Factly Weekly

Compilation

2025

For UPSC CSE Prelims Exam

4th Week

May 2025

INDEX

Debt Recovery Tribunals (DRTs)

News: Recently, the Department of Financial Services (DFS), under the Ministry of Finance, convened a colloquium of Chairpersons of Debt Recovery Appellate Tribunals (DRATs) and Presiding Officers of Debt Recovery Tribunals (DRTs) at New Delhi. **Debt Recovery Tribunals (DRTs)**

About Debt Recovery Tribunals (DRTs)

- Debt Recovery Tribunals (DRTs) are special courts established by the Government of India to facilitate the recovery of debts owed to banks and financial institutions.
- They were set up under the Recovery of Debts and Bankruptcy Act, 1993, previously known as the Recovery of Debts Due to Banks and Financial Institutions (RDDBFI) Act.
- **Purpose:** To provide a fast and efficient legal mechanism for banks to recover non-performing assets (NPAs).
- **Aim:** These tribunals aim to reduce the workload on regular civil courts in financial matters and ensure that loan defaults are addressed promptly.
- DRTs handle loan default cases **above ₹20 lakh**, focusing on secured debts.

Structure of DRTs

- Each DRT is headed by a Presiding Officer, who is usually a qualified and experienced judge appointed by the central government.
- If a party is not satisfied with the decision of the DRT, they can appeal to a higher body called the Debt Recovery Appellate Tribunal (DRAT).
- DRATs are headed by Chairpersons who oversee appeals and ensure proper legal review of DRT decisions.

Key Features of DRT Proceedings

- DRTs follow a simplified legal process designed specifically for debt recovery and do not strictly follow the Civil Procedure Code.
- They have powers similar to civil courts, including summoning individuals, examining witnesses, and attaching properties to recover dues.

- Proceedings in DRTs are time-bound to ensure quicker resolution of cases compared to regular courts.

RBI Dividend

News: The Reserve Bank of India (RBI) recorded a **historic surplus of ₹2.69 lakh crore** for the financial year 2024-25, the highest ever dividend payout to the central government. **RBI Dividend**

About RBI Dividend

- The **RBI dividend** refers to the **annual surplus or profit** that the **Reserve Bank of India (RBI)** transfers to the **Central Government**. This surplus arises from the RBI's various operations and is transferred under a set mechanism called the **Economic Capital Framework (ECF)**.
- It is **not a tax**, but a **non-tax revenue** for the government.
- The dividend helps the central government meet its fiscal needs, including managing its budget deficit and spending requirements.
- The transfer amount is determined **after the RBI sets aside provisions** to maintain its financial strength and absorb risks—especially via the **Contingent Risk Buffer (CRB)**.

Why Did RBI Earn a Higher Surplus in 2024-25?

- **1. Higher Interest Income:** The RBI earns substantial interest from its **holdings of government securities** (like bonds and treasury bills), both domestic and foreign. In FY25, **elevated interest rates globally** led to **higher returns** on these securities.
- **2. Strong Gains from Foreign Exchange Operations:** The RBI was the **top seller of foreign exchange reserves in January 2025** among Asian central banks. Profits from **selling dollars at higher rates** due to forex market volatility contributed significantly.
- **3. Increased Gold Holdings and Rising Gold Prices:** The RBI **expanded its gold reserves**, and with global **gold prices surging**, this added to capital gains in its asset portfolio.

- **4. Liquidity Management and LAF Operations:** The RBI earns interest from **liquidity adjustment facility (LAF)** operations like **repo and reverse repo transactions** with banks. Active liquidity management during market fluctuations increased income from these operations.
- **5. Seigniorage from Currency Issuance:** Income from issuing currency (seigniorage) also added to the surplus. This is the **difference between the cost of printing currency and its face value**.
- **6. Efficient Expense Management:** The RBI managed its operating costs effectively, ensuring that more of the gross income translated into net surplus.

1st State of the World's Animal Health Report

News– According to the first State of the World's Animal Health report by WOAH, infectious animal diseases are reaching new regions and species, with almost half (47%) having the potential to transmit to humans. **1st State of the World's Animal Health Report.**

About State of the World's Animal Health Report

Released by: World Organisation for Animal Health (WOAH)

- WOAH is an intergovernmental organization focused on improving animal health worldwide. It is headquartered in Paris, France.

Key findings of the report:

- **Changing Disease Patterns**: Infectious animal diseases are *spreading into previously unaffected regions*, with nearly 47% having the ability to transmit from animals to humans (zoonotic potential). *For example*, *Peste des Petits Ruminants* (which affects sheep and goats) — once limited to developing countries — has now resurfaced in Europe.
- **Increasing Disease Severity**: Diseases such as *African swine fever, avian influenza, and foot-and-mouth disease* are becoming more frequent and severe, disrupting agricultural food systems and posing threats to food security, public health, and biodiversity.
- **Factors Driving Disease Spread**: *Climate change and the growth of global trade* are recognized as key factors fueling the spread of these diseases.

- **Antimicrobial Resistance (AMR):** By 2050, AMR is expected to cause significant livestock losses, *threatening the food security of 2 billion people* and resulting in an *economic loss estimated at US$ 100 trillion*.

Bharat Forecast System (BFS)

News– The India Meteorological Department (IMD) is set to adopt the Bharat Forecast System (BFS), which offers the highest resolution among all global weather models. **Bharat Forecast System (BFS).**

About Bharat Forecast System

- It is *India's first indigenously developed weather model*.
- Developed by the *Indian Institute of Tropical Meteorology (IITM), Pune.*
- It is a *deterministic model*, meaning it provides a single-model-based output, unlike ensemble models which give multiple outputs.
- **Key specifications:**
    - **Spatial Resolution 6 km × 6 km** — the highest resolution globally for a national model.
        - Existing Model 12 km × 12 km — covers 144 sq km per forecast unit.
    - **Coverage**– BFS can provide 6 km resolution forecasts for the tropical region that falls between *30 degrees South and 30 degrees North latitudes*.
        - The Indian mainland extends between 8.4 degrees North and 37.6 degrees North latitudes.
    - **Forecast Accuracy-** Capable of predicting small-scale weather phenomena such as localized thunderstorms, cyclones, and extreme rainfall with much greater accuracy

Moringa

News: PKM1, a variety of *Moringa oleifera* has made a significant global impact, particularly in African countries like Senegal, Rwanda, and Madagascar **for its nutrient-rich leaves** that help combat malnutrition. **Moringa**

About Moringa

- Moringa is a **nutrient-rich deciduous tree** native to **North India.**
- It is also a **fast-growing, drought-resistant tree native to the southern foothills of the Himalayas** in northwestern India.
- Its scientific name is **Moringa oleifera.**
- It's been called **"the Miracle Tree," "the Tree of Life" and "Mother's Milk."**
- It is commonly known as the **drumstick tree, horseradish tree, or miracle tree.**
- Nearly every part of the tree, **leaves, seeds, flowers, and pods** is edible and has been traditionally used for food and medicine.
- Moringa is packed with **vitamins A, B1, B2, B3, and C,** as well as **essential minerals** like calcium, potassium, iron, and magnesium.
- It is **low in fat and contains no harmful cholesterol.**
- Moringa has **antioxidant and anti-inflammatory properties** that may help protect the liver, promote skin and hair health, and reduce swelling from conditions like edema.
- It also shows potential in **supporting heart health, controlling blood sugar levels, and lowering blood pressure.**
- Moringa may also **help treat digestive issues, bacterial infections, and mood or neurological disorders**. Some research indicates anti-cancer properties and benefits in treating asthma and anaemia.

