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## Intercepted Missile System/ Iron dome

**Why in News ?** The Israeli has recently intercepted a large number of the incoming missiles -- 180 from Iran by Iron Dome air defence system.

### About Interceptive missile systems:

They are designed to detect, track, and destroy incoming ballistic missiles or airborne threats before they reach their targets. These systems are crucial components of missile defense strategies used by countries to protect against missile attacks. Interception can occur in different phases of the missile's flight—boost phase, midcourse phase, and terminal phase.

The main types of **interceptive missile systems**:

#### 1. Boost-Phase Interception:

- These systems attempt to destroy an enemy missile during the early stage of its flight (within the first few minutes after launch). This is the most challenging phase for interception due to the short time window.

#### Example:

**Airborne Laser (ABL) Program** - Developed by the United States. It involved a laser system mounted on a Boeing 747 to destroy missiles in the boost phase. However, this program was eventually canceled.

**Directed Energy Weapons** - Countries like the U.S. and China are working on directed energy weapons (DEWs) like lasers for future boost-phase missile interception.

#### 2. Midcourse-Phase Interception:

- These systems target the missile in the midcourse phase, where it travels through space (after the boost phase but before re-entry into the atmosphere).

#### Examples:

**Ground-based Midcourse Defense (GMD)** – United States. It uses Ground-Based Interceptors (GBIs) based in Alaska and California to intercept intercontinental ballistic missiles (ICBMs).

**Aegis Ballistic Missile Defense (BMD)** – United States and Japan. This sea-based system uses the SM-3 (Standard Missile-3) to intercept missiles in space during the midcourse phase.

**S-500 Prometey** – Russia. An advanced missile defense system designed to target ballistic missiles, cruise missiles, and even satellites during their midcourse flight.

### 3. Terminal-Phase Interception:

- In this phase, interceptors destroy the missile as it re-enters the atmosphere and approaches its target. Terminal-phase systems are often land-based and deal with shorter-range threats like medium and short-range ballistic missiles.

#### Examples:

- THAAD (Terminal High Altitude Area Defense) – United States. THAAD intercepts ballistic missiles during their terminal phase at high altitudes. It is deployed in countries like South Korea and the United Arab Emirates.

**S-400 Triumph – Russia.** A versatile air defense system capable of intercepting incoming missiles in their terminal phase. India has also purchased the S-400.

**David's Sling – Israel.** This system, part of Israel's multi-layered missile defense, intercepts medium-range threats in the terminal phase.

### 4. Layered Missile Defense:

- Some countries have developed multi-layered defense systems to intercept missiles at different phases of their flight, combining different types of interceptors for more comprehensive protection.

#### Examples:

**Iron Dome – Israel.** The Iron Dome is designed to intercept and destroy short-range rockets and artillery shells in the terminal phase. It forms part of Israel's multi-layer defense system.

**Arrow Missile System – Israel.** Arrow-2 and Arrow-3 are part of Israel's multi-layered system designed to intercept medium to long-range ballistic missiles at high altitudes and in space (midcourse phase).

**Aegis Ashore – Japan, Romania (with U.S. cooperation).** A land-based version of the Aegis BMD system, capable of intercepting medium-range ballistic missiles.

### 5. Air-Based Interceptors:

- These systems involve air-launched missiles that intercept airborne threats, such as enemy aircraft and cruise missiles.

#### Examples:

**Patriot Missile System (PAC-3) – United States.** An advanced air-defense system designed to intercept tactical ballistic missiles and cruise missiles. It is widely deployed in countries like Saudi Arabia, Israel, and Germany.

**Barak-8 – India and Israel.** A surface-to-air missile system designed to intercept airborne threats, such as aircraft and cruise missiles.

**Key Countries with Advanced Interceptive Missile Systems:****United States:**

- THAAD, GMD, Aegis BMD, Patriot (PAC-3).

**Russia:**

- S-400, S-500, A-135 missile defense system.

**Israel:**

- Iron Dome, David's Sling, Arrow Missile System.

**China:**

- HQ-9 (similar to the S-300) and developing advanced missile defense systems like HQ-19 (for midcourse interception).

**India:**

- Ballistic Missile Defence (BMD) Program, S-400, Barak-8, and collaboration on interceptive missile technology with Israel and the U.S.

**Japan:**

- Aegis BMD, PAC-3, Aegis Ashore (in cooperation with the U.S.).

## PM E-DRIVE Scheme

**Why in News-** The government has launched the PM E-DRIVE Scheme, with an outlay of Rs 10,900 crore for faster adoption of electric vehicles, setting up of charging infrastructure and development of EV manufacturing ecosystem in India.



The scheme shall be implemented from October 1, 2024 to March 31, 2026.

**Key Points:**

**subsidy:**

- The subsidy under the PM E-DRIVE scheme for electric two-wheelers has been fixed based on battery power at Rs 5,000 per kilowatt hour but the overall incentive will not exceed Rs 10,000 in the first year.
- Under the PM E-DRIVE scheme, subsidies/demand incentives worth Rs 3,679 crore have been provided to incentivise e-2Wheelers, e-3Wheelers, e-ambulances, e-trucks and other emerging EVs. The scheme will support 24.79 lakh e-2Ws, 3.16 lakh e-3Ws, and 14,028 e-buses.

Three-wheelers, including e-rickshaws, will get a demand incentive of Rs 25,000 in the first year, which will be halved to Rs 12,500 in the second year.

**e-voucher:**

- Ministry of Heavy Industries is introducing e-vouchers for EV buyers to avail demand incentives under the scheme. At the time of purchase of the EV, the scheme portal will generate an Aadhaar authenticated e-voucher for the buyer.
- The scheme addresses range anxiety of EV buyers by promoting in a big way the installation of electric vehicle public charging stations (EVPCS). These EVPCS shall be installed in select cities with high EV penetration and also on selected highways.
- The scheme proposes installation of 22,100 fast chargers for e-4Ws, 1,800 fast chargers for e-buses and 48,400 fast chargers for e-2W/3Ws. The outlay for EVPCS will be Rs 2,000 crore.

## Rapid Financing Instrument (RFI)

**Why in News?** The Rapid Financing Instrument (RFI) is a financial tool provided by the International Monetary Fund (IMF) that offers quick financial assistance to member countries facing urgent balance of payments needs. It is designed to provide swift financial relief in cases of economic crises caused by external shocks, such as natural disasters,

commodity price shocks, or health pandemics, without requiring a full-fledged economic reform program.

### **Key Features of the Rapid Financing Instrument (RFI):**

#### **Rapid Disbursement:**

- The RFI allows for quick disbursement of funds to meet a country's urgent needs without requiring a drawn-out negotiation process.
- It is particularly useful for countries needing immediate financial support to stabilize their economy.

#### **No Need for a Full Economic Program:**

- Unlike other IMF financial tools that require countries to implement comprehensive economic reform programs, the RFI does not demand a full-fledged reform agenda. This makes it ideal for situations where immediate assistance is critical.

#### **Flexible Conditions:**

- While some policies and actions may still be encouraged, the RFI has fewer conditions attached compared to other IMF lending instruments, allowing recipient countries to focus on immediate stabilization efforts.

#### **Access Limits:**

- A country can access up to 50% of its IMF quota within a 12-month period under the RFI. The exact amount is determined based on the country's specific financing needs and the size of its IMF quota.

#### **Eligibility:**

- The RFI is available to all IMF member countries, irrespective of income level, and is used when a country faces balance of payments difficulties caused by sudden shocks or emergencies.
- **Repayment Terms:**
- The financial assistance provided under the RFI comes with standard IMF interest rates, and countries are expected to repay the funds within 3.25 to 5 years.

#### **Use of the RFI:**

- The COVID-19 pandemic saw widespread use of the RFI by several countries to manage the immediate economic impact of the global health crisis. Countries such as **Bangladesh, Nigeria, and Ukraine** received RFI support to address short-term balance of payments needs.



The RFI has also been used in situations of natural disasters, such as hurricanes and earthquakes, to stabilize economies quickly.

#### Comparison with Other IMF Instruments:

- Unlike instruments like the Stand-By Arrangement (SBA) or Extended Fund Facility (EFF), which are designed for longer-term balance of payments issues and require extensive negotiations, the RFI is simpler and faster.
- It is more suitable for short-term, emergency relief, whereas SBA and EFF are intended for more prolonged economic stabilization and reforms.

### Centre approves 5 new classical languages

**Why in News ?** Recently , Five Indian languages were granted classical language status by the Center, which also stated that the government is working to "preserve their rich heritage."

5 new classical languages- **Marathi, Pali, Prakrit, Assamese and Bengali.**

- Some of these languages have been fighting for classical language status for a decade. The Maharashtra government proposed the **recognition of Marathi in 2013**.
- In 2014, Prithviraj Chavan, the former chief minister of Maharashtra, formed a committee of language experts to evaluate the language. The Center received the panel's report, which verified that Marathi met all the requirements for being recognized as a classical language.
- **Six languages**, including Tamil (2004), Sanskrit (2005), Kannada (2008), Telugu (2008), Malayalam (2013), and Odia (2014) are already holding the title of "Classical" in India.
- All the Classical Languages are listed under the **8th Schedule of the Constitution**. So, what is the classical language of India and what is its significance?

#### What is the Classical language of India?

- The term "Indian classical languages," or "**Semmozhi**," refers to a group of languages that have a long history and a rich, unique, and distinctive literary legacy.
- **11 languages** are recognized as the **Classical languages of India** by the Republic of India.



- The Indian government announced in 2004 that languages might hold the title of "Classical Language" of India if they fulfilled a number of certain requirements.
- It was established by the **Linguistic Experts' Committee** and the Ministry of Culture.
- The Indian government established a committee to examine requests for the designation of certain languages as classical.

#### What is the significance of the Classical language of India?

According to a government of India resolution, issued on November 1, 2004, a language designated as a "**Classical Language**" will have the following significance:

- Every year, two significant international awards are given to distinguished scholars of classical Indian languages.
- The establishment of a **Center of Excellence for Classical Language Studies**.
- The University Grants Commission will be asked to establish a specific number of Professional Chairs for **Classical Languages for distinguished scholars** of Classical Indian Languages, starting at least in the Central Universities.

