

# Factly Monthly

**Compilation**

2024

**For UPSC CSE Prelims  
Exam**

**December 2024**

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## Red-breasted Flycatcher

**News:** The Red-Breasted Flycatcher, a migratory bird from Eastern Europe, was recently spotted at Ameenpur Lake in Hyderabad.

### About Red-breasted Flycatcher



Figure 1. Source- The Hindu

**1. Scientific name-** Ficedula parva

**2.** It is a small (11-12 cm) *passerine bird* in the Old World flycatcher family.

**3.** It can be found occasionally feeding on figs (banyan, peepal) in our urban gardens.

**4. Appearances:**

- **Males have a reddish-orange throat** that extends till the upper breast, whereas the **females are overall brown**. Both have creamy-white

underparts.

- They can be distinguished from other orders by the arrangement of their toes — three pointing forward and one backward, a design that helps them to cling onto branches efficiently.

**5. Migration-** It generally *migrates from Eastern Europe* to avoid the harsh winters and thrive in South Asia's moderate climate with abundant food.

**6. Breeding:**

- The bird *breeds from spring to summer*, in the *deciduous mixed forests of Eastern Europe* and *across Central Asia*.
- *In winter months* (September to March mostly), it migrates to forests, woodlands, orchards, parks, and roadside trees of the *Indian Subcontinent*.

**7. Conservation Status:**

- **IUCN:** Least Concern

### About Ameenpur Lake

**1.** It is a small lake in the Sangareddy district of Telangana, *located on the outskirts of Hyderabad*.

**2.** It is the *first body of water in India to be designated as a Biodiversity Heritage Site*, as well as the first biodiversity site to be approved in an urban area.

**3.** The lake is *man-made* and was reportedly built over 300 years ago during the reign of *Ibrahim Qutb Shah* (1550–1580 AD).

**4. Wildlife:**

- The lake brims with life: *bar-headed geese, cormorants, ruddy shelducks, and grey herons*.
- The checkered keelback snake catches fish, while buffaloes lounge in the deeper parts of the water.
- **Flamingoes are the most common birds** found here.

## Achanakmar Tiger Reserve

**News:** A tiger from Kanha Tiger Reserve in Madhya Pradesh's Mandla district was spotted 400 km away in Achanakmar Tiger Reserve, Chhattisgarh.

### About Achanakmar Tiger Reserve



Figure 2. Source-Naidunia

626 hectares, there are 25 forest villages, with around 75% of the population being from the Baiga tribe.

- **Vegetation:** Tropical moist deciduous vegetation covers the majority of the area.
- **Flora-** Sal, *Saja*, *Tinsa*, *Bija*, *Bamboo*
- **Fauna-** *Tiger*, leopard, bison, *flying squirrel*, *Indian giant squirrel*, *chinkara*, wild dog, hyena, sambar, chital and over 150 species of birds.

- **Location-** It is situated in Bilaspur district of Chhattisgarh.
- Achanakmar Wildlife Sanctuary was established in 1975 and was declared a tiger reserve in 2009.
- It is **part of the huge Achanakmar-Amarkantak Biosphere Reserve**.
- It has a corridor **linking Kanha and Bandhavgarh Tiger Reserves** and plays a key role in the movement of tigers between them.
- **Rivers-** The Maniyari River flows through the centre of the reserve, serving as the forest's lifeline.
- **Tribe:** The reserve is home to the **Baigas**, a forest-dwelling tribal community recognized as a "Particularly Vulnerable Tribal Group (PVTG)." Within the core area of



## Ratapani Tiger Reserve



**News:** The Madhya Pradesh government has officially notified the Ratapani Wildlife Sanctuary as a Tiger Reserve. Ratapani is now the state's eighth tiger reserve. **Ratapani Tiger Reserve**

### About Ratapani Tiger Reserve

- **Location-** It is situated in the Vindhyaachal Mountain Ranges across Raisen and Sehore districts of Madhya Pradesh.
- **Origin:** It was first declared a wildlife sanctuary in 1976, extended in 1983, and received approval from the NTCA to become a tiger reserve in 2008.
- **Rivers-** It runs parallel on the northern side of the *Narmada River*. The *Kolar River forms the western boundary* of the Sanctuary.
- **Vegetation-** Dry deciduous and moist deciduous type
- **Flora-** Teak (*55 percent of area is covered by teak*), Bamboo etc.
- **Fauna-** Tiger, leopard, *Chinkara*, sloth bear, hyena, spotted deer, sambar deer, *paradise flycatcher* (the state bird of Madhya Pradesh) among others.
- **Significance-** The Sanctuary has *Bhimbetka*, a group of rock shelters and rock paintings, which is one of the " *World Heritage Site* " declared by UNESCO.

## About Tiger Reserves of India



Source- NTCA

- The tiger reserves in India were **established under *Project Tiger***, launched in 1973.
- They are administered by the ***National Tiger Conservation Authority (NTCA)*** of the Government of India.
- As of December 2024, there are 57 protected areas that have been designated as tiger reserves.
- Tiger reserves **consist of a core area**, which includes parts of protected areas like national parks or wildlife sanctuaries, **and a buffer zone**, which is a combination of forested and non-forested land.
- ***State governments notify areas as tiger reserves*** based on the NTCA's recommendations.
- The ***tiger reserve designation enables the state to receive funding from the NTCA***. It will ensure better management and conservation efforts for wildlife.

## Laysan albatross

**News:** Wisdom, a 74-year-old Laysan albatross and the world's oldest known wild bird, has laid what experts believe to be her 60th egg.

### About Laysan albatross



Figure 3. Source- The Hindu

- Laysan Albatross (*Phoebastria immutabilis*) is a pelagic bird **found predominantly in the North Pacific Ocean.**
- Approximately 99.7% of the population nests in the **Northwestern Hawaiian Islands**, with **Midway Atoll National Wildlife Refuge** serving as a critical breeding ground.
- **Key Characteristics:**
  - It is a medium-sized seabird with a ***gull-like appearance*** and long, slender wings for long flights.
  - It has blackish-brown backs and upper wings, with white primary feathers.
  - It primarily feeds on squid, fish, and crustaceans.
  - Laysan albatrosses are ***monogamous*** and usually ***mate for life***, laying ***one egg each year***.
  - Their typical ***lifespan is around 68 years*** with

some individuals like Wisdom reaching 74 years.

- **IUCN Red List:** Near Threatened

## Sacred Groves

**News:** Sacred groves can preserve biodiversity and function as carbon sink, enabling India to achieve her carbon goals. Unfortunately, most of them are under threat today.

### About Sacred Groves



Figure 4. Source- Tamil Nadu Biodiversity Board

- Sacred groves are ***areas of forest or woodland*** that are considered sacred by local communities, often due to their ***spiritual, cultural, or religious significance.***
- They are usually ***preserved from human exploitation***, such as logging, hunting, or farming based on traditional beliefs and rituals.
- They serve as an ***important site for worship, community rituals and conservation of biodiversity***, often supporting rare or endangered species of plants and animals.
- They help to ***maintain the ecological balance*** by acting as vital airshed areas, protecting against soil erosion and helping to regulate local microclimate.
- India has well ***over 13,000 documented sacred groves***, with Maharashtra, Jharkhand, West Bengal, Kerala, Tamil Nadu, Meghalaya, Rajasthan having rich abundance of groves.



### Sacred Groves in different states

#### Kerala

- The ***Kaavu system*** is prevalent in Kerala.
- Some of the famous groves include ***Sree Deviok Kavu, Iringole Kavu, Kammadam Kavu.***

#### Maharashtra

- Sacred groves in Maharashtra are known as ***Devrai***, meaning the forest of God.
- The ***Sahyadri mountains*** in Maharashtra are home to numerous sacred groves.

#### Rajasthan

- Sacred Groves in Rajasthan are known as ***Dev Van.***
- Sacred groves around ***Udaipur and Mount Abu*** are good examples.

### Caspian Sea

**News:** Kazakhstan state owned energy company said that it had decontaminated Soviet-era oil waste on the shores of the Caspian Sea, which has been reeling under the effects of pollution and global warming.

#### About Caspian Sea



Figure 5. Source- BBC

- It is the ***largest inland body of water*** in the world ***by surface area.***
  - It is ***located between Europe and Asia***- to the east of Caucasus and west of the broad steppe of Central Asia.
  - ***Bordering Countries:*** Russia, Azerbaijan, Iran, Turkmenistan, and Kazakhstan.
  - Caspian Sea is primarily watered by ***three major rivers:*** Volga, Ural and Terek River.
  - It has ***fresh water in its northern parts*** and ***saline water in its southern parts.***
- It has a ***mean salinity*** of about a third of the salinity of average seawater.