ARHGAP36 gene

News: Two independent studies by Stanford University (USA) and Kyushu University (Japan) have identified the ARHGAP36 gene as the reason behind the orange coat colour in ginger cats. The discovery ends a century-long mystery in feline genetics. **ARHGAP36 gene**

About ARHGAP36 gene

- The **ARHGAP36 gene** (Rho GTPase Activating Protein 36) encodes a **regulatory protein** that belongs to the **Rho GTPase-activating protein (GAP)** family.
- In orange cats, **higher levels of RNA from the Arhgap36 gene** are expressed in pigment cells.
- The protein produced by this gene **limits a step in the pigment pathway**, leading to reddish-yellow (orange) coat colour.
- In **male cats** (with one X chromosome), the presence of the orange mutation **activates Arhgap36**, leading to orange fur. In **female cats** (with two X chromosomes), a process called **X-chromosome inactivation** creates **mosaic coat patterns** like tortoiseshell or calico.
- **Relevance to Human Health:** ARHGAP36 has also been implicated in **human conditions** such as **Skin cancer and Baldness (hair loss).** The gene's involvement in these conditions shows its **conserved biological importance across species** and opens up avenues for **comparative biomedical research**.

Key technologies & Framework on Oil Spills

News: The state government has launched safety and cleanup operations after a cargo ship, MSC ELSA 3, sank off the coast near Thottappally in the Alappuzha district of Kerala.

Source – New Indian Express

About oil spills

- An oil spill is the **release of a liquid petroleum hydrocarbon** into the environment—especially the **marine ecosystem**—due to human activities and it is considered a form of **pollution**.

Consequences of oil spills

- When oil spills into water, it rapidly spreads. Due to its lighter density, it forms a layer over water, obstructing **sunlight** and disrupting **photosynthesis** in marine plants and phytoplankton – organisms crucial for oxygen production.

International Measures to control oil spills

- **International Convention for the Prevention of Pollution from Ships (MARPOL)**
  - It evolved from several older agreements and led to a protocol issued in 1978 following several oil spill disasters in the 1970s.
  - **India is also a signatory.**
  - It has **six annexes**, covering prevention of **pollution from ships by – Oil, Noxious liquid substances, Dangerous goods in packaged form, Sewage, Garbage and Air pollution** from ships.
- **International Convention on Oil Pollution Preparedness, Response and Co-operation (OPRC), 1990**
  - **Purpose**: Provides a global framework for international cooperation in preparing for and responding to major marine oil pollution incidents.

National measures to control oil spills

- **Merchant Shipping Act**: The **MARPOL Convention** is enforced with the help of **domestic legislation**, such as the **Merchant Shipping Act** in India, which has provisions on **civil liability and pollution prevention certificates.**
- **National Oil Spill Disaster Contingency Plan (NOS-DCP)**: The **Indian Coast Guard (ICG)** is responsible for maintaining and implementing the Plan. It was promulgated in 1996 and revised in 2015.

Key technologies on Oil Spills

- **Detection and monitoring:** Like being done by the **Indian National Centre for Ocean Information Services (INCOIS),** under the Ministry of Earth Sciences in India in the above case.
- **Skimming**: It involves **removing oil from the sea surface** before it can reach sensitive areas along the coastline.
- **In situ burning** means burning a particular patch of oil after it has concentrated in an area.
- **Use of chemical dispersants:** Releasing chemical dispersants helps break down oil into smaller droplets, making it easier for microbes to consume and further break it down into less harmful compounds.
- **Bioremediation:** Use of naturally occurring or genetically engineered microbes to degrade oil, often enhanced by nutrients or surfactants.

Key facts about Maldives

News: India and Maldives explored ways to boost trade and strategic cooperation even as Maldivian Foreign Minister Abdulla Khaleel backed New Delhi's fight against terrorism.

Key facts about Maldives

Figure 1.Source – World Atlas

Geography

- **Location**: It is located to the south of India or to the southwest of Sri Lanka in the Indian Ocean.
- It is located on the central part of a submerged ocean mountain range called **Laccadive-Chagos Ridge.**
- **Island chains:** The Maldives is a chain of 26 coral atolls. There are 1,192 small islands in the Maldives, of these only about 200 are inhabited.
- This country consists of **99% water** and only **1%** of the area is **land area.**
- There are no rivers in the Maldives and no hills, the highest points of the Maldives islands are about 15 ft above sea level.
- There are **only two small freshwater lake** on Foammulaku atoll.
- **Climate:** The rainy season, from May to August, is brought by the **southwest monsoon**; from December to March the **northeast monsoon** brings dry and mild winds.

Polity

- **Capital**: The capital city is called **Male** and located on the North Male atoll.
- This is the **smallest country** on the Asian continent.
- **Language:** The national language is Dhivehi, a language in Arabic script but derives from the Sinhala language spoken in Sri Lanka.
- **Religion**: **Islam** is the **state religion** and plays a central role in national governance.

Economy

- The currency of the Maldives is the rufiyaa. The coins are called laari.
- The **main industries** of the Maldives are **fishing, shipping** and boat building, sand and coral mining and **tourism**.