#### What are the criteria for declaring the Classical language of India?

- As per the Ministry of Culture, Classical language criteria are provided below:
- Early texts or documented history of the language must be between **1500 and 2000 years old**.
- The language must have ancient **literature or texts that its speakers** value as part of their cultural legacy.
- The language's literary heritage needs to be original and not borrowed from another speech community.
- There should be a possible discontinuity between the **classical language** and its later forms or derivatives, and the **classical language and literature** should be separate from its modern form.

## World Green Economy Forum 2024

**Why in News?** The World Green Economy Forum was launched recently in Dubai, bringing together global leaders and experts to address pressing environmental challenges.

**The forum's theme**, "Empowering Global Action: Unlocking Opportunities and Advancing Progress,".

**Key points of the session:**

- A key session titled "Decarbonising Energy-Intensive and Hard-to-Abate Industries" explored strategies to reduce carbon emissions in heavy transport, construction, energy, and chemicals sectors.
- 4Ps: Adding Another 'P' to PPP (**Public-Private Partnerships + Philanthropists**)," highlighted the importance of collaboration between philanthropists and the public and private sectors to drive effective climate solutions.
- The potential applications of artificial intelligence in fostering a sustainable future were discussed in the session.
- How Can We Use AI to Help Create a Sustainable Future?"

**The future of Sustainable Aviation Fuel (SAF):**

- Panelists discussed the ambitious goal of scaling up SAF production from the current 200,000 tonnes to **300 million tonnes by 2050**. They also explored various CO2 sources for SAF production and emphasized the importance of stakeholder collaboration and capital investment.
- The UAE government's target of **1% SAF use by 2031** was noted as a key driver for change in the region.
- The forum also emphasized the critical role of youth in shaping a sustainable future, recognizing their importance in driving long-term environmental progress.

## (PM-RKVY) /Krishonnati Yojana (KY)

**Why in News?** Union Cabinet approves Pradhan Mantri Rashtriya Krishi Vikas Yojana (PM-RKVY) to promote sustainable agriculture and Krishonnati Yojana (KY) to achieve food security for self-reliance

- States given the flexibility to reallocate funds from one component to another based on their specific requirement

**About the Pradhan Mantri Rashtriya Krishi Vikas Yojana (PM-RKVY):**

- PM-RKVY will promote sustainable agriculture, KY will achieve the goal of food security and self-reliance in agriculture. All the components will leverage technology to ensure efficient and effective implementation of various components.
- The Pradhan Mantri Rashtriya Krishi Vikas Yojana (PM-RKVY) and Krishonnati Yojana (KY) will be implemented with a total proposed outlay of Rs 1,01,321.61 crore. These schemes are implemented through the state governments.
- This exercise ensures continuation of all the existing schemes. Wherever any sector is considered necessary to be promoted for the welfare of farmers, the scheme has been taken up in mission mode. For example, **National Edible Oil Mission** – Oil Palm [NMEO-OP], Clean Plant Programme, Digital Agriculture and National Edible Oil Mission-Oilseed Seeds [NMEO-OS].
- Mission Organic Value Chain Development for North Eastern Region (MOVCDNER) Scheme, a component under KY, is being revised by adding an additional component namely MOVCDNER- Detailed Project Report (MOVCDNER-DPR) which will provide strength to the North Eastern States to address critical challenges.
- Rationalization of these schemes provides an opportunity to the States to prepare a comprehensive strategic document related to the **agriculture sector of the State** in a holistic manner. This strategic document not only focuses on production and productivity of crops but also addresses emerging issues related to development of climate resilient agriculture and value chain approach for agricultural commodities.

- These schemes are envisaged to articulate the overall strategy and schemes/programmes related to the objectives of the strategic framework.
- Out of the total proposed expenditure of Rs. 1,01,321.61 crore, the estimated expenditure of the Central share of the Department of Agriculture and Farmers Welfare (DA&FW) is Rs. 69,088.98 crore and the State share is Rs. 32,232.63 crore. This includes Rs 57,074.72 crore for RKVY and Rs 44,246.89 crore for KY.

**PM-RKVY includes the following schemes:**

- Soil Health Management
- Rainfed Area Development
- Agroforestry
- Paramparagat Krishi Vikas Yojana
- Agricultural Mechanization including Crop Residue Management
- Per Drop More Crop
- Crop Diversification Programme
- RKVY DPR Component
- Accelerator Fund for Agricultural Startups

## Nobel Prize in medicine for discovery of discovery of micrNA

**Why in News ?** Victor Ambros, a researcher at the University of Massachusetts Chan Medical School, and Gary Ruvkun, a molecular biologist at the University of Massachusetts Hospital and a professor at Harvard University Medical School, were awarded the Nobel Prize in Medicine after discovering microRNA .

- The microRNA heavily involves in cell function.
- MicroRNA and its significance in cell development:
- It will be proving to be fundamentally important for how organisms develop and function.
- Ambros and Ruvkun's Nobel Prize in Medicine work with microRNA could help scientists treat diseases like cancer or epilepsy, as the discovery concerns how cells develop.

### About DNA (Deoxyribonucleic Acid):

**1. Structure:** DNA is a double-stranded molecule made of nucleotides, consisting of a phosphate group, a sugar (deoxyribose), and nitrogenous bases (adenine, thymine, guanine, and cytosine).

**Function:** DNA stores the genetic information of an organism and is responsible for transmitting hereditary traits. It encodes the instructions for building proteins and governs cellular activities.

**Location:** Found mainly in the cell nucleus (in eukaryotic cells), but also in mitochondria (mitochondrial DNA).

### 2. RNA (Ribonucleic Acid):

**Structure:** RNA is typically single-stranded and made up of nucleotides containing a sugar (ribose), phosphate group, and nitrogenous bases (adenine, uracil, guanine, and cytosine).

**Function:** RNA acts as a messenger and intermediary between DNA and protein synthesis. It is involved in transferring genetic code from the DNA (in the nucleus) to the cytoplasm where proteins are synthesized.

**Types:** Several types of RNA play different roles in the cell:

- Messenger RNA (mRNA)
- Transfer RNA (tRNA)
- Ribosomal RNA (rRNA)
- Micro RNA (miRNA)

### 3. Messenger RNA (mRNA):

**Role:** mRNA is synthesized during transcription, where a segment of DNA is copied into mRNA. It carries genetic information from the DNA in the nucleus to the ribosomes in the cytoplasm, where proteins are synthesized (translation).

**Process:**

**Transcription:** mRNA is produced from DNA in the nucleus.

**Translation:** The ribosome reads the mRNA sequence in codons (triplets of nucleotides) to assemble amino acids into a protein.

**Importance:** mRNA is critical in protein synthesis. In recent developments, mRNA technology has been utilized in vaccines (e.g., COVID-19 vaccines) to instruct cells to produce a protein that triggers an immune response.

#### 4. MicroRNA (miRNA):

**Role:** miRNA is a small, non-coding RNA molecule (about 21-25 nucleotides) that regulates gene expression at the post-transcriptional level.

**Mechanism:** miRNAs bind to complementary sequences on target mRNA, leading to mRNA degradation or the inhibition of translation, thus controlling the levels of proteins produced.

**Functions:**

- miRNAs play a crucial role in developmental processes, cell differentiation, apoptosis, and the regulation of various genes involved in diseases (e.g., cancer, cardiovascular diseases).
- They act as gene expression regulators, contributing to fine-tuning the synthesis of proteins and maintaining homeostasis in cells.

## Global Framework on Chemicals Fund

**Why in News?** The Global Framework on Chemicals fund has recently launched its first project, targeting the safe and sustainable management of chemicals and waste.

**About the Global Framework on Chemicals:**

- The Global Framework on Chemicals Global Framework on Chemicals - For a Planet Free of Harm from Chemicals and Waste (GFC), provides the essential building blocks for a future in which humanity benefits from chemicals in a safe and sustainable manner, while avoiding their negative impacts.
- The Framework, adopted in **September 2023 at the fifth International Conference on Chemicals Management (ICCM5)**, seeks to protect both the planet and human health, advocating for strong governance mechanisms and enforcing international standards.

- The Framework presents a comprehensive plan with five strategic objectives and 28 targets to guide countries and stakeholders in jointly addressing the lifecycle of chemicals, including products and waste.
- This unique **multi-stakeholder agreement** brings in a variety of sectors including representatives from governments, the private sector, non-governmental and intergovernmental organizations, youth and academia.

The Executive Board takes the operational decisions and oversees the functioning of the Fund. It is composed of:

- 2 National representatives of each United Nations region
- Representatives of all donors and contributors.

**Financing:** The Fund provides financial support of 300,000 to 800,000 USD for an implementation period of up to three years.

- Funding for the GFC Fund is provided through voluntary contributions.
- It is supported by the **Bonn Declaration**, a high-level declaration **also agreed at ICCM5 in Bonn, Germany.**

## WWF's Living Planet Report (LPR) 2024

**Why in News ?** :There has been a steep 73% decline in the average size of monitored wildlife populations\*in just 50 years (1970-2020), according to WWF's Living Planet Report (LPR) 2024.

- The Living Planet Index (LPI), provided by ZSL (Zoological Society of London), includes almost 35,000 population trends of 5,495 species from 1970-2020.