## Malayan Night Heron

**News:** The Malayan Night Heron has been spotted in Madurai for the first time, near the Alagar Kovil hills.

### About Malayan Night Heron



Figure 6. Source- Wikipedia

- The Malayan Night Heron, also known as *Malaysian Night Heron*, is a *medium sized heron*.
- It has reddish-brown plumage, black underwings, black crown and crest, stout bill and short neck.
- It is **found in Southern and Eastern Asia**, migrating to India during the winter season. It usually inhabits forests, streams and marshes.
- It is **typically nocturnal** but can be **active during the day too**.
- It is generally solitary. It prefers roosting in trees and feeding in open areas.
- Its **IUCN status** is Least Concern.

## Key facts about Morocco

**News:** Morocco is becoming a key gateway for India to expand its presence in Africa for defense exports. **Key facts about Morocco**

### About Morocco



Figure 7. Source- World Atlas

- **Capital:** Rabat
- **Location:** Morocco is located in North Africa, in the *Maghreb region*. It lies in both the Northern and Western Hemispheres.
- **Borders:** Algeria to the east and Western Sahara to the south.
- **Coastlines:** Morocco is the only African country with coastlines on both the Atlantic Ocean (to the west) and the Mediterranean Sea (to the north).
- **Strategic Cities:** *Casablanca is the largest city* and a major commercial hub, while the capital is Rabat.
- **Climate:** Morocco experiences a *Mediterranean climate* along the coastal regions, characterized by mild, wet winters and hot, dry summers. The interior regions and southern areas are drier, with desert conditions.
- **Geography:**

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- **Mountain Ranges:** The Atlas Mountains dominate Morocco's landscape, with *Jebel Toubkal* as the highest peak at 4,167 meters.
- **Rivers:** The *Moulouya River*, originating in the Atlas Mountains, is a major water source, flowing into the Mediterranean Sea.
- **Desert:** Parts of the Sahara Desert extend into southern Morocco.
- **Political System-**Morocco is a *constitutional monarchy* with a king as the head of state and a two-house legislative system.
- **Economy-** Morocco's economy relies heavily on agriculture, tourism, phosphate exports, and manufacturing. It is *one of the world's largest producers of phosphates*.
- **Language-** The official languages are Arabic and Tamazight (Berber). French is widely used for business and administration.
- **Interesting Facts:**
  - Morocco was one of the first states to recognize the United States as an independent nation in 1777.
  - It hosts iconic landmarks like the Hassan II Mosque in Casablanca and Aït Benhaddou, a *UNESCO World Heritage site*.

### Arctic Tundra: Transitioning to a Carbon Source

**News:** The Arctic Tundra has shifted from being a carbon sink to a carbon emitter, as confirmed by a recent analysis in the National Oceanic and Atmospheric Administration's (NOAA) Arctic Report Card.

#### About Arctic Tundra



Source- Realty+

- The Arctic Tundra is a unique biome located in the northernmost parts of Earth, primarily north of the Arctic Circle.

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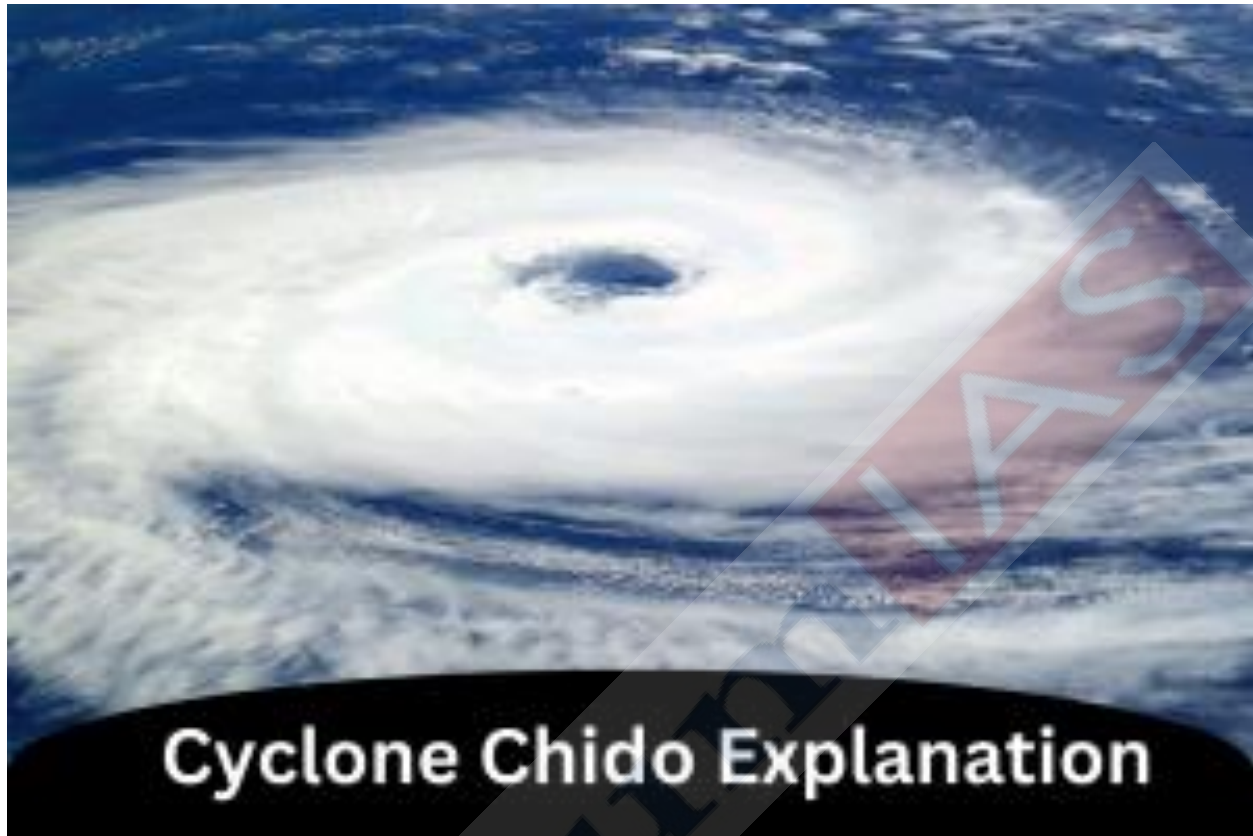
- It is characterized by *extreme cold, treeless landscapes, and a harsh climate.*
- **Characteristics of the Arctic Tundra:**
  - **Permafrost:** It refers to *permanently frozen soil beneath the surface*, starting within 1 meter of the ground. In summer, only the uppermost layer of permafrost thaws, while deeper layers remain frozen.
    - **Effect:** Limits plant root growth and prevents the growth of trees, resulting in a treeless landscape.
  - **Soil composition:** The tundra soil is *nutrient-poor and rocky*, due to slow decomposition caused by cold temperatures. Organic matter (like sphagnum moss) accumulates as peat and humus, forming a significant carbon sink.
  - **Climate:**
    - Temperatures *range from 15.5°C in summer to -60°C in winter*, with mean temperatures below 0°C for 6–10 months.
    - Low annual precipitation (150–250 mm) but minimal evaporation.
    - Features 24-hour sunlight in summer and 24-hour darkness in winter.
  - **Natural Vegetation:** Herbaceous plants like *grasses, mosses (e.g., reindeer moss), lichens, and liverworts dominate.*
  - **Animal Life:**
    - **Large mammals:** Polar bears, caribou, musk oxen, and Arctic foxes.
    - **Smaller animals:** Lemmings and Arctic hares, which change fur color with the seasons.
    - **Migratory birds**, like snow geese and loons, use the tundra for breeding during summer.

### Reasons for Arctic Emitting Greenhouse Gases

- **Thawing Permafrost:**
  - Rising global temperatures are causing permafrost to thaw.
  - When the frozen soil thaws, microbes become active, breaking down the trapped organic matter, releasing carbon dioxide (CO<sub>2</sub>) and methane (CH<sub>4</sub>).
  - Methane is especially concerning because it is a more potent greenhouse gas than CO<sub>2</sub>.
- **Wildfires:**
  - As temperatures rise, wildfires in Arctic regions are becoming more frequent.
  - Fires release large amounts of carbon stored in the vegetation and soil, further accelerating global warming.
- **Arctic Warming Trends:**
  - The Arctic is heating up four times faster than the global average, causing rapid changes in the biome.
  - Melting ice and warming soils are significant contributors to greenhouse gas emissions.



## Cyclone Chido



**News:** Indian Prime Minister Narendra Modi expressed deep sorrow over the devastation caused by Cyclone Chido in Mayotte, France. **Cyclone Chido Explanation**

### About Cyclone Chido

- Cyclone Chido was a powerful *tropical cyclone* that struck Mayotte, a French overseas territory in the Indian Ocean, in December 2024.
- With sustained wind speeds exceeding 200 km/h (124 mph) and gusts surpassing 225 km/h (140 mph), it was the strongest storm to hit Mayotte in at least 90 years.