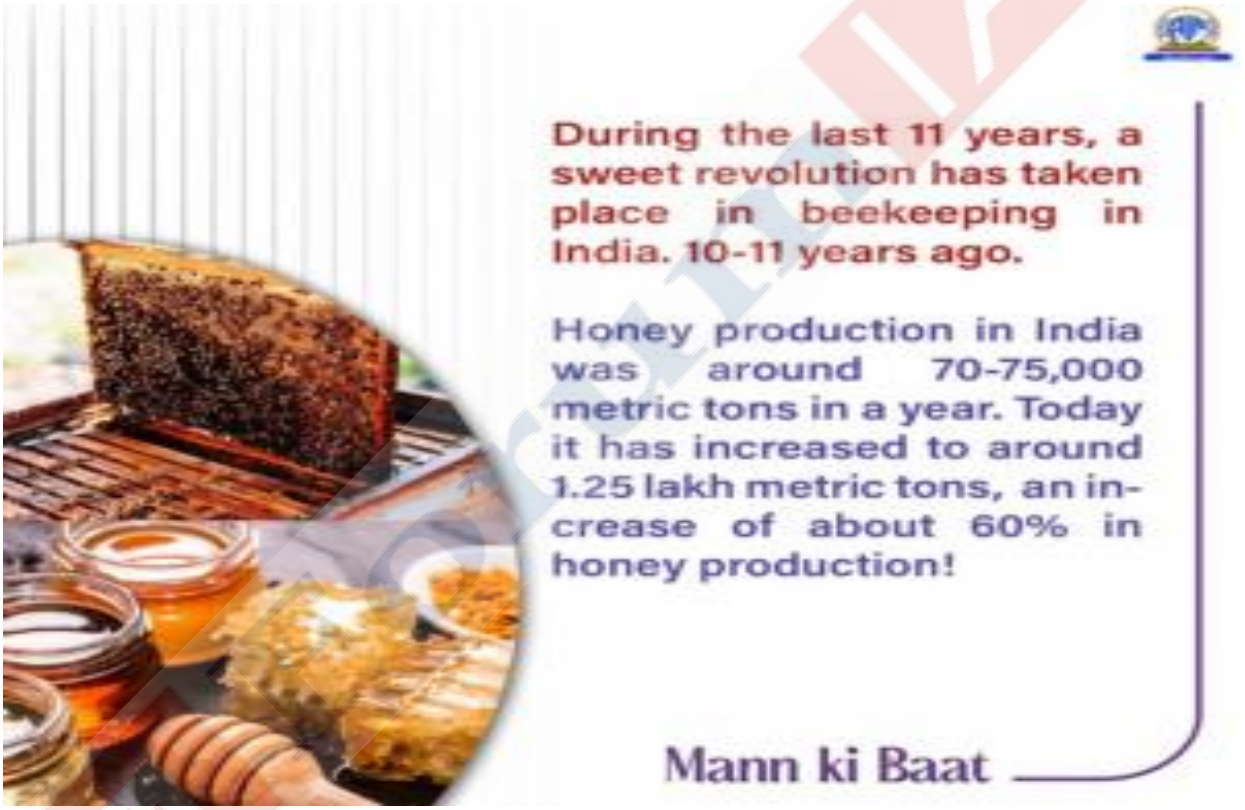
International cooperation

- The Maldives is a member of the U**nited Nations, the Commonwealth of Nations, the Organisation of Islamic Cooperation, and the Non-Aligned Movement**.
    - It is is a **Dialogue Partner** of the **Shanghai Cooperation Organisation**.

Honey Production in India

News: Prime Minister Narendra Modi has emphasized the transformative journey of India's honey industry over the past decade.

Honey Production in India



Source – News on Air

- India is currently producing about 1,46,000 metric tonnes (MTs) of honey as per the 3rd-advance estimate of honey (2023-24).
- The country has exported natural honey to the world during the **year 2023-24** as is in below table-

	Export Volume FY24 (MT)	**Exported in FY24 (USD Million)**
Natural Honey	107963.21	177.52

- **Major Export Destinations (2023-24)**: **U.S.A**, UAE, Saudi Arabia, Qatar and Libya.

- **Areas of Production:** Uttar Pradesh (17%), West Bengal (16%), Punjab (14%), Bihar (12%) and Rajasthan (9%).
- **Global Leader: China** is the world's largest producer and exporter of honey in the world.
    - India is the **7th largest producer and exporter** of honey in the world.

Steps taken to increase honey production in India

Honey Mission programme

- **Lunched by: Khadi & Village Industries Commission (KVIC),**
- **Nodal Ministry**: **Ministry of MSME.**
- Luanched in **2017-18**
- **Objective:** It is being implemented to **promote Bee Keeping activities** and provide **self-sustaining employment opportunities** among farmers, Adivasies and unemployed youth in rural India, especially in economically backward and remote areas.
    - Under the programme, beneficiaries are provided with Bee Boxes, live bee colonies, tool kits and training.

National Beekeeping & Honey Mission (NBHM) scheme

Nodal Ministry: Ministry of Agriculture and Farmers' Welfare

Aim: It aims for the **overall promotion & development of scientific beekeeping** in the country to achieve the goal of **'Sweet Revolution'** which is being implemented through **National Bee Board (NBB).**

Type: Central Sector Scheme

Case Study: Korea District of Chhattisgarh

- The tribal farmers of district are making pure organic honey called **Sonhani**.
    - Only **forest flowers** are used to make this honey.
- The Sonhani project has been started in the forests from the **District Mineral Fund**.
- For this, ten farmers were identified and sent to special Hubs for **training**.

Note: **World Bee Day** is celebrated on **May 20** every year.

Madden-Julian Oscillation (MJO)

News: The southwest monsoon arrived early, reaching Kerala on May 24 and Mumbai by May 26 — the earliest ever. The IMD says this was mainly due to favourable weather patterns, especially the Madden–Julian Oscillation.

About Madden-Julian Oscillation (MJO)

- It is a tropical atmospheric phenomenon characterized by a moving system of winds, clouds, and pressure that brings rainfall as it moves eastward along the equator.
- It was discovered in 1971 by scientists Roland Madden and Paul Julian at the National Centre for Atmospheric Research in Boulder, Colorado.
- The MJO typically completes one global cycle in 30 to 60 days, although it can sometimes take up to 90 days.
- As it moves, the MJO creates two distinct zones — one where rainfall activity is enhanced (active phase) and another where rainfall is suppressed (suppressed phase).
- The MJO travels eastward at a speed of about 4 to 8 metres per second and primarily influences weather patterns in the tropical belt between 30°N and 30°S latitude, which includes India.
- The MJO has a significant impact on tropical weather systems, including monsoons, cyclones, and periods of heavy rainfall or dryness.

Phases and Impact of MJO

- During its **active phase**, the MJO leads to increased cloud formation, strong convection, and higher-than-average rainfall in the affected region.
- In its **suppressed phase**, the MJO inhibits convection and results in lower-than-average rainfall or dry conditions.
- These alternating phases occur periodically and can influence multiple weather events within a single season.

Emblems and Names (Prevention of Improper Use) Act, 1950

News: The Supreme Court has rejected a plea seeking to protect VD Savarkar's name under the Emblems and Names (Prevention of Improper Use) Act, 1950.

