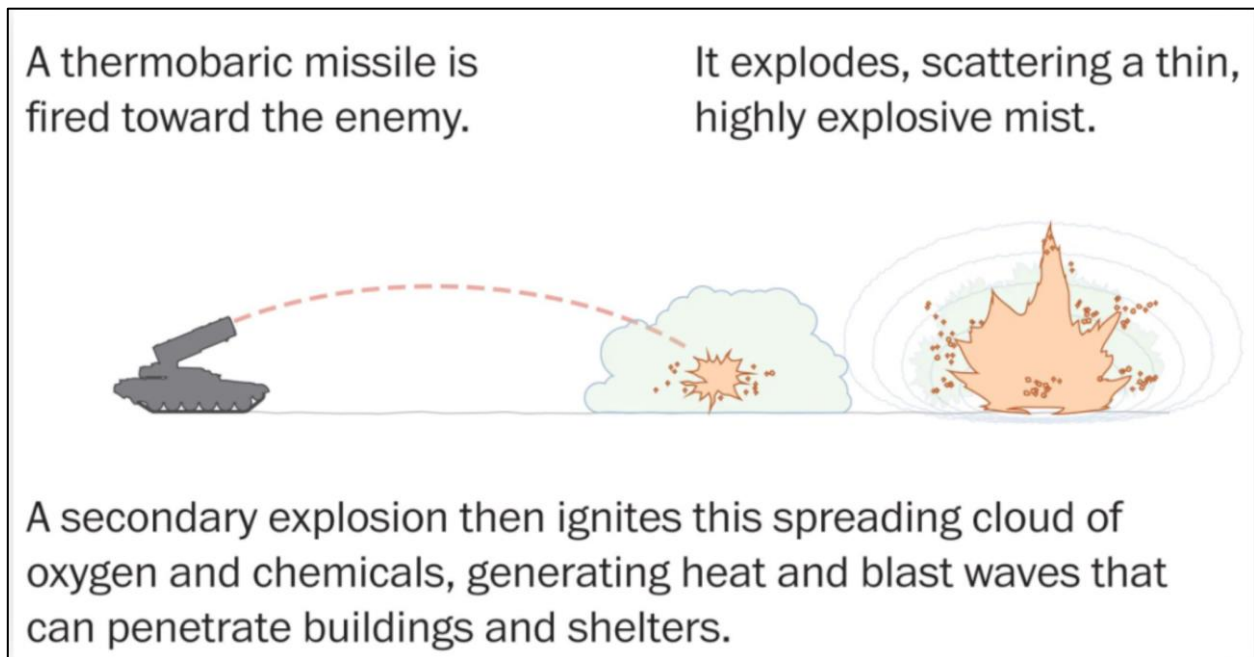
AMRUT 1.0 primarily aimed at providing basic services such as water supply, sewerage management while AMRUT 2.0 focuses on City Water Balance Plan (CWBP) to recycle/reuse treated sewage.

THERMOBARIC WEAPONS

Russia's use of thermobaric weapons in Ukraine has drawn significant attention due to their devastating effects.

Background: -

- Many countries, including the United States, China, and others, have also invested in **thermobaric technology** for its unique capabilities in modern warfare.



About Thermobaric weapons

- Thermobaric weapons, also called "**vacuum bombs**" or "**enhanced blast weapons**," rely on the atmosphere's oxygen to fuel their explosive power.
- Unlike conventional explosives that contain both fuel and oxidizer, thermobaric bombs release a fuel cloud, which, when ignited, causes a high-temperature explosion. This explosion generates a blast wave of immense pressure, followed by a rapid vacuum effect as the oxygen in the vicinity is consumed.
- The combination of intense overpressure and the subsequent vacuum makes these weapons particularly destructive in enclosed spaces such as bunkers, buildings, and tunnels.

Historical Overview

- Thermobaric weapons and technology's roots trace back to the United States.
- During the Vietnam War in the 1960s, the US military sought effective methods to clear minefields. This led to the development of fuel-air explosives (FAEs), early predecessors of modern thermobaric bombs.

- Over time, the US refined its thermobaric capabilities. During Operation Desert Storm in 1991, US forces used FAEs to destroy Iraqi bunkers and minefields. The US continues to maintain a range of thermobaric-capable weapons, including the AGM-114N Hellfire missile, which employs a Metal Augmented Charge (MAC) thermobaric warhead.
- Russia has emerged as a leader in the development and use of thermobaric weapons. Russia's TOS-1, mounted on a tank platform, has become one of the most recognizable thermobaric systems. It was used during the Soviet invasion of Afghanistan and later saw action in Chechnya.
- More recently, Russia's ODAB-1500 bomb, used in Ukraine, showcased the continuing evolution of these weapons.

Global Proliferation of Thermobaric Technology

- China, Brazil and India are among the countries that have developed thermobaric weapons. South Korea and Serbia have also developed thermobaric systems, further illustrating the global proliferation of this technology.
- North Korea is also reported to have thermobaric artillery systems, which it has reportedly supplied to allied non-state actors in the Middle East.
- Improvised thermobaric explosive devices (IEDs) were used in the Bali bombings in 2002, demonstrating the destructive potential of these weapons outside of military contexts.

ASSAM ACCORD

After a meeting with the All Assam Students' Union (AASU), the Chief Minister of Assam set the ball rolling for the implementation of recommendations of the Justice Biplab Sarma Committee regarding Clause 6 of the Assam Accord.

Background: -

- Notably, 15 key recommendations of the Justice Biplab Sarma Committee will not be implemented for the time being. These, CM Himanta said, will require Constitutional amendments.

Assam Accord:

- It was a Memorandum of Settlement between the Rajiv Gandhi-led union government and the leadership of the Assam Movement, primarily the All Assam Students' Union (AASU), which was signed in 1985.
- The accord ended the six-year-long agitation in Assam against the entry of Bangladeshi migrants into the state.
- Clause 6 of the accord states that "Constitutional, legislative and administrative safeguards, as may be appropriate, shall be provided to **protect, preserve and promote the cultural, social, linguistic identity and heritage of the Assamese people.**" It aims to address concerns regarding the state's demographic and cultural integrity amidst the influx of migrants.

The main provisions of the Assam Accord included:

- Detection, deletion, and deportation of illegal immigrants who entered Assam after March 25, 1971.
- Safeguarding the political, social, and cultural rights of the Assamese people.

- Providing constitutional, legislative, and administrative safeguards to protect and preserve the cultural, social, and linguistic identity and heritage of the Assamese people.
- Accelerating the economic development of Assam.

Significance of the Assam Accord:

- It helped in bringing peace to Assam after years of unrest and protests.
- It ensured that illegal immigrants would have to leave the state, and the government would take steps to protect Assam's culture, language, and heritage.
- It clearly defined who would be considered an Indian citizen in Assam which was crucial in ending the uncertainty around citizenship for many people living there.
- It is still relevant because the issue of immigration continues to be a big issue in Assam. Even today, the questions about who is a citizen and who is not are debated and discussed. The National Register of Citizens (NRC), which was updated in Assam in 2019, is a part of this ongoing issue.

Biplab Sarma Committee:

- It was formed by the Union Home Ministry in July 2019 to provide recommendations on implementing Clause 6 of the Assam Accord.
- It is a 14-member committee chaired by retired Assam High Court Justice Biplab Kumar Sarma.
- The committee submitted its final report in February 2020.

Key Recommendations made by the Biplab Sarma Committee:

- According to the definition provided by the Committee, Assamese People include:
 - Indigenous Tribals
 - Other Indigenous Communities of Assam
 - Indian citizens residing in Assam on or before January 1, 1951, and their descendants
 - Indigenous Assamese People
- **It recommended reservations for "Assamese people" in Parliament, the state Assembly, local bodies, and jobs.**
- The Assam government has accepted the 1951 cut-off date for the specific recommendations of the Justice Biplab Sarma Committee report.
- It recommended Special Revenue Circles as areas where only Assamese people can own and transfer land.
- It suggested a three-year program to grant land titles to Assamese people who have long occupied land without proper documentation.
- It recommended Char Areas Survey to treat newly formed chars as government land, prioritizing allocation to those affected by river erosion
- It suggested retaining Assamese as the official state language per the 1960 Assam Official Language Act, with provisions for local languages in certain regions.
- It recommended issuing all state government acts, rules, and orders in both Assamese and English along with establishing an Autonomous Language Council to preserve and promote the indigenous languages of Assam.

- It recommended making Assamese a compulsory subject in all English medium schools up to Class VIII or Class X.
- It supported setting up an autonomous body to oversee the development of sattras and provide them with financial assistance.
- The autonomous councils of Assam's Sixth Schedule Areas, including the Bodoland Territorial Council, the North Cachar Hills Autonomous Council, and the Karbi Anglong Autonomous Council, will decide whether to implement the 52 recommendations. These councils have certain legislative and judicial autonomy under the Sixth Schedule of the Constitution.

L.69

With the United Nations (UN) approaching its 80th anniversary next year, the Group of Four (G4) countries – India, Brazil, Germany and Japan – seeking permanent membership and reform of the UN Security Council (UNSC) called for urgent reform of the world body. Other plurilateral groupings, such as the L.69 and C-10 also echoed these calls.



Background: -

- The L.69 group of countries met on Thursday, under the chairmanship of Prime Minister of Saint Vincent and the Grenadines, Ralph E. Gonsalves. The group held a joint meeting with the C-10 group countries.

About L.69

- The L.69 Group of Developing Countries is a coalition of 32 developing nations from Africa, Latin America and the Caribbean, Asia, and the Pacific. This group is dedicated to advocating for comprehensive reforms of the United Nations Security Council (UNSC).
- Formation: The L.69 Group was established to address the need for a more representative, accountable, and effective UNSC.

The Group is bound by the firm conviction that expansion in both the permanent and non-permanent categories of membership of the Security Council is imperative to better reflect contemporary world realities.

- The Group derives its name from the draft document number “L.69” that the Group had tabled in 2007-08, which led to the initiation of the Intergovernmental Negotiation (IGN) process.
- The Group had tabled a draft resolution on the “Question of equitable representation on and increase in the membership of the Security Council and related matters.”
- **At that time, the Group’s membership was of 22 member states, which has since increased to 32 developing countries.** The Group meetings are held regularly to coordinate its position on the IGN process currently underway in the United Nations.
- **The Mission of India serves as the Secretariat for the meetings of the L.69 Group of Developing Countries.**

Member Countries

- The L.69 Group includes a diverse range of countries from different regions:
 - Africa: Nigeria, South Africa, Rwanda, Burundi, Ethiopia, Liberia, Seychelles, Togo.
 - Latin America and the Caribbean: Brazil, Bolivia, Bahamas, Barbados, Dominica, Grenada, Guyana, Haiti, Jamaica, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines.
 - Asia and the Pacific: India, Bangladesh, Bhutan, Maldives, Mauritius, Micronesia, Mongolia, Palau, Papua New Guinea, Timor-Leste, Tuvalu, Vanuatu.

Key Objectives

- Expansion of Membership: Advocating for the inclusion of more permanent and non-permanent members from developing countries to ensure fair representation.
- Veto Power: Addressing the issue of veto power held by the current permanent members and seeking reforms to make the UNSC more democratic and accountable.

C10 & “THE EZULWINI CONSENSUS”

- Common position of the African Union (AU) on Security Council reform known as **Ezulwini Consensus**
- It is based on the **communiqué it adopted in Addis Ababa in March 2005.**
- The consensus calls for **Africa to have at least two permanent seats** with veto power on the UNSC
- **AU’s Committee of Ten (C-10)** : A group of ten African states that advocates internationally for the Ezulwini Consensus
 - Algeria, Equatorial Guinea, the Republic of the Congo, Kenya, Libya, Namibia, Senegal, Sierra Leone, Uganda, and Zambia

CRITICAL MINERALS

Recently, China announced its decision to restrict the export of antimony, a critical mineral used in strategic sectors such as defence, for military equipment such as missiles, infrared sensors, flares, ammunition, and even nuclear weapons.

Background: -


- Restricting access to strategic resources is a classic statecraft strategy that China seems to be perfecting.

Critical Minerals:


- They are elements that are the building blocks of essential modern-day technologies and are at risk of supply chain disruptions.
- For example, Antimony, Beryllium, Bismuth, Cobalt, Copper, etc.
- For India, major import sources of Cobalt are China, the US, and Japan; Lithium (Chile, Russia, China); Nickel (Sweden, China), etc.
- These minerals are now used everywhere from making mobile phones, and computers to batteries, electric vehicles, and green technologies like solar panels and wind turbines.
- Based on their individual needs and strategic considerations, different countries create their own lists.

CRITICAL MINERALS


- Minerals essential for Economic Development & National Security
- Their associated Economic Impact is higher than any other raw material





WHY ARE THESE MINERALS CRITICAL?



©PMF IAS




- 


Clean Energy Transition
Essential for the World transitioning towards Clean Energy.
- 




Overdependency on other Countries
For Strategic autonomy of a country that is over dependent on others to produce critical minerals.
- 

Supply Risk
Rare availability & growing demand of Minerals

MAJOR INDUSTRIES THAT RELEY ON CRITICAL MINERALS

-  Telecommunications and Electronics
-  Energy
-  Defence



-  Medical
-  Transportation
-  Agriculture

©PMF IAS

Significance of Critical Minerals for India:

- Minerals such as lithium, graphite, cobalt, titanium, etc. are essential for the advancement of high-tech electronics, telecommunications, transport, etc.
- Some critical minerals are important for climate-friendly technologies like electric vehicles, solar panels wind turbines, etc.
- Critical minerals such as lithium, nickel, and silicon are vital to manufacturing technologies and materials used in the aerospace and defence sector.
- Critical minerals are necessary for India to achieve its geo-economic goals, energy security, renewable energy goals, mineral security, and commitment to electric vehicles by 2030.

What are the Initiatives Taken for Critical Minerals in India?

- **Planning Commission:**
 - A **Planning Commission report** (now **NITI Aayog**) in **2011** highlighted the need for the assured availability of mineral resources for the country's industrial growth.
 - **12 minerals and metals** were **identified** as **strategic minerals** **which** included Tin, Cobalt, Lithium, Germanium, Gallium, Indium, Niobium, Beryllium, Tantalum, Tungsten, Bismuth and Selenium.
- **Ministry of Mines:**
 - The **Ministry of Mines** constituted a steering committee in 2011 to review the status of the availability of **rare-earth elements (REE)** and energy-critical elements.
 - The study titled "**Rare Earths and Energy Critical Minerals: A Roadmap and Strategy for India**" reviewed India's production, consumption and reserves.
- **Council on Energy, Environment and Water (CEEW):**
 - A study conducted by **CEEW** highlighted the paucity of research in India related to ensuring **mineral resource security** for the manufacturing sector.
 - The study identified **13 minerals** that would become most critical by 2030.
 - 13 minerals included Rhenium, Beryllium, Rare Earths (Heavy), Germanium, Graphite, Tantalum, Zirconium, Chromium, Limestone, Niobium, Rare Earths (light), Silicon and Strontium.
- **Geological Survey of India (GSI):**
 - A strategic plan for enhancing REE exploration in India was jointly submitted by the **Geological Survey of India (GSI)** and **Atomic Mineral Division (AMD)**.
 - It emphasized on securing rare earth elements for India.
- **Centre for Socio and Economic Progress (CSEP):**
 - In 2023, CSEP released a working paper titled "**Assessing the Criticality of Minerals in India**".
 - It evaluated the criticality of **43 non-fuel minerals** in India based on two dimensions i.e., economic importance for the Indian economy and supply risks.

GLOBAL INNOVATION INDEX

India has moved up to 39th place out of 133 countries in the Global Innovation Index (GII) 2024. This shows a big improvement in how India supports innovation. Union Commerce and Industry Minister Piyush Goyal announced this news, highlighting that India is the leader in innovation in Central and Southern Asia.



Key Rankings

- Global Position: 39th out of 133 countries
- Regional Leadership: 1st in Central and Southern Asia
- Economic Category: 1st among lower-middle-income countries
- WIPO S&T Cluster Ranking: 4th place

Innovative Cities

Four Indian cities – Mumbai, Delhi, Bengaluru, and Chennai – are recognized among the World’s Top 100 Science & Technology clusters. This shows that these cities are strong centers for innovation. India’s rise in the GII is impressive, moving up from 81st place in 2015. This significant progress shows India’s dedication to improving its innovation environment.

What is the GII?