### About Mayotte:

- Mayotte is an *archipelago located in the northern Mozambique Channel* in the Indian Ocean, between Madagascar and the coast of Mozambique.
- As a French overseas department, it comprises two main islands: *Grande-Terre (the main island)* and *Petite-Terre (a smaller island)*, along with several islets.
- Mayotte is known for its rich biodiversity, including one of the world's largest enclosed lagoons.

### Cyclone Classification:

The Indian Meteorological Department (IMD) categorizes cyclones based on wind speeds

- **Depression:** Wind speeds of 31–49 km/h
- **Deep Depression:** 50–61 km/h
- **Cyclonic Storm:** 62–88 km/h
- **Severe Cyclonic Storm:** 89–117 km/h

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- **Very Severe Cyclonic Storm:** 118–166 km/h
- **Extremely Severe Cyclonic Storm:** 167–221 km/h
- **Super Cyclonic Storm:** Above 222 km/h

### Key Facts about Moldova

**News:** The Republic of Moldova, a country in Eastern Europe, recently opened its embassy in New Delhi.

#### About Key Facts about Moldova



Source- BBC

- **Capital-** Chisinau
- It is a *landlocked country* in Eastern Europe.
- It is *bordered by Romania to the west and Ukraine to the north, east, and south.*
- It is situated in the northeastern corner of the *Balkan Peninsula.*
- The country lies to the east of the *Carpathian Mountains.*
- **Rivers:** Most of Moldova is located between the *Prut River*, which borders Romania to the west, and the *Dniester River*, a major waterway in the east.
- **Notable landscapes:** Bălți Steppe and Codru Hills, known for their scenic beauty and fertile lands.
- **EU Status:** Moldova is not a member of the European Union but was granted EU candidate status in 2022.
- **Transnistria Region:**
  - It is a breakaway territory located east of the Dniester River.
  - It is controlled by pro-Russian separatists and permanently hosts Russian troops as well as a large arms depot.

### Himalayan Birch Tree

**News:** A new study has found that climate change is altering the tree line landscape of the central Himalayas, leading to the replacement of Birch trees by Fir Trees.

#### About Himalayan Birch Tree



Figure 8.Source- Wikipedia

- It is a **fast growing, medium sized, deciduous tree** that dominates the Himalayan region.
- **Distribution:** It is widely distributed in the upper altitudes of North-West Himalayas.
- It grows well in moist or wet but well drained rocky or sandy soil conditions.
- **Key Features:**
  - Leaves are *oval shaped*.
  - Can be grown as a *standard or multi-trunked tree*.
  - Known for its *white, paper-like bark*, which was used as writing paper for manuscripts of Sanskrit literature.

### Sea Otters

**News:** A new study reveals that sea otters at the Elkhorn Slough National Estuarine Research Reserve in California are consuming thousands of green crabs. This behavior plays a crucial role in preserving the ecosystem along the West Coast of the United States.

#### About Sea Otters



Figure 9.Source- BBC

- **Scientific Name:** *Enhydra lutris*
- They are aquatic members of the *weasel family*.
- **Habitat:**
  - They found along the *coasts of the Pacific Ocean*, particularly in North America (from Alaska to California) and parts of Asia (Russia and Japan).
  - They spend most of their time in the water but occasionally come ashore to sleep or rest.
- **Physical Characteristics:**
  - They have webbed feet and water-repellent fur to stay dry and warm, with nostrils and ears that close in the water.



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- Unlike other marine mammals, they *lack blubber* (a thick layer of fat) to shield them from hypothermia. As a result, they must consume a large amount of food daily to maintain their body heat.
- **Diet**– They are carnivorous and consume a variety of marine life, including *sea urchins, crabs*, mollusks, clams, and fish.
- **Ecological Role:**
  - They are a *keystone species in kelp forest ecosystems*, helping control populations of sea urchins and other species that can damage kelp forests.
  - Their presence promotes biodiversity and maintains ecological balance.
- **IUCN Status:** Endangered.

## Pangong Tso lake

**News:** The Indian Army has installed a statue of the Maratha warrior Chhatrapati Shivaji Maharaj on the banks of Pangong Tso Lake.

### About Pangong Tso lake

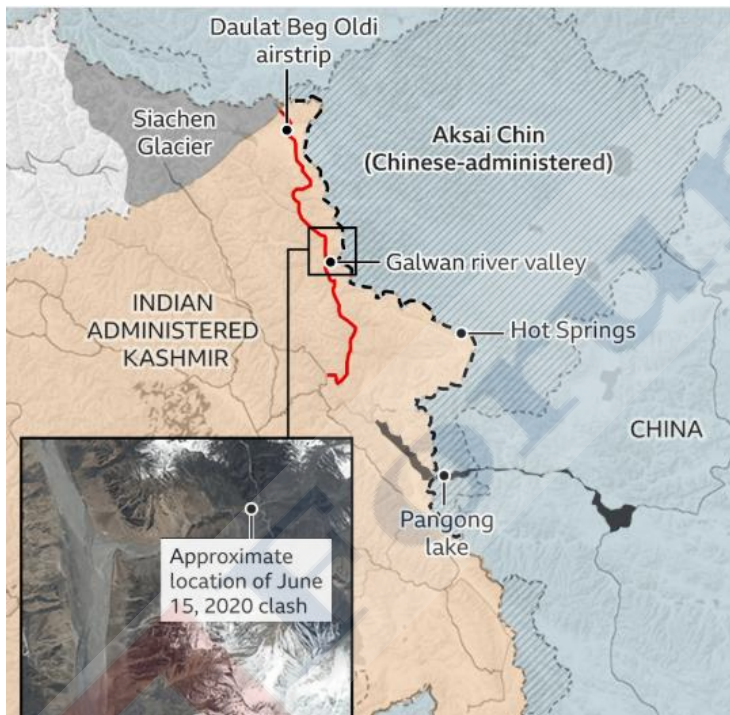


Figure 10. Source- BBC

- It is an *endorheic lake* (landlocked) located in *eastern Ladakh*.
- It derives its name from the Tibetan word, “Pangong Tso”, which means “high grassland lake”.
- It lies *partly in India’s Ladakh region and partly in Tibet*.
- It is the *world’s highest saltwater lake*.
- The *Karakoram Mountain range* which crosses Tajikistan, Afghanistan, Pakistan, China and India ends at the north bank of Pangong Tso.
- Pangong Tso is also known to change colors, appearing blue, green and red at different times of a day.

### Importance of the lake

- The importance of the lake is due to the fact that it lies in the path of the Chushul approach of China.
  - China uses *Chushul valley* for performing offensive activities into Indian-held territory.
- The legendary 19th century *Dogra general Zorawar Singh* is said to have trained his soldiers and horses on the frozen Pangong lake before invading Tibet.
- LAC (Line of Actual Control) mostly passes on the land, but Pangong Tso is a unique case where it passes through the water as well.

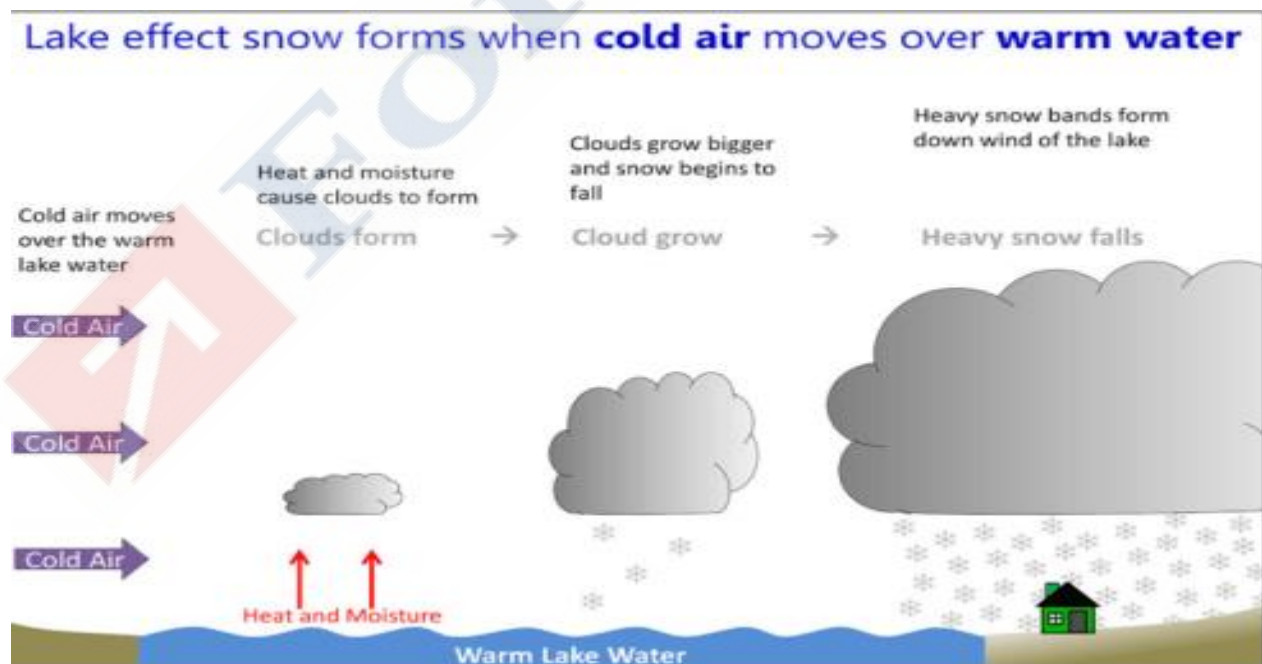


## Lake Effect Snow



**News:** The Great Lakes region in the United States is experiencing extreme winter weather, with heavy lake-effect snow and freezing temperatures.