### Key Findings of the report:

- The strongest decline is reported in **freshwater ecosystems 85%, followed by terrestrial 69% and marine 56%.**
- Habitat loss and degradation, driven primarily by our food systems, **is the most reported threat to wildlife populations around the world, followed by overexploitation, invasive species and disease.**



- Pollution is an additional threat for wildlife populations in Asia and the Pacific, which have recorded a staggering **60% average decline**.
- Declines in wildlife populations can act as an early warning indicator of increasing extinction risk and the potential loss of healthy ecosystems.
- When ecosystems are damaged, they can become more vulnerable to tipping points - being pushed beyond a critical threshold resulting in substantial and potentially irreversible change.
- Potential global tipping points, such as the **dieback of the Amazon rainforest** and the mass **die-off of coral reefs**, could create shockwaves far beyond the immediate area impacting food security and livelihoods.
- The decline of the three vulture species in India—white-rumped vulture (*Gyps bengalensis*), Indian vulture (*Gyps indicus*), and slender-billed vulture (*Gyps tenuirostris*)—is alarming.
- Research shows that these species have seen dramatic population decreases, particularly between 1992 and 2002.
- A 2022 nationwide vulture survey by BNHS highlights the extent of this decline: the white-rumped vulture population has dropped **by 67%**, the **Indian vulture by 48%**, and the slender-billed vulture by a staggering 89% compared to their populations in 2002.
- Despite a decline in many wildlife populations in India, some populations have stabilized and shown recovery, largely due to **proactive government initiatives, effective habitat management, and robust scientific monitoring, combined** with community engagement and public support.
- Notably, India is home to the largest population of **wild tigers globally**. The All-India Tiger Estimation 2022 estimated a mean of 3,682 tigers, a significant increase from the 2,967 estimated in 2018.
- Additionally, the Ministry of Environment, Forest & Climate Change (MoEF&CC) recently launched the first Snow Leopard Population Assessment in India (SPAI), which systematically evaluated **70% of their potential range**.
- This assessment estimated the snow leopard population at 718.
- It also provides insights into their distribution and the key threats they face, to further strengthen the conservation efforts for these magnificent creatures.

**What report suggests?**

- Countries have agreed on ambitious global goals to halt and reverse nature loss (the Global Biodiversity Framework), cap global temperature rise to 1.5°C (the Paris Agreement), and eradicate poverty (the UN Sustainable Development Goals).
- But the Living Planet Report says **national commitments and action on the ground fall far short of what's required to meet targets for 2030 and avoid dangerous tipping points.**
- The report states that the only way to make progress on the global goals of halting and reversing nature loss **by 2030 and addressing the drivers of climate change** is by transforming our energy, food and finance systems.
- At the same time, we must scale-up effective and **inclusive conservation action**, taking account of the rights, **needs and values of Indigenous Peoples** and local communities. **Ecosystem based adaptation (EbA)** - approaches which benefit biodiversity, climate and human well-being at the same time - hold enormous potential.

#### About WWF:

- WWF was founded on April 29, 1961, in **Morges, Switzerland.**
- It was initially called the **World Wildlife Fund.**
- WWF is an independent conservation organization, with over **30 million supporters** and a global network active in over 100 countries.
- WWF's mission is to stop the degradation of the Earth's natural environment and to build a future in which humans live in harmony with nature.

## The Nobel Prize in Physics 2024

**Why in News?** The Nobel Prize in Physics 2024 was awarded to John J. Hopfield and Geoffrey E. Hinton “for foundational discoveries and inventions that enable machine learning with artificial neural networks.”

John Hopfield created an associative memory that can store and reconstruct images and other types of patterns in data. Geoffrey Hinton invented a method that can autonomously find properties in data, and so perform tasks such as identifying specific elements in pictures.

**What are Artificial Neural Networks (ANNs)?** Artificial Neural Networks (ANNs) are a type of computing system inspired by the biological neural networks that constitute animal

brains. ANNs are designed to mimic how human brains process information, learn from data, and make decisions.

They are a foundational technology behind many modern machine learning and artificial intelligence (AI) systems.

### Key Concepts of Artificial Neural Networks:

#### 1. Structure of ANNs:

**Neurons:** The basic units of ANNs are artificial neurons (also known as nodes or perceptrons), which simulate the behavior of biological neurons. These neurons receive inputs, process them, and produce an output.

**Layers:** ANNs are organized into layers of neurons:

**Input layer:** This layer receives raw data as input (e.g., images, text, or numerical data).

**Hidden layers:** These layers perform transformations on the input data through weights, biases, and activation functions. The network's complexity and ability to learn complex patterns increase with more hidden layers.

**Output layer:** This layer produces the final output (e.g., a prediction, classification, or decision).

### 2024 Nobel Prize in Chemistry:

- On 9th October 2024, David Baker, Demis Hassabis, and John Jumper were awarded the 2024 Nobel Prize in Chemistry for breakthroughs in computational protein design and protein structure prediction.

#### Key Points:

- David Baker's Computational Protein Design:** Baker was recognized for his pioneering work in computational methods that allow the design of new proteins, enabling the creation of designer proteins for specific applications.
- AlphaFold and Protein Structure Prediction;** Hassabis and Jumper, creators of AlphaFold 2, revolutionized protein structure prediction by using AI to predict the structures of millions of proteins, solving a long-standing scientific challenge.
- Advancements in AI for Chemistry:** The success of **AlphaFold 2** in predicting complex protein structures represents a major step forward in biochemistry, transforming research into drug design, disease understanding, and molecular biology.
- Breakthroughs Recognized Soon After Discovery; Unlike many Nobel Prizes,** which often come decades after the original research, this prize comes within just 4-6 years of the **AlphaFold 2** development, reflecting its immediate global impact.

- **Non-Chemists Honoured for Contributions:** The award highlights the interdisciplinary nature of modern chemistry, with significant contributions from fields like artificial intelligence, extending chemistry's influence into areas like biochemistry.

### What is AlphaFold?

It is an artificial intelligence (AI) system developed by DeepMind, a subsidiary of Alphabet (Google's parent company), to predict the 3D structure of proteins from their amino acid sequences. It represents a breakthrough in **computational biology** and **protein folding**, solving one of biology's most challenging problems. Understanding the 3D structure of proteins is essential for various biological processes, including drug discovery, disease understanding, and bioengineering.

### Types of AlphaFold Models:

#### AlphaFold 1:

**Initial Model:** The original version of AlphaFold competed in the 2018 CASP competition (CASP13) and performed remarkably well but was not the ultimate solution to the protein folding problem.

**Focus:** AlphaFold 1 was a combination of deep learning models and techniques based on **graph neural networks**, which allowed it to model protein folding pathways more efficiently than earlier methods.

#### AlphaFold 2:

**Breakthrough Version:** Released in 2020, AlphaFold 2 marked a significant leap in the field. This version used an improved neural network architecture and more sophisticated models, allowing it to predict protein structures with almost experimental-level accuracy.

**Transformers and Attention Mechanisms:** AlphaFold 2 utilizes **transformer networks**, a type of neural network architecture that has been highly successful in natural language processing (NLP) tasks. By using "attention" mechanisms, the model can focus on different parts of the amino acid sequence when predicting folding patterns.

**CASP14 Performance:** AlphaFold 2 performed at an unprecedented level in CASP14, with some predictions coming very close to the experimentally-determined structures.

## National Agriculture Code

**Why in News ?** The Bureau of Indian Standards (BIS) has begun the process of formulating a National Agriculture Code (NAC), on the lines of the existing National Building Code and National Electrical Code.

### What is the National Agriculture Code?

The BIS is the national body which sets standards for different products across various economic sectors. In agriculture, it has already set standards for machinery (tractors, harvesters, etc.) and various inputs (fertilisers, pesticides, etc.)

- However, there are still many areas not covered by the BIS standards. For example, there is no standard for agriculture practices like preparation of fields, micro irrigation and water use. Thus, for a long time, policymakers have felt a need for a comprehensive standards framework, like the one now being formulated by the BIS.
- The NAC will cover the entire agriculture cycle, and will also contain a guidance note for future standardisation.
- The code will have two parts. The first will contain general principles for all crops, and the second will deal with crop-specific standards for the likes of paddy, wheat, oilseeds, and pulses. The NAC will serve as a guide for farmers, agriculture universities, and officials involved in the field.

### What will the NAC cover?

- In addition to standards for agriculture machinery, the NAC will cover all agriculture processes and post-harvest operations, such as crop selection, land preparation, sowing/transplanting, irrigation/drainage, soil health management, plant health management, harvesting/threshing, primary processing, post-harvest, sustainability, and record maintenance.
- It will also include standards for input management, like use of chemical fertilisers, pesticides, and weedicides, as well as standards for crop storage and traceability.
- Crucially, the NAC will cover all new and emerging areas like natural farming and organic farming, as well as the use of Internet-of-Things in the field of agriculture.

**What are the stated objects of the National Agriculture Code?**

- To create an implementable national code covering recommendations for agriculture practices taking agroclimatic zones, crop type, socio economic diversity of the country and all aspects of agrifood value chain into consideration;
- To act as an enabler of quality culture in Indian agriculture by providing the required reference to policy makers, agriculture departments and regulators for incorporating the provisions of NAC in their schemes, policies, or regulations;
- To create a comprehensive guide for the farming community to ensure effective decision making in agricultural practices;
- To integrate relevant Indian Standards with recommended agricultural practices.
- To address the horizontal aspects of agriculture such as SMART farming, sustainability, traceability and documentation; and
- To aid in the capacity building program organized by agriculture extension services and civil society organisations.

**What is the proposed timeline for this project?**

The BIS has already formulated a strategy to standardise practices. It has formed working panels for 12-14 specifically identified areas, which will include university professors and R&D organisations. These panels will draft the code, with a tentative deadline for the NAC set as October 2025.

**What are Standardized Agriculture Demonstration Farms? How are they important?**

- Apart from drafting the NAC, the BIS has also taken an initiative for setting up of 'Standardized Agriculture Demonstration Farm' (SADF) in selected agriculture institutes in the country.
- These farms will serve as experimental sites for testing and implementing various agricultural practices and new technologies in accordance with Indian Standards, according to the BIS.
- The BIS will provide financial assistance to these institutes for setting up the SADFs, where anyone including officials responsible for extension activities, farmers or industry people can come and learn.



## Green Patches

**Why in News?** The discovery of green patches in Antarctica is a recent phenomenon that has raised both scientific interest and environmental concerns. These patches are primarily areas of algae blooms growing in the Antarctic region, which have been observed more frequently in recent years.

### What Are These Green Patches?

- The green patches observed in Antarctica are algal blooms—particularly microscopic plants, such as snow algae—that thrive in melting snow and ice.
- These algae can survive in extreme conditions and typically bloom during the summer months when temperatures rise, and snow starts to melt. The algae are green due to the chlorophyll they use for photosynthesis, and in some cases, red algae also appear, creating "red snow" or "watermelon snow."