The Global Innovation Index (GII) ranks countries by how well they can innovate. **It was started in 2007 by WIPO, INSEAD, and Cornell University and looks at 81 different factors.**

Switzerland has often been at the top of the list because it invests a lot in research and development (R&D).

The GII is published every year and provides valuable information about different economies. It focuses on key areas like education and skills (human capital), infrastructure (like roads and buildings), and how advanced the market is.

The 2021 report noted that India is becoming an important place for innovation. The GII also helps countries work together on innovation strategies, which can influence policies worldwide.

Global Leaders in Innovation

According to the GII 2024, the top five innovative countries are Switzerland, Sweden, the US, Singapore, and the UK. China, Turkey, India, Vietnam, and the Philippines are noted as the fastest-growing countries in innovation over the past ten years.

MINERALS SECURITY FINANCE NETWORK

India has officially become part of the Minerals Security Finance Network (MSFN), a group led by the United States.

This network was created to help countries work together to secure important minerals needed for technology and clean energy.

The announcement was made by the US State Department on September 23, 2024, during the United Nations General Assembly. The network now includes 14 countries and the European Union.

What is the MSFN?

The MSFN is linked to the Minerals Security Partnership (MSP), which was started by the US in 2022. India joined the MSP in June 2023, showing its growing role in securing important minerals globally.

The MSFN focuses on reducing dependence on specific countries, especially China, for key minerals such as rare earth elements, which are essential for clean energy technologies like electric vehicles and solar panels.

Why is the MSFN Important?

The network is designed to help countries reduce their reliance on a few sources for critical minerals, which are needed to transition to clean energy.

Since many of these minerals are controlled by just a few countries, the MSFN helps nations work together to secure more reliable and sustainable supply chains.

This cooperation ensures that countries can access the minerals needed for clean energy projects and technologies.

Public and Private Sector Collaboration

The MSFN encourages Development Finance Institutions (DFIs) and Export Credit Agencies (ECAs) in member countries to collaborate.

By working together, they aim to create stronger supply chains for critical minerals. This collaboration allows these organizations to combine their resources and make a bigger impact than they would individually.

About the MSFN

The Minerals Security Finance Network focuses on securing a steady and sustainable supply of minerals that are crucial for clean energy technologies. These include minerals like lithium, cobalt, and rare earth elements.

The network encourages innovation in mineral processing and recycling and supports responsible mining practices.

It also works towards making **mineral extraction more environmentally sustainable while addressing geopolitical challenges that can disrupt the supply of these important resources.**

GOVERNANCE INDEX

Kerala has earned the top spot in the **Urban Governance Index (UGI)** by the Praja Foundation, because of its strengths in managing finances and planning at the local level. However, the study also points out areas where Kerala can improve, especially in city administration.

What is the Urban Governance Index (UGI)?

The UGI is a study that looks at how well cities are governed in India. It took two years to complete and checked various aspects of governance. Kerala scored 59.31 out of 100, beating Odisha, which scored 55.10.

This index can attract investments and improve the sustainability of cities by keeping governance efficient and up-to-date.

Kerala's Financial Strength

Kerala performed very well in fiscal empowerment, which refers to how well the state manages its money. **Kerala scored 23.22 out of 30 in this category, doing better than Maharashtra, which scored 21.15. This shows that Kerala has strong financial management at the local level.**

Even though Kerala did well overall, it ranked 20th in terms of city administration empowerment. This means Kerala still has room to improve how its cities are run. However, it stands out by allowing mayors to write a yearly report on the performance of city commissioners.

Local Governance Practices

Kerala is one of only four states that require every city councillor to take part in at least one deliberative committee. This shows Kerala's commitment to keeping its local government active and engaged.

The report mentions that states like Kerala are adopting new technologies to improve how local governments provide services and manage their cities. This is making things more efficient.

PARAM RUDRA SUPERCOMPUTERS

Prime Minister Narendra Modi recently inaugurated three PARAM Rudra supercomputers and a High-Performance Computing (HPC) system. These advancements are important steps for India's technological progress, made possible through the National Supercomputing Mission.

What is the National Supercomputing Mission?

The National Supercomputing Mission, which began in 2015, aims to increase India's ability to handle complex calculations and support advanced scientific research.

National Supercomputing Mission (NSM)

Building Capacity and Capability

Vision

To Attain leadership and self-reliance in Supercomputing

Scope

- **Setting up supercomputing centres of different sizes and scales to match demands of HPC users – build & buy approach**
- **Supercomputing applications development**
- **Creating a national grid by interconnecting various HPC systems over NKN**
- **HPC manpower development**
- **Creating cloud infrastructure for HPC user community**
- **Initiating R&D for next-generation Exascale Computing**

Impact expected

- **Significant Qualitative & Quantitative improvement in R&D/ Higher Education in all S&T Disciplines**
- **Capability to solve multi-disciplinary Grand Challenge problems**
- **Solid Foundations for Supercomputing Ecosystem**
- **Conducive Environment for Scientific Breakthroughs**
- **Reduced Gap/ Contemporary in Next Generation Technologies in different domains**
- **Overall impact on National Economy**

This mission is designed to boost various sectors like information technology (IT), manufacturing, and startups. The launch of these supercomputers is the result of years of effort under this mission.

Supercomputers Overview

The three PARAM Rudra supercomputers have been installed in Pune, Delhi, and Kolkata. Together, they cost ₹130 crore to develop. These supercomputers will help India perform more scientific research and create new innovations.

High-Performance Computing System

The HPC system, which was developed with ₹850 crore, will be used mainly for weather and climate research. It will improve the ability of institutions like IITM (Indian Institute of Tropical Meteorology) and NCMRWF (National Centre for Medium-Range Weather Forecasting) to predict and understand weather patterns. This will help with disaster management and ensuring public safety.

Benefits of Advanced Computing

Prime Minister Modi emphasized that technology should benefit everyone, especially the underprivileged. The new supercomputers and HPC system will allow for better predictions of severe weather events like floods or cyclones, which can save lives and reduce damage. This will help improve disaster response and protect communities.

WOMEN IN SPACE LEADERSHIP PROGRAM

The Department of Science and Technology (DST), in partnership with the British Council, has launched the Women in Space Leadership Programme (WiSLP) as part of the UK-India Education and Research Initiative (UKIERI).



This programme is designed to encourage more women to take leadership roles in the field of space sciences and aims to create a more inclusive environment for women in scientific research and innovation.

What is the Aim of WiSLP?

The main goal of the WiSLP is to create a framework that helps women become leaders in space sciences. By supporting women in scientific research, it hopes to break down barriers and make the space sector more gender-inclusive.

Who is the Programme For?

The programme is aimed at 250 early-career researchers, focusing on helping them overcome gender biases and create a strong network of support in the scientific community.

Workshops will be conducted as part of the programme, where academics and policymakers will discuss ways to promote gender equality in space sciences, both within India and internationally. These discussions will help shape policies and practices that support women in the field.

Future Goals

One of the long-term goals of the initiative is to build sustainable mentoring networks that will continue to support women in space sciences.

Additionally, it seeks to bring more gender perspectives into key areas like astrophysics and telecommunications, enhancing innovation by considering diverse viewpoints.

CASSOWARY BIRD

The cassowary, often called the ‘most dangerous bird in the world,’ is at risk due to hunting and habitat loss. With fewer than 5,000 left in Australia, efforts to protect this species are becoming more urgent.



What is a Cassowary?

The cassowary is a large, flightless bird found in the rainforests of New Guinea and northern Australia. It is known for its bright blue neck, black feathers, red wattles, and a helmet-like structure called a casque on its head.

Ecological Importance

Cassowaries are important for the environment because they spread seeds through their droppings, which helps maintain plant diversity in rainforests. Studies show that they can adjust their eating habits, which allows them to survive even in areas where habitats are fragmented.

The cassowary is a large bird that cannot fly and comes from New Guinea and nearby islands. It is known for its bright blue skin and a helmet-like structure on its head called a casque.

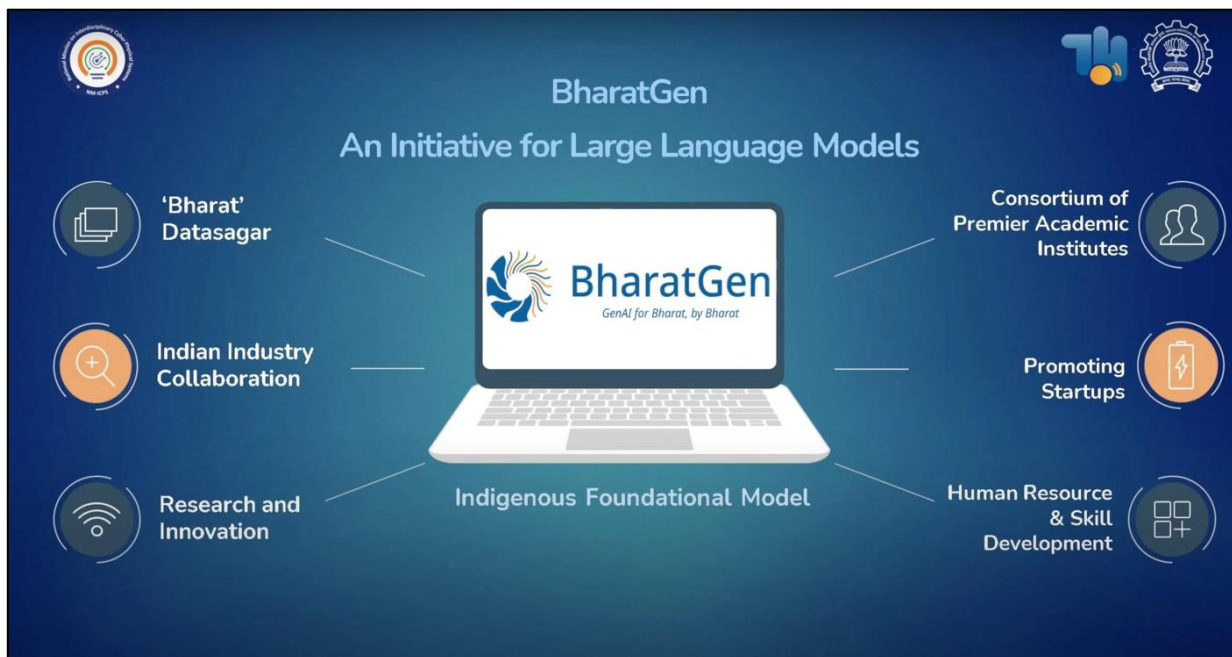
Cassowaries can weigh as much as 130 pounds and grow up to 6 feet tall. Even though they are big, they can run at speeds of up to 30 miles per hour and jump over 5 feet high.

These birds usually live alone and mainly eat fruits, which helps spread seeds in their environment.

They have strong legs and can kick hard, which can make them dangerous if they feel threatened. The name of their genus, *Casuarius*, means “horned heads”.

BHARATGEN

BharatGen is a major new project in generative AI, which is a type of artificial intelligence that can create text, images, or even sound. The goal of BharatGen is to improve public services and increase citizen participation in India using AI.



This project was officially launched in New Delhi by Dr. Jitendra Singh, the Union Minister of State. BharatGen is part of India's efforts to develop its advanced technologies and aims to make India a global leader in AI.

Key Goals of BharatGen

The main purpose of BharatGen is to create AI models that can work with language, speech, and visual information. These models will help solve different social challenges. Some of the key goals include:

Promoting social equality: Making AI accessible to all parts of society.

Preserving cultural heritage: Ensuring that India's diverse cultures and languages are represented.

Accessibility: Making AI technology available to everyone, especially in different regional languages.

Who is Managing BharatGen?

The project is being led by IIT Bombay under the National Mission on Interdisciplinary Cyber-Physical Systems (NM-ICPS). It is managed by the TIH Foundation for IoT and IOE, which will work with many top universities and research institutions to develop the project.

Four Important Features of BharatGen

BharatGen is special for several reasons:

Multilingual and Multimodal Models: It will focus on developing AI that works across many Indian languages and forms of communication, like text and speech.

Bhartiya Data Set: It will use Indian data to train its AI models, making them more relevant to local needs.

Open-Source: BharatGen will be an open-source platform, meaning its technology will be available to everyone, encouraging collaboration.

AI Ecosystem: The project will support the growth of AI research in India, helping more researchers and developers work on generative AI.

Project Timeline

BharatGen is expected to be completed in two years, with key milestones, including developing important AI models, set to be achieved by July 2026.

Focus on Indian Data and Efficiency

A unique feature of BharatGen is its focus on data sovereignty, meaning that it will use data collected from India, ensuring that India's languages, dialects, and cultures are accurately represented. This is especially important for languages with fewer digital resources.

BharatGen is aligned with India's vision of Atmanirbhar Bharat, which means self-reliant India. The project will help India develop its own AI capabilities, reduce dependence on foreign technology, and build a stronger AI ecosystem that benefits startups, businesses, and government agencies.

AFRICAN NEURAL NETWORKS

On October 8, John Hopfield and Geoffrey Hinton won the 2024 Nobel Prize for physics for foundational discoveries and inventions that enable machine learning with artificial neural networks.

Background: -

- Their work lies at the roots of a large tree of work, the newest branches of which we see today as artificially intelligent (AI) apps like ChatGPT.

What are Artificial Neural Networks (ANNs)?

- Artificial Neural Networks (ANNs) are computational models inspired by the human brain's neural networks. They are composed of layers of interconnected artificial neurons that process data in a way that mimics human learning. ANNs are the foundation for many AI applications, particularly those involving pattern recognition, data analysis, and decision-making.

Structure of ANNs

- **Neurons and Layers:** ANNs consist of interconnected units called neurons, organized into layers. There are typically three types of layers:
 - **Input Layer:** Receives the initial data.
 - **Hidden Layers:** Perform computations and feature extraction.
 - **Output Layer:** Produces the final result or prediction.

Types of ANNs

- **Feedforward Neural Networks (FNNs):** The simplest type, where connections do not form cycles. Data moves in one direction from input to output.
- **Convolutional Neural Networks (CNNs):** Specialized for processing grid-like data such as images. They use convolutional layers to automatically and adaptively learn spatial hierarchies of features.
- **Recurrent Neural Networks (RNNs):** Designed for sequential data, such as time series or natural language. They have connections that form cycles, allowing them to maintain a memory of previous inputs.
- **Autoencoders:** Used for unsupervised learning, these networks aim to learn a compressed representation of the input data.

Applications of ANNs

- **Image and Speech Recognition:** CNNs are widely used for tasks like identifying objects in images and recognizing spoken words.
- **Natural Language Processing (NLP):** RNNs and their variants, such as LSTM (Long Short-Term Memory) networks, are used for language translation, sentiment analysis, and more.
- **Healthcare:** ANNs assist in diagnosing diseases, predicting patient outcomes, and personalizing treatment plans.
- **Finance:** Used for stock market prediction, fraud detection, and risk management

MACE OBSERVATORY

The Major Atmospheric Cherenkov Experiment (MACE) Observatory was inaugurated on October 4, 2024, in Hanle, Ladakh.

Background:

- MACE Observatory is a monumental achievement for India, and it places our nation at the forefront of cosmic-ray research globally.

About MACE OBSERVATORY

- Located at Hanle, Ladakh, at an altitude of approximately 4,300 meters, making it the highest imaging Cherenkov telescope in the world.
- **Significance:** It is the largest imaging Cherenkov telescope in Asia.
- **Built By:** Bhabha Atomic Research Centre (BARC) with support from the Electronics Corporation of India Ltd (ECIL) and other Indian industry partners.

Purpose and Functionality

- The MACE Observatory is designed to study high-energy gamma rays. Gamma rays do not reach the Earth's surface but interact with the atmosphere to create high-energy particles that emit Cherenkov radiation. The telescope captures these flashes to trace them back to their cosmic sources.

Scientific and Socio-Economic Impact

- **Research:** The telescope will advance cosmic-ray research, allowing scientists to study phenomena such as supernovae, black holes, and gamma-ray bursts.
- **Community Engagement:** The project also aims to support the socio-economic development of Ladakh, encouraging local students to pursue careers in science and technology.

Unique Advantages

- **Location Benefits:** Hanle offers extremely low light pollution, which is ideal for gamma-ray observations. Its longitudinal position allows MACE to observe sources that are not visible from other parts of the world.

About Cherenkov radiation

- Cherenkov radiation is a fascinating phenomenon that occurs when a charged particle, such as an electron, travels through a dielectric medium (like water or glass) at a speed greater than the phase velocity of light in that medium.