### About Lake Effect snow



Source- National weather service

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- It is a localized weather phenomenon that causes heavy snowfall due to the **interaction between cold air and the warmer waters of large lakes**.
- This phenomenon is **common in areas near the Great Lakes in the United States**, especially in states such as New York, Michigan, Ohio, and Pennsylvania.
- **Formation process:**
  - Cold air, usually from Canada, flows over the warmer, unfrozen waters of the Great Lakes.
  - The warm water transfers heat and moisture to the lower atmosphere.
  - As the air rises and cools, it forms narrow bands of clouds that produce snowfall at rates of 2–3 inches per hour or more.
- **Contributing factors:**
  - **Wind direction:** Determines the areas that will experience snowfall.
  - **Cold air**-The intensity of the snow depends on how much colder the air is compared to the lake's surface temperature.
  - **Geography**- Physical Features such as the size of the lake, the depth of the water, and the landscape around the lake (like mountains or valleys) can influence how much snow is produced.

### About Great Lakes of North America



Figure 11. Source- Britannica

- The Great Lakes of North America are a **group of large, interconnected freshwater lakes**.
- They are **linked to the Atlantic Ocean through the Saint Lawrence River** and to the Mississippi River basin via the Illinois Waterway.
- The five great lakes are— **Superior, Michigan, Huron, Erie, and Ontario**.
- Four of the Great Lakes are on the border between Canada and the United States of America. The other, **Lake Michigan, is completely inside the United States**.
- Hydrologically, Michigan and Huron form a single body of water, connected at the Straits of Mackinac.
- The Great Lakes are the largest freshwater lake system in the world by total area and the second-largest by volume, holding 21% of the Earth's surface freshwater.

## Hornbill Festival



**News:** The Nagaland government is organising the popular Hornbill festival from December 1 to December 10, 2024.

### About Hornbill Festival



Figure 12. Source- Wikipedia

and architecture of the state.

1. The Hornbill Festival is also referred to as the "**Festival of Festivals**" in Nagaland as it showcases the vibrant culture, language and traditions of the ethnic tribes of the state.
2. It is an **annual festival** celebrated for the **first ten days of December**. The festival coincides with the **Statehood Day of Nagaland (1st December)**, which adds to its significance.
3. The festival is celebrated at the **Kisama Heritage Village**, located 12km south of Kohima, the capital of Nagaland.
4. It is named after the **Hornbill Bird**, which represents strength, vitality and respect for nature. The bird is also revered for its beauty and significance in local folklore, culture and customs.
5. The festival features an exhibition of **Nagaland's traditional art and handicrafts**. The artisans display their works like wood carvings, textiles, jewelry.
6. It has enhanced the **state's tourism brand** by attracting tourists from all over the world, promoting cultural heritage, food and cuisine, music



7. A key highlight of the festival is that it **brings 17 major tribes of the state on a single platform**, displaying their folk dances, rituals, traditional attire, music and culture.

### Great Hornbill



Figure 13. Source- Indian Express

- In India, Great Hornbills are found in **Western Ghats and Himalayas**.
- Generally, they occupy the **canopy of tall trees in evergreen and moist deciduous forests**.
- They are **mostly herbivores**, feeding largely on fruits, figs, berries.
- Great Hornbill is the **state bird of Kerala and Arunachal Pradesh**.
- **Protection Status**
  - IUCN: Vulnerable
  - WPA, 1972: Schedule 1

### Laysan albatross

**News:** Wisdom, a 74-year-old Laysan albatross and the world's oldest known wild bird, has laid what experts believe to be her 60th egg.

### About Laysan albatross



Figure 14. Source- The Hindu

- Laysan Albatross (*Phoebastria immutabilis*) is a pelagic bird **found predominantly in the North Pacific Ocean**.
- Approximately 99.7% of the population nests in the **Northwestern Hawaiian Islands**, with **Midway Atoll National Wildlife Refuge** serving as a critical breeding ground.
- **Key Characteristics:**
  - It is a medium-sized seabird with a ***gull-like appearance*** and long, slender wings for long flights.
  - It has blackish-brown backs and upper wings, with white primary feathers.
  - It primarily feeds on squid, fish, and crustaceans.
  - Laysan albatrosses are **monogamous** and usually **mate for life**, laying **one egg each year**.
- Their typical **lifespan is around 68 years** with some individuals like Wisdom reaching 74 years.
- **IUCN Red List:** Near Threatened



## Sacred Groves

**News:** Sacred groves can preserve biodiversity and function as carbon sink, enabling India to achieve her carbon goals. Unfortunately, most of them are under threat today.

### About Sacred Groves



Figure 15. Source- Tamil Nadu Biodiversity Board

- Sacred groves are **areas of forest or woodland** that are considered sacred by local communities, often due to their **spiritual, cultural, or religious significance**.
- They are usually **preserved from human exploitation**, such as logging, hunting, or farming based on traditional beliefs and rituals.
- They serve as an **important site for worship, community rituals and conservation of biodiversity**, often supporting rare or endangered species of plants and animals.
- They help to **maintain the ecological balance** by acting as vital airshed areas, protecting against soil erosion and helping to regulate local microclimate.
- India has well **over 13,000 documented sacred groves**, with Maharashtra, Jharkhand, West Bengal, Kerala, Tamil Nadu, Meghalaya, Rajasthan having rich abundance of groves.

### Sacred Groves in different states

#### Kerala

- The **Kaavu system** is prevalent in Kerala.
- Some of the famous groves include **Sree Devi Kavu, Iringole Kavu, Kammadam Kavu**.

#### Maharashtra

- Sacred groves in Maharashtra are known as **Devrai**, meaning the forest of God.
- The **Sahyadri mountains** in Maharashtra are home to numerous sacred groves.

#### Rajasthan

- Sacred Groves in Rajasthan are known as **Dev Van**.
- Sacred groves around **Udaipur and Mount Abu** are good examples.

## Windfall tax



**News:** The government recently removed the windfall tax on domestically produced crude oil and exports of petrol, diesel, and aviation turbine fuel after a decline in international oil prices.

### About Windfall tax

- Windfall tax is a tax imposed by governments on **companies that have earned unexpectedly high profits** due to favorable market conditions, policy shifts, or external factors.
- It is typically imposed on industries like oil, gas, and mining.
- The aim is to seize a portion of the exceptional profits earned by companies and redirect it for the **benefit of the public**.
- India introduced windfall profit taxes on July 1, 2022 to curb profits made by oil & gas companies during Russia-Ukraine war.
- It is levied in the form of Special Additional Excise Duty (SAED).
- The tax rates are **reviewed every two weeks** based on the average oil prices from the previous fortnight.

## Copper Industry in India

**News:** Copper industry in India faces a major copper shortage following the implementation of the Quality Control Order (QCO) on refined copper from December 1, 2024.

Japan, which supplies 80% of India's copper imports, is still awaiting BIS certification, causing a potential supply disruption.

## About Copper



Figure 16. Source- ET

- Copper is a reddish-brown metal known for its **high thermal** and **electrical conductivity**.
- **Properties:**
  - **Malleability and Ductility:** Copper can be easily shaped into wires and sheets without cracking.
  - **Corrosion Resistance:** When exposed to air, copper develops a protective layer of copper oxide that prevents further corrosion.
  - **Recyclability:** Copper is one of the few materials that can be recycled repeatedly without any loss of quality, making it an eco-friendly metal.

## Copper mining and processing

- **Open-pit Mining:** Used for extracting surface-level copper deposits.
- **Underground Mining:** Applied for deeper copper reserves.
- **Leaching:** A chemical method to extract copper from ores.
- **Refining:** Involves smelting and electrolytic refining to produce pure copper.