### Causes of Green Patches in Antarctica:

#### Warming Temperatures:

- Climate change has led to increasing temperatures in Antarctica, particularly along its coasts and the Antarctic Peninsula, which is one of the fastest-warming regions on the planet. As temperatures rise, snow and ice melt, creating moist environments suitable for algae to thrive.

#### Increased Snowmelt:

- More frequent and prolonged periods of snowmelt create the ideal conditions for algae to grow. The meltwater provides a habitat for algae, allowing them to spread across larger areas.

#### Nutrient Availability:

- Nutrients carried by wind and ocean currents, along with bird and animal droppings (like those of penguins and seals), contribute to the spread of algae by providing essential nutrients such as nitrogen and phosphorus.



**Environmental Concerns:****Impact on Albedo Effect:**

- One of the most significant concerns is that algal blooms reduce the albedo (reflectivity) of the snow and ice surfaces.
- Snow and ice normally reflect most of the sunlight, helping to regulate the Earth's temperature. However, darker green patches absorb more heat, leading to further melting of ice and snow, which in turn accelerates warming and creates a feedback loop.

**Ecological Imbalance:**

- The rapid spread of algae could disrupt the Antarctic ecosystem, which is highly sensitive to changes. While some species may benefit from the increase in algae (such as certain microorganisms), it could negatively affect other species that rely on specific environmental conditions.

**Indicator of Global Warming:**

- The appearance of green patches is a visible sign of the ongoing impact of global warming in Antarctica. The region is already experiencing shifts in temperature, ice cover, and biodiversity, and the growth of algae is one of many indicators of how the polar environment is changing.

**Potential for Expanded Habitats:**

- As Antarctica warms, it may create conditions for more complex plant and microbial life to thrive, potentially transforming parts of the continent's landscape. This could lead to the emergence of new ecosystems in areas that were previously inhospitable due to extreme cold.

**Global Sea Level Rise:**

- The melting of Antarctic ice, exacerbated by the warming effect of algal blooms, contributes to global sea level rise. Even small increases in sea levels can have catastrophic effects on coastal communities worldwide, increasing the frequency of flooding and storm surges.

## 10-point plan in India-ASEAN Summit

- Prime Minister Narendra Modi, while addressing the 21st India-ASEAN Summit, said that India's trade with ASEAN countries has doubled in the last decade and now stands at over \$130 billion. Modi said that he is confident that the 21st century, also known as the Asian century, is the century of India and ASEAN countries. ASEAN countries include Malaysia, Thailand, Brunei, Cambodia, Indonesia, Myanmar, Philippines, Vietnam, Laos and Singapore.
- Prime Minister Narendra Modi announced a 10-point plan to strengthen partnership with ASEAN countries.

### Announcement of 10-point plan -

1. Celebrating 2025 as ASEAN-India Tourism Year. For this, India will provide US\$5 million for joint activities
  2. Celebrating a decade of Act-East Policy through a number of focused activities including Youth Summit, Start-up Festival, Hackathon, Music Festival, ASEAN-India Think Tank Network and Delhi Dialogue
  3. Organizing ASEAN-India Women Scientists Conference under the ASEAN-India Science and Technology Development Fund
  4. Doubling the number of scholarships at Nalanda University, providing new grants for ASEAN students in agricultural universities in India
  5. Review of ASEAN-India Trade in Goods Agreement by 2025
  6. India will provide US\$5 million for disaster resilience
  7. Launching a new track of Health Ministers towards health
  8. Launching a regular mechanism of ASEAN-India Cyber Policy Dialogue towards strengthening digital and cyber policy
  9. Workshop on Green Hydrogen
  10. Inviting ASEAN leaders to join the 'Plant a Tree for Mother' campaign towards climate resurgence
- PM Modi announced the establishment of the ASEAN India Fund for a Digital Future, which aims to enhance financial connectivity between ASEAN and India. He also

expressed support for the ASEAN think tank ERIA which will deepen ASEAN-India relations.

## Nihon Hidankyo wins 2024 Nobel Peace Prize

**Why in New?** The Norwegian Nobel Committee has selected the Japanese anti-nuclear weapons organization **Nihon Hidankyo for the 2024 Nobel Peace Prize**.

- The Norwegian committee chose the Nihon Hidankyo organization for its efforts to achieve a world free of nuclear weapons and to demonstrate through the victims of nuclear weapons that nuclear weapons should never be used again.
- The Nihon Hidankyo will receive the 11 million kroner prize at a ceremony in Oslo, Norway. The Nobel Prizes in physics, chemistry, physiology or medicine, literature and economics are awarded at a ceremony held in Stockholm, Sweden. At the same time, **the Nobel Peace Prize winner is honored in Oslo, Norway.**

### About Nihon Hidankyo-

- During World War II, the United States Air Force dropped two atomic bombs on Japan. More than 200,000 people were killed in the attack, and the survivors suffered the effects of nuclear radiation.
- A powerful local grassroots anti-nuclear weapons movement emerged in Hiroshima and Nagasaki against the horrors of nuclear war, popularly called Hibakusha (a combination of Hiroshima and Nagasaki).
- In 1956, the local Hibakusha association, together with victims of nuclear weapon testing in the Pacific, formed a new organization, the Japan Confederation of A- and H-Bomb Victims' Organizations.
- **It was called Nihon Hidankyo for short in Japanese.** Nihon is the Japanese name for Japan.

### Nobel Peace Prize-

- The Nobel Foundation established the Nobel Peace Prize in 1900, in accordance with Alfred Nobel's will, and the first Peace Prize was awarded in 1901.
- The first prize was jointly shared by Jean Henri Dunant of Switzerland and Frederic Passy of France.
- In 2023, the prize was awarded to Iranian peace activist Narges Mohammadi.

#### Indian Nobel Peace Prize Winners-

- **Mother Teresa** was the first Indian citizen to win the Nobel Peace Prize in 1979. She started her organization, "The Missionaries of Charity", to care for the poor and destitute in Kolkata (then Calcutta).
- **In 2014, Kailash Satyarthi** shared the Peace Prize with Mala Yousafzai of Pakistan. Kailash is the founder of the "Bachpan Bachao Andolan" established to eradicate child labour in India and save children from child labour.

### India becomes UNICEF's third largest provider of nutrition and health support

**Why in News?** Indian businesses supplied UNICEF with goods and services worth nearly \$6 billion for its global work from 2016 to 2023, making it the third largest supplier in 2023.

- This contribution includes vaccines, pharmaceuticals and nutrition supplies that are critical to meeting the health and nutrition needs of children around the world. Indian suppliers of life-saving goods and services for children are vital to UNICEF's work for children globally.
- Long-term partnerships with the Government of India have been instrumental in achieving critical goals in children's health, education and protection in the country. UNICEF values these contributions, which are a priority of UNICEF's mission to save the lives of the most vulnerable children not only in India but around the world.
- UNICEF procures significant volumes of children's immunization, health and nutrition products from India-based suppliers that play a vital role in UNICEF's global development and humanitarian work.

**UNICEF Supply Division Director Leela Pakkala's first official visit to India-**

- Recently, UNICEF Supply Division Director Leela Pakkala met key stakeholders to sustain and expand UNICEF's global supply partnership with India. The visit comes at a time when UNICEF is celebrating 75 years of its presence and continued partnership with the Government of India.
- Ms. Pakkala's visit highlights the importance of UNICEF's global supply partnership with India and the great potential for deeper collaboration to meet the needs of children around the world.
- Aligning with national policies and Sustainable Development Goals, UNICEF contributes to shaping the Indian market so that their supply chains align with sustainable business practices and do not harm the environment.

**About UNICEF-**

- UNICEF, the United Nations agency for children, works to protect the rights of every child, especially the most disadvantaged children and in the most remote places. It works to help children survive, thrive and fulfil their potential in more than 190 countries and territories.
- **UNICEF India relies on support and donations from businesses and individuals** to sustain and expand health, nutrition, water and sanitation, education, social policy and social protection and child protection programmes for all girls and boys in India.
- UNICEF's Supply and Logistics Headquarters - **UNICEF Supply Division is located in Copenhagen, Denmark.** UNICEF supplies are vital to providing health, education and protection to the world's most vulnerable children.

## Nobel Prize in Economics: 2024/ Why nations fail or succeed?

The 2024 Nobel Prize in Economics was awarded to **Daron Acemoglu, Simon Johnson, and James A. Robinson** for their research on how **institutional differences** impact a nation's prosperity. Their work emphasizes that the nature of societal institutions—specifically, whether they are inclusive or extractive—plays a crucial role in determining why some countries thrive economically while others do not.

- The laureates highlighted that **inclusive institutions**, which support democracy, the rule of law, and equitable economic policies, tend to foster prosperity.
- In contrast, **extractive institutions** often exploit resources and inhibit growth, creating a cycle where the elite benefit at the expense of the broader population. Their findings draw on historical examples, particularly the effects of colonization, where the establishment of either inclusive or extractive systems had long-lasting impacts on former colonies
- The research also addresses the stark economic disparities observed globally, where the richest **20% of countries are about 30 times wealthier than the poorest 20%**. The insights provided by Acemoglu, Johnson, and Robinson help explain why many nations fail to achieve economic growth .

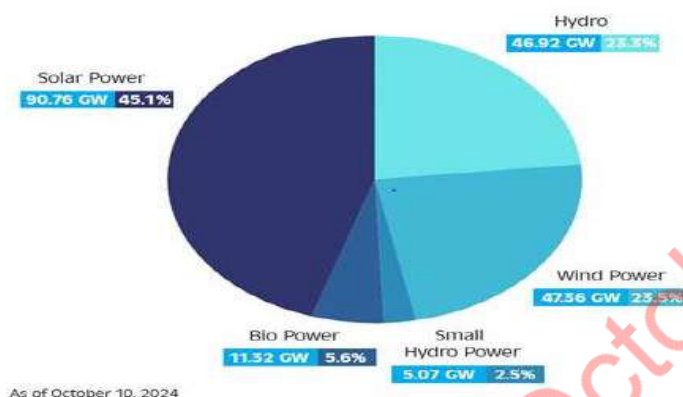
## India's total renewable energy capacity : 2024

**Why in New?** India's total renewable energy capacity has crossed the 200 GW (gigawatt) mark as of October 10, 2024. It accounts for 46.3 percent of the country's total installed capacity.