Physical Origin

- **Speed of Light in Medium:** While the speed of light in a vacuum is a universal constant (approximately 3×10^8 meters per second), it slows down when it passes through a medium like water or glass. For instance, light travels at about 75% of its speed in a vacuum when in water.
- **Charged Particles:** When charged particles (e.g., electrons) move faster than the speed of light in that medium, they emit Cherenkov radiation.

Mechanism

- **Electromagnetic Shockwave:** This radiation is analogous to a sonic boom, which occurs when an object exceeds the speed of sound in air. Similarly, Cherenkov radiation is an electromagnetic shockwave produced when a particle exceeds the speed of light in a medium.

Appearance

- **Blue Glow:** Cherenkov radiation typically appears as a faint blue glow. This is because the emitted photons are in the blue and ultraviolet part of the electromagnetic spectrum.

Historical Context

- **Discovery:** The phenomenon was first observed by Soviet physicist Pavel Cherenkov in 1934. He noticed a faint blue light around a radioactive preparation in water.
- **Nobel Prize:** Pavel Cherenkov, along with Ilya Frank and Igor Tamm, received the Nobel Prize in Physics in 1958 for their theoretical explanation of this effect.

Applications

- **Nuclear Reactors:** Cherenkov radiation is commonly observed in the water surrounding nuclear reactors, where it serves as a visual indicator of high-energy particles being emitted.
- **Particle Detectors:** Cherenkov detectors are used in particle physics to identify high-speed charged particles. These detectors are crucial in experiments involving cosmic rays and high-energy physics.
- **Medical Imaging:** Recent advancements have explored the use of Cherenkov radiation in medical imaging, particularly in radiotherapy, where it helps visualize the distribution of radiation doses.

ATAL PENSION YOJANA APY

Atal Pension Yojana (APY) has achieved a new milestone with gross enrolments under the scheme having crossed 7 crore.

Background: -

- This milestone was achieved with an enrolment of over 56 lakh in the current Financial Year, i.e., FY 24-25

About Atal Pension Yojana (APY)

- APY was launched on May 9, 2015 with an aim to create a universal social security system for all Indians, especially the poor, the underprivileged and the workers in the unorganised sector.
- The scheme is administered by the Pension Fund Regulatory and Development Authority (PFRDA)
- Eligibility
 - APY is applicable to all citizen of India aged between 18-40 years.
 - Account Requirement: A savings account with an authorized bank or post office is necessary.
- Subscriber Contribution: Contributions can be made monthly, quarterly, or half-yearly, and the amount depends on the age of joining and the desired pension amount.

Pension Benefits

- APY's design focuses on ensuring a guaranteed minimum pension to subscribers upon reaching the age of 60, based on their contributions during their working years.
- Pension Amount: Subscribers can choose a fixed monthly pension of ₹1,000, ₹2,000, ₹3,000, ₹4,000, or ₹5,000, which starts after they reach 60 years of age.
- Nomination: It is mandatory to appoint a nominee for the APY account.
- In case of death of subscriber pension would be available to the spouse and on the death of both of them (subscriber and spouse), the pension corpus would be returned to his nominee.
- Tax Benefits: Contributions to the APY qualify for tax benefits under Section 80CCD(1) of the Income Tax Act.

DRY PORTS

Telangana will soon have dry port facilities to boost logistics services for its industries.

Background: -

- Logistics is the backbone of industrial development.

Key takeaways

- A dry port is an inland terminal directly connected to a seaport by road, rail, or waterways. It functions as a multimodal logistics hub where goods are handled, stored, and cleared for customs, thus extending the capabilities of seaports.
- An exporter can complete all customs formalities at the dry dock, saving time and cost.

Purpose:

- Reduce Congestion at Seaports: By handling container traffic away from the seaport, dry ports help reduce congestion at major ports.

- **Facilitate Trade:** They provide efficient customs clearance and reduce time for cargo processing, thus facilitating faster and cheaper trade.
- **Enhance Connectivity:** Dry ports improve connectivity between the hinterland and international trade gateways by integrating various transport modes like road, rail, and waterways.

Functions:

- **Cargo Handling:** Sorting, labeling, packing, and distribution of goods.
- **Customs Clearance:** Enables customs inspections and procedures inland, reducing the burden on seaports.
- **Warehousing and Storage:** Offers facilities for long-term storage of goods.
- **Logistics and Distribution:** Acts as centers for regional and international distribution of cargo.

Importance for India:

- **Improves Trade Efficiency:** Dry ports help in faster cargo movement, making India's export-import system more efficient.
- **Boosts Hinterland Connectivity:** Enhances the connection of remote areas with international trade, contributing to balanced regional development.
- **Supports 'Make in India':** By providing logistics solutions, dry ports support India's manufacturing sector by ensuring smooth supply chains.
- **Cost Reduction:** Reduces transportation costs by minimizing delays and streamlining logistics operations.

Examples in India:

- **Concor's Inland Container Depots (ICDs):** Located at places like Tughlakabad (Delhi), Dadri (Uttar Pradesh), and Whitefield (Bangalore).
- **Jawaharlal Nehru Port Dry Port:** Near Jalna, Maharashtra, which improves connectivity for industries in central India.

INDIA-MALDIVES

Maldivian President Mohamed Muizzu met with Prime Minister Narendra Modi in New Delhi. Both countries commenced a series of initiatives as bilateral relations improve post the weak phase.

Background: -

- The Maldives is looking at a debt default as its foreign exchange reserves have dropped to \$440m (£334m), just enough for one-and-a-half months of imports.

Key initiatives

- **Currency Swap Agreement:** India signed a major currency swap agreement with the Maldives for \$750 million, aimed at helping the Maldives manage its foreign currency crunch.
- **RuPay Card and Infrastructure Cooperation:** Agreements were signed for launching the RuPay card in the Maldives and the handover of 700 houses built with Indian assistance.
- **Institutional Cooperation:** Memorandums of understanding (MoUs) were inked between the Central Bureau of Investigation (CBI) and the Maldivian Anti-Corruption Commission, as well as between policing and judicial training institutes of both countries.
- **Tourism and People-to-People Ties:** Maldivian President Mohamed Muizzu expressed hopes for the return of Indian tourists, whose numbers had halved due to recent tensions.

- Economic Cooperation: Both nations agreed to explore further cooperation on trade in national currencies, and discussions on a Free Trade Agreement (FTA) were initiated. Other requests from the Maldives, including debt repayment waivers and further economic assistance, would be reviewed by India.
- Vision Statement: A “vision statement” was released for a comprehensive economic and maritime security partnership, which includes supporting the Maldives on the refit of its Coast Guard ship Huravee at an Indian facility.
- No Indian Military Personnel: There was no mention of the return of Indian military personnel to Maldives, a subject that had led to tension between New Delhi and Male, until India agreed to withdraw them and replace them with technical personnel in May 2023.
- India as a “First Responder”: Modi reiterated that India has always been a first responder and has played a major role in assisting Maldives, including thwarting a coup in 1988, providing emergency aid after the 2004 tsunami, and offering essential commodities and COVID-19 vaccines during recent crises.

Strategic importance of Maldives

- Maldives’ proximity to the west coast of India (barely 70 nautical miles from Minicoy and 300 nautical miles from India’s West coast), and its location at the hub of commercial sea-lanes running through the Indian Ocean (particularly the 8° N and 1 ½° N channels) imbues it with significant strategic importance to India.
- Maldives is one of the key elements in India’s maritime security calculus. The security scenario in India’s periphery in the Indian Ocean is very much linked to the maritime strength of Maldives. This is the reason why India invests on Maldives’ security by training its defence forces.
- Estimates suggest that almost 70 per cent of Maldives’ defence training is done by India – either on the islands or in India’s elite military academies. India has trained over 1,500 Maldivian National Defence Force (MNDF) personnel in the past 10 years.
- The Indian Navy has given aircraft and choppers to the Maldivian defence forces for aerial surveillance. India also wants to set up a coastal radar system in Maldives, with a view to keep an eye on the activities in the Indian Ocean.

CHEMISTRY NOBEL

The 2024 Nobel Prize for chemistry was jointly awarded to David Baker for his work on computational protein design and to Demis Hassabis and John Jumper for developing technologies to predict the structure of proteins.

Background: -

- The chemistry prize concerns two areas in the field of protein research: design and structure.

Why are proteins important?

- All life requires proteins and all proteins are made of amino acids. While there are many types of amino acids in nature, only 20 of them in different combinations make up all the proteins in the human body and in most life-forms.
- Amino acids are found in tissues – like muscles, skin, and hair – that provide structural support; they’re catalysts in biochemical reactions; move molecules like oxygen across membranes; control muscle contraction that lets us move and have our hearts beat; and help cells communicate with each other to perform tasks.

What is the protein-folding problem?

- A protein has many identities and one of them depends on the arrangement of its amino acids in the three dimensions of space – in other words, its 3D structure. And scientists have spent decades trying to understand how proteins attain these structures.
- In 1962, John Kendrew and Max Perutz won the Nobel for elucidating the first 3D models of haemoglobin and myoglobin, both proteins, using X-ray crystallography. (This method reveals a crystal's structure based on how its constituent atoms scatter X-rays. For this the proteins need to be purified and crystallised first). A year earlier, Christian Anfinsen had found that a protein's 3D structure is governed by the sequence of amino acids in the protein, and won the 1972 chemistry Nobel.
- Notable breakthrough arrived in 1969 when scientists found that a protein doesn't try to bend into different shapes before settling into its final one. Instead it somehow knows the shape it needs to have and rapidly folds itself to acquire it. The mysterious nature of this 'knowledge' of the protein is called the protein-folding problem.
- By the late 2010s, scientists had worked out the structures of around 1.7 lakh proteins – a large number yet still small compared to the roughly 200 million proteins in nature. This situation changed drastically around 2018.

What is AlphaFold?

- Hassabis co-founded DeepMind in 2010 and which Google acquired. Here, Hassabis and his colleagues unveiled AlphaFold in 2018. AlphaFold is a deep-learning model able to predict the structures of almost all proteins after training on the set of known structures.
- DeepMind launched its successor AlphaFold 2 in 2020, when it was able to predict the structure of proteins with an accuracy comparable to that of X-ray crystallography.
- Jumper led the work on AlphaFold 3. This model is able to predict the structures of various proteins as well as how two proteins and/or a protein and another molecule might interact.
- Given enough computing power, these machine-learning models are capable of deducing the 3D shapes of most proteins in a matter of hours. However, these machines have not been able to say why a protein prefers a particular structure.

What is protein design?

- Baker, who received the other half of chemistry Nobel, developed tools that scientists use to design new proteins with specific shapes and functions. His first notable work was in 2003, when he led a team to create a novel protein and determined its structure using a bespoke computer program they had developed in 1999 called 'Rosetta'.
- The ability to design proteins has far-reaching implications. For example, in 2022, Baker's team developed an antiviral nasal spray to treat COVID-19. At its heart were proteins the team designed using computational methods in the laboratory to stick to vulnerable sites on the viral surface and target the spike protein.

MALABAR EXERCISE

The 28th edition of the multi-national maritime exercise MALABAR 2024 commenced on Wednesday in Andhra Pradesh's Visakhapatnam.

Background:

- The exercise is aligned with the Indian Government's vision of Security & Growth for All in the Region (SAGAR) and reflects India's growing engagement with like-minded nations.

About Malabar Exercise

- The Malabar Exercise is a significant annual naval exercise that involves the navies of India, the United States, Japan, and Australia.
- Inception: The Malabar Exercise began in 1992 as a bilateral exercise between the Indian Navy and the United States Navy.
- Expansion: Japan became a permanent participant in 2015, and Australia joined in 2020, transforming it into a quadrilateral exercise.

Objectives

- Interoperability: The primary goal is to enhance interoperability among the participating navies through joint training and operations.
- Maritime Security: It aims to promote maritime security and stability in the Indo-Pacific region.
- Strategic Coordination: The exercise focuses on strategic and operational coordination to counter regional threats and ensure a rules-based maritime order.
- Structure of the Exercise: The exercise is typically divided into two phases:
 - Harbour Phase: This phase includes planning conferences, professional exchanges, and cultural events. It allows the navies to plan and coordinate their activities.
 - Sea Phase: This phase involves complex naval drills, including anti-submarine warfare, air defense exercises, surface warfare drills, and live weapon firing.

Malabar 2024

- Host: India is hosting the Malabar Exercise in 2024, with activities centered around Visakhapatnam.
- Activities: The exercise includes live weapon firing, complex surface operations, anti-air and anti-submarine warfare drills, and joint maneuvers involving a range of naval assets.

Significance

- Regional Security: Malabar plays a crucial role in maintaining the security dynamics of the Indo-Pacific region, especially in counterbalancing China's growing influence.
- Cooperation: It fosters mutual understanding and cooperation among the participating nations, enhancing their ability to work together in times of crisis.

NILGIRI TAHR

In a significant breakthrough for conservation efforts, a newly colonised habitat of Nilgiri Tahr has been discovered in Pasumalai.

Background: -

- Surrounded by shola forests and abandoned coffee estates, the area has potential grassland cover atop hillocks and cliffs, providing the Tahr with necessary escape terrains - critical for their survival.

About Nilgiri tahr

- The Nilgiri tahr (*Nilgiritragus hylocrius*) is a unique species of mountain ungulate endemic to the Nilgiri Hills and the southern portion of the Western and Eastern Ghats in the states of Tamil Nadu and Kerala in southern India.

Physical Description

- Appearance: Nilgiri tahrs are stocky goats with short, coarse fur and a bristly mane. Males are larger and darker than females, with both sexes having curved horns.
- They develop a light grey area on their backs, earning them the nickname “saddlebacks”.

Habitat and Distribution

- Location: The Nilgiri tahr inhabits the open montane grassland habitats of the South Western Ghats montane rain forests ecoregion, at elevations ranging from 1,200 to 2,600 meters .

Range:

- The Nilgiri tahr can be found only in India.
- Historically, they were found along the entire stretch of the Western Ghats, but now they are confined to small fragmented pockets.
- Currently, the Nilgiri tahr distribution is along a narrow stretch of 400 km in the Western Ghats between Nilgiris in the north and Kanyakumari hills in the south of the region.
- Though there are smaller populations found in the Palani hills, Srivilliputtur, and the Meghamalai and Agasthiyar ranges, only two well-protected, large populations are documented – one from the Nilgiris and the other from the Anamalais, including the high ranges of Kerala.
- The Eravikulam National Park in Anamalai hills, Kerala, is home to the largest population of the Nilgiri tahr, with more than 700 individuals.
- Diet: Nilgiri tahrs are primarily grazers, feeding on a variety of grasses, herbs, and shrubs.
- Behavior: They are well-adapted to their rugged, mountainous habitat, with cloven hooves that help them climb rocks and steep slopes.

Conservation Status

- Threats: The Nilgiri tahr faces several threats, including habitat loss due to deforestation, competition with domestic livestock, hydroelectric projects, and monoculture plantations. Occasional hunting for their meat and skin also poses a threat.
- Species is listed as Endangered in the IUCN Red List of Threatened Species and is protected under Schedule I of the Wildlife (Protection) Act of India, 1972.
- The Nilgiri tahr is the only mountain ungulate in southern India amongst the 12 species present in India. It is also the state animal of Tamil Nadu.

INTERNATIONAL BIG CAT ALLIANCE (IBCA)

Recently, the Union cabinet approved the proposal of India to become a member country of the International Big Cat Alliance (IBCA) by signing and ratification of the Framework Agreement on the establishment of the International Big Cat Alliance (IBCA).

Background: -

- The International Big Cat Alliance (IBCA) is a global initiative launched by India in April 2023 during the 50th anniversary of Project Tiger.

About International Big Cat Alliance

- The Union cabinet in its meeting held on February 29 approved the establishment of International Big Cat Alliance with Headquarters in India with a one-time budgetary support of ₹150 crore for a period of five years from 2023-24 to 2027-28.
- So far four countries have become member of IBCA including India, Nicaragua, Eswatini and Somalia.
- All UN member countries are eligible for becoming the member of IBCA.

Concept and Objectives:

- A multi-country, multi-agency coalition of big cat range and non-range countries, conservation partners, scientific organizations, business groups, and corporates.
- Aims to establish networks, synergies, and a centralized repository of best practices, personnel, and financial resources to strengthen big cat conservation efforts.
- Focused on arresting the decline of big cat populations and reversing the trend.