## Applications of Copper

- **Electrical Industry:** Copper's excellent conductivity makes it ideal for wiring, motors, generators, transformers etc.
- **Plumbing:** Copper pipes are durable, corrosion-resistant, and commonly used in water supply lines and refrigeration systems.
- **Construction:** Used in roofing, cladding, gutters, and decorative elements due to its durability, aesthetic appeal, and ability to form alloys like brass and bronze.
- **Electronics:** Copper is essential in devices like smartphones, computers, and TVs. Its thermal conductivity helps manage heat from electronic circuits.

## Major Copper mines in India

- Malanjkhand Mine- largest copper mine in India (Madhya Pradesh)
- Kolihan Mine (Rajasthan)
- Khetri Mine (Rajasthan)
- Banwas Mine (Rajasthan)
- Surda Mine (Jharkhand)

## Largest Copper Exporters Worldwide

- **Chile:** Leads with over 30% of global copper production.
- **Peru:** Renowned for vast copper mines.

## Current issues with copper industry in India

- India imports 30-40% of its refined copper, with Japanese suppliers accounting for 80% of imports.
- **Reasons for Copper Shortage:**
  - **Quality Control Order (QCO):** Imports of refined copper are stalled due to pending BIS certification, causing potential supply issues.
  - **Sterlite Plant Closure:** The shutdown of Tamil Nadu's Sterlite smelter, which once supplied 36% of India's copper, has reduced domestic production.
- **Consequences of Supply Shortage:**



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- **Production Disruptions:** Industries like wire, cable, and electrical equipment manufacturing may face operational halts, rising input costs, and project delays.
- **Economic Impact:** The shortage is likely to heavily affect domestic industries, particularly small and medium enterprises reliant on refined copper.

### Foreign Currency Non-Resident (Banks) Deposits



**News:** The Reserve Bank of India has decided to increase the interest rate ceilings on Foreign Currency Non-Resident (Banks) Account deposits to support foreign inflows into the country. **Foreign Currency Non-Resident (Banks) Deposits**

#### About Foreign Currency Non-Resident (Banks) Deposits

- It is a deposit scheme that enables the Non-Resident Indians (NRIs), Persons of Indian Origin (PIOs) and Overseas Citizens of India (OCIs) to invest their foreign earnings in Indian fixed deposit accounts.
- The deposit is held in foreign currencies like the US dollar, British pound sterling, Australian dollar, Euro and Canadian dollar.
- The FCNR deposit can be held as a term deposit, ranging from 1 year to 5 years.
- The interest rate ceiling for the FCNR deposits is set by the Reserve Bank of India and the individual banks set the interest rate within that ceiling.

#### Benefits of the FCNR(B) Deposits

- It helps NRIs to avoid the risk of currency fluctuations as the principal and interest are held in foreign currency, rather than the Indian Rupee.
- FCNR deposits tend to offer higher interest rates than those offered on regular savings accounts, making them an attractive investment option.
- The principal and interest are freely repatriable, allowing NRIs to transfer the funds to their residential country.
- The interest on FCNR deposits is not taxable in India.

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## PM e-Vidya

**News:** Recently, the Union Minister for Education launched the DTH 24×7 Channel No. 31, as a part of PM e-Vidya initiative, to provide education through Indian Sign Language for students who have hearing disabilities.

### About PM e-Vidya



Figure 17. Source- PIB

The scheme was launched in **May 2020**, as part of the **Atmanirbhar Bharat Abhiyaan**, by the **Ministry of Education**.

It aims to promote **inclusive, accessible and high-quality education** through **digital platforms** to minimise learning loss, particularly in the aftermath of the pandemic.

The scheme **aligns with the vision of the National Economic Policy (NEP) 2020**, aiming to provide equitable and quality education throughout the country.

The scheme **utilises technology** to ensure education is accessible to all students, thereby **bridging the digital divide** for learners across the country.

### Key components of PM e-Vidya

**DIKSHA:** It serves as a **national repository of digital content**, including e-learning modules, textbooks, and teaching resources for teachers and students.

**PM e-Vidya DTH TV Channels:** Includes 200 DTH channels, enabling students to access educational content in multiple Indian languages for classes 1-12 across States/UTs.

**SWAYAM (Study Webs of Active Learning for Young Aspiring Minds):** A national MOOC platform providing **free online courses for students from schools to university levels**.

**Radio, Community Radio & CBSE Podcast- Shiksha Vani:** These platforms are used to **deliver educational content to a broader audience**, particularly in regions with limited internet connectivity.

**Digitally Accessible Information System (DAISY):** E content tailored for visually and hearing-impaired students such as audiobooks, sign language videos, and talking books, is available on the NIOS website and Youtube.

## Bima Sakhi Yojana

**News:** Yesterday, Prime Minister launched the **Bima Sakhi Yojana** of Life Insurance Corporation (LIC).

### About Bima Sakhi Yojana



Figure 18. Source- Wikipedia

- It is an **initiative of LIC** to appoint **over two lakh woman insurance agents** over the **next three years**.
- The **aim** is to empower women aged 18-70 years who are Class X pass.
- To promote **financial literacy and institutional awareness**, women agents will be provided with **specialised training** and a **stipend for the first three years**.

• **Stipend Amount:** The woman agents will get a stipend of Rs. 7000 per month for the first year, Rs. 6000 per month in the second year and Rs. 5000 per month in the third year.

- Bima Sakhis will also receive the **benefit of commission**.

### About LIC

- It came into existence in **September 1956** after the **Life Insurance of India Act** was passed by the Parliament. This Act also nationalised the private insurance sector in the country.
- Its **mission** is to ensure financial security by providing products and services with competitive returns and by rendering resources for economic development.
- It is India's **largest government owned life insurance and investment corporation**, investing the mobilised fund in global financial markets and different government securities.
- **Key objectives** of LIC
  - Spread insurance across the country, particularly to rural areas and vulnerable section of society.
  - Making insurance linked savings attractive
  - Act as trustees of insured public
  - Meeting the various life insurance needs of the community
- It is **headquartered** in Bombay, Maharashtra.



## PRAGATI Platform

**News:** A recent Oxford study has praised India's PRAGATI platform for its outstanding role in digital governance, particularly in infrastructure and social development.

### About PRAGATI Platform



Figure 19. Source- PMIndia

- PRAGATI (Pro-Active Governance And Timely Implementation) was launched on March 25, 2015.
- It is a multipurpose and multi-modal platform designed to **address public grievances**. It also **monitors and reviews key programs and projects of the Government of India**, along with those identified by **State Governments**.
- The PRAGATI platform **combines three advanced technologies:**

digital data management, video conferencing, and geo-spatial technology.

### Key features

- It is a **three-tier system** (PMO, Union Government Secretaries, and Chief Secretaries of the States)
- **Prime Minister will hold a monthly programme** where he will interact with the Government of India Secretaries, and Chief Secretaries through Video-conferencing enabled by data and geo-informatics visuals.
- Issues to be flagged before the PM are picked up from the available database regarding Public Grievances, on-going Programmes and pending Projects.

### Significance

- It is a robust system for bringing **e-transparency** and **e-accountability** with real-time presence and exchange among the key stakeholders.
- It **promotes cooperative federalism** by bringing together Government of India Secretaries and State Chief Secretaries on a single platform.

## Inner Line Permit (ILP) system



**News:** Recently, the Manipur government began reviewing the ILP system due to violations, emphasizing the need for stricter enforcement.

### About Inner Line Permit (ILP)

- It is an **official travel document** issued by the concerned state government to **allow inward travel of an Indian citizen into a protected area for a limited period.**
- It is obligatory for Indian citizens from outside those states to obtain a permit for entering into a protected state.
- **NRIs** (Indians who are staying abroad for more than 6 months), **PIO Card holders**, and **OCI holders** are **not eligible for Inner Line Permit.**
- **Origin**– Under the Bengal Eastern Frontier Regulation Act of 1873, the British imposed rules to restrict the entry and stay of outsiders in certain areas to protect the Crown’s interests.
- **Current governing Law:** Currently regulated under the **Foreigners (Protected Areas) Order, 1958** for foreign tourists and state-specific ILP guidelines for Indian citizens.
- **States under ILP:** Arunachal Pradesh, Nagaland, Mizoram, and Manipur.
- The inner line permit for the foreign tourist is called the **Protected Area Permit (PAP)**, which is different from the inner line permit for domestic tourists.

### Protected and Restricted Areas

- Under the **Foreigners (Protected Areas) Order of 1958**, areas between the ‘Inner Line’ and the ‘International Border of the State’ are designated as “**Protected Areas**,” while areas between the ‘Inner Line’ and the ‘Territory occupied by indigenous tribes’ are classified as “**Restricted Areas**.”