### India's renewable energy targets:

- **By 2030:** Achieve 500 GW of installed electricity capacity from non-fossil fuel sources.
- **Net-Zero by 2070:** As per India's commitments at COP26.

## Renewable Energy Capacity in India



## States Driving India's Renewable Energy Capacity





Present status of renewable energy in India (as of October 2024):

Category	Installed Capacity (GW)	Contribution (%)
Solar Power	90.76 GW	20.05%
Wind Power	47.38 GW	10.46%
Large Hydro	46.92 GW	10.36%
Small Hydro	5.07 GW	1.12%
Bio Power	11.32 GW	2.50%
<b>Total Renewable</b>	<b>201.45 GW</b>	<b>46.30%</b>
<b>Total Installed Capacity</b>	<b>432.09 GW</b>	

## Nasa launched Europa Clipper mission

**Why in News?** National Aeronautics and Space Administration (Nasa) is set to launch its most ambitious planetary mission to Jupiter's icy moon Europa, aiming to explore the potential for life in the solar system's most intriguing ocean worlds. The launch of the Europa Clipper space tool place on 14 Oct, 2024.

The spacecraft is scheduled to launch from Nasa's Kennedy Space Center in Florida aboard a Falcon Heavy rocket. It is the largest spacecraft Nasa has ever built for any planetary mission. Reportedly, with solar arrays extended, it spans a basketball court (100 feet, or 30.5 meters, tip to tip).

- The journey of the Europa spacecraft wouldn't be a straight one but a long one, i.e., 1.8 billion miles (2.9 billion kilometres) as the Europa clipper will loop around Mars and then Earth, gaining speed as it swings past.
- The mission has two potential launch windows from now till November 6. Nasa needs to be vigilant as both opportunities are instantaneous as there is only one exact timing per day when the launch may occur. Plans to launch Europa Clipper on October 5 were delayed due to the impacts of Hurricane Milton.

**What will Europa Clipper do?**

- The \$5 billion mission aims to investigate potential life beneath the icy crust of Jupiter's moon Europa.

- According to scientists, Europa contains a vast subsurface ocean that has more water than all the Earth's oceans combined which is a key target in the search for extraterrestrial life.

#### Europa Clipper to join Juno and JUICE:

- There have already been two spacecraft orbiting Jupiter: NASA's Juno orbiting Jupiter since July 2016 and ESA's Jupiter ICy moons Explorer (JUICE) launched in April 2023.
- The Europa Clipper will complete the triad of missions, and it is expected to arrive in Jupiter in April 2030, beating JUICE to its destination by about a year, all thanks to differing trajectories.

## ASEAN Regional Forum (ARF)

The **ASEAN Regional Forum (ARF)** is an important platform for security dialogue in the Asia-Pacific region. It involves not only the ten ASEAN (Association of Southeast Asian Nations) member states but also several key non-ASEAN countries that are important stakeholders in regional security.

### 1. History and Formation:

- The ARF was established in **1994** during the 26th ASEAN Ministerial Meeting (AMM) in Bangkok, Thailand.
- It was created to address growing security concerns in the Asia-Pacific region, offering a multilateral setting for discussing and resolving political and security issues.

### 2. Membership:

- The ARF consists of **27 members**: the 10 ASEAN member states and 17 other participants, including countries like:
  - India
  - China
  - Japan
  - South Korea
  - Australia

- Russia
- The United States
- The European Union
- Canada, and others.
- **India** has been a member since **1996**.

### The Expanded ASEAN Maritime Forum (EAMF):

- The **Expanded ASEAN Maritime Forum (EAMF)** is a platform that involves ASEAN member states and non-ASEAN countries to address maritime security challenges and promote maritime cooperation. The EAMF builds on the ASEAN Maritime Forum (AMF), which focuses on issues related to maritime safety, security, and cooperation within ASEAN, but extends it to a broader set of regional and global partners.

#### India's Membership:

- **Yes**, India is a member of the EAMF. India actively participates in the EAMF to strengthen maritime cooperation, especially in areas like maritime security, combating piracy, and enhancing freedom of navigation in the Indo-Pacific.

#### Objectives:

- The EAMF aims to:
  1. **Strengthen maritime security:** Promote maritime security cooperation among ASEAN member states and external partners, particularly in the areas of combating piracy, trafficking, and other maritime crimes.
  2. **Encourage collaboration:** Facilitate cooperation on non-traditional security issues, such as disaster relief, environmental conservation, and sustainable development in maritime zones.
  3. **Promote freedom of navigation:** Support the peaceful use of maritime zones, in line with international law, particularly the United Nations Convention on the Law of the Sea (UNCLOS).
  4. **Build trust and confidence:** Enhance trust among participating states through dialogues, capacity-building initiatives, and joint exercises, promoting a stable and secure maritime environment.

**Meetings:**

- The EAMF is held on an annual basis, alongside the ASEAN Maritime Forum (AMF). It brings together ASEAN countries and key external partners, such as the United States, India, China, Japan, South Korea, Australia, and Russia, among others.

**ASEAN Plus Three (APT):**

**ASEAN Plus Three** is a regional framework that involves the ten ASEAN (Association of Southeast Asian Nations) member states along with three East Asian countries: **China, Japan, and South Korea**.

**Key Points:****Members:**

**ASEAN Member States:** Brunei, Cambodia, Indonesia, Laos, Malaysia, Myanmar, the Philippines, Singapore, Thailand, Vietnam.

**Plus Three:** China, Japan, South Korea.

**Formation:** The ASEAN Plus Three process was initiated in 1997 as an informal summit, growing out of the need for East Asian cooperation following the 1997 Asian Financial Crisis.

**Objectives:**

- To strengthen cooperation in various areas, including economic, political, and security matters.
- To promote economic integration and financial stability, especially in the wake of economic crises.
- To address regional issues like food security, energy, climate change, and transnational crime.
- To foster people-to-people exchanges and cultural cooperation.

**Key Initiatives:**

**Chiang Mai Initiative:** A multilateral currency swap arrangement aimed at stabilizing financial markets in times of crisis.

**ASEAN+3 Emergency Rice Reserve:** A program designed to ensure food security in case of natural disasters or food crises.

- **Significance:** ASEAN Plus Three serves as a crucial platform for deepening East Asian integration and cooperation. It has fostered a more cohesive regional economic and

political environment and has become an important mechanism for addressing both regional and global issues.

- **India is not a member** of the ASEAN Plus Three framework but maintains strong bilateral and multilateral ties with ASEAN and its member states through other forums such as the East Asia Summit (EAS) and the ASEAN Regional Forum (ARF).

## Greenwashing guidelines

**Why in New?** Seeking to restrain companies from making false or misleading claims about the environment-friendly nature of their products or services, the Centre recently released new guidelines that make it mandatory for companies to substantiate their claims with scientific evidence.

The Guidelines for Prevention and Regulation of Greenwashing or Misleading Environment Claims were issued by the **Central Consumer Protection Authority (CCPA)** which works under the Consumer Affairs Ministry.

**What is greenwashing?**

- Although greenwashing as a term has been used in the limited context of advertising in these guidelines, it has a much broader scope. Greenwashing refers to the growing tendency of companies, organisations or even countries to make dubious or unverifiable claims about their activities, products or services being environment-friendly or climate-friendly.
- Due to heightened sensitivity to climate change, there is rising pressure on corporations and governments to carry out their activities in a way that causes the least damage to the environment. Many of them also have legal commitments, or targets, to adhere to in this regard.
- As a result, companies and governments often make claims that are exaggerated, misleading, or, in some cases, wrong.
- The **2015 Volkswagen scandal**, in which the German car company was found to have been cheating in emissions testing of its supposedly green diesel vehicles, is one of the

headline-grabbing examples of greenwashing. Several other big corporations, including Shell, BP, and Coca Cola have faced accusations of greenwashing.

### What are the advertising guidelines for preventing greenwashing?

- The mandate of CCPA is to protect consumer interest and therefore, its guidelines are limited to curbing greenwashing in advertisements of products or services. They define greenwashing as “**any deceptive or misleading practice**” that conceals, omits or hides relevant information, or exaggerates, or makes vague or **unsubstantiated environmental claims about the product or service**.
- Use of misleading words, symbols or imagery, emphasizing positive environmental attributes while downplaying or concealing negative aspects would constitute greenwashing, according to the guidelines.
- However, they allow the use of “**obvious hyperboles**” or “**puffery**”, which is central to the advertising business, if these do not amount to deception or misleading practice.
- If a company, for example, makes the statement that its growth is based on “sustainable principles”, it would not be **treated as a misleading environmental claim** for the purposes of these guidelines. But if the company claims that all its products are manufactured sustainably, then it would be examined for greenwashing, the guidelines said.
- Thus, generic terms like “clean”, “green”, “eco-friendly”, “good for planet”, “cruelty-free”, “**carbon neutral**”, “natural”, “**organic**”, “**sustainable**”, or similar other descriptions for a product would be allowed only if the company is able to substantiate these with evidence. The company will also have to use “adequate and accurate” qualifiers and disclosures while advertising such descriptions.

### About the Central Consumer Protection Authority (CCPA):

The Central Consumer Protection Authority (CCPA) was established under the Consumer Protection Act, 2019 to protect consumer rights, prevent unfair trade practices, and address consumer complaints.

### Composition of CCPA:

Chairperson: The CCPA is headed by a Chief Commissioner (Chairperson), appointed by the Central Government.

### Members:

- There are two additional Commissioners, one for goods and another for services, also

appointed by the Central Government.

- The CCPA can include other officers and employees as necessary to carry out its functions.

**Advisory Council:** The CCPA may have an advisory council with experts from various fields like consumer rights, law, and public administration to provide suggestions on matters related to consumer protection.