Mission:

- Foster mutual cooperation among countries for big cat conservation.
- Support knowledge sharing, capacity building, networking, advocacy, finance, and research.
- Integrate big cat conservation with sustainable development and climate resilience.

Approach:

- **Multipronged Strategy:**
 - Broad-based linkages in areas like knowledge sharing, capacity building, research, advocacy, and technical support.
 - Education and awareness campaigns targeting youth and local communities.
 - Use big cats as symbols for sustainable development and livelihood security.
- **Synergies and Partnerships:**
 - Collaborative platform for sharing gold-standard conservation practices.
 - Access to centralized technical know-how and financial resources.
 - Strengthen species-specific transnational initiatives on conservation.
 - Align biodiversity policies with the UN Sustainable Development Goals (SDGs).
- **Sectoral Integration:**
 - Promote biodiversity integration into agriculture, forestry, tourism, and infrastructure.
 - Support sustainable land-use practices, habitat restoration, and ecosystem-based conservation approaches.
 - Contribute to climate change mitigation, food security, clean water, and poverty reduction.

Governance Structure:

- Assembly of Members, Standing Committee, and Secretariat.
- Governance framework modeled on the International Solar Alliance (ISA).
- Director General (DG) appointed by MoEFCC as Interim Head, until formal appointment during IBCA Assembly.

CIRCULAR MIGRATION

A notable example of circular migration is the recent initiative where 997 youth from Maharashtra, with only high school certificates, secured employment in Israel with a monthly salary of Rs 1.37 lakh. This migration model promotes temporary migration where workers gain valuable skills abroad and return to their home country.

Background: -

- As artificial, non-economic barriers to the free movement of workers collapse due to skill deficits in regions with aging populations, India should position itself as a global source of human capital.

About circular migration

- Circular migration refers to the temporary, repetitive movement of individuals between two or more places, often across international borders, for work, education, or other purposes.

- It usually involves a person leaving their home region or country to seek employment elsewhere, but with the intention of returning periodically or eventually.

Key characteristics of circular migration include:

- Temporary nature: Migrants do not settle permanently in the host country; they move back and forth.
- Seasonal work: Many circular migrants engage in seasonal or temporary jobs, such as agriculture, construction, or tourism.
- Benefit for both regions: The home country receives remittances and knowledge transfer, while the host country gains a flexible workforce.

Brain Drain:

- In contrast, brain drain refers to the permanent emigration of highly skilled or educated individuals from their home country to another, usually for better employment opportunities, living conditions, or education.
- Unlike circular migration, brain drain often results in a loss of talent, expertise, and human capital from the country of origin.

Key characteristics of brain drain include:

- Permanent emigration: Once people leave, they typically do not return, causing a long-term loss of skilled workers.
- Loss of investment: Countries spend resources on educating and training individuals, only to lose them to other nations.
- Talent gap: It leads to a shortage of skilled professionals in critical sectors such as healthcare, technology, and education in the home country.
- Unequal exchange: While the host country gains from the influx of talent, the country of origin suffers a net loss of intellectual capital.

Workforce Shortage in Developed Nations:

- Europe and Japan face shortages in sectors like computing, infrastructure, and healthcare due to aging populations.
- Circular migration agreements with countries like Germany, Japan, and Israel aim to address this shortage by sourcing skilled workers from India.
- Unlike traditional brain drain, circular migration leads to skill exchange benefiting both India and destination countries. Labour mobility agreements ensure wages and social security for Indian workers, with a guaranteed return to India, boosting both economies.
- Highly-qualified permanent migrants like doctors and engineers contribute only 32% of India's remittances. In contrast, manual workers in the Gulf contribute 40%, highlighting the economic impact of low-skilled migration.

RE FREEZING ARCTIC REGION

Researchers are working on an innovative idea to address the impacts of climate change on the Arctic by developing a method to “refreeze” the Arctic Sea. Early trials show promise, suggesting that this method could help make the sea ice thicker by pumping seawater into already frozen areas.

Current Climate Threat

The Arctic is warming rapidly, and if this continues, it could become ice-free in the summers by the 2030s. This would be disastrous for global ecosystems and the planet's climate stability. Over the past few decades, nearly 13% of the sea ice in the Arctic has disappeared every 10 years.

What is the Proposed Solution?

Scientists are testing a simple method: using pumps to spread seawater onto areas of thin ice. The water then freezes in the cold winter months, creating a thicker layer of ice. The idea is that this thicker ice will last longer during the warmer seasons and help slow down the overall loss of Arctic ice.

How does it Work?

Engineers identify areas where the ice is thin. They make a hole in the ice and pump seawater through it. This water spreads across the surface and freezes faster than it would naturally, forming a stronger, thicker layer. Early tests of this method have shown some success, especially on a small scale.

Previous Tests and Innovations

Some experiments have used hydrogen as a renewable energy source to power the pumps. This is an important step forward in making the process more environmentally friendly, as it avoids relying on fossil fuels.

Are there any risks or concerns?

Although the method shows potential, there are concerns about its side effects. For example, it could lead to less snow cover, which might affect the wildlife in the Arctic. Some experts warn that while this approach might temporarily help the ice, it's not a complete solution to the much larger problem of climate change.

While this research is promising and could help protect Arctic ice in the short term, it is only one piece of the puzzle in the fight against global climate change. More comprehensive solutions will still be needed.

BIHAR'S NEW TR

The central government has given temporary approval to create Bihar's second tiger reserve in Kaimur district. This decision came after a proposal from the Bihar state government and is aimed at improving wildlife protection in the area.

Proposal and Approval Process

On October 8, 2024, Bihar's Forest, Environment, and Climate Change Minister, Prem Kumar, announced the plan to turn the Kaimur Wildlife Sanctuary (KWLS) into a tiger reserve. The National Tiger Conservation Authority (NTCA) and a technical committee approved this during their 12th meeting.

MARBURG VIRUS

Rwanda is currently facing its first Marburg virus outbreak, with 46 confirmed infections and 12 deaths. Most of the affected people are healthcare workers (80% of the cases), which is especially concerning because the country has only around 1,500 doctors to care for a population of over 13 million. This could put a lot of pressure on Rwanda's healthcare system.

What Is the Marburg Virus?

The Marburg virus is one of the most dangerous viruses known. It causes a disease called Marburg Virus Disease (MVD), which can kill between 24% and 88% of those who get it, depending on how well the outbreak is managed. The virus was first found in 1967 in Marburg, Germany, and most cases have since been reported in Africa. Marburg is related to Ebola, as both belong to a group of viruses called filoviruses.

How Does MVD Spread?

The Marburg virus originally spread to humans from Rousettus bats, which live in caves and mines. After a person is infected, the virus can spread from human to human through direct contact with bodily fluids like blood, vomit, or urine. It can also spread by touching contaminated surfaces or objects. Healthcare workers are at high risk because they are in close contact with sick patients.

Symptoms of Marburg Virus Disease (MVD)

Symptoms usually start between 2 to 21 days after someone is infected and include High fever, Severe headache, Muscle pain, Diarrhea (watery), Stomach pain, and Vomiting.

In severe cases, people can experience bleeding (hemorrhaging), and many die within 8 to 9 days due to blood loss and shock.

Prevention and Treatment

There are currently no approved vaccines or specific treatments for Marburg virus. The best doctors can do is provide supportive care, such as giving fluids to prevent dehydration and managing the symptoms. Rwanda is exploring experimental vaccines and treatments. For example, the Sabin Vaccine Institute has provided 700 doses of an experimental vaccine to protect frontline healthcare workers.

About the Marburg Virus

The Marburg virus was first discovered during outbreaks in Germany and Serbia in 1967. It causes hemorrhagic fever, which means that it can lead to severe internal bleeding and organ failure. The virus is passed between people through bodily fluids, and its natural host is believed to be fruit bats. Although outbreaks of Marburg are rare, they are often devastating when they do occur.

CLIPPER MISSION

On October 10, NASA will launch the Europa Clipper mission, which aims to explore Europa, one of Jupiter's moons, for signs of extraterrestrial life. This mission is a major milestone in space exploration, involving NASA's largest spacecraft ever built.

Mission Purpose

The main goal of the Europa Clipper mission is to investigate whether life could exist in the ocean beneath Europa's icy surface. While Mars is often studied for life, scientists are excited about Europa because it might have liquid water beneath its ice – an essential ingredient for life as we know it.

Water is vital for life on Earth because it dissolves many substances needed for living things to survive. Europa's possible underground ocean could have similar conditions, even though it is very far from the Sun. This makes Europa one of the top targets in the search for life beyond Earth, along with other moons like Titan and Enceladus (moons of Saturn) where liquid water has also been found.

Jupiter's Influence on Europa

Jupiter's strong gravity helps keep Europa's interior warm, even though it is far from the Sun. This warmth could allow the water under Europa's ice to remain liquid, just like on Saturn's moons Titan and Enceladus. Scientists believe this warmth, along with water, could create conditions for life.

Europa Clipper's Scientific Instruments

The Europa Clipper spacecraft is equipped with nine advanced instruments to thoroughly study Europa. These tools will measure the moon's surface, chemicals, temperature, and potential water plumes that might shoot up from the ocean. This data will help scientists figure out if any part of Europa could support life.

Challenges of the Mission

It will take over five years for Europa Clipper to reach Jupiter, so the results won't come quickly. The mission is just the first step in figuring out whether life could exist on Europa. Future missions might go further and directly search for signs of life.

GENDER RESPONSE TO CLIMATE CHANGE

Recent reports from the UN Climate Change secretariat show an increasing effort to consider gender in climate policies. By July 2024, around 81% of the countries that are part of the Paris Agreement included gender references in their Nationally Determined Contributions (NDCs), which is a big improvement compared to 2015.

Gender and Climate Change

Climate change affects men and women differently, with women being hit harder, especially in developing countries where many women work in agriculture. They often rely on farming for their food and income, so when climate conditions worsen, they lose both, making them more vulnerable to poverty and hunger.

Current Gender-Responsive Strategies

According to the report, 62.3% of the countries that mentioned gender in their climate plans are working on policies that include women's needs. However, most of these policies focus mainly on women's vulnerabilities and sometimes overlook men who may also be in difficult situations. About 55.7% of countries have committed to promoting gender equality in their climate actions.

Impact on Food Security

Climate change is making food production more challenging by affecting four key areas:

- Availability (how much food is grown),
- Accessibility (how easy it is to get food),
- Utilization (how food is used for nutrition), and
- System stability (the reliability of the entire food system).

Since women make up a large part of the workforce that grows food, they are particularly impacted when climate changes disrupt farming and food supplies.

Women's Exclusion from Decision-Making

Despite their important role in farming and food production, women are often left out of decisions about key resources like land and water. Without a say in how these resources are managed, it's harder for them to adapt their farming practices to cope with the changing climate.

Countries have an opportunity to improve gender-responsive strategies in their next climate action submissions in 2025. The first Global Stocktake (an assessment of global progress) from the 28th Conference of Parties (COP28) emphasized that integrating gender equality into climate policies can lead to better outcomes for everyone.

While progress has been made, there is still more to be done to ensure climate policies address the unique challenges that women face and involve them in decision-making.

LOTHAL COMPLEX

The Indian government, led by Prime Minister Narendra Modi, has approved the development of the National Maritime Heritage Complex (NMHC) in Lothal, Gujarat. This project will celebrate India's long and rich maritime history.

Project Overview

The NMHC project is being developed in two main phases:

- Phase 1B and Phase 2 have been given the green light. The money for these phases will come from voluntary contributions.
- In Phase 1B, a special Light House Museum will be built with funds from the Directorate General of Lighthouses and Lightships.

Project Management

A new organization, called a society, will be set up to manage the project's future phases. This society will follow the rules of the Societies Registration Act, 1860, and will be led by a Governing Council headed by the Minister of Ports, Shipping, and Waterways.

Current Progress

Phase 1A is already under construction and is more than 60% complete. It is expected to be finished by 2025.

Both Phase 1A and Phase 1B are using the Engineering, Procurement, and Construction (EPC) model to speed up the work. Phase 2 will use a Public-Private Partnership (PPP) approach, meaning both the government and private companies will work together.

Economic Impact

The NMHC is expected to create around 22,000 jobs, with 15,000 direct jobs and 7,000 indirect ones. This will help local communities and provide opportunities for tourists, researchers, and various organizations.

Vision and Background

The NMHC project is part of the Prime Minister's vision to showcase India's 4,500-year-old maritime heritage. The architectural masterplan has been designed by well-known architect Hafeez Contractor, and Tata Projects Ltd is responsible for building Phase 1A.

Future Phases and Features

Phase 1A: Includes a museum with six galleries displaying naval artefacts and a replica of the ancient Lothal township.

Phase 1B: Will add eight more galleries, a world-class Light House Museum, and a Bagicha complex (a garden area).

Phase 2: Will include Coastal States Pavilions, a hospitality zone (hotels and restaurants), an ecological resort, and recreational parks to make the NMHC a top tourist and heritage site.

The NMHC aims to celebrate India's long history with the sea, create jobs, and boost tourism in the region.

LUPEX MISSION

After the success of Chandrayaan-3 in August 2023, India's National Space Commission has approved a new lunar mission, called the Lunar Polar Exploration Mission (Lupex). This mission is a partnership between India's space agency ISRO and Japan's space agency JAXA, and it will focus on exploring the Moon's resources, especially water at the lunar south pole.

What are the Objectives of the Lupex Mission?

The main goal of the Lupex mission is to study water and other important resources on the Moon. Scientists want to understand how much water is present, where it is located, and whether it is just on the surface or also beneath the Moon's soil, known as regolith.

How long will the Mission Last?

Lupex is designed to operate for up to 100 days on the Moon's surface. This is a longer time compared to previous lunar missions, allowing the mission to gather more information. It will explore areas that are permanently shadowed places that sunlight never reaches – using special tools for drilling and on-site experiments.

Collaboration Between India and Japan

In this mission, both India and Japan will share responsibilities. JAXA (Japan) will build the rover and the rocket, while ISRO (India) will build the lander that will carry the rover to the Moon's surface. The Lupex rover will be about 350 kg in weight, much larger than the Pragyan rover from Chandrayaan-3, which weighed just 26 kg.

What could the Mission Mean for the Future?

Lupex's information will help plan future missions to the Moon, including those that may bring lunar samples back to Earth. It is also part of India's larger plan to send astronauts to the Moon by 2040. Lupex will also strengthen international cooperation in space exploration, especially between India and Japan.

About the Lunar Polar Exploration Mission (Lupex)

Lupex, will explore the Moon's polar regions, searching for water ice and assessing other resources. The mission is an important step toward building a sustainable human presence on the Moon. It will also contribute to lunar geology studies and increase international collaboration in space research.

TRACHOMA ELIMINATION

World Health Organization (WHO) recently praised India for successfully eliminating trachoma as a public health issue. This makes India the third country in the Southeast Asia Region to achieve this, following Nepal and Myanmar.

Significance of the Achievement

The WHO's recognition shows that India has made a strong effort to improve eye health and prevent diseases through its health programs. Trachoma, a disease that was once a major cause of blindness worldwide, has now been brought under control in India.

What is Trachoma?

Trachoma is a bacterial infection that affects the inner lining of the eyelids, and it is often linked to poor hygiene and bad environmental conditions. In the past, especially during the 1950s and 60s, it was a major cause of blindness in India.

Government Initiatives

India started the National Trachoma Control Program in 1963. This program was later merged with the National Programme for Control of Blindness. Thanks to these efforts, the percentage of blindness caused by trachoma dropped from 5% in 1971 to less than 1% today.

WHO's SAFE Strategy

To fight trachoma, India used the WHO's SAFE strategy, which stands for:

- Surgery to correct eyelid problems caused by trachoma.
- Antibiotics to treat the infection.
- Facial cleanliness to prevent the disease from spreading.
- Environmental hygiene to improve living conditions.

This strategy helped India get rid of infective trachoma by 2017.

Ongoing Surveillance and Research

Since 2019, India has been keeping a close watch to ensure trachoma does not come back. The National Trachomatous Trichiasis Survey (2021-2024) is being conducted to confirm that the disease remains under control.

Health Outcomes

In 2021, more than 69,000 people received surgical treatment, and around 64.6 million people were treated with antibiotics to fight trachoma. These efforts have greatly reduced the number of people affected by this disease, leading to better health outcomes across the country.

VISHORADS

The Defence Research and Development Organisation (DRDO) successfully tested the Very Short Range Air Defence System (VSHORADS) three times in Pokhran, Rajasthan. These tests show a big step forward in India's ability to develop its advanced defense systems.