About Emblems and Names (Prevention of Improper Use) Act, 1950

- It is a legislation aimed at **safeguarding national and international symbols** from unauthorized commercial or professional exploitation.
    - The "**emblem**" means any **emblem, seal, flag, insignia, coat-of-arms or pictorial representation** specified in the Schedule.
- **Nodal Ministry:** Ministry of Consumer Affairs, Food, and Public Distribution.
- **Objective**: Prevent misuse of specified emblems, names, and symbols for commercial purposes to maintain their dignity and sanctity.
- **Jurisdiction**: It extends to the **whole of India** and also applies to **citizens of India outside India**.

Key Provisions

- **Prohibited Uses (Section 3):** It restricts the use of emblems/names listed in the Schedule (e.g., Indian national flag, UN/WHO emblems, names of national leaders like Gandhi) **without prior permission** from the Central Government.
    - It applies to trade, business, patents, trademarks, or designs.
- **Registration Restrictions (Section 4):** It bars authorities from registering companies, trademarks, or patents that contravene Section 3.
- **Penalty (Section 5):** The violations attract a fine of up to ₹500.
- **Schedule: Lists protected emblems/names, including:**
    - Indian national flag and emblem.
    - UN, WHO, Red Cross symbols.
    - Names/abbreviations of international organizations.
    - Names/pictorial representations of Mahatma Gandhi, former Presidents, and Prime Ministers.
- **Exemption:** This Act **does not provide any exemption** to individuals from any legal action or proceeding that could be filed against them independently of this Act.

Bow Echo

News: The intense storm that hit Delhi recently appeared in an unusual shape in the India Meteorological Department's (IMD's) weather radar imagery. The storm looked like a crescent or an archer's bow. In technical terms, such presentations of storms are called "bow echoes".

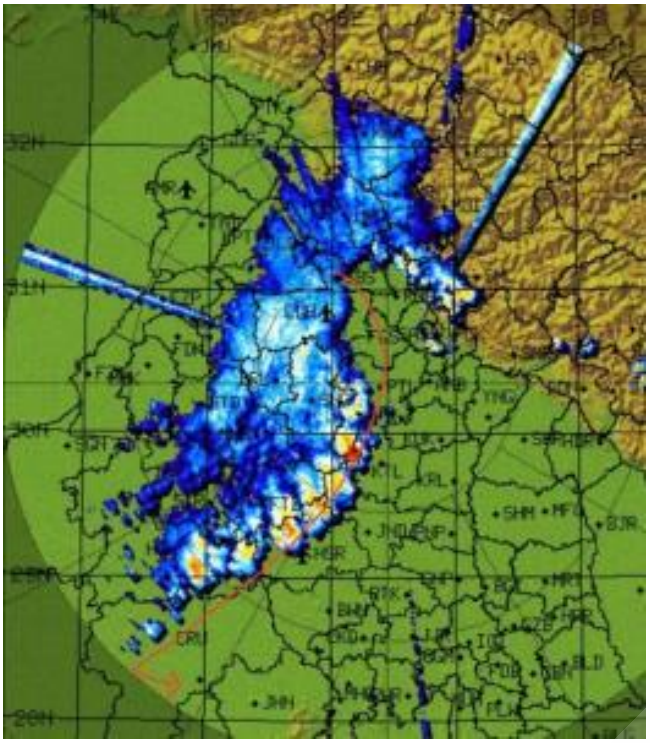


Figure 2.Source – IE

About Bow Echo

- A bow echo is essentially **a line of storms**, also called a **squall line**, on the radar that looks like a bow.
  - This squall line can sometimes be **embedded in a larger squall line**.
  - Bow echoes are often **associated with severe weather**, including damaging straight-line winds.
- **Naming:** The term was coined in the **1970s by Ted Fujita**, a Japanese American meteorologist known for developing the scale to classify tornadoes.
- **Range:** A bow echo can extend from **20 km to 100 km**.
- **Timeframe:** It can last between **three and six hours**.
- **Formation**
  - When rain-cooled air comes down to the ground, and spreads out horizontally, a boundary called the gust front is created between the rain-cooled air and warm-moist air on the surface.
  - This front pushes up the warm-moist air into the atmosphere, which forms new thunderstorms.
  - These new thunderstorms produce more rain, thereby creating more rain-cooled air, which helps the gust front to maintain its strength.
  - As this process keeps repeating itself, there comes a point when there is an inflow of air on the trailing side of the line of storms and bends it like an archer's bow.
  - The cycle lasts as long as new thunderstorms keep forming at the front, helping the system grow and move forward with strong winds.
- **Derecho**: If the bow echo (or series of bow echoes) progresses more than 400 kilometers with widespread wind gusts 93 km/h or greater, then the bow echo is **classified as a derecho**.

Plastic pellets (nurdles)

News: Several bags of tiny **plastic pellets (nurdles)** from the Liberian container ship that sank off the Kochi coast, were washed ashore.

About Plastic pellets (nurdles)

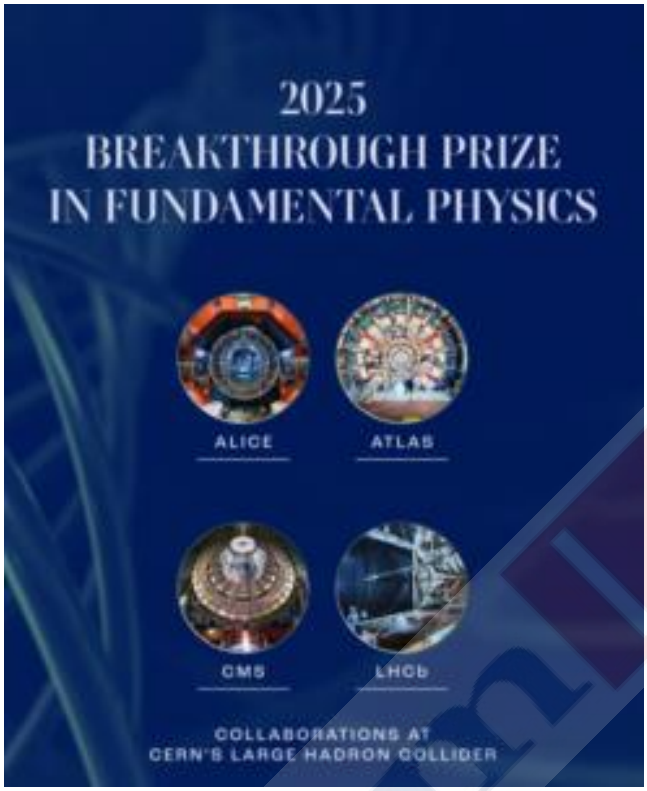
Source – DTE

- **Definition:** The **International Organisation for Standardisation (ISO)** defines pellets in ISO 472:2013 as "small pre-formed masses of moulding material that have relatively uniform dimensions within a specific batch".
- These pellets are **utilised as raw material** in moulding and extrusion operations.
- When in the form of **microplastics**, these pellets are commonly referred to as '**nurdles'**.
- They are mainly composed of **polyethene, polypropylene, polystyrene, and polyvinyl chloride**.
    - However, they can also be made from various other types of plastics and synthetic resins.
- **Sources of plastic pellet pollution:** Leak from various sources, including production facilities, **transportation**, storage, and recycling activities. (They are **not the result of littering by citizens**.)
- **Challenges**
    - Cleaning up pellets is **tougher than regular beach clean-up** due to their small size.
    - Their **short- and long-term impacts** include **habitat contamination** and their breaking up into micro and nano plastics and **entering the food chain.**
        - They **resemble fish eggs**, making them attractive to marine animals. Once ingested, they can cause internal blockages, poisoning, and even death in marine creatures like turtles, dolphins, and seabirds.