**Powers of CCPA:**

- The CCPA can conduct **inquiries into violations** of consumer rights and investigate unfair trade practices or misleading advertisements.
- It can also refer matters for investigation to the Director-General (investigation) under the authority.
- The authority can issue **directions to recall unsafe goods or withdraw misleading advertisements**.
- It can order a company to **refund the price of the goods or services** if found defective or unsafe.
- The CCPA has the power to **impose penalties on individuals or businesses for misleading advertisements**.
- It can also hold the endorser or the publisher of such ads responsible.
- The CCPA can **act suo moto** (on its own motion) in cases where it suspects consumer rights violations or any unfair trade practices.
- The CCPA can initiate **class action suits** in cases involving multiple consumers being harmed by the same product or service.

## Miombo forest

**Why in News?** The United Nations Food and Agriculture Organization (FAO) and the Italian Agency for Development Cooperation (AICS) have recently signed two agreements for the implementation of projects aimed at protecting the miombo forest and facilitating trade in the border region between Mozambique and Zimbabwe. The agreements were signed in



**Maputo.**

These projects, valued at just over \$8 million, will be funded by Italy within the framework of the Mattei Plan for Africa. The initiatives are designed to promote sustainable development and cooperation between Mozambique and Zimbabwe by increasing food security, improving livelihoods, and promoting resilience against environmental and economic challenges.

- The first project, Integrated Transboundary Sustainable Management of Miombo Forests, aims to protect, restore, and promote the sustainable use of the **Miombo forest shared by Mozambique and Zimbabwe**.
- This forest is vital for millions of people in rural areas, providing essential resources such as firewood, food, and water.
- The project will focus on sustainable livelihoods, biodiversity conservation, and enhancing community-based management practices.
- It will directly benefit 5,000 families in selected areas, promoting gender equality and youth participation. This initiative aligns with the **Protocol and the Maputo Declaration (2022)** on sustainable and integrated management of Miombo woodlands, adopted in August 2022.

**About Miombo:**

- The Miombo is a biome that includes tropical and subtropical grasslands, bushlands, and savannahs.
- It also encompasses four bio-regions and is responsible for maintaining the **Greater Zambezi**, one of the most important transnational river basins.

**About the Maputo Declaration (2022):**

- It refers to the renewed commitment by African nations to strengthen efforts for agricultural development and food security in Africa.
- It builds upon previous declarations, particularly the **Maputo Declaration of 2003**, which focused on boosting agriculture and reducing hunger across the continent.

## 'Scam se Bacho' Campaign

**Why in News?** This initiative of Meta, being launched in collaboration of key ministries Ministry of Electronics and Information Technology (MeitY), the Ministry of Home Affairs (MHA), Ministry of Information and Broadcasting (MIB) and the Indian Cyber Crime Coordination Centre (I4C), aims to combat the growing menace of scams and cyber frauds, aligning with the government's commitment to addressing the rising cases of online scams and enhancing cyber safety.

**Key facts :**

- over 900 million internet users
- rising cyber frauds, with 1.1 million cases reported in 2023

**Types of cyber scams:**

- social media scam/data scam/Job Scams/Loan Apps Fraud/Banking Frauds.-Fishing)/E-commerce Frauds etc:

**What is Meta?**

- Meta is the parent company of social media platforms like Facebook, Instagram, and WhatsApp

**Recent Cyber scam/attack-** Digital Arrest etc

- Steps Taken by the Government and Authorities
- New Digital Personal Data Protection Act (2023/India launches online 'suspect registry'
- National Cyber Crime Reporting Portal
- RBI Guidelines for Digital Lending:
- Awareness Campaigns: Scam se Bacho/"Cyber Safe India"
- Crackdown on Illegal Apps: In 2023, the ED froze assets worth billions connected to such scams.
- Strengthening of CERT-In:.

### Way Forward:

- **Stronger Regulatory Framework:** A more robust regulatory framework, especially for digital platforms and fintech companies, is essential. The RBI and SEBI need to tighten their oversight on digital lending and investment platforms to prevent fraud.
- **Improved Collaboration Between Agencies:** Law enforcement agencies need better coordination with technology firms, financial institutions, and telecom companies to track and counter online fraud more effectively.
- **Public Awareness and Digital Literacy:** Greater emphasis on public awareness campaigns and digital literacy programs is necessary. Citizens should be educated about online fraud prevention, secure payment methods, and phishing attacks, especially in rural areas where digital literacy is low.
- **Development of Advanced Cybersecurity Infrastructure:** Investments in advanced cybersecurity infrastructure, such as AI-based threat detection systems, will help identify and mitigate frauds before they escalate.
- **Global Cooperation:** Given the cross-border nature of many scams, India should enhance cooperation with global agencies to track down international fraudsters, especially those linked to countries like China.
- **Consumer Protection Measures:** E-commerce platforms and financial service providers must strengthen their consumer protection measures, including grievance redressal mechanisms, to minimize the risk of online fraud.
- **Legal Reforms:** There should be reforms in cyber laws to impose stricter penalties on online fraudsters and create specialized cybercrime courts to ensure speedy trials.

### E-Shram: One Stop Solution'

**Why in News?** Union Labour Minister has recently launched the upgraded 'e-Shram: One-stop solution' portal, which will provide seamless access to the government's different social security schemes, including health, pension and food, to over 300 million workers from the unorganised sector.

"Every day, around 60,000 to 90,000 workers are joining the e-Shram platform.

**Significance/Objectives :**

- This platform will act as a bridge, connecting the workers to the numerous benefits offered by the government and making the registration process easier and more transparent
- One-stop solution entails consolidating and integrating data from various central ministries/ departments into a single repository.
- This initiative will also help in ensuring saturation of the schemes through identification of left-out potential beneficiaries both state and district-wise. Till now, the ministry had successfully integrated ten central schemes with the e-Shram database.

**The schemes available on the portal are:**

- Ration card
- PM Street Vendor's AtmaNirbhar Nidhi (PM SVANidhi), Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA), Pradhan Mantri Awas Yojana Gramin (PMAY-G), PMAY- Urban, National Career Service portal, Pradhan Mantri Shram Yogi Maandhan, National Disability Pension, National Widow Pension, PM Matsya Sampada Yojana (PMMSY) and Skill India Digital Hub (SIDH).

**About E-Shram Yojana:**

- It was launched in **2021** by the **Ministry of Labour and Employment** of the Government of India.
- The scheme aims to create a national database of unorganized workers, including construction workers, migrant laborers, gig workers, and others, to provide them with social security benefits and welfare schemes.
- The E-Shram portal enables these workers to register and obtain a unique **E-Shram card**, ensuring they are included in various social welfare schemes and receive benefits such as insurance coverage.

## Graded Response Action Plan (GRAP-II)

**Why in New?** The second stage of the Graded Response Action Plan (GRAP-II), implemented by the **Commission for Air Quality Management (CAQM)**, has come into effect from October 22. The decision was taken after reviewing the air quality scenario in the region, as per the CAQM order.

As of 4 pm on October 21, the national capital's **AQI stood at 310**, which comes under the '**very poor**' category according to the **Central Pollution Control Board (CPCB)**.

- In an effort to prevent further deterioration of the air quality, the Sub-Committee decided that all actions as envisaged under **Stage II of the GRAP-Very Poor Air Quality** be implemented by all the agencies concerned in the NCR, in addition to the **Stage-I actions** already in force, from **8:00 A.M. of 22.10.2024** in the National Capital Region (NCR).
- The India Meteorological Department (IMD) and IIT Madras (IITM) predicted that Delhi's air quality could remain in the '**very poor**' category between **301-400** in the coming days.
- IMD and IITM said this could be due to **the unfavourable meteorological and climatic conditions as well as calm winds**.

**About the Graded Response Action Plan (GRAP) :**

It was launched in **2017** by the **Environment Pollution (Prevention and Control) Authority (EPCA)** in collaboration with the **Central Pollution Control Board (CPCB)**.

GRAP is an emergency response mechanism aimed at tackling air pollution, particularly in the **National Capital Region (NCR)**, which includes Delhi and nearby areas.

**Purpose:**

GRAP is designed to take **immediate actions** based on different levels of air quality to mitigate pollution, especially during severe air pollution episodes like those witnessed in Delhi during the winter months.

### Key Features of GRAP

#### Moderate to Poor (AQI 101-300):

- Heavy fines for polluting industries.
- Mechanized cleaning and sprinkling of water on roads.

#### Very Poor (AQI 301-400):

- Ban on diesel generators (except for essential services).
- Increased frequency of public transport.

#### Severe (AQI 401-500):

- Closure of brick kilns and hot mix plants.
- Ban on stone crushers and firecrackers.

#### Severe+ or Emergency (AQI >500):

- Closure of schools, offices, and construction activities.
- Odd-even vehicular scheme may be enforced.
- Ban on the entry of heavy vehicles into the city.

## Lahore most polluted city in the world

**Why in News?** Pakistan's Lahore has been declared the most polluted city in the world, with a shocking Air Quality Index (AQI) of 394.

- In response, the Punjab government has announced plans to **create artificial rain** to combat the smog's impact.
- The AQI measures the concentration of various pollutants in the air, with anything above 100 deemed unhealthy and over **150 considered "very unhealthy."**

**The smog crisis has been exacerbated mainly :**

- by **crop residue burning and industrial emissions**

**Impact of smog:**

- Widespread health issues among residents, including coughing, breathing difficulties, eye irritation, and skin infections.

- Maryam Nawaz's Punjab government has also launched an 'Anti-Smog Squad' to visit affected areas and raise awareness.

### What is Smog?

- Smog, a blend of smoke and fog, occurs when polluting microparticles combine with cold, moist air, hanging close to the ground, reducing visibility, and causing health problems.

### What is long way solution?

- use of super seeders
- Strengthening Regulatory Frameworks
- Air Quality Monitoring
- Promoting Clean Energy
- Renewable Energy Sources
- Energy Efficiency
- Improving Public Transportation
- Public awareness –eg- **Anti-Smog Squad'**
- The Punjab Chief Minister Maryam Nawaz has called for “**climate diplomacy**” with India to reduce the smog's impact.
- She stressed that both sides should collaborate, noting that **stubble burning in India's Punjab** affects Pakistan due to **air currents**. “This issue must be addressed with India immediately.