What is VSHORADS?

VSHORADS is a 4th generation, portable missile system designed to protect against threats in the air at short distances. The Very Short Range Air Defence System (VSHORADS) is meant to defend against low-flying threats like drones and aircraft within a range of 5 to 20 kilometers. It uses surface-to-air missiles guided by infrared, radar, or optical systems to track and hit targets. VSHORADS is becoming more important in modern warfare due to the increasing use of drones. These systems are typically placed near military bases, borders, and other critical areas for protection.

Testing Objectives

The main purpose of the tests was to check how well the VSHORADS performs, especially its ability to:

- Intercept targets at its maximum range and altitude.
- Work effectively against fast-moving aerial threats in different combat situations.

The missile system hit its targets with great accuracy, showing that it can be relied upon in various battlefield conditions.

"Hit-to-Kill" Capability

One key feature of VSHORADS is its "hit-to-kill" capability. This means the missile can hit and destroy the target directly, not just damage it. The tests confirmed that it could hit approaching, receding, and even sideways-moving targets, proving it is adaptable and dependable in different scenarios.

Development and Production

The VSHORADS was developed with the help of two production agencies, following a model that focuses on both development and manufacturing at the same time. This approach allows for faster production and quicker user trials, bringing the system closer to being ready for military use.

Connection to 'Aatmanirbhar Bharat' (Self-Reliant India)

The successful tests support the Indian Government's 'Aatmanirbhar Bharat' initiative, which aims to make India more self-reliant in defense production. By creating advanced systems like VSHORADS at home, India is reducing its dependence on imports.

Involvement of Armed Forces

The Indian Armed Forces – Army, Navy, and Air Force – have been involved in the VSHORADS project from the very start. Their feedback and participation during development and testing help ensure the system meets the real needs of soldiers in the field.

India's Defence Minister Rajnath Singh congratulated DRDO and its partners for the successful tests, highlighting the system's importance for the country's defense. DRDO Chairman Dr. Samir V Kamat also acknowledged the team's efforts, calling the tests a big milestone in India's defense technology.

NOBEL - MEDICINE

The Nobel Prize in Medicine for 2024 was awarded to Victor Ambros and Gary Ruvkun for discovering microRNA and its vital role in controlling how genes work after they are copied. This discovery changed how we understand gene regulation, showing how certain genes are turned on or off to support different cell functions, like in muscle or nerve cells.

What is Gene Regulation?

Inside every cell, genes act like instructions that tell the cell how to function. Even though all the cells in our body have the same genes, they can behave very differently. For example, muscle cells and nerve cells look and act differently, even though they share the same genetic code. This happens because only certain genes are turned on in each cell type, depending on what the cell needs to do. This process is called gene regulation.

The Discovery of MicroRNA

Ambros and Ruvkun's research led to the discovery of microRNA (miRNA) – tiny RNA molecules that play a big role in gene regulation. These small pieces of RNA help control which genes are active in a cell. Their research found that humans have over a thousand different microRNAs, and they are important for growth, development, and many other processes.

REPORT ON FOREST FIRES

2024 Forest Declaration Assessment: Forests under fire' Report Released

Report focuses on tracking the overarching forest goals: **eliminating deforestation and forest degradation, and restoring 30% of degraded forest area by 2030.**

- These goals have been established by **international commitments** such as New York Declaration on Forests (2014), Glasgow Leaders' Declaration (2021), and Kunming-Montreal Global Biodiversity Framework (2022).

Global Forest Goals and Progress

- **Eliminate deforestation by 2030:** Around 6.37 million hectares deforested in 2023 much greater than the targeted 4.38 million hectares.
 - **3.8 billion metric tons of CO2 equivalent in 2023** making deforestation fourth-highest emitter after China, US and India.
- **Eliminate tree cover loss in forested Key Biodiversity Areas (KBAs):** Over 1.4 million hectares of forests were lost within forested KBAs in 2023.
- **Controlling Forest Fire:** Nearly **one-third of area lost to fires** since 2001 was burned from 2019-23.
- **Restore 30% of degraded and deforested landscapes by 2030:** Only around **18% of the Bonn Challenge's 2020 target of 150 million hectares** was restored from 2000-19.

Drivers of Deforestation

- **Commodity Production:** Agricultural commodities responsible for **57% of global deforestation** over past two decades.

- **Shifting agriculture in primary forests:** Responsible for loss of 15.9 million hectares of primary forests from 2015-23.
- **Mining:** From 2000-19, mining volumes from tropical moist forest ecosystems doubled.

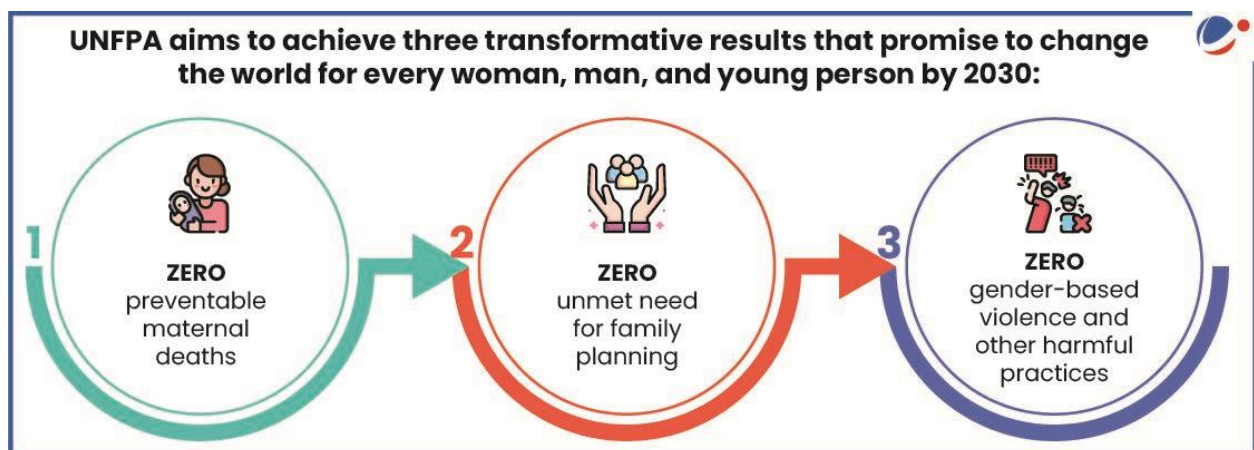
Recommendations

- All forests need protection, but **primary and intact ecosystems** should be the top conservation priority.
- **Large scale efforts** are necessary to restore 30% of degraded ecosystems, and to monitor and transparently report progress.
- **Governments should acknowledge altered fire patterns** as a human-induced phenomenon and implement adaptive strategies accordingly.
- **KBAs and other areas identified as high integrity and high conservation value forests** should be prioritized within global and national forest conservation efforts.

INDIA'S INITIATIVES FOR ADVANCING MATERNAL HEALTH AND FAMILY PLANNING

Celebrating a landmark **50-year partnership** between UNFPA and the Government of India.

- UNFPA is the United Nations **sexual and reproductive health agency** and is a subsidiary organ of UN General Assembly.



India's Initiatives for advancing Maternal Health and Family Planning

- **Surakshit Matritva Aashwasan Yojana (SUMAN):** Assured, dignified and respectful **delivery** of quality healthcare services at **no cost** and zero tolerance for denial of services to any woman and newborn visiting a public health facility.
- **Pradhan Mantri Surakshit Matritva Abhiyan (PMSMA):** Provide assured, comprehensive, and quality **antenatal care, free of cost, universally to all pregnant women.**
- **Midwifery Services Initiative:** Training about **90,000 midwives** as they can provide about 90% of all sexual, reproductive, maternal, new-born and adolescent health (SRMNAH) care.

India's Advancements in Maternal health and Family Planning

- India has **reduced Maternal Mortality Rate (MMR) by 70% (between 2000 and 2020) to 97** (per 1,00,000 live births), positioning India to achieve SDG target of MMR below 70 by 2030.
- **Total Fertility Rate** (2.0 in 2020) reduced **below Replacement level Fertility** (2.1).
- In 2019–2021, **89% of women delivered in a health facility**, up from 79% in 2015–2016.
- **Infant Mortality Rate (IMR)** has declined from 39 in 2014 to 28 in 2020.

EWRs IN PANCHAYATS

In a recent case, SC while **offering relief to Woman Sarpanch** removed by District Administration in a Maharashtra village **highlighted resistance faced by EWRs in Panchayats**.

EWRs in Rural Government

- **Status in India:** ~1.4 million women constituting 46% of total elected representatives of PRIs.
 - **73rd Constitutional Amendment, 1992** mandated reservation of at least one-third seats for women.
 - Some states like **Bihar, Chhattisgarh**, have increased reservation **proportion to 50%**.
- **Significance of EWRs:** Improved service delivery; lesser corruption; inclusive governance; gender equality, etc.

Issues faced by EWRs in Rural Areas

- **Rubber Stamps Candidates:** Actual decision-making powers lies with husbands/male family members.
- **Gender Biases and Social Barriers:** Domestic Responsibilities along with prejudiced attitude towards EWRs limits possibility for bringing social change.
- **States' Policies as Barrier:** Some states like Rajasthan have two-child norm or minimum educational qualification as criteria for contesting elections.
- **Rotation of Seats:** EWRs often have to discontinue after serving a single term due to rotation.
- **Other Issues:** Digital divide, Lack of Knowledge, apprehensions about ability, cultural Constraints etc.

Way forward on facilitating EWRs

- **Institutional Reforms:** recruiting more women in other Panchayat roles like Panchayat Secretary, institutionalized monitoring to restrict interference by their male counterparts in their work.
- **Strengthening Women Collective Agency:** Nurturing federations of EWRs, mobilizing forums like Self Help Groups, etc.
- **Others:** Investing in capacity building through education; coherent and updated data for comprehensive assessment, etc.

FORTIFIED RICE & PRADHAN MANTRI GARIB KALYAN ANNA YOJANA (PMGKAY)

Free Fortified Rice will be supplied under **Pradhan Mantri Garib Kalyan Anna Yojana (PMGKAY) and other welfare schemes.**

- **Rice fortification** involves **adding Fortified Rice Kernels** (containing micronutrients like Iron, Folic Acid, and Vitamin B12) **to normal Rice** (Custom Milled Rice) **as per standards prescribed by FSSAI.**
 - **Fortification** is the addition of **key vitamins and minerals** to staple foods such as rice, wheat, oil, milk and salt **to improve their nutritional content and combat malnutrition.**

About Fortified Rice Initiative

- **Background:** The initiative launched **in 2022**, and the **three-phase rollout** of this scheme was **completed successfully** by March 2024.
- **Rationale:**
 - **Combating malnutrition:** Fortification is a cost-effective method for **combating Anaemia and micronutrient malnutrition.**
 - **Higher reach:** **Rice** is an ideal vehicle for supplying micronutrients as it is a **staple food for 65% of India's population.**
- **Schemes covered:**
 - Targeted Public Distribution System (TPDS),
 - Integrated Child Development Services (ICDS),
 - PM POSHAN (formerly the Mid-Day Meal scheme), and
 - other welfare programs across all states and Union Territories.
- **Funding:** Central Sector Initiative with **100% funding by the Centre** as part of the **food subsidy component of PMGKAY.**
 - Under PMGKAY, free foodgrain is being provided (for 5 years) to **81.35 crore beneficiaries of the National Food Security Act 2013.**

About Anaemia

- **Anaemia** is a condition in which the **number of red blood cells or the haemoglobin** concentration within them is **lower than normal**
- **Prevalence:** As per the National Family Health Survey 5 (2019-21) **57% women, 59% adolescent girls and 67% Children (6-59 months)** are anaemic.
- **Anaemia Mukht Bharat strategy** is implemented to reduce Anaemia **in the vulnerable age groups.**

ANACONDA STRATEGY

What is the Anaconda Strategy?

The Anaconda Strategy is a slow, squeezing tactic, similar to how an anaconda snake wraps around its prey before striking. China uses this strategy to weaken Taiwan gradually. Instead of launching an immediate attack, China focuses on surrounding Taiwan and weakening its defenses through military drills and psychological pressure.

Increasing Military Presence Around Taiwan

China has been increasing the number of military forces around Taiwan. For example, Chinese aircraft flying near Taiwan's airspace has increased by more than five times, and the number of Chinese naval ships has doubled. These activities show that China is prepared for a possible blockade and poses a constant threat to Taiwan.

INDIA'S MARITIME DECARBONISATION CONFERENCE

The Conference on Maritime Decarbonization in New Delhi, co-hosted by the Ministry of Ports, Shipping and Waterways, and the Asian Development Bank, brought together more than 200 participants, including leaders from Indian ports, government officials, and international experts. The goal of the conference was to discuss how shipping and port operations can become more environmentally friendly.

India's Maritime Sector and Climate Change

In his keynote speech, Secretary TK Ramachandran explained that the maritime sector is crucial for the economy but also plays a key role in fighting climate change. The Indian government is committed to making maritime operations more sustainable, which means they want to reduce pollution and adopt greener practices.

Green Initiatives

The Ministry shared two important guidelines

Harit Sagar Green Port Guidelines – These are rules to help ports use green energy and become more eco-friendly.

Harit Nauka Green Transition Guidelines – These focus on making shipping more sustainable.

Both guidelines are designed to help ports and ships use clean energy and reduce pollution, serving as models for the entire maritime sector.

India's commitment to net-zero emissions

The conference emphasized India's goal to reach net-zero carbon emissions by 2070. This means India wants to balance the amount of carbon dioxide it produces with the amount it removes from the atmosphere. This goal aligns with Maritime India Vision 2030, which focuses on making India's maritime practices more sustainable in the coming years.

Key Discussion Themes

Several important issues were discussed at the conference, including:

- Building green infrastructure for ports, meaning ports that use eco-friendly energy sources.
- Using clean harbor crafts, or smaller boats that produce less pollution.
- Exploring zero-carbon fuels like hydrogen and ammonia, which do not release harmful emissions.
- Strategies to reduce emissions from ships and ports.
- Electrifying inland waterways, making them run on electric energy instead of fuel.

These discussions are part of a broader effort to make the maritime industry more sustainable and address global climate concerns.

What is Maritime Decarbonization?

Maritime decarbonization means reducing greenhouse gas emissions from ships. Around 90% of global trade is done through ships, but these ships produce nearly 3% of the world's CO2 emissions. The International Maritime Organization (IMO) aims to reduce these emissions by 50% by 2050. To achieve this, shipping companies are exploring alternative fuels such as ammonia, hydrogen, and methanol.

However, switching to these fuels is expensive and requires new infrastructure. Some ships are even using wind-assist technologies to reduce fuel consumption.

SERIOUS FRAUD INVESTIGATION OFFICE (SFIO)

The Serious Fraud Investigation Office (SFIO) recorded the statement of daughter of Kerala Chief Minister Pinarayi Vijayan and owner of a now-dormant information technology firm, raising a political storm.

Background:

- The Union Corporate Affairs Ministry had ordered an SFIO inquiry based on the finding of the Interim Settlement Board (ISB) under the Central Board of Direct Taxes.

About Serious Fraud Investigation Office

- The Serious Fraud Investigation Office (SFIO) is a specialized agency established under the Ministry of Corporate Affairs (MCA), tasked with investigating serious financial frauds in India. It plays a critical role in ensuring corporate governance and financial integrity, especially concerning complex and large-scale frauds.
- The SFIO was set up in 2003 based on the recommendations of the Naresh Chandra Committee on Corporate Governance.
- It gained statutory status under the Companies Act, 2013 (Section 211), empowering it to investigate frauds relating to companies.
- It is a multi-disciplinary organization, consisting of experts in the field of accountancy, forensic auditing, banking, law, information technology, investigation, company law, capital market and taxation, etc. for detecting and prosecuting or recommending for prosecution white-collar crimes/frauds.
- SFIO is headed by a Director as Head of Department in the rank of Joint Secretary to the Government of India.
- SFIO take up for investigation cases characterized by –
 - complexity and having inter-departmental and multi-disciplinary ramifications.
 - substantial involvement of public interest to be judged by size, either in terms of monetary
 - the possibility of investigation leading to or contributing towards a clear improvement in systems, laws or procedures
- SFIO Investigate into the affairs of a company on: –
 - on receipt of a report of the Registrar or inspector under section 208 of the Companies Act, 2013.

- on intimation of a special resolution passed by a company that its affairs are required to be investigated
- in the public interest
- on request from any department of the Central Government or a State Government.