Breakthrough Prize in Fundamental Physics

News: Indian researchers celebrate 2025 breakthrough prize in fundamental physics for award-winning CERN experiments.

About Breakthrough Prize in Fundamental Physics



Source – CERN

- The Award was founded in **2012** by physicist **Yuri Milner.**
- **Objective:** To **recognize those individuals** who have made profound contributions to human knowledge.
- It is **open to all physicists** – theoretical, mathematical, experimental – working on the deepest mysteries of the Universe.
- **Prize money**: USD$3 million (more than **twice the amount** given to the Nobel Prize awardees)

Breakthrough Prize in Fundamental Physics, 2025

- The 2025 Breakthrough Prize in Fundamental Physics is awarded to **co-authors** of publications based on **CERN's Large Hadron Collider Run-2 data** released between 2015 and July 15, 2024, at the experimental collaborations **ATLAS, CMS, ALICE and LHCb**.
- The $3 million prize is allocated to **ATLAS ($1 million), CMS ($1 million), ALICE ($500,000) and LHCb ($500,000).**
- The prize money will be **used** by the collaborations to **offer grants for doctoral students** from member institutes to spend research time at CERN.
- **Indian scientists and researchers** have played a significant role in the international collaboration for the **ALICE (A Large Ion Collider Experiment)** and the **CMS (Compact Muon Solenoid)**

Deputy Speaker of Lok Sabha

News: The position of the Deputy Speaker has been lying vacant for the last six years raising questions on constitutional adherence and democratic resilience.

About Deputy Speaker of Lok Sabha

Constitutional provisions

- **Article 93:** The House of the People (Lok Sabha) is required to elect two members as Speaker and Deputy Speaker whenever these offices become vacant.
    - The article **does not specify a time frame** for this election but uses the phrase "as soon as may be".
- **Article 94:** It provides the procedures for the **vacation, resignation and removal** of the **Speaker and Deputy Speaker** of the House of People or Lok Sabha.
- **Article 95(1):** The Deputy Speaker **performs the Speaker's** duties when the Speaker's post is vacant and exercises the same powers while presiding over the House.
- **Article 178:** This article provides the corresponding requirement for the **Speaker and Deputy Speaker of a State's Legislative Assembly.**

Election of Deputy Speaker

- According to **Article 93** of the Indian Constitution, it is **mandatory** to elect a Deputy Speaker.
- **Rule 8 of the Rules of Procedure and Conduct of Business in Lok Sabha**: The election of the Deputy Speaker is held on a date fixed by the Speaker.

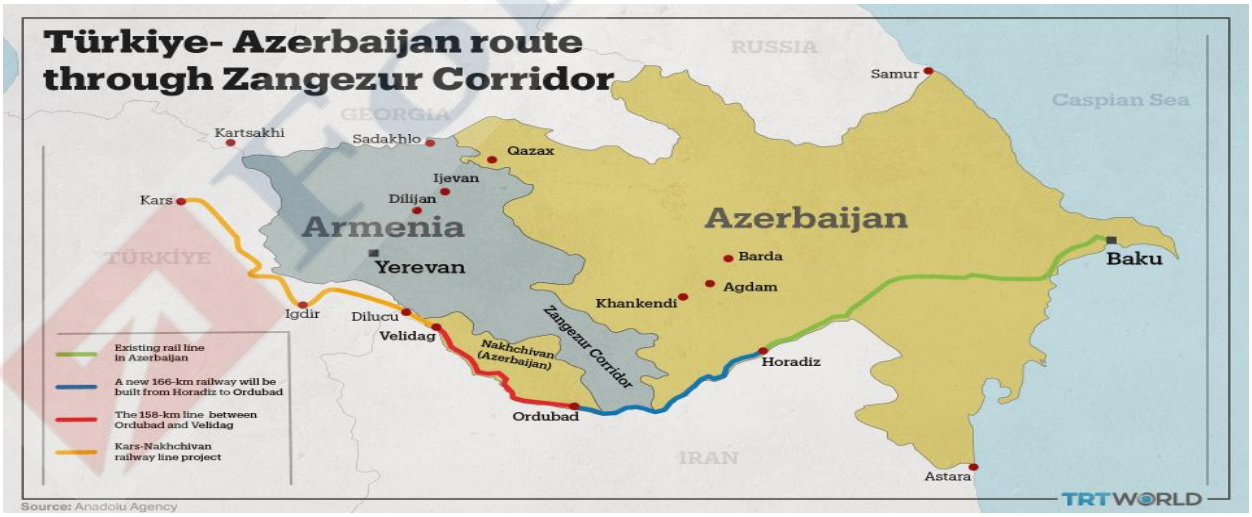
Position of Deputy Speaker

- The Deputy Speaker is the **second-highest authority** in the Lok Sabha after the Speaker.
- The Deputy Speaker is **not subordinate to the Speaker** but is directly responsible to the Lok Sabha.
    - However, when the **Speaker is presiding**, the Deputy Speaker functions as a **regular member** of the House.
- By **convention** (developed after 11th Lok Sabha), the Deputy Speaker is elected **from opposition political party** — to promote non-partisan functioning (it is not a constitutional requirement).

Zangezur Corridor

News: The Zangezur Corridor is in focus after Armenia's Security Council Secretary visited New Delhi and held talks with India's National Security Advisor, Ajit Doval.

About Zangezur Corridor



Source: trtworld

- The Zangezur Corridor is a planned transport route that connects **Azerbaijan** to its **Nakhchivan region** by passing through the southern part of **Armenia**.
- It will link **Azerbaijan's capital Baku** to **Kars in Türkiye**, going through Armenia near the **Iranian border**.

- The corridor includes railways and highways that were originally built during the **Soviet Union** period but were later destroyed due to war.
- This corridor will help **Azerbaijan** reach its Nakhchivan region without needing to go through **Iran** or **checkpoints controlled by Armenia**.
- It will allow smooth movement of **goods, people, and vehicles** between Azerbaijan, Nakhchivan, and Türkiye.
- It is also part of a larger project that connects **Europe to Central Asia and China** through road and railway networks.