## What is “climate diplomacy & Green Diplomacy?

### Climate Diplomacy:

- Climate diplomacy refers specifically to international negotiations, agreements, and efforts aimed at addressing climate change and its impacts.
- It involves discussions among countries, organizations, and stakeholders to develop strategies for reducing greenhouse gas emissions, adapting to climate change, and enhancing resilience.

### Green Diplomacy:

- **Green diplomacy** is a broader term that encompasses various diplomatic efforts aimed at promoting sustainable development and environmental protection.
- It includes addressing issues like biodiversity, pollution, conservation, and sustainable resource management, along with climate change.

## Flags of Convenience & shadow fleets

**Why in New?** While covering the Russia-Ukraine conflict, many western media outlets have used the term ‘shadow fleet’ to describe tanker ships that carry Russian crude oil or oil products to other countries. The term conjures up images of pirate-like vessels and phantom owners trading in illegal, contraband substances. India has been painted as a host of a shadow fleet that is ‘laundering’ Russian crude.

### How are sanctions implemented?

- When the U.S. sanctions a country, as is the case with Russia, it launches investigations into entities, companies and individuals who violate the sanctions.
- Their assets in the U.S. **are seized, bank accounts accessible** to the western banking system are frozen and, **sometimes**, criminal prosecutions are launched against them.

- U.S. sanctions against Russian oil mandate that Russia can only sell its crude oil at \$60 a barrel. Current market prices are **at least \$15** more. This is to ensure Russia doesn't profit much from oil sales and use that to fund its war effort in Ukraine.

#### What is structure of global shipping?

- The global shipping industry is highly diversified. Greeks own **20%** of the global merchant shipping **fleet with China** now crossing Japan to become the second leading nation in terms of merchant shipping fleet ownership.
- Most ships are built and repaired in **China, Japan and South Korea**. Yet, marine insurance, ship finance as well as global shipping regulations revolve around the **U.K.** and rest of **Europe**. U.S. sanctions are sought to be enforced through these levers.

#### What is the accusation against India?

- Soon after sanction enforcements, many Russian ships struck alliances with Indian firms. Many switched their base **to Dubai where Indians have a presence** in shipping. The **Indian Register of Shipping (IRS)**, a classification society, did see an increase in the ships it was **certifying, bolstering charges of Indian involvement** in shadow fleets.
- Noting that it has been linked to **Russian shipping entities**, the IRS said its primary responsibility is to the safety of a vessel and that it will not be compromised.
- IRS reported that it has indeed been asked to provide safety-related classification services to a number of vessels by **Dubai-based entities**. These vessels were registered under the flag administrations of **Liberia and Cyprus** and none flew the Russian flag, the IRS reported.
- In 2015, **when Iran was sanctioned, some 160 ships**, many with trade links to Iranian oil, switched their **classification society to the Korean Register of shipping** — Korea is a U.S. ally. Sometimes renaming a vessel can help to erase association with sanctions.

#### Can U.S. sanctions be enforced?

- Many agencies and shipping experts acknowledge that sanctions on Russian oil cannot be rigorously enforced because of its potential impact on world economy, the complex ways in which the shipping industry is structured, and because ownerships and origins of stakeholders are obscure and often based on voluntary disclosure.
- More recently, the **BBC reported that the U.K. had taken** action only mild action against some 35 U.K. companies found to have violated the price cap set by sanctions. Industry voices there say that taking strong action would be bad for U.K. businesses.

**What are Flags of Convenience (FoCs) and shadow fleets ?**

- They are terms commonly used in the shipping industry, often in discussions about maritime regulation, labor practices, and environmental compliance.

**Flags of Convenience (FoCs):**

- Flags of Convenience refer to the **practice of registering a ship under a foreign flag** rather than the flag of the country where the ship is owned or operated.
- This practice allows shipowners to take advantage of more lenient regulations, lower taxes, and reduced labor costs in the foreign country.

**Shadow Fleets:**

- Shadow fleets refer to a **group of vessels that are operating outside** of the conventional shipping regulations or tracking systems.
- These ships may not be registered with the relevant authorities, making it difficult to monitor their activities. Shadow fleets are often associated with **illicit activities, including smuggling, trafficking, or bypassing sanctions.**

**The International Transport Workers' Federation (ITF):**

- The International Transport Workers' Federation (ITF) is an international federation of transport workers' trade unions. Around 700 unions representing 19.5 million transport workers from some 150 countries are ITF members.
- It is one of several global union federations allied with the International Trade Union Confederation (ITUC).
- The ITF's headquarters is in London and it has offices in Amman, Brussels, Nairobi, New Delhi, Ouagadougou, Rio de Janeiro, Singapore and Tokyo.

## BRICS summit 2024 : Kazan Declaration

**Why in News?** The BRICS summit 2024 was recently held at Kazan , Russia. It focused on Strengthening Multilateralism for Just Global Development and Security.

### Key Declaration:

- Russia emphasized a BRICS-led payment system against SWIFT. 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.



**About BRICS:**

- The term **BRIC** was coined by **British** economist **Jim O'Neill** in **2001** to represent emerging economies.
- Established in 2009 with founding countries Brazil, Russia, India, and **BRIC**. **Later on** **South Africa** joined it in 2010( **BRICS**).
- **Expansion of BRICS: Argentina, Ethiopia, Egypt, Iran, Saudi Arabia, and the UAE** are the six new additions to the **BRICS**.

**Biodiversity Intactness Index (BII)**

**Why in News?** The Natural History Museum (NHM) has recently carried out a study that says that Biodiversity is declining more quickly inside key protected areas than outside them. The analysis was carried out by the, based in London.

The critical biodiversity areas (CBAs) ecosystems and areas such as wetlands that are crucial for biodiversity — **22% of which is protected**

**What the report says?**

- The findings, which raise questions about the ongoing conservation practices, suggest that merely designating more areas as protected “**will not automatically result in better outcomes for biodiversity**”.
- It is “a wake-up call” to policymakers and enforcers of the legislation that it was not enough just to designate an area as protected.
- The government and policymakers need to know it is not about just hitting a number
- The **Biodiversity Intactness Index (BII)** has decreased by **1.88 percentage points globally between 2000 and 2020**.
- They found that “**within those critical areas that were not protected**, biodiversity had declined by an average of **1.9 percentage points between 2000 and 2020**, and within the areas that were protected it had declined by **2.1 percentage points**.”

### Why is the decline happening?

- Many of the protected **areas are not designed to safeguard** the whole ecosystem but only certain species. This means that complete “**biodiversity intactness**” is **not a priority**.
- Another threat to the protected areas is oil, gas, and mining concessions — land granted by the government to companies which explore for and produce oil, natural gas, and other hydrocarbons. For instance, more than **65% of the Conkouati-Douli national park**, which is one of the most **biodiverse protected areas in the Republic of the Congo**, is occupied by oil and gas concessions.
- The climate crisis also has a role to play. more frequent and intense droughts and wildfires have severely impacted the protected areas. For example, several of Australia’s national parks, which have been stringently protected by **authorities, were destroyed by wildfires in 2019**.

### What is way forward ?

- The region-specific analysis is required to determine why these landscapes are deteriorating.
- Protections in place are not stringent enough.
- Countries need to continue their focus on **30x30** (a commitment made by countries at Biodiversity COP15 to put at least **30% of the world’s lands** and oceans under conservation by 2030), that shouldn’t waver.
- They just need to bring more into it, and pay more attention to actually conserving the land which provides those **ecosystem services**.

### About the Biodiversity Intactness Index (BII) :

- It is released by the **Natural History Museum in London**. The BII is a metric used to assess the extent to which biodiversity in an area remains intact despite human activities.
- It **measures** the average abundance of originally present species relative to pre-impact levels, providing insights into ecosystem health and the effects of land use, deforestation, agriculture, and urbanization on biodiversity.
- The BII provides a percentage score, reflecting how much of an area’s original biodiversity remains. For example, a BII of **90% suggests that 90%** of species populations remain intact, while a score below **50% may indicate significant biodiversity loss**.

**About the Natural History Museum (NHM) :**

- It is based in **London** . It is one of the **world's most famous museums**, dedicated to the study of natural history and biodiversity.
- NHM houses an extensive collection of specimens and provides resources for scientific research, public education, and conservation advocacy.
- The museum's collections and research support efforts to understand the Earth's **natural diversity and address pressing environmental challenges**, such as climate change and biodiversity loss.

**Sarco or 'Suicide pod'**

**Why in News?** Switzerland police has recently arrested at least four persons for their involvement in the death of a 64-year-old American woman by a '**suicide pod**'. The woman, whose identity has not been disclosed, reportedly suffered from an **autoimmune condition** for years.

- This incident has turned the spotlight on the contentious Sarco pod, engineered by Dr Philip Nitschke, an Australian physician who founded the **pro-euthanasia group Exit International**.
- More crucially, it also raises questions about the **ethics of assisted dying and euthanasia**.

**What are euthanasia and assisted dying?**

- Both **euthanasia** and assisted dying are ways in which a person may intentionally choose to end their life.
- Euthanasia relies on the presence of a **physician to address a lethal drug** to the person. Euthanasia may be of two kinds — voluntary, where the patient gives their explicit consent, and involuntary, when they are unable to do so, possibly because they are in a coma.



- **Assisted dying**, on the other hand, is understood to rely on self-administration of the lethal substance, with medical involvement restricted simply to the procurement of the drug. It means intentionally helping another person end their life, and does not stipulate that the person is terminally ill.

#### What is the Sarco pod?

- Named after sarcophagus, the stone coffin used to bury ancient royalty, the Sarco is a coffin-sized, air-tight machine designed by **Exit International**.
- First made in 2019, **the Sarco pod consists of a 3D-printed** detachable capsule placed on a stand with a canister of liquid nitrogen. A person lying inside it could press a button to initiate the dying process, flooding the air inside it with **nitrogen gas**.
- The device was designed and built in the **Netherlands by Nitschke and Dutch engineer Alex Bannink over 12 years and cost around €650,000 (\$725,000)** to research and develop. Future pods are estimated to cost around €15,000 and to be reusable.