Key Features:

- **Autonomy:** SFIO functions autonomously but operates within the framework provided by the MCA.
- **Coordination with Other Agencies:** It coordinates with other regulatory bodies like SEBI, CBI, RBI, and the Enforcement Directorate (ED) during investigations.
- **Investigation Process:** Investigations are initiated upon referral by the Central Government, based on material suggesting fraud. The SFIO submits its report to the government, which may lead to prosecution.
- **High-profile cases** such as the Satyam scam, IL&FS crisis, and Kingfisher Airlines case have been investigated by the SFIO.

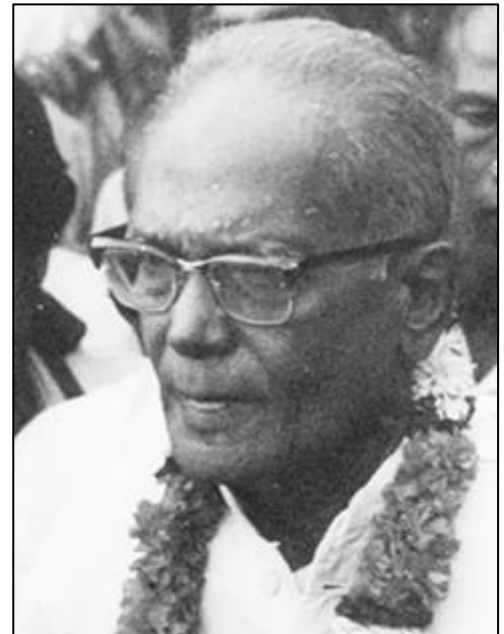
Recent Amendments and Reforms:

- To strengthen SFIO, amendments to the Companies Act, 2013 have expanded its powers, including the authority to summon individuals and seize company records during investigations.
- The Insolvency and Bankruptcy Code (IBC), 2016, has further enhanced the agency's role in investigating corporate insolvency cases with fraudulent activities.

JAYAPRAKASH NARAYAN

Jayaprakash Narayan, popularly known as Lok Nayak, was born on 11 October 1902 in Bihar's Saran district. As we commemorate his 122nd birth anniversary this year, his legacy as a people's leader and champion of their cause continues to inspire.

- He played a noteworthy role in the Indian national struggle and especially in leading the call for 'Total Revolution' during the Emergency.



Context: Jayaprakash Narayan, popularly known as Lok Nayak, was born on 11 October 1902 in Bihar's Saran district. As we commemorate his 122nd birth anniversary this year, his legacy as a people's leader and champion of their cause continues to inspire.

Background: -

- He played a noteworthy role in the Indian national struggle and especially in leading the call for 'Total Revolution' during the Emergency.

Key takeaways

- The first encounter of Jayaprakash Narayan (JP) with freedom struggle happened during the Swadeshi movement. He gave up his foreign clothes and footwear in support. From the beginning, he was influenced by Gandhi.
- In December 1920, Gandhi visited Patna with the message of Non-cooperation. Inspired by his speech, JP wanted to invest all his time into political work but was held back by apprehension. His misgivings disappeared when Maulana Abul Kalam Azad visited Patna and prompted students. JP quit college and became part of the Non-Cooperation Movement. In 1922, he left India to study at the University of California, Berkeley, where Karl Marx's ideas influenced him.
- In 1929, upon returning to India, he joined the Indian National Congress. During the Civil Disobedience Movement, when all the prominent leaders were arrested, JP kept the Congress functional. He began working on building an extensive illegal underground network distributing literature and recruiting supporters. Several warrants were issued against him, eventually leading to his arrest in 1932.
- Influenced by Socialist ideas, the young congressmen in Bihar founded the Bihar Socialist Party in 1931, JP was associated with the organisation since its inception. JP became instrumental in the formation of the All India Congress Socialist Party (CSP) in 1934 with Narendra Deva as president and himself as secretary.
- It was during the Quit India Movement (1942) that JP came to the forefront. He along with Ram Manohar Lohia and Aruna Asaf Ali, took charge of the movement after all the senior leaders were arrested. Soon, he was also arrested under Defence India Rules. He was taken to Hazari Bagh Central Jail from where he escaped in November 1942.
- JP organised an "Azaad Dasta" (armed guerrilla revolutionaries) in Nepal after escaping from jail. JP hoped to launch a countrywide revolution. However, he was arrested in September 1943, exactly ten months and ten days after he escaped from Hazaribagh jail. It was only in 1946 that he was released from jail.
- Following Independence, JP took the CSP out of the Congress and formed the Socialist Party, which he merged with J B Kripalani's Kisan Mazdoor Praja Party to form the Praja Socialist Party. Soon afterward, after turning down Nehru's calls to join the ministry, JP decided to walk away from electoral politics and involved himself with Acharya Vinoba Bhave's Bhoodan movement.
- In March 1974, students in Bihar protesting against rising prices and unemployment, invited JP, who has given up from active politics, to guide the student movement. JP accepted it on one condition that the movement will remain non-violent and will not limit itself to Bihar. JP demanded the dismissal of the Congress government in Bihar and gave a call for a "total revolution" in the social, economic, and political spheres.
- A massive protest was organised in Delhi's Ramlila grounds on 25 June 1975 where JP announced a nationwide satyagraha for then Prime Minister, Indira Gandhi's resignation and asked the army, the police, and government employees not to obey "illegal and immoral orders". In response, the government declared a state of emergency on 25 June 1975.
- The General Elections were called in 1977. The election results turned into a referendum on Emergency, at least in north India. Indira Gandhi's government was defeated, paving the way for the formation of the first-ever non-Congress government at the Centre. Throughout the Emergency, JP fought vigorously against the authoritarian and became a beacon of hope in the face of adversity.

BIRD POPULATION

India has seen a worrying decline in its bird population over recent decades, especially between 1992 and 2002, when some species, like vultures, faced severe reductions. The Living Planet Report 2024 draws attention to this issue, making India the only country to have a specific section on its bird crisis in the report.

Vulture Population Decline

Vultures in India have experienced an alarming drop in numbers:

- The White-rumped Vulture population fell by 98%.
- The Indian Vulture and Slender-billed Vulture populations decreased by 93%.

These vultures, which play an important role in the ecosystem as scavengers, have been declining rapidly due to several threats.

What are the Main Causes of Vulture Decline?

The report lists several reasons why vulture numbers have dropped so drastically

Pharmaceutical Impact: The use of certain drugs in livestock has been highly damaging to vultures. Medications like diclofenac, aceclofenac, ketoprofen, and nimesulide, used to treat animals, remain in their bodies after they die. When vultures eat the carcasses, they get poisoned. Last year, India banned aceclofenac and ketoprofen to protect vultures.

Carcass Poisoning: In some areas, livestock carcasses are intentionally poisoned to kill predators like wolves. Unfortunately, this also harms scavengers like vultures that feed on the same carcasses.

Electrocution: Vultures are accidentally electrocuted when they come into contact with high-voltage electric wires.

Habitat Loss: Vultures depend on open areas like grasslands and farmlands. As these habitats are destroyed or transformed, vultures lose their natural homes.

Impact on Insects

In addition to birds, the report also raises concerns about the decline of insects:

- 33% decline in grassland butterfly species across 22 countries over the past 20 years.
- In Odisha, native bee populations have dropped by 80% since 2002.

There is also a lack of comprehensive data on other important pollinators, like bees and butterflies, making it harder to fully understand the extent of biodiversity loss.

Positive News for Tiger Populations

While birds and insects are facing serious challenges, there is some good news. India's tiger population has grown. According to the 2022 All-India Tiger Estimation, the number of tigers has increased from 3,682 to 3,925, especially in central India and the Shivalik Hills.

Urbanization and its Effect on Biodiversity

The report also warns about the impact of urbanization on India's ecosystems. For example, in Chennai, rapid urban expansion between 1988 and 2019 caused a significant loss of wetlands. This has reduced the city's ability to naturally store water, making it more vulnerable to climate change effects, like droughts and floods.

India is facing a serious biodiversity crisis, especially with the decline in bird species, including vultures. The loss of insect populations and the destruction of natural habitats add to the growing environmental challenges. Conservation efforts are urgently needed to protect India's wildlife and prevent further ecological damage.

BRICS2024

- The Summit in **Kazan, hosted by Russia**, focused on Strengthening Multilateralism for Just Global Development and Security.

Key Points of the Summit

- The **Kazan Declaration**, issued at the summit, is a comprehensive document that emphasizes the need for **enhanced cooperation** among the participating countries and presents the **bloc's unified stance on key global issues**.
- The **Kazan Declaration** emphasized “**Strengthening Multilateralism for Just Global Development and Security**” with commitment to fostering peace, ensuring a fairer international order, and promoting sustainable development.
- Russia emphasized a **BRICS-led payment system against SWIFT**, an international financial network that Russian banks were cut off from in **2022**, as well as the escalating situation in West Asia.
- The BRICS nations agreed to explore initiatives, such as **BRICS Grain Exchange and BRICS (Re)Insurance Company**.
- The summit also endorsed the creation of a **BRICS Partner Country category**, which would allow other nations to collaborate with BRICS on various projects.
- **BRICS R&D Vaccine Center** was announced for fostering research in vaccine development.
- India's initiative to create an **International Big Cats Alliance** was recognized during the summit.

- Expansion of BRICS: Argentina, Ethiopia, Egypt, Iran, Saudi Arabia, and the UAE are the six new additions to the BRICS.



- It brings together five of the largest developing countries of the world, representing around **41%** of the global population, around **24%** of the global GDP and around **16%** of global trade.

Significance of BRICS for India

- **Strengthening South-South Cooperation:** India views BRICS as a platform for fostering collaboration among developing countries, amplifying their voices in global institutions like the UN and World Bank.
- **Balancing Global Power:** BRICS serves as a counterbalance to Western-dominated alliances such as the G7. For India, this helps in diversifying its foreign relations and reducing dependency on Western powers.
- **Trade Diversification:** BRICS promotes economic cooperation, trade, and investment between member countries.
- **New Development Bank (NDB):** It provides BRICS nations with access to funding for infrastructure and sustainable development projects, aligning with India's growth objectives.

Challenges

- **Varying Agendas:** India's concerns over terrorism and border security may differ from other members like China and Russia, who may prioritize their regional and geopolitical interests over these issues.
- **Geopolitical Rivalry:** China's growing influence within BRICS, especially with the inclusion of countries like **Iran and Saudi Arabia** (which have strong ties with China), raises concerns about BRICS tilting towards a pro-China bloc.
- **Balancing Middle Eastern Alliances:** The inclusion of Iran, Saudi Arabia, and the UAE introduces complexities in India's relationships within the Middle East.
- **Trade Barriers:** Intra-BRICS trade barriers such as tariffs, regulatory differences, and currency issues persist, limiting India's ability to fully capitalize on trade opportunities within the group.

Way Ahead

- **India's participation in BRICS is crucial**, both for advancing its national interests and for shaping global governance in an increasingly dynamic geopolitical environment.
- **As one of the founding members**, India has consistently played a key role in ensuring that BRICS remains a collaborative platform for emerging economies to assert their influence on the global stage.
- BRICS presents India with a unique opportunity to diversify its trade networks, attract foreign investments, and engage in joint infrastructure and development initiatives.
- In this context, India should strategically utilize the resources of the **New Development Bank (NDB)** to finance critical projects that align with its long-term growth goals.

Kartarpur Sahib Corridor

India and Pakistan agreed to renew their pact on the Kartarpur Sahib Corridor for another five years. The pact was due to lapse on October 24.

Background: -

- The development comes after Jaishankar went to Pakistan recently to attend the Shanghai Cooperation Organisation (SCO) meeting.

Key takeaways

- The 4 km-long Kartarpur Corridor provides visa-free access to Indian Sikh pilgrims to visit Gurdwara Darbar Sahib, the final resting place of Sikhism founder Guru Nanak Dev.
- While the Corridor was opened in November 2019, movement was suspended in March 2020 after the pandemic struck. It was reopened later.
- The Agreement, signed on 24 October 2019 to facilitate the visit of pilgrims from India to Gurdwara Darbar Sahib Kartarpur, Narowal, Pakistan through the Kartarpur Sahib Corridor, was valid for a period of five years. Extension of the validity of Agreement will ensure uninterrupted operation of the Corridor.

Additional Information

- Kartarpur marks the most significant phase in the life of Guru Nanak Dev. It was here on the banks of the river Ravi that he laid the foundations of a new faith in a commune he set up. Guru Nanak came to the town between 1520 and 1522.



- He had spent the formative years of his life at Talwandi, about 90 km west of Lahore in Pakistan, where he was born in 1469.
- The next 10 years of Guru Nanak's life were spent at Sultanpur Lodhi, where he gained enlightenment. He finally came to Kartarpur rich with experiences gained from his interactions with rulers, common people, clergymen, and thinkers.
- The janam sakhis on Guru Nanak's life say he was offered this land by a 'karori' (administrator of a pargana). Guru Nanak called it Kartarpur,
- **At Kartarpur, Guru Nanak practised what he preached – "naam japo, kirrt karo, wand chhako (worship, work, and share)" – as the path to liberation. He and his followers cultivated the land and also reared cattle.**

- It was at Kartarpur that Nanak started the concept of 'langar', a community meal prepared in a community kitchen where everyone would sit on the floor and eat together regardless of background.
- The distinctive feature of Sikh identity – Service before Self – was formulated by Guru Nanak at Kartarpur.
- It was at Kartarpur that Nanak gave the three Gs – Gurdwara, the Granth, and the Guru himself – that underpin the Sikh faith.

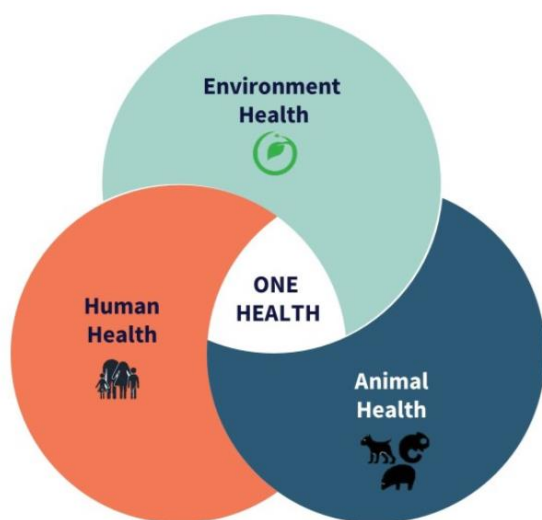
NATIONAL ONE HEALTH MISSION

The UN General Assembly recognised **antimicrobial resistance (AMR)** as an urgent “global health threat and developmental challenge”. This has brought the attention back on National One Health Mission.

Background: -

- Antimicrobial is an all-encompassing term that includes antibiotics, antivirals, antifungals and antiparasitics administered to humans, animals and plants.
- They have been misused and overused not just to treat diseases but also as “growth promoters” in industrial-scale food production. In 2000, the WHO recommended rapidly phasing out antibiotic growth promoters from the agriculture and animal sectors.

One Health -INDIA



The **Prime Minister's Science, Technology, and Innovation Advisory Council** approved to set up a **National One Health Mission** with a cross-ministerial effort which will serve to coordinate, support, and integrate all the **existing One Health activities** in the country.

Recently, **MOHFW**, has transformed its "**Division of Zoonotic Diseases Program**" into the "**Centre for One Health.**" The Centre for One Health comprises **8 technical divisions**, each focusing on different aspects of One Health.

Concept of One Health:

- One Health is a collaborative, multi-sectoral, and transdisciplinary approach that recognizes the interconnectedness of the health of humans, animals, and the environment.
- It aims to prevent and control zoonotic diseases (diseases transmitted between animals and humans) and other public health threats by working at the intersection of these three domains.

About National One Health Mission

- The National One Health Mission is a comprehensive initiative in India aimed at integrating human, animal, and environmental health sectors to address health challenges holistically.

Vision and Goals

- Vision: To build an integrated disease control and pandemic preparedness system by bringing together human, animal, and environmental sectors for better health outcomes, improved productivity, and conservation of biodiversity.
- Goals: The mission aims to enhance pandemic preparedness, integrated disease control, and early warning systems for both endemic and emerging epidemic threats.

The key pillars of the NOHM are:

- Technology enabled integrated surveillance across sectors.
- National network of Biosafety Level 3 (BSL-3) laboratories (for testing high-risk or unknown pathogens).
- Collaborative and integrated R&D for medical countermeasures including vaccines, diagnostics, and therapeutics for human-animal-wildlife-livestock health.
- Data integration across sectors.
- Training and capacity building in all spheres related to One Health.