India's Strategic Concerns:

- India has invested heavily in the **Chabahar Port in Iran** and in **Armenia**. This gives India a **multimodal route** (sea + land) to reach the **Black Sea and Europe**, **bypassing Pakistan** and the **Suez Canal**.
- If the Zangezur Corridor opens **without Armenian control**, it may cut off **Iran's access to Armenia**, and in turn, India's land route to **Europe through Armenia and Georgia.**

Dark Factory

News: Tata Sons Chairman N. Chandrasekaran, in the TCS Annual Report FY2025, highlighted a major shift in IT and business services toward autonomous operations, driven by AI agents and robots enabling 'dark factories'.

About Dark Factory

- A **Dark Factory** (also known as **Lights-Out Manufacturing**) refers to a **fully automated production facility**.
- These factories **operate without human presence**, utilizing robotics, AI, and IoT for all manufacturing tasks.
- Since no workers are needed on-site, these factories **function in darkness**, hence the name.

Key Advantages of Dark Factories

- **Uninterrupted Production**: Machines can run 24/7 without breaks, holidays, or shift changes.
- **High Efficiency**: Automation reduces errors and accelerates production timelines.
- **Cost Savings**: Minimal reliance on human labor leads to reduced salary, insurance, and safety-related costs.
- **Enhanced Workplace Safety**: Robots can handle hazardous processes, minimizing the risk of injury.
- **Easy Scalability**: AI systems can adapt quickly to changes in demand, without retraining staff.

Challenges and Limitations

- **High Setup Costs**: Initial investment in robotics and infrastructure is substantial.
- **Job Displacement**: Loss of manual jobs raises concerns about unemployment and inequality.
- **System Downtime Risks**: A single malfunction can halt entire operations.
- **Rigid Adaptability**: Unlike humans, reprogramming machines for change is complex and time-consuming.
- **Cybersecurity Threats**: Automated systems are vulnerable to hacking and data breaches.

7 Summits Challenge

News: Hyderabad teenager Vishwanath Karthikey Padakanti has become the youngest Indian and the second youngest person in the world to complete the legendary 7 Summits challenge.

About 7 Summits Challenge

- The Seven Summits Challenge is a **renowned mountaineering achievement** that involves climbing the **highest mountain on each of the seven continents**.
- This challenge is considered one of the **most prestigious feats in global mountaineering** and is highly sought after by adventure climbers worldwide.
- **Origin:** The challenge was first **proposed and completed** by American mountaineer **Richard Bass in 1985.**
- **Objective:** To summit the **highest peak on each continent**—Asia, Africa, North America, South America, Antarctica, Europe, and Australia/Oceania.

Summits that now bear the imprint of his footprints	
Asia	Mount Everest (8,848 m / 29,029 ft)
South America	Aconcagua (6,961 m / 22,838 ft)
North America	Denali (6,190 m / 20,310 ft)
Africa	Kilimanjaro (5,895 m / 19,341 ft)
Europe	Mount Elbrus (5,642 m / 18,510 ft)
Antarctica	Mount Vinson (4,892 m / 16,050 ft)
Australia	Mount Kosciuszko (2,228 m / 7,310 ft)

Source – NIE

- **Major Lists:** The Seven Summits challenge has **two options** –
  - **Bass (or Kosciuszko) List:** Includes **Mount Kosciuszko** (Australia, 2,228 m) as the highest peak for the continent of Australia.
  - **Messner (or Carstensz) List:** Includes **Puncak Jaya** (also known as Carstensz Pyramid, 4,884 m) in **Indonesia** as the highest for Oceania/Australasia, which some argue is more geographically accurate.
- **Records:**
  - **Kaamya Karthikeyan** was the **youngest Indian** to scale the seven summits at the age of **17**.
  - The **youngest person** in the world to scale all seven peaks is **American mountaineer Jordan Romero,** who achieved the milestone at the age of **15**.

Dag Hammarskjold medal

News: Two Indian peacekeepers to be honoured posthumously with the Dag Hammarskjold medal on International Peacekeepers Day.

About Dag Hammarskjold medal

Source – UN

- It was established in in **December 2000**.
- The Dag Hammarskjöld Medal is the **highest honour awarded** to UN peacekeepers.
- It is **named after the second Secretary-General** of the United Nations, Dag Hammarskjold.
- It is given **as a posthumous award** to members of peacekeeping operations who lost their lives during service with a peacekeeping operation under the operational control and authority of the United Nations.
- **No minimum period of service** in a United Nations peacekeeping operation is required for award of the Medal.
- The Medal is **awarded without prejudice** to the award of other medals or awards.
- This medal is awarded each year on **Peacekeeper's Day (May 29th).**

Other UN Awards for Peacekeeping

Captain Mbaye Diagne Medal for Exceptional Courage

- This Award was created on **8 May 2014.**
- It is to be awarded to those **military, police, civilian United Nations personnel** and associated personnel who demonstrate **exceptional courage, in the face of extreme danger,** while fulfilling the mandate of their missions or their functions, in the service of humanity and the United Nations.

UN Military Gender Advocate of the Year Award

- This Award recognises the **dedication and effort of an individual peacekeeper** in promoting the principles within the United Nations Security Council Resolution 1325.
- It was first given out in **2016**.
- The **latest recipient** of the award was **Major Radhika Sen from India (2023).**

Mt. Khangchendzonga

News: Sikkim Chief Minister has urged the Centre to ensure that Mt. Khangchendzonga, the world's third-highest peak, regarded as sacred by the people of the State, is made out of bounds for mountaineers.

About Mt. Khangchendzonga

Source – Wikimedia

- It lies in the **eastern Himalayas**, straddling the **India–Nepal border**, located between **Sikkim** (India) and Taplejung District (Nepal).
- Kangchenjunga is India's **highest (8,568 metres)** and **only** 8,000+ meter peak.
- It is world's **third highest peak** after Mt. Everest and K2.
- **Meaning:** Kanchenjunga or Kangchenzonga means "**The Five Treasures of the Great Snow"** in Sikkim because the mountain has **five prominent peaks**.
    - They are Kanchenjunga Main (8,586m), Yalongkang (8,505m), Kanchenjunga West (8,420m) and Twin Peaks (both 8,476m).
- Unlike most other Himalayan peaks, this mountain **runs from north to south**, where the **Kanchenjunga Glacier joins the Tamur River**, a tributary of **Koshi**.
    - Numerous lakes and glaciers, including the **26 km long Zemu Glacier**, dot the barren high altitudes.
- **World Heritage site: The Khangchendzonga National Park (KNP), Sikkim** has been inscribed as **India's first "Mixed World Heritage Site"** on UNESCO World Heritage List.