#### Who can Access it ?

- The pod is not available to just anyone, and interested candidates must clear an online mental fitness test first. "If they pass, they receive an access code to a **Sarco device that works for 24 hours**. After the code is entered and an additional confirmation given, liquid nitrogen in the generator is released, rapidly bringing down the oxygen level in the capsule. Within a minute, the user loses consciousness; death comes a short time later.
- The device is portable and can be transferred where one chooses.

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## Facts for Prelims

### The Gran Grif Gang

**Why in News?**- The Gran Grif gang is an armed criminal group in Haiti responsible for widespread violence, particularly in the Artibonite region. Recently, the gang executed a brutal attack in the Pont-Sondé locality, killing over 70 people and displacing thousands. The gang has taken control of large parts of the region, targeting civilians, burning homes and vehicles, and severely disrupting the community's daily life.

- The Haitian government and the National Police have struggled to contain the gang's activities, which have led to significant internal displacement and heightened insecurity. The leader of **Gran Grif, Luckson Elan**, has been sanctioned by the U.S. government for his involvement in human rights abuses and gang-related violence.

### Aditi 2.0 and DISC 12 Initiatives

**Why in News?**- India's Defence Minister has recently launched two key initiatives—ADITI 2.0 and DISC 12—at **DefConnect 4.0 in Delhi**. These initiatives aim to strengthen India's defence technology ecosystem by encouraging innovation and providing financial support for new ideas.

**What is ADITI 2.0?**

- ADITI 2.0 focuses on 19 technology challenges that cover advanced areas like Artificial Intelligence, Quantum Technology, military communication systems, and

anti-drone technology. The government is offering grants of up to ₹25 crore for those who come up with successful solutions to these challenges.

#### What is DISC 12?

- DISC 12, the 12th Defence India Start-up Challenge, introduces 41 new technology challenges. These challenges include innovations in **Unmanned Aerial Vehicles** (UAVs) and medical technologies. The programme also includes the Medical Innovations and Research Advancement (MIRA) initiative, which focuses on developing medical technologies specifically for the Armed Forces. The top ideas can receive grants of up to ₹1.50 crore.

#### iDEX Initiative:

- The Innovations for Defence Excellence (iDEX) initiative, which works with the Atal Innovation Mission, supports start-ups and small businesses (MSMEs) in developing new defence technologies. iDEX helps companies create prototypes and eventually bring these products to market.
- Since it started, iDEX has reviewed over 9,000 applications and partnered with more than 450 companies to boost defence innovation.

### 2024 Nobel Prize in Literature

- The Swedish Academy has selected South Korean novelist Han Kang for the 2024 Nobel Prize in Literature. Han Kang is the first Asian woman to receive the Nobel Prize in Literature. She is the second South Korean to win the Nobel Prize after former President Kim Dae-jung. President Kim Dae-jung was awarded the Nobel Peace Prize in 2000.
- Han Kang will receive the 11 million kroner prize at a ceremony in Stockholm, Sweden on 10 December 2024, the anniversary of Alfred Nobel's death.

### About Nobel laureate Han Kang-

- Novelist Han Kang, the 2016 International Booker Prize winner, has been selected by the Swedish Academy for her intensely poetic prose that confronts historical traumas and highlights the fragility of human life.
- Her novel 'The Vegetarian' brought her international recognition and she also received the 2016 International Booker Prize for this work.

### Women Literature Prize Winners-

- Han Kang is the 18th woman to be awarded the Nobel Prize in Literature.
- The first woman to win the Literature Prize was Selma Lagerlöf of Sweden who received this honor in 1909.

### Nobel Prize in Literature-

- The Nobel Foundation established the Nobel Prize in Literature in 1900, in accordance with the will of Alfred Nobel. The first prize was awarded in 1901.
- Sully Prudhomme of France was the first recipient of the Literature Prize in 1901.

### Indian Nobel Prize Winners in Literature-

- Rabindranath Tagore was the first Asian and Indian to receive the Nobel Prize in Literature (1913).
- He is the only Indian to receive this award.

## **Matsigenka community**

- The recent murder of Gerardo Keimari Enrique, an Indigenous leader from **Peru's Matsigenka community**, has intensified calls for stronger protection of Indigenous land rights.
- The Matsigenka community is an Indigenous group primarily located in the **Peruvian Amazon**, particularly in the region of **Madre de Dios and parts of Cusco**.



## Green War Room and Green Delhi Application

The Green War Room and Green Delhi Application are initiatives launched by the Delhi Government to combat environmental issues, primarily aimed at addressing air pollution and improving environmental governance in the city.

### What is Green War Room:

**Purpose:** The Green War Room, established by the Delhi Government, serves as a centralized command center for monitoring and managing air quality and other environmental concerns, especially during the winter season when Delhi experiences severe air pollution.

### Operations:

- The War Room collects real-time data from various pollution monitoring systems across Delhi and coordinates immediate responses to pollution spikes.
- It monitors key pollution sources such as vehicular emissions, industrial pollution, dust from construction sites, and burning of waste.
- The War Room is equipped with advanced technology and software to track air quality levels and provide alerts to citizens and authorities.
- The **Green Delhi App** was launched in 2020 by the Delhi Government to empower citizens to participate in addressing environmental issues, specifically air pollution.

## The Currency Composition of Official Foreign Exchange Reserves (COFER)

- It is a statistical database maintained by the International Monetary Fund (IMF) that tracks the currency composition of countries' foreign exchange reserves. These reserves are assets held by central banks and monetary authorities in different currencies, used to support the national currency and meet international payment obligations.

### Key Aspects of COFER:

Composition of Reserves: COFER reports the reserves held in various major currencies, primarily:

- US Dollar (USD)
- Euro (EUR)
- Japanese Yen (JPY)
- British Pound (GBP)
- Chinese Renminbi (CNY)
- Swiss Franc (CHF)

## Business Email compromise (BEC)

### What is **business** email compromise (BEC)?

Business email compromise (BEC) is a type of social engineering attack that takes place over email. In a BEC attack, an attacker falsifies an email message to trick the victim into performing some action — most often, transferring money to an account or location the attacker controls. BEC attacks differ from other types of email-based attacks in a couple of

### Key areas:

- They do not contain malware, malicious links, or email attachments
- They target specific individuals within organizations

- They are personalized to the intended victim and often involve advance research of the organization in question

BEC attacks are particularly dangerous because they do not contain malware, malicious links, dangerous email attachments, or other elements an email security filter might identify. Emails used in a BEC attack typically contain nothing but text, which helps attackers camouflage them within normal email traffic.

## Mule Accounts and Rented Accounts

### Mule Accounts:

- A mule account is used by criminals to move illicit funds from one place to another to conceal the origins and destination. Often, the account holder (or “mule”) may or may not be aware of the illegal nature of the transactions they’re helping to facilitate.
- Mule accounts are commonly part of schemes like money laundering, phishing, and business email compromise (BEC) fraud.
- Mules can be either unwitting participants (thinking they’re doing legitimate work) or complicit participants (knowing they’re assisting in a crime).

### Rented Accounts:

- Rented accounts, on the other hand, involve individuals who knowingly “rent out” access to their bank accounts to someone else, often in exchange for a fee.
- In a rented account scheme, the account holder is usually aware that they’re giving someone else access, though they might not always know the specifics of the illegal activities involved.
- Rented accounts are similarly used in fraud and laundering but are often more intentional. They’re also riskier for the renter, as they actively participate in providing access.



**Key Differences:**

- Mule account holders can be unknowing participants, while rented account holders are generally aware that they're renting out their account.
- Mule accounts are typically controlled by a third party after recruiting the account holder, while rented accounts are provided intentionally for temporary use by the account holder.

**Example:**

**Mule Account:** A person responds to a job ad offering easy income for transferring funds, unaware that the money originates from phishing scams.

**Rented Account:** An individual is approached with an offer to let someone use their account in exchange for a monthly fee. They allow access, knowing that the third party will be using it for unknown purposes.

Both types are frequently flagged by banks for potential money laundering and fraud, as they're used to disguise the movement of funds in criminal schemes.

## Fast-Moving Consumer Goods (FMCG)

**What are Fast-Moving Consumer Goods (FMCG)?**

Fast-Moving Consumer Goods (FMCG) are products that are sold quickly at relatively low cost and have high turnover due to frequent consumer demand. These products are essential in daily life, so they tend to be used up quickly and purchased regularly, such as packaged foods, personal care items, and household supplies.

**Key Characteristics of FMCG:**

- High Volume, Low Cost: FMCG items are generally inexpensive, allowing consumers to buy them in large volumes. Examples include snacks, soap, toothpaste, and beverages.

- **Short Shelf Life:** Many FMCG products, like food and toiletries, are perishable or consumable, meaning they are used up quickly.
- **Frequent Purchases:** FMCGs are essential, everyday items that consumers buy repeatedly, ensuring consistent demand.
- **Categories of FMCG Products:**
  - **Food and Beverages:** Packaged foods, soft drinks, dairy products, snacks, and frozen foods.
  - **Personal Care Products:** Items like shampoos, deodorants, toothpaste, and cosmetics.
  - **Household Products:** Cleaning supplies, detergents, air fresheners, and paper goods.
  - **Over-the-Counter (OTC) Medications:** Non-prescription items like pain relievers, cough syrup, and vitamins.

#### **Examples of Leading FMCG Companies:**

**Global Brands:** Procter & Gamble, Unilever, Coca-Cola, Nestlé, and PepsiCo are top FMCG companies, offering a wide range of products worldwide.

**Local Brands:** Many regions also have popular local brands that specialize in specific FMCG categories.

#### **Distribution Channels:**

FMCG products are commonly available in supermarkets, convenience stores, and increasingly through online retail, making them easily accessible to consumers.

#### **Trends in FMCG:**

**E-commerce Growth:** More FMCG products are being sold online, as consumers look for convenient shopping options.

**Sustainability Focus:** FMCG companies are prioritizing sustainable packaging and sourcing practices to meet consumer demand for eco-friendly products.

**Health Conscious Products:** Growing interest in organic, plant-based, and low-calorie options is shaping the FMCG sector.

FMCG is an essential industry as it meets everyday consumer needs and provides jobs across production, logistics, and retail, significantly impacting the global economy.

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