Governance Structure

- Executive Committee: Chaired by the Hon'ble Minister of Health and Family Welfare, with the Principal Scientific Adviser as the vice-chair.
- Scientific Steering Committee: Chaired by the Principal Scientific Adviser, providing overall scientific direction and oversight.

PONG DAM

Even after five decades have passed since thousands were uprooted to make way for the construction of Pong Dam, the cases of 6,736 families, who await rehabilitation, are still pending.

Background: -

- A total area of 75,000 acres, spread over 94 villages in Nurpur and Dehra tehsils in Himachal Pradesh, was acquired displacing 20,722 families and a population of 1.5 lakh.



About Pong Dam

- The Pong Dam is located on the Beas River in the Kangra District of Himachal Pradesh, India. It is an earth-fill embankment dam.
- Also Known As: Maharana Pratap Sagar Dam (Reservoir is called Maharana Pratap Sagar).
- Purpose:
 - Hydroelectric Power Generation.
 - Irrigation: Provides irrigation to parts of Himachal Pradesh, Punjab, and Rajasthan.
 - Water Storage: It is a reservoir for regulating water supply.
- Year of Completion: 1974.
- The Maharana Pratap Sagar Lake formed by the dam is a Ramsar Wetland Site and a wildlife sanctuary, known for migratory birds.

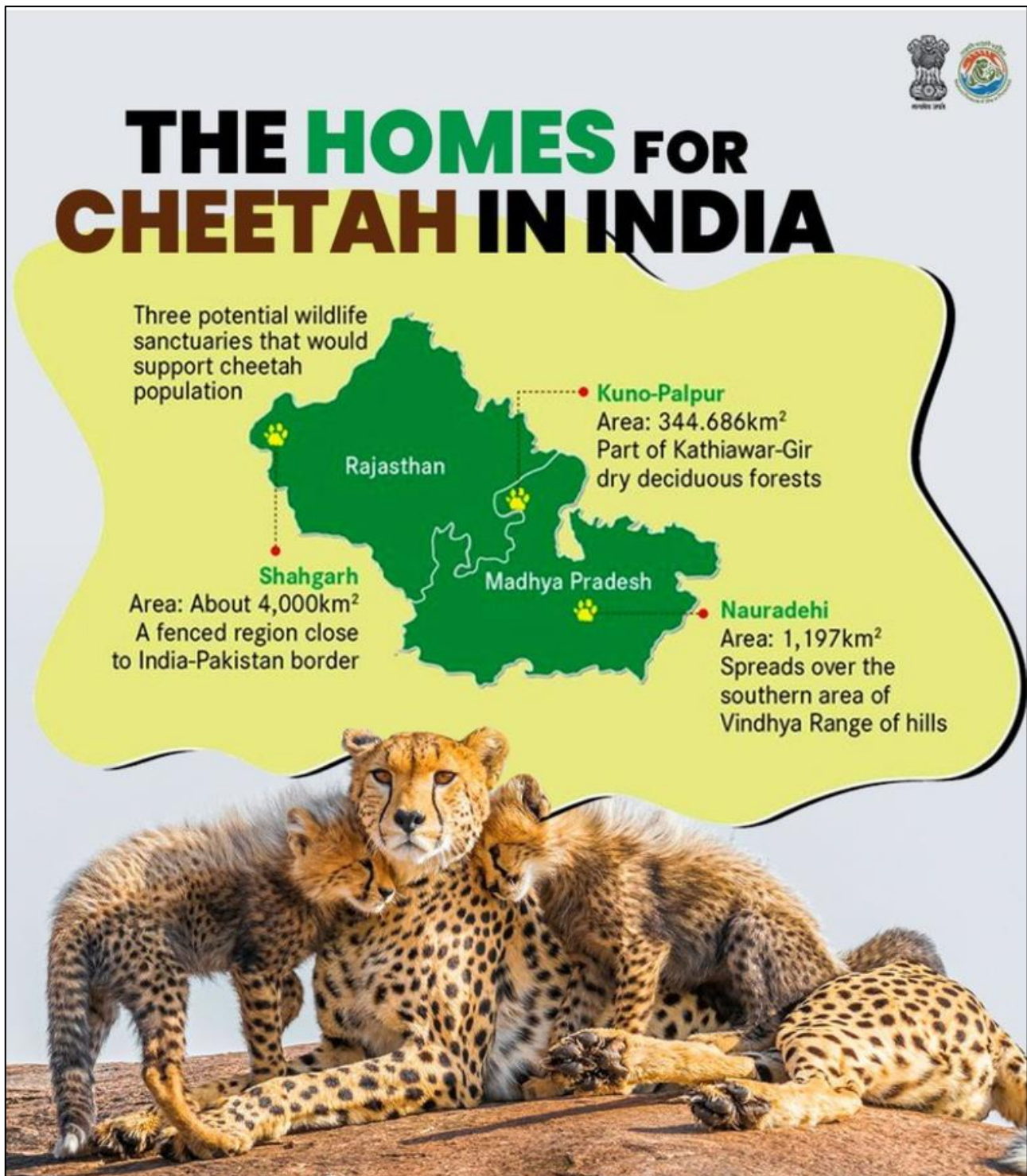
KUNO NATIONAL PARK (KNP)

A female cheetah is pregnant and expected to deliver cubs soon at the Kuno National Park (KNP).

Background: -

- On September 17, 2022, Prime Minister Modi released eight cheetahs – five females and three males – brought from Namibia into enclosures at the KNP as part of the world’s first intercontinental translocation of the big cats.

- In February 2023, another 12 cheetahs were translocated to the national park in MP from South Africa.



Kuno National Park - Key Facts

- Location: Madhya Pradesh.
- Area: Approximately 748 sq km.
- Established: Initially designated as a Wildlife Sanctuary in 1981, it was upgraded to a National Park in 2018.
- It is part of the Khathiar-Gir dry deciduous forests ecoregion.

Biodiversity and Ecosystems

- Flora: Predominantly dry deciduous forest, with significant presence of grasslands and scrub.
- Fauna: Flagship Species: Asiatic Cheetah (reintroduced in 2022 as part of India's Cheetah reintroduction program).
- Other species: Leopards, Indian Wolves, Jackals, Nilgai, Chinkara, Sambar, and various species of birds and reptiles.

Cheetah Reintroduction Project:

- Kuno National Park was chosen for the reintroduction of Cheetahs in India, after being declared extinct in the country in 1952.
- The first batch of African Cheetahs from Namibia was released into the park in 2022 as part of a historic translocation project to restore the species in India.
- The park was originally identified in the 1990s as a potential site for the relocation of Asiatic Lions from Gir National Park (Gujarat), but this plan faced delays.
- However, the focus shifted to cheetah reintroduction due to suitable habitat conditions.

Geographical Features:

- The park is part of the larger Vindhyan hill ranges and lies within the semi-arid region of central India.
- Rivers: The Kuno River, a tributary of the Chambal River, flows through the park, providing an important water source for the wildlife.

MOONLIGHT PROGRAM

The European Space Agency (ESA) at the International Astronautical Congress, launched its Moonlight Lunar Communications and Navigation Services (LCNS) programme.

Background: -

- The initial services of the programme will begin by the end of 2028, and the system is said to be fully operational by 2030.

About Moonlight programme

- The Moonlight programme is an ambitious initiative by the European Space Agency(ESA) aimed at establishing a dedicated satellite constellation for lunar communications and navigation services.

Key Features:

- Satellite Constellation: The Moonlight programme will consist of a constellation of five lunar satellites. Four of these satellites will be dedicated to communication, while one will handle navigation.
- These satellites will reportedly enable data transfer over 4,00,000 kilometres between the Earth and the Moon.

- The satellites will be strategically positioned to prioritise coverage of the lunar south pole, an area of particular interest for future missions due to its “peaks of eternal light” suitable for solar power and “craters of eternal darkness” containing polar ice which can be a source of water, oxygen and rocket fuel.



Significance:

- **High-Speed Communication:** The programme aims to enable high-speed, low-latency communication and data transfer between Earth and the Moon.
- **Autonomous Landings:** The infrastructure will facilitate precise, autonomous landings and surface mobility on the Moon.
- **Sustainable Lunar Exploration:** By providing robust communication and navigation services, the Moonlight programme is a significant step towards sustainable lunar exploration and the development of a lunar economy
- The program will support lunar missions by various space agencies and private companies over the next two decades.

STANDING COMMITTEE ON DEFENCE & 'NON-KINETIC WARFARE'

Standing Committee on Defence will deliberate on India's readiness to deal with 'non-kinetic warfare'.

Background: -

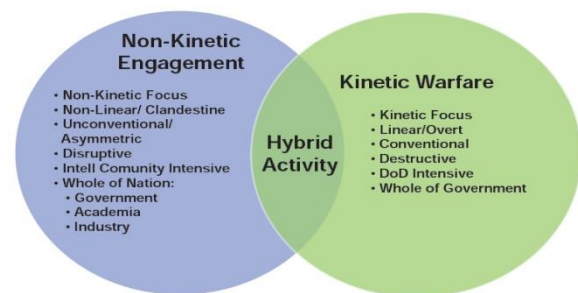
- Kinetic warfare typically means military employing a range of weapons. Non-kinetic warfare is an evolving concept, it goes beyond the usual military tactics and can involve electronic warfare, cyber, information, psychological and economic among others. Importantly, it can involve non-military stakeholders too.

Key takeaways

- Non-kinetic warfare refers to actions taken against an adversary without direct conventional military action. It encompasses a range of strategies and tactics that aim to disrupt, deceive, or influence the adversary without physical confrontation.

Key Features:

- **Information Warfare:** This involves the use of information and communication technologies to influence, disrupt, or manipulate the adversary's decision-making processes. It includes propaganda, misinformation, and psychological operations.
- **Cyber Warfare:** Cyber attacks target the adversary's computer systems, networks, and data to disrupt operations, steal information, or cause damage. This can include hacking, malware, and denial-of-service attacks.
- **Psychological Operations:** These are designed to influence the perceptions, emotions, and behavior of the adversary. Techniques include spreading rumors, creating fear, and manipulating public opinion.
- **Electromagnetic Offensives:** This involves the use of electromagnetic spectrum to disrupt or disable the adversary's electronic systems, such as radar, communication networks, and navigation systems.
- **Cryptographic Warfare:** This includes the use of encryption and decryption techniques to protect one's own communications and to intercept or disrupt the adversary's communications.
- **Diplomatic Warfare:** Leverages diplomatic tools and international forums to isolate an adversary, build coalitions, or alter geopolitical alignments. This involves applying diplomatic pressure, negotiating deals that undercut the adversary's influence, or using soft power strategies.
- **Economic Warfare:** Uses economic measures like sanctions, boycotts, or trade restrictions to weaken an adversary's economy and force compliance or submission. Involves disrupting supply chains, imposing tariffs, or weaponizing global financial systems.
- Recent spate of pager blasts in Lebanon, which is an example of a "non-kinetic warfare".



ELECTRONICS MANUFACTURING IN INDIA

Recently, Prime Minister Narendra Modi announced a \$500 billion (Rs 4.20 lakh crore) target for electronics manufacturing in India by 2030.

Background: -

- The ambition is audacious – India’s entire manufacturing output in 2023-24 was roughly \$660 billion (Rs 55.4 lakh crore).

Key takeaways

Cluster-Based Growth:

- Historically, manufacturing growth has thrived in regional clusters. The electronics industry, from Silicon Valley to Shenzhen, has followed this model.
- In India, clusters like Sriperumbudur (Tamil Nadu) and Noida (Uttar Pradesh) contribute nearly 50% of India’s electronics exports.
- India’s focus must be on achieving export competitiveness at scale to drive growth in electronics manufacturing.
- To sustain and accelerate growth in electronics, we need deep and ambitious region-led reform that can create large, globally competitive electronics manufacturing regions.

Special Electronics Manufacturing Zones:

- To address land acquisition challenges, the government should develop large electronics manufacturing zones around existing clusters.
- Example: Declaring 300 sq km regions for electronics manufacturing, incorporating factories and new parks. Electronics factories can employ thousands and it is important to house workers close to factories. Large zones make it possible to have social infrastructure like worker housing, schools, hospitals and recreation facilities.
- Within the zones, the focus needs to be on attracting lead brands and their partners as anchor investors and they can, in turn, attract their downstream partners.

Importance of Scale:

- Global competitors like Shenzhen (2,000 sq km) employ 4.6 million workers and export over \$300 billion.
- Comparatively, Indian clusters like Mundra EMC are much smaller (2.5 sq km with 5,000 workers), necessitating expansion.

Pro-Employment Labour Reforms:

- Indian electronics regions need pro-employment labour laws, including longer shifts, competitive overtime rules, and the removal of restrictions on employing women (who form a majority of the workforce).

Taxation and Tariff Reforms:

- India needs to ease cross-border inventory management. Electronics manufacturing requires movement of components. Extremely specialised supply chain participants mean that much of this movement is cross-border.
- Thus, all countries like Vietnam, China, etc., already allow foreign vendors or brands to manage component inventory seamlessly across borders without tax or tariff implications.
- Corporate tax and GST rates too need to be benchmarked against those in Vietnam and China to attract large global players.

Regulatory Environment:

- Indian factories face numerous regulations (building codes, pollution norms, etc.) that are globally uncompetitive.
- Within designated electronics manufacturing regions, regulatory relaxation should be allowed to create a conducive environment for manufacturing.

Devolution of Powers:

- Electronics Manufacturing Cluster (EMC) authorities should be granted devolved powers from central and state governments to ensure responsive and efficient governance.
- Adopting PPP models for managing these regions can ensure high-quality, plug-and-play parks for speedy execution.

Learning from Global Best Practices:

- Successful regions like Shenzhen highlight three factors for success:
 - Large size with anchor investors.
 - Customised regulations to suit export-led manufacturing.
 - Devolution of administrative powers to the industrial park level.
- The government should create differentially regulated zones for electronics manufacturing, akin to the model used in GIFT City for financial services.
- Without focused and region-led reforms, the \$500 billion target for electronics manufacturing will remain unachievable.

HAND IN HAND INITIATIVE

72 countries have joined the Hand-in-Hand Initiative.

Background: -

- Innovative and targeted approaches to development are in ever-greater demand, as underscored by growing participation in the Hand-in-Hand Investment Forum 2024.

Key takeaways

- The Hand-in-Hand Initiative is an evidence-based, country-led, and country-owned initiative of the Food and Agriculture Organization of the United Nations.
- Its primary goal is to accelerate agricultural transformation and sustainable rural development to eradicate poverty (SDG1) and end hunger and all forms of malnutrition (SDG2).



Key Features:

- **Integrated Analyses:** The initiative provides integrated analyses that identify key interactions, synergies, and trade-offs among actions to accelerate economic growth, ensure social inclusion, and promote sustainable use of biodiversity and natural resources.
- **Geospatial Modeling and Analytics:** The initiative uses advanced geospatial modeling and analytics to identify opportunities with the greatest potential for alleviating poverty and hunger.
- **Partnership-Building Approach:** The initiative brings together beneficiary countries with donors, private sector organizations, international financial institutions, research institutions, and civil society to mobilize means of implementation.
- **Focus Areas:** The initiative prioritizes countries and territories where poverty and hunger are highest, national capacities are limited, or operational challenges are significant.

FOOD AND AGRICULTURE ORGANIZATION (FAO)

- The Food and Agriculture Organization (FAO) was established on 16 October 1945 as a specialized agency of the United Nations (UN).
- **Headquarters:** Rome, Italy.
- **Objective:** FAO's main goal is to lead international efforts to defeat hunger and improve nutrition and food security by promoting sustainable agriculture and rural development.
- **Key Mandates:**
 - Achieving food security for all.
 - Raising levels of nutrition and standards of living.
 - Increasing agricultural productivity and ensuring sustainable management of natural resources (land, water, air, climate, and genetic resources).

Key Programs and Initiatives:

- **Hand-in-Hand Initiative:** Focuses on eradicating poverty and ending hunger through targeted investments.
- **Globally Important Agricultural Heritage Systems (GIAHS):** Recognizes traditional agricultural systems with cultural, ecological, and agricultural significance.
- **State of Food Security and Nutrition in the World (SOFI):** An annual report by FAO tracking global progress towards ending hunger.
- **Members:** The FAO has 195 members, including 194 countries and the European Union.
- **Key Reports:**
 - FAO publishes several important reports, such as:
 - State of World Fisheries and Aquaculture.
 - State of Food and Agriculture.
 - Global Forest Resources Assessment (GFRA).