- **Currently, Protected Areas are located in the following States:**
  - a. Whole of Arunachal Pradesh
  - b. Parts of Himachal Pradesh
  - c. Parts of Jammu & Kashmir
  - d. Whole of Manipur
  - e. Whole of Mizoram
  - f. Whole of Nagaland
  - g. Parts of Rajasthan
  - h. Whole of Sikkim (partly in Protected Area and partly in Restricted Area)
  - i. Parts of Uttarakhand

Under the Foreigners (Restricted Areas) Order, 1963, Andaman & Nicobar Islands (Entire UT) and Sikkim (Part of the State) are included as '**Restricted**' Areas.

### **Oilfields (Regulation and Development) Amendment Bill, 2024**

**News:** The Rajya Sabha recently passed the Oilfields (Regulation and Development) Amendment Bill, 2024. It enables major changes in India's oil and gas exploration laws.

#### **About Oilfields (Regulation and Development) Amendment Bill, 2024**

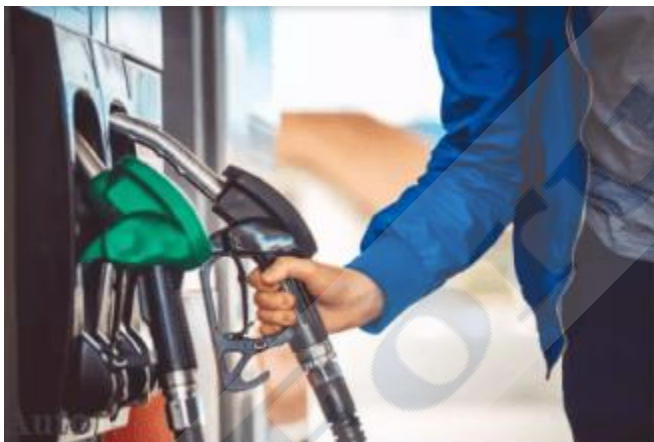


Figure 20. Source- ET

The bill seeks to **amend the Oilfields (Regulation and Development) Act of 1948**, with the goal of increasing investment in oil and gas exploration and production.

- The bill regulates the exploration and extraction of petroleum and natural gas.

#### **Salient features of the bill**

##### **Expansion of the definition of mineral oils**

- The amended bill expands the definition of mineral oils to **include petroleum, natural gas, naturally occurring hydrocarbons, coal bed methane, and shale gas/oil**.
- However, it clarifies that mineral oils will

**not include coal, lignite or helium.**

#### **Introduction of petroleum lease:**

- The bill also covers mining leases, which include activities such as exploration, prospecting, production, commercialization, and disposal of mineral oils.
- The new bill will **replace mining leases with petroleum leases**, covering similar activities. However, mining leases granted under the previous Act will remain valid.

#### **Central government's authority to make rules**

- It maintains the central government's authority to regulate leases, conservation, and royalties.
- Additionally, it introduces provisions for **lease mergers, sharing of facilities, environmental protection, and dispute resolution**.



## Penalties

- The bill seeks to **decriminalize** certain provisions of the original 1948 law by introducing penalties. For rule violations, it **increases the penalty from the current fine of Rs 1,000 to Rs 25 lakh**.
- For exploration, prospecting, and production without a valid lease, a penalty of Rs 25 lakh will be imposed, with continued violations attracting a daily fine of Rs 10 lakh.

## Adjudication of penalties

- For dispute resolution, the central government will appoint an officer of joint secretary rank or higher to handle penalty adjudications.
- Appeals against the adjudication officer's decision can be made to the **Appellate Tribunal** under the **Petroleum and Natural Gas Regulatory Board Act, 2006**.

## Anna Chakra & SCAN Portal

**News:** The Union Minister of Consumer Affairs, Food, and Public Distribution recently launched two initiatives: 'Anna Chakra' and the SCAN (Subsidy Claim Application for NFSA) portal.

### About Anna Chakra



Figure 21. Source- PIB

- It is a **Public Distribution System (PDS) Supply chain optimization tool**.
- The Department of Food and Public Distribution leads the initiative to **improve the efficiency of the country's PDS logistics network**.
- It is developed in collaboration with the [World Food Programme \(WFP\)](#) and [Foundation for Innovation and Technology Transfer \(FITT\)](#), IIT-Delhi.
- **Key features:**
  - **Advanced algorithms for route optimization** across 30 states which ensures seamless movement of food grains across supply chain nodes.
  - The supply chain involves multiple stakeholders, from farmers to Fair Price Shops (FPSs).
  - The tool is **integrated with the Railways' FOIS (Freight Operations Information System)** through the Unified Logistics Interface Platform (ULIP).
  - The optimization tool is **also linked to the PM Gati Shakti platform**, which includes geolocations of FPSs and warehouses across the states.
- **Significance:**
  - This initiative enhances the speed and efficiency of the world's largest food security program, benefiting 81 crore people.
  - It **reduces fuel use, time, logistics costs**, and transportation-related **carbon emissions**, offering environmental benefits.

### About SCAN (Subsidy Claim Application for NFSA) portal

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- It is a **single-window portal for states to submit and process subsidy claims** under the National Food Security Act (NFSA).
- **Key features:**
  - Automates the entire workflow for claim scrutiny, approval, and settlement.
  - Utilizes rule-based processing for faster and more efficient subsidy disbursal.
  - Speeds up claim settlements, improving overall efficiency.

### Trade Watch Report

**News:** NITI Aayog's Trade Watch Quarterly Report highlights the challenges being faced by the Indian economy.

#### Key Highlights of the Report



Figure 22. Source- NITI Aayog

- **India achieved limited success in harnessing the China Plus One strategy.** While countries like Vietnam, Thailand, Cambodia, and Malaysia have emerged as major beneficiaries
  - These countries have simplified tax laws, cheap labour, lower tariffs and showcase proactiveness in signing the Free Trade Agreements (FTA).
- **India's share in global trade has fallen for labour intensive sectors,** impacting her export competitiveness.
- There has been a **re-emergence of trade conflict between US and China,** reflecting in the trade restrictions imposed by both the countries.
  - This has led to the **fragmentation of global supply chains,** offering opportunities of a **potential economic boom for India.**
- Indian economy is likely to be adversely affected by **European Union's Carbon Border Adjustment Mechanism (CBAM),** especially the **steel sector,** which represents 23.5% of India's EU export.
  - **Indian firms may incur tariffs of 20-25%,** affecting their export potential to European Union's market.

#### China Plus One Strategy

- It is a global business strategy in which companies diversify their supply by adding alternative countries to China as part of their global operations.
- The idea is to reduce over-reliance on China for manufacturing and sourcing goods, considering risks such as trade tensions, political instability, or supply chain disruptions.

#### Cross Border Adjustment Mechanism

- Carbon Border Adjustment Mechanism aims to prevent carbon leakages and will be imposed on certain carbon intensive goods such as steel, iron, cement, aluminium, electricity, fertilizers, hydrogen products that are imported into the EU.
- It is launched as a part of EU's 'Fit for 55' Package.
- It will be implemented in phases, with transitional phase from 2023 to 2025 and definitive regime beginning from 2026.

## National Commission for Minority Educational Institutions



**News:** The Union Minister of Education addressed the 20th Foundation Day of the National Commission for Minority Educational Institutions (NCMEI). He emphasized the rights of minorities under the Constitution. **National Commission for Minority Educational Institutions.**

### About National Commission for Minority Educational Institutions



Figure 23. Source- Nagaland Tribune

- It was established by the National Commission for Minority Educational Institutions Act (NCMEI Act), 2004.
- **Mandate**– To safeguard and promote educational rights of religious and linguistic minorities as per *Article 30(1)* of the Constitution.
- **Nodal Ministry**– Ministry of Education
- **Powers and Functions:**
  - It is a *quasi-judicial body* endowed with the powers of a *Civil Court*.
  - It decides on questions regarding the status of an institution as a *Minority Educational Institution (MEI)*.
  - It acts as an *appellate authority for disputes related to Minority Status* or *No Objection Certificate (NOC)*.
  - The Commission can *cancel the minority status of an institution* granted by an authority or commission

based on the Act's provisions.



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- It has powers to call for information while enquiring into the complaints of violation or deprivation of the educational rights of the minorities.
- As per Supreme court ruling the Commission has *both original as well as appellate jurisdiction*.
- No court (*except the Supreme Court and a High Court exercising jurisdiction under articles 226 and 227 of the Constitution*) shall entertain any suit, application or other proceedings in respect of any order made by the Commission.

### No-Detention Policy

**News:** The Central Government has recently amended the Right to Education Act, 2009, *eliminating the no-detention policy* in schools governed by the Act. This includes Kendriya Vidyalayas, Jawahar Navodaya Vidyalayas, and other institutions under the Ministries of Defence and Tribal Affairs. **No Detention Policy**



Source- Indian Express

### About No-Detention Policy

- The policy, introduced under Section 16 of the Right to Education Act, 2009, *prevented the detention of students until Class 8*.
- The no-detention policy was intended to ensure that children received at least a minimum level of education.