As a living deity

- The mountain is revered as the **abode of the principal guardian and protector-deity of Sikkim,** known as **Dzoe-Nga**.
- This sacred being is **worshipped as the Pho-lha**, or the chief of the entire assemblage of supernatural entities of Sikkim.
- These deities were recognised and anointed as the guardian deities of the land by **Ugyen Guru Rinpoche**, also known as **Guru Padmasambhava**, the Patron Saint of Sikkim.

Climbing ban in Sikkim

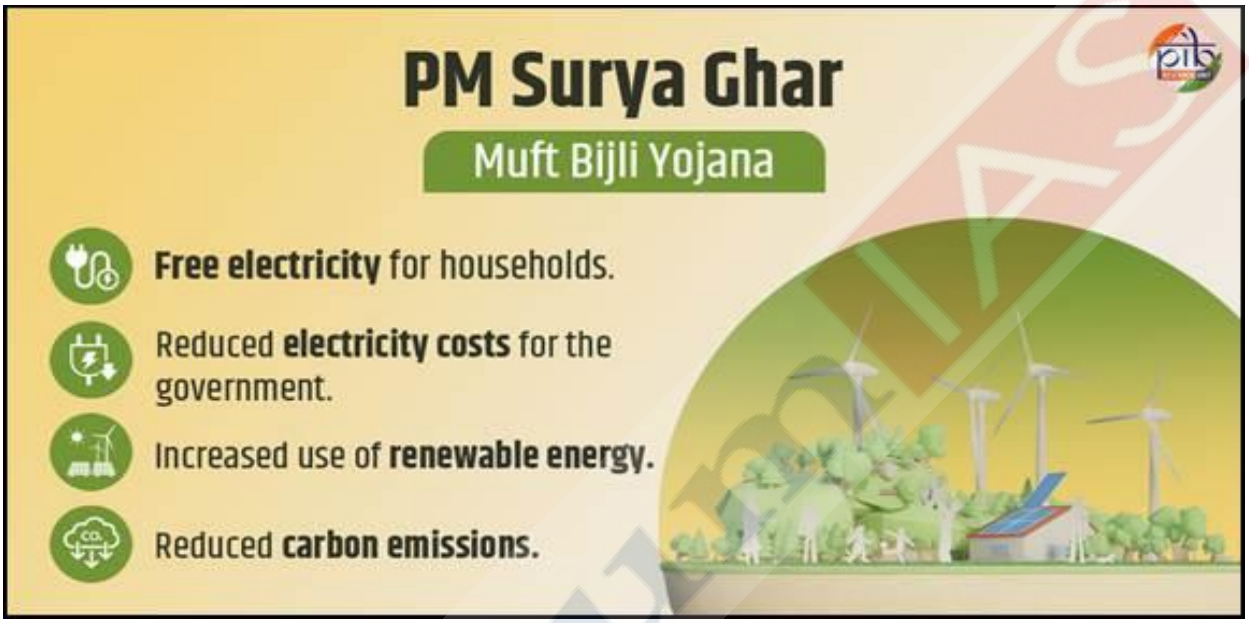
- The Sikkim government banned all climbing activities on Mt. Khangchendzonga through notifications in 1998 and 2001 under **the Sacred Places of Worship (Special Provisions) Act, 1991.**
- Sikkim's ban on Mount Kangchenjunga's summits **aligns with Article 371F** of the Indian Constitution, which safeguards Sikkim's cultural and religious laws after it merged with India in 1975.

- In **1955**, mountaineers **Charles Band and Joe Brown** became the **first people to scale** the peak but they **stopped a few feet short** of the Summit in honour of the Sikkimese belief.

PM–Surya Ghar: Muft Bijli Yojana

News: Diu has become the first district in India to fulfill its entire electricity demand through solar energy, achieving a generation capacity of 11.88 MW

About the Scheme



- PM Surya Ghar: Muft Bijli Yojana is the world's largest domestic rooftop solar initiative.
- The scheme aims to provide free electricity to households by promoting the installation of rooftop solar panels.
- It is expected to benefit 1 crore households across India and reduce the government's annual electricity expenditure by ₹75,000 crore.

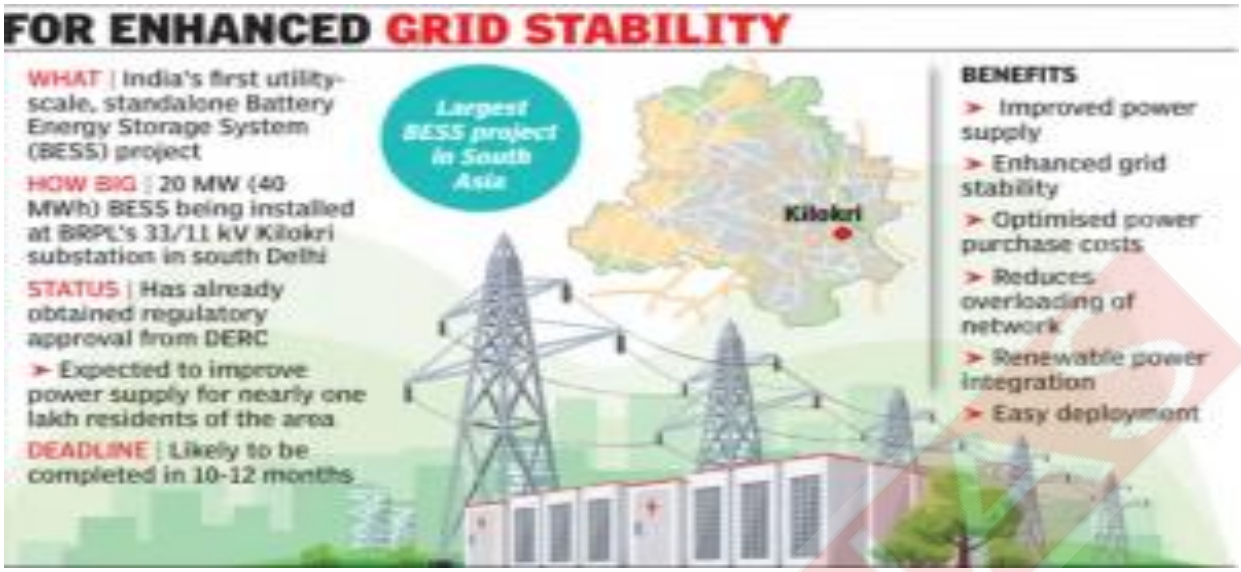
Key Features of the Scheme

- The government provides financial assistance (subsidy) to install rooftop solar panels on residential buildings.
- The subsidy covers up to 60% of the cost for solar systems up to 2 kW and 40% of the additional cost for systems between 2 to 3 kW.
- The total subsidy is capped at ₹78,000 for systems of 3 kW or more.
- The scheme is designed to reduce household electricity bills and encourage the use of renewable energy sources.
- It will create more than 3 lakh skilled manpowerthrough fresh skilling, and up-skilling

Battery Energy Storage Systems (BESS)

News: The Delhi power minister inaugurated a 20-MW battery energy storage system (BESS) at Kilokari, said to be the "largest" in South Asia.