PFAS-FOREVER CHEMICALS

A recent study has found toxic 'Forever Chemicals' in drinking water worldwide.

These chemicals, known as perfluoroalkyl substances (PFAS), were detected in both tap and bottled water in major cities across the UK and China. Researchers from the University of Birmingham and Hainan University published their findings in ACS ES&T Water.

What are PFAS?

PFAS are synthetic chemicals that do not break down easily in the environment. **They are used in many products, including non-stick cookware, water-repellent clothing, and stain-resistant fabrics.** Some PFAS have been banned, but many are still in use.


These chemicals can enter the body through inhalation, ingestion, or skin absorption.

Health effects linked to PFAS exposure include weakened immune response, liver damage, lower birth weight, and increased cancer risk.


What are PFAS?

Per- and polyfluoroalkyl substances (PFAS) are a series of man-made chemicals that can be found in a variety of consumer products and water.


Products that may contain PFAS:




fast food packaging/wrappers




water



non-stick cookware



firefighting foam




stain-resistant carpet and fabric


Health concerns with PFAS

PFAS remain in the environment and the human body for long periods of time. Reducing exposure to PFAS will lower your risk for health problems. Talk to your healthcare provider about the recommended screening guidelines for these effects, especially if you have high levels of PFAS in your drinking water.


Based on current research, higher exposure to PFAS increases the risk of:




infertility and low birth weight




certain types of cancers



developmental delays



thyroid and heart issues




reduced vaccine response

Those at greater risk


- infants and young children whose brains and bodies are developing rapidly
- pregnant or breastfeeding women, or those planning pregnancy

Reduce exposure to PFAS


PFAS do not have any taste, color, or odor. The best way to prevent exposure to PFAS is to avoid products and sources that may contain them.



use home water treatment systems or specific water filters that remove PFAS




limit the use of waterproof and stain-resistant products



choose non-stick, PFAS-free cookware

do not drink water with PFAS if you are at greater risk



get water from PFAS-free sources

55 | Page

Kerala State Civil Service Academy

kscsa.org

How to Reduce PFAS?

There are effective methods to reduce PFAS in drinking water. Boiling water and using carbon filters can remove up to 90% of these chemicals. Professor Stuart Harrad brought into light that simple treatments can lower PFAS levels.

Implications for Public Health

The widespread presence of PFAS in drinking water has public health implications. About these risks can encourage consumers to take action. Awareness can also drive demand for better water treatment solutions and stricter regulations on PFAS use.

Research Significance

The study underscores the need for ongoing research into PFAS. It marks the importance of monitoring water quality and the potential health impacts of these chemicals. Further studies may help develop strategies to mitigate PFAS contamination in drinking water supplies.

INDIA'S MARITIME DECARBONISATION CONFERENCE

The Conference on Maritime Decarbonization in New Delhi, co-hosted by the Ministry of Ports, Shipping and Waterways, and the Asian Development Bank, brought together more than 200 participants, including leaders from Indian ports, government officials, and international experts. The goal of the conference was to discuss how shipping and port operations can become more environmentally friendly.



India's Maritime Sector and Climate Change

In his keynote speech, Secretary TK Ramachandran explained that the maritime sector is crucial for the economy but also plays a key role in fighting climate change. The Indian government is committed to making maritime operations more sustainable, which means they want to reduce pollution and adopt greener practices.

Green Initiatives

The Ministry shared two important guideline

Harit Sagar Green Port Guidelines – These are rules to help ports use green energy and become more eco-friendly.

Harit Nauka Green Transition Guidelines – These focus on making shipping more sustainable. Both guidelines are designed to help ports and ships use clean energy and reduce pollution, serving as models for the entire maritime sector.

India's commitment to net-zero emissions

The conference emphasized India's goal to reach net-zero carbon emissions by 2070. This means India wants to balance the amount of carbon dioxide it produces with the amount it removes from the atmosphere. This goal aligns with Maritime India Vision 2030, which focuses on making India's maritime practices more sustainable in the coming years.

Key Discussion Themes

Several important issues were discussed at the conference, including:

- Building green infrastructure for ports, meaning ports that use eco-friendly energy sources.
- Using clean harbor crafts, or smaller boats that produce less pollution.
- Exploring zero-carbon fuels like hydrogen and ammonia, which do not release harmful emissions.
- Strategies to reduce emissions from ships and ports.
- Electrifying inland waterways, making them run on electric energy instead of fuel.

These discussions are part of a broader effort to make the maritime industry more sustainable and address global climate concerns.

What is Maritime Decarbonization?

Maritime decarbonization means reducing greenhouse gas emissions from ships. Around 90% of global trade is done through ships, but these ships produce nearly 3% of the world's CO₂ emissions.

The International Maritime Organization (IMO) aims to reduce these emissions by 50% by 2050. To achieve this, shipping companies are exploring alternative fuels such as ammonia, hydrogen, and methanol.

However, switching to these fuels is expensive and requires new infrastructure. Some ships are even using wind-assist technologies to reduce fuel consumption.

LIVING PLANET INDEX REPORT

The 2024 Living Planet Index report is out

Background:

- The Living Planet Report stresses the need for a collective global effort to tackle the dual crises of climate change and biodiversity loss.

About Living Planet Report

- The Living Planet Report is a comprehensive biennial publication by the World Wildlife Fund (WWF) that assesses the state of the planet's biodiversity, ecosystems, and the impact of human activity on the natural world.

LIVING PLANET REPORT 2024

WWF's 2024 Living Planet Report details an average 73% decline in wildlife populations since 1970.



Key Findings

- **Biodiversity Decline:** The 2024 report highlights a staggering 73% decline in wildlife populations on average since 1970. This decline is tracked using the Living Planet Index, which monitors thousands of vertebrate species populations globally.
- **When a population falls below a certain level,** that species may not be able to perform its usual role within the ecosystem – whether that's seed dispersal, pollination, grazing, nutrient cycling or many other processes that keep the ecosystem functioning, the report says.
- In India, the decline of three vulture species – white-rumped vulture, Indian vulture, and slender-billed vulture, has been alarming, WWF said.

- **Ecosystem Health:** The report provides a detailed analysis of various ecosystems, including forests, oceans, and freshwater systems, showing significant degradation and loss of habitat.
- **Human Impact:** It emphasizes the role of human activities such as deforestation, pollution, climate change, and overexploitation of resources in driving biodiversity loss and ecosystem degradation.

Major Themes

- **Climate Change:** The report underscores the urgent need to address climate change, which is exacerbating biodiversity loss and pushing ecosystems towards dangerous tipping points.
- **Nature-Based Solutions:** It advocates for nature-based solutions to mitigate climate change and restore ecosystems, such as reforestation, sustainable agriculture, and conservation efforts.
- **Sustainable Development:** The report calls for integrating biodiversity conservation into sustainable development goals and policies to ensure a balanced approach to economic growth and environmental protection.

NEW NUCLEAR SUBMARINE LAUNCHED

India launched its fourth nuclear-powered ballistic missile submarine (SSBN), designated S4, at the Ship Building Centre in Visakhapatnam. This submarine is more advanced than its predecessor, INS Arihant (S2). The launch marks an important step in India's naval capabilities.



India's SSBN Program

India's SSBN program is part of its efforts to strengthen its nuclear deterrent. The first SSBN, INS Arihant, was commissioned in August 2016. It serves primarily as a technology demonstrator under the Advanced Technology Vessel program. Currently operates two SSBNs: INS Arihant and INS Arighaat (S3).

Submarine Specifications

INS Arihant has a displacement of 6,000 tonnes. It is powered by an 83 MW pressurized light-water reactor using enriched uranium. INS Arighaat retains similar specifications but includes technological upgrades. The new S4 has an improved reactor design and is larger, offering enhanced capabilities.

The S4 can carry multiple K-4 submarine-launched ballistic missiles (SLBMs). These missiles have a range of 3,500 km, extending India's undersea strike capability. The S4 is expected to enter service shortly, following the completion of sea trials for the third SSBN, INS Aridhman (S4).

GOOGLE PURCHASE OF NUCLEAR ENERGY

Google announced a groundbreaking agreement to purchase nuclear energy from small modular reactors (SMRs) developed by Kairos Power. This marks the first corporate deal of its kind.

The initial SMR is expected to be operational by 2030, contributing 500 MW of carbon-free power to the U.S. electricity grid. Google aims to leverage this energy to support AI technologies and major scientific advances.

Google's Energy Needs

Google's shift to nuclear energy stems from its increasing energy demands. Training AI models and maintaining data centers require substantial power.

In its 2024 Environmental Report, Google acknowledged a 13% rise in global greenhouse gas emissions in 2023. The company faces challenges in reducing emissions while expanding its technical infrastructure for AI.

Benefits of Nuclear Energy

Google views nuclear energy as a clean and reliable power source. Unlike solar energy, nuclear power can generate energy continuously, making it suitable for round-the-clock operations. The smaller size and modular design of SMRs allow for quicker deployment, aligning with Google's rapid growth.

Other Corporate Partnerships

Google is not alone in pursuing nuclear energy. Microsoft signed a 20-year agreement with Constellation to develop the Crane Clean Energy Center and restart the Three Mile Island Unit 1, adding approximately 835 MW of carbon-free energy. Amazon has also committed to nuclear energy, partnering with Energy Northwest and investing in SMR technology.

Public Perception of Nuclear Energy

Despite its potential, nuclear energy faces public scepticism. Past accidents, like Chernobyl and Fukushima, have left a lasting negative impression. These incidents involved severe environmental damage and ongoing health concerns.

The Three Mile Island accident in 1979, while less catastrophic, still raised alarms about nuclear safety.

Environmental Opposition

Many environmental groups oppose nuclear energy. Friends of the Earth criticizes it as one of the dirtiest and most dangerous energy sources. They highlight the risks of accidents, leaks, and the challenges of operating nuclear plants in earthquake-prone areas. Concerns about nuclear waste management and high costs also persist.

Small Modular Reactors (SMRs)

SMRs are seen as a potential solution to some of the issues associated with traditional nuclear power. Their compact designs reduce construction and operational costs.

They can be deployed in areas unsuitable for larger plants, making them more versatile. The U.S. Department of Energy has noted their potential to function in regions that cannot support older nuclear facilities.

FOURTH CORAL BLEACHING EVENT

The fourth global coral bleaching event (GCBE4) began in January 2023. It is the most extensive and rapid coral bleaching event recorded. According to National Oceanic and Atmospheric Administration (NOAA), 99.9% of coral reefs in the Atlantic Ocean have experienced heat stress. This event has surpassed previous bleaching events from 2014 to 2017 by over 11%.

CORAL BLEACHING
Have you ever wondered how a coral becomes bleached?

HEALTHY CORAL
1 Coral and algae depend on each other to survive.

STRESSED CORAL
2 If stressed, algae leaves the coral.

BLEACHED CORAL
3 Coral is left bleached and vulnerable.

WHAT CAUSES CORAL BLEACHING?

- Change in ocean temperature**
Increased ocean temperature caused by climate change is the leading cause of coral bleaching.
- Runoff and pollution**
Storm generated precipitation can rapidly dilute ocean water and runoff can carry pollutants — these can bleach near-shore corals.
- Overexposure to sunlight**
When temperatures are high, high solar irradiance contributes to bleaching in shallow-water corals.
- Extreme low tides**
Exposure to the air during extreme low tides can cause bleaching in shallow corals.

NOAA's Coral Reef Conservation Program
<http://coralreef.noaa.gov/>

Comparison with Previous Events

The current event has unfolded in less time than GCBE3, which lasted three years and affected 65.7% of coral reefs. GCBE4 has impacted at least 77% of global reef areas in just 20 months. This rapid increase in bleaching is alarming and unprecedented.

Current Impact and Regional Examples

Reports confirm mass coral bleaching in 74 countries since February 2023. Regions like Palau, Guam, and Israel have documented bleaching. The Caribbean and South China Sea continue to experience high heat stress levels.

Climate Patterns and Their Influence

Strong El Niño events often lead to severe bleaching. However, recent events have shown that bleaching can also occur during La Niña phases. This indicates a shift in ocean temperatures, making reefs vulnerable regardless of the ENSO phase.

Extent of Heat Stress

The overwhelming majority of coral reefs in the Atlantic have faced bleaching-level heat stress. This extreme heat has persisted for nearly two years in some Caribbean areas. The situation is dire, with many corals experiencing ongoing thermal stress.

Future Assessments and Delayed Impact

The full impact of GCBE4 may take years to understand. Scientists need to conduct extensive in-water monitoring and field assessments. These evaluations usually happen months after the bleaching event subsides.

Coral Mortality Timeline

Coral mortality can begin rapidly during marine heatwaves. Sensitive species may die within days to weeks. However, the complete consequences of bleaching often unfold over one to two years. Corals may become immunocompromised and more susceptible to disease after heat stress.

CHINA RELEASES GUIDELINES TO STANDARDISE OBESITY TREATMENT

China's National Health Commission (NHC) released its first guidelines to standardise obesity diagnosis and treatment. Over half of Chinese adults are currently overweight or obese. This trend is expected to worsen, with projections indicating that 65.3% of the population could be affected by 2030. Obesity is now the sixth leading cause of death and disability in China, denoting its status as a major public health crisis.

Rising Obesity Rates

China faces a growing obesity epidemic. The NHC has identified a sharp increase in overweight individuals. Economic changes have led to more sedentary jobs. As growth slows, many are turning to cheaper, unhealthy food options. This dual challenge exacerbates the weight issue across the country.

Contributing Factors

Several factors contribute to rising obesity rates in China:

1. **Sedentary Lifestyles** : Modern jobs are often desk-bound, reducing physical activity.
2. **Poor Diet Choices**: Economic constraints push people towards unhealthy, affordable food.
3. **Urban Stress**: High job stress and long working hours contribute to unhealthy eating habits.
4. **Rural Challenges**: In rural areas, agricultural work has become less physically demanding. Inadequate healthcare hampers effective weight management.

Guidelines Overview

The NHC's guidelines aim to provide a comprehensive approach to tackling obesity. Key areas covered include:

Clinical Nutrition: Emphasises the importance of balanced diets and nutritional education.

Surgical Treatment: Outlines criteria and procedures for surgical interventions when necessary.

Behavioural and Psychological Interventions: Focuses on the mental aspects of weight management.

Exercise Interventions: Encourages regular physical activity to combat obesity.

Public Awareness Campaign

In July 2024, the NHC, along with 15 other government departments, launched a three-year public awareness campaign. This initiative aims to educate citizens about obesity prevention. The campaign promotes eight key slogans, which include:

- Lifelong commitment
- Active monitoring

- Balanced diet
- Physical activity
- Good sleep
- Reasonable targets
- Family action

School Initiatives

Health guidelines were distributed to primary and secondary schools in July. These guidelines recommend:

- Regular health screenings for students.
- Daily physical exercise.
- Employment of nutritionists to guide healthy eating habits.
- Reducing salt, oil, and sugar intake in school meals.

DIAMOND DUST FOR GEOENGINEERING

A new study published in Geophysical Research Letters suggests that diamond dust could be an effective SRM material. The study compared seven compounds and found diamonds to be the most efficient for reflecting solar radiation. Researchers propose spraying five million tonnes of diamond dust annually into the upper atmosphere to achieve a temperature reduction of 1.6 degrees Celsius.



About Geoengineering

Geoengineering involves large-scale interventions to alter the Earth's climate system. It aims to counteract global warming's effects. Two main strategies exist: Solar Radiation Management (SRM) and Carbon Dioxide Removal (CDR). SRM focuses on reflecting solar radiation away from Earth, while CDR seeks to remove carbon dioxide from the atmosphere.

Solar Radiation Management Explained

SRM is a key area of interest. It involves deploying materials in the atmosphere or space to reflect sunlight. This can potentially reduce global temperatures. The concept draws inspiration from volcanic eruptions.

When volcanoes erupt, they release sulphur dioxide, which forms particles that reflect sunlight. The 1991 Mount Pinatubo eruption is an example, as it temporarily lowered global temperatures by 0.5 degrees Celsius.

Other SRM Materials

Previous studies have considered various materials for SRM, including sulphur, calcium, and sodium chloride. Each has its advantages and drawbacks. Diamonds, however, have emerged as a promising option due to their unique properties.



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