#### Key Clause in the RTE Act, 2009:

- **Section 16:** No child shall be held back in any class until completing elementary education (Classes 1-8).
- **Amended in 2019:** To include a clause that allowed the “*appropriate government*” to decide on holding back children in Classes 5 and 8 based on academic performance.
  - Since then, 18 states and union territories (UTs) have abolished the no-detention policy.

### Reasons for Scrapping the No-Detention Policy:

- **Criticism of Academic Standards:** Experts argued that the policy led to lower academic standards and reduced student accountability. It was seen as turning schools into places for mid-day meals rather than centers for learning.
- **States’ Feedback:** Many states called for the removal of the policy to enhance quality and accountability in elementary education.

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- **National Alignment:** The change aligns with the objectives of the National Education Policy (NEP) 2020, which focuses on holistic education.

### About New rules

- Students who fail the annual exams in Classes 5 or 8 will receive extra help and be *allowed a re-examination within two months*. Failure in the re-exam may result in detention.
- Teachers and school leaders will offer targeted support, identify learning gaps, and closely monitor student progress.
- *No child can be expelled before completing Class 8*. Detailed records of detained students and their progress will be kept.

## India-Australia Economic Cooperation and Trade Agreement (Ind-Aus ECTA)

**News:** The India-Australia Economic Cooperation and Trade Agreement (Ind-Aus ECTA) has reached its two-year milestone. It highlights significant achievement in strengthening bilateral trade ties and promoting mutual growth.

### About Ind-Aus ECTA

- It was signed on April 2, 2022 and came into force in December 2022.
- **Aim**– To provide an institutional mechanism to encourage and improve trade between India-Australia.
- **Key Features of the ECTA:**
  - **Tariff Reduction:** Australia has removed tariffs on 96% of Indian goods, while India has extended concessions on coal, wine, and agricultural products to Australia.
  - **Market Access:** The agreement ensures mutual market access in key sectors such as pharmaceuticals, education, healthcare, and information technology.
  - **Enhanced Professional Mobility:** Indian professionals in IT and healthcare benefit from improved opportunities to access the Australian market.
  - **Rule of Origin:** The agreement includes a rule of origin clause to prevent any unintended benefits to third-party nations.

### Recent Trends:

- **Trade Growth:** Bilateral merchandise trade surged from USD 12.2 billion in 2020-21 to USD 26 billion in 2022-23.
- **Utilization Rates:** In 2023, export utilization stood at 79%, while import utilization reached 84%.
- **Moderation:** Total trade amounted to USD 24 billion in 2023-24, with India's exports recording a 14% growth.

**Note**– The ECTA serves as a cornerstone for the forthcoming Comprehensive Economic Cooperation Agreement (CECA). The Comprehensive Economic Cooperation Agreement is an extension of the ETCA, for which negotiations are undergoing between India and Australia.

## Household Consumption Expenditure Survey 2023-24

**News:** The second survey of Household Consumption Expenditure Survey, conducted during August 2023 to July 2024, has been released by the Ministry of Statistics and Programme Implementation.

### Key Findings of the Survey

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- **Average Monthly Per Capita Consumption Expenditure:** The MPCE is estimated to be *Rs. 4,122 in rural areas and Rs. 6,996 in urban areas.*
- **Rural-Urban Gap:** The gap narrowed to 71% in 2022-23 from 84% in 2011-12, highlighting increased consumption in rural areas.
- **Consumption Pattern:** *Non-food items* dominate the household's average monthly expenditure, with rural and urban areas contributing 53% and 60% respectively.
  - *Rent* accounts for about 7% of urban household's non-food expenditure.
  - In *food items*, beverages, refreshments and processed foods constituted major expenditure in rural and urban areas.
- **Consumption Inequality:** *Gini coefficient* has declined for both rural and urban areas, indicating a reduction in consumption inequality.
- **State and Union Territory wise MPCE:**
  - **States:** MPCE is *highest in Sikkim*, and it is *lowest in Chhattisgarh*.
  - **UT's:** MPCE is *highest in Chandigarh*, and it is *lowest in Dadra and Nagar Haveli and Daman and Diu and Jammu and Kashmir in rural and urban areas respectively.*

### Adhai Din Ka Jhonpra

**News:** An Ajmer court's recent decision to admit a petition for a survey of the Ajmer Sharif Dargah has sparked calls for a similar investigation into the historic Adhai Din Ka Jhonpra.

Ajmer's deputy mayor has claimed that the site was originally a Sanskrit college and Jain temple before being converted into a mosque in the 12th century. **Adhai Din Ka Jhonpra.**

#### About Adhai Din Ka Jhonpra



Figure 24. Source- Navbharat times

of Delhi in 1213 CE.

- It is an example of early **Indo-Islamic architecture.**

#### Historical Claims

- The site of the mosque originally had another structure.

- It is one of the oldest mosques in the country, **located in Ajmer, Rajasthan.** It is also the second oldest completed mosque in North India, after the Quwwat ul Islam mosque in Delhi.

- It was **commissioned by Qutabuddin Aibak** after the Muhammad of Ghor defeated Prithviraj III (popularly known as Prithviraj Chauhan) in the Second Battle of Tarain.

- The structure was completed in 1199 CE and was **further enhanced by Iltutmish**



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- According to Jain tradition, this **structure was constructed by Seth Viramdeva Kala in 660 CE as a Jain shrine** to celebrate Panch Kalyanaka ( a five-day celebration to mark the five auspicious events in the life of a Jain tirthankara).
- ASI excavations from 1874-75 at the site uncovered a number of inscriptions which referred to a **Sanskrit college which was built in 1153 by the Chauhan emperor Visaladeva.**
- The original building was partially destroyed and converted into a mosque by Qutb-ud-Din-Aibak of Delhi in the late 12th century.

### Ashtalakshmi Mahotsav

**News:** Prime Minister has inaugurated the first edition of Ashtalakshmi Mahotsav, which is being celebrated from December 6th to 8th 2024 at Pragati Maidan, Delhi.

#### About the Ashtalakshmi Mahotsav



Figure 25.Source-PIB

Indication (GI) tagged products.

- The festival underlines the **importance of infrastructure development** in Northeast India and its transformative impact on the region.
- **Key highlights** of the event
  - Display of **unique handicrafts, handlooms and agri-horticultural products** of the Northeast India.
  - Focus on **key development areas** like women's leadership, IT, energy, healthcare etc.
  - **Investors roundtable** to promote opportunities in sectors like handicrafts, agriculture and tourism.
  - Various **cultural performances.**

#### Key Schemes to promote infrastructural development in North Eastern India

##### 1. North East Special Infrastructure Development Scheme (NESIDS)

- It is a **central sector scheme**
- It is implemented by the **Ministry of Development for North Eastern Region.**
- **Two components** of the scheme are: A) NESIDS-Road B) NESIDS-Other Than Road Infrastructure (OTRI)
- The **objective** of the scheme is to support infrastructural development in the identified sectors in the North Eastern States.

##### 2. Prime Minister's Development Initiative for North East (PM-DevINE)

- It is a **central sector scheme**
- It is implemented by the **Ministry of Development for North Eastern Region.**
- **Objectives** of the scheme include:

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- Funding infrastructure
- Supporting social development projects
- Creating livelihood opportunities for women and youth
- Filling development gaps in various sectors

### Srisailam Temple

**News:** The Archaeological Survey of India has discovered several copper plates and other ancient inscriptions at the Srisailam Temple, Andhra Pradesh.

#### About Srisailam Temple



Figure 26. Source- srisailadevasthanam.org

- **Location:**
  - It is located on the top of *Nallamala Hills* in Andhra Pradesh.
  - It lies on the *bank of the river Krishna*.
- **History:**
  - The inscriptional evidence date back the temple to *2nd century BCE*, during the reign of the *Satavahana King*
  - It has received patronage from various dynasties like *Chalukyas, Kakatiyas, Vijayanagara Empire, Qutb Shahis*.
- **Religious Significance:**
  - The temple is dedicated to *Lord Shiva*, who is worshipped as *Mallikarjuna Swamy* and is represented by the *lingam*. While *Goddess Parvati* is worshipped as *Brahamaramba Devi*.
    - Thus, the temple is also known as *Sri Brahamaramba Mallikarjuna Swamy Temple*.
  - It is sacred to *devotees of both Shaivism and Shaktism* as it houses one of the *12 Jyotirlingas of Lord Shiva* and is one of the *18 Shakti Peethas*.
- **Architecture:**
  - It is built in the *Dravidian style*, featuring lofty towers and sprawling courtyards.
  - The temple houses *many halls*, the most notable being the *Mukha Mandapa* built during the *Vijayanagar period*.