About Battery Energy Storage Systems (BESS)



Source – ToI

- **Battery storage, or battery energy storage systems (BESS),** are devices that enable energy from renewables, like solar and wind, to be stored and then released when the power is needed most.
- **Working:** Batteries **receive electricity from the power grid**, straight from the power station, or from a **renewable energy** source like solar panels or other energy source, and subsequently **store it as current** to then release it when it is needed.
- **Need:** The **National Electricity Plan 2023** estimates that **236 GWh BESS would be required by 2031-32.**
- **Main components:**
    - **Batteries**: Store electrical energy (most commonly lithium-ion).
    - **Power Conversion System (PCS):** Converts DC electricity from batteries to AC for use on the grid, and vice versa.
    - **Battery Management System (BMS):** Monitors and controls battery performance, health, and safety.
    - **Energy Management System (EMS):** Coordinates the operation of all components for optimal performance.
- **Types of batteries used in BESS**
    - **Lithium-ion batteries:** Most widely used for BESS, especially in residential, commercial, and utility-scale applications. Their pros include high energy density, long cycle life (up to 20 years), fast charge/discharge, scalable.
    - **Lead-acid batteries:** Traditional and cost-effective; commonly used for off-grid and backup power. Their pros include low cost, widely available, recyclable.
    - **Sodium-ion batteries:** Emerging technology with potential for large-scale storage. Their pros include lower cost than lithium-ion, better safety, similar power delivery, can operate at higher temperatures.
    - **Zinc-air batteries:** Use oxygen from the air as a reactant. Their pros include high theoretical energy density, lower cost materials.
    - **Nickel-cadmium (NiCd) batteries:** Durable and robust but less common due to environmental concerns. Their pros include long life, reliable in extreme conditions.

- **Flow batteries:** Use **liquid electrolytes** (e.g., vanadium redox flow battery). Their pros include long lifespan (up to 25 years), highly scalable, safer with non-flammable electrolytes, suitable for long-duration storage.

Key Government Initiatives and Policies

- **Viability Gap Funding (VGF) Scheme for Battery Energy Storage Systems (BESS):** The scheme envisages development of 4,**000 MWh of BESS projects by 2030-31**.
- **Budgetary support** for enabling infrastructure for **Pumped Storage Projects.**
- **National Energy Storage Mission (NESM):** It aims to make India a **global hub** .
- **PLI Scheme:** A **₹18,100 crore production-linked incentive (PLI) scheme** for advanced cell chemistry battery manufacturing.
- **Green Finance:** Sovereign Green Bonds may be used for funding green infrastructure and reducing the carbon intensity of the economy.
- **Guidelines for Resource Adequacy Plan:** The Central Electricity Authority (CEA) has released a **Long-term National Resource Adequacy Plan (LT-NRAP)** estimating the storage requirement at the national level for the next 10 years.
- **Connectivity and Grid Access:** Connectivity of ESS to nearest Inter State Transmission (ISTS) may be granted on priority basis.
- **Storage Capacity with future Renewable Generations:** The new RE projects (excluding Hydro Projects) with an installed capacity of over 5 MW may be mandated to install ESS (of at least 1 hour storage) for minimum 5% of the RE capacity.

Exercise Nomadic Elephant

News: The Indian Army contingent departed for 17th edition of India- Mongolia Joint Military Exercise Nomadic Elephant.

About Exercise Nomadic Elephant

Source – PIB

- It is an **annual training event** conducted alternatively in **India and Mongolia**.

- **Aim:** The aim of the exercise is to enhance **interoperability** between the two forces while employing joint task force in semi conventional operations in semi urban/ mountainous terrain under United Nations mandate.
- **Scope:** The scope of this exercise involves **Platoon level Field Training Exercise**.
- **Significance:** The exercise underscores the **shared commitment** of India and Mongolia towards **regional security, peace and stability**.
- **2024 Edition:** Last edition (**16th**) of the same exercise was conducted at **Umroi, Meghalaya in July 2024.**
- **2025 Edition:** The exercise is scheduled to be conducted in **Ulaanbaatar, Mongolia from 31st May to 13th June 2025.**
- **Contingents:** The Indian contingent comprising 45 personnel will be represented mainly by troops from a battalion of the **ARUNACHAL SCOUTS**.
    - The **Mongolian Armed Forces contingent**, also comprising similar strength, will be represented by 150 Special Forces unit.

Biostimulants

News: The **Ministry of Agriculture and Farmers Welfare** notifies 34 more biostimulants under the **Fertiliser Control Order (FCO)**, increasing the total to over 45.

About Biostimulants

Figure 3.Source – BusinessLine

- Biostimulants are **biologically derived substances** or **microorganisms** applied to plants or soil to enhance nutrient uptake, improve plant tolerance to abiotic (e.g., drought, salinity) and biotic (e.g., pests, diseases) stresses, and generally promote plant growth and productivity.
    - **Unlike conventional fertilizers or pesticides**, biostimulants act through multiple non-nutritional mechanisms and are considered **eco-friendly alternatives** for sustainable agriculture.
- **Market and prospects**: The India biostimulants market size was valued at **USD 355.53 million in 2024.**
    - The market is projected to grow from **USD 410.78 million in 2025** to USD 1,135.96 million by 2032, exhibiting a CAGR of 15.64% during the forecast period.
- **Significance**
    - The biostimulant formulations are beneficial in **mitigating climate change** challenges like biotic and abiotic stresses.
    - These products help in **better uptake of nutrients**, which are excessively available in the soil itself, providing them more vigor.
    - These products are also looked upon **as a product range**, which helps across **reduction in chemical agri-inputs.**

About Fertilizer (Inorganic, Organic or Mixed) (Control) Order, 1985 (FCO 1985)

- The Order is issued under the **Essential Commodities Act, 1955.**

- It includes **biostimulant under Schedule VI.**
- It aims to regulate the **sale, price, and quality of fertilizers** in India.
- It defines **what substances qualify as fertilizers**, specifies quality standards, and outlines procedures for obtaining licenses/registrations for fertilizer manufacturers and dealers.
- **Category of biostimulants** includes **botanical extracts** including **seaweed extracts**, bio-chemicals, protein hydrolysates and **amino acids, vitamins**, cell free microbial products, antioxidants, anti-transpirants, humic and fulvic acids and their derivatives among others.