### Abathsahayeswarar Temple

**News:** The Abathsahayeswarar temple has been selected for the UNESCO Asia-Pacific Awards for Cultural Heritage Conservation.



Figure 27. Source- Wikipedia

### About Abathasahayeswarar Temple

- The temple is in **Thukkatchi in Thanjavur district, Tamil Nadu**.
- It is **1,300-year-old** and was constructed by **Kings Vikrama Chola and Kulothunga Chola**.
  - Kulothunga established an idol for Sarabeshwarar, which is the reason this deity is called **Aadhi Sarabeshwarar**.
- The temple **houses numerous deities** like Soundaryanayaki Ambal, Pillayar, Murugan etc.
- The temple has been restored using traditional and modern conservation techniques.

### Asia-Pacific Awards for Cultural Heritage Conservation

- Initiated by UNESCO in 2000.
- Recognises the efforts of individuals and organisations in Asia and Pacific in restoring, conserving, and transforming structures of heritage value.
- The objective is to protect cultural heritage sites.

### Potti Sriramulu

**News:** The Chief Minister of Andhra Pradesh, N. Chandrababu Naidu, reaffirmed the government's commitment to establishing a Telugu University named after Potti Sriramulu.

### About Potti Sriramulu



Portrait of Sriramulu Potti

Figure 28. Source- Indianculture.gov.in

- He was an **Indian freedom fighter** known for his pivotal role in the creation of Andhra State.
- He was bestowed with the title '**Amarajeevi**' for his supreme sacrifice for the cause of the people of Andhra.
- He was born on March 16, 1901, in the Madras Presidency, now part of Nellore, Andhra Pradesh.
- He is remembered for his **commitment to social justice** and the **upliftment of Dalits**.
- **Freedom struggle contribution:**
  - He was **inspired by Mahatma Gandhi** to join the freedom struggle.
  - He was actively participated in significant movements like the **Non-Cooperation Movement (1920-1922)**, **Salt Satyagraha (1930)**, and **Individual Satyagraha (1941-42)**.
  - He was arrested by the British during the **Quit India Movement in 1942** and jailed along with Gandhiji.



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- **Post independence:**
  - He began a hunger strike on October 19, 1952, demanding Andhra Pradesh's formation from the Madras Presidency.
  - After 58 days of fasting, he died on December 15, 1952, in Mylapore.
  - His sacrifice led to the announcement of Andhra Pradesh on December 19, 1952, with statehood granted on November 1, 1956.
- **Socio-religious activities:**
  - He was involved in the village reconstruction programmes at Rajkot in Gujarat.
  - He also *joined Gandhi ashram* (established by Yerneni Subrahmanyam) in Krishna district, Andhra Pradesh.
  - He undertook three fasts to support Dalit (Harijan) entry rights to holy places including Venu Gopala Swamy Temple in Moolapeta, and Nellore.

### M. S. Subbulakshmi

**News:** The Supreme Court, in a recent interim order, directed that Carnatic vocalist T.M. Krishna “should not be recognised” as a recipient of the Sangita Kalanidhi M.S. Subbulakshmi Award.

#### About M. S. Subbulakshmi



Figure 29. Source- Indian Express

- She was an *Indian Carnatic singer*.
- She was born on September 16, 1916, in Madurai, Tamil Nadu
- She was the *first musician to be awarded the Bharat Ratna*.
- In 1974, she became the *first Indian musician to receive the Ramon Magsaysay Award*.
- She was also the *first Indian to perform at the United Nations in 1966* on the occasion of UN Day.
- In 2005, the United Nations issued postage stamps to commemorate her birth centenary.
- She popularized numerous classical and devotional compositions, including *Venkatesa Suprabhatam* and *Bhajagovindam*.

#### About Turner Prize



#### About Turner Prize

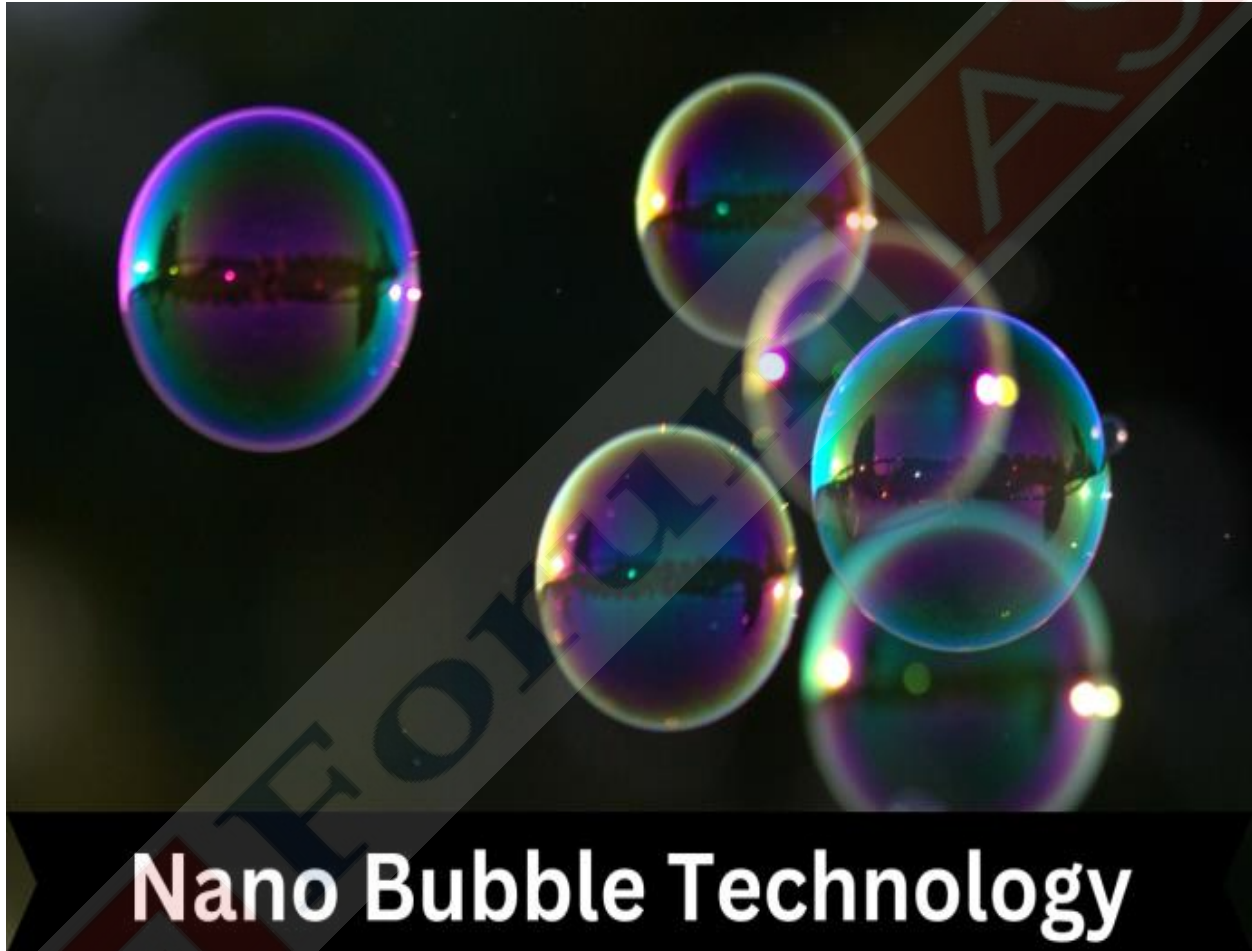
- The prize is named after *English painter JMW Turner*, known for his expressive colouring, imaginative landscapes and dramatic depiction of lights.
- The prize was *first awarded in 1984* and founded by a group called the *Patrons of New Art*.
- It is awarded to a *British artist working globally or to an immigrant working in Britain*.
- It is given based on the *recommendation of a jury*, selected every year by *UK's Tate Gallery*.

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- o The jury comprises gallery directors, curators, critics and writers with at least one member from abroad.
- A prize of **25,000 Pounds** is given to the **winner** while the **shortlisted artists** get **10,000 Pounds**.
- Apart from Jasleen Kaur, the **only other Indian origin artist** to have won the prize was sculptor **Anish Kapoor** in 1991.

### Nano Bubble Technology



**News:** The Union Minister of State for Forest, Environment, and Climate Change launched the innovative 'Nano Bubble Technology' at the National Zoological Park in Delhi.

#### About Nano Bubble Technology

- It is an advanced **technique for enhancing water quality** by using extremely small bubbles, known as nanobubbles.
- Nanobubbles are so tiny (less than 200 nanometers in diameter) that they cannot be seen with the naked eye. They can be formed using any gas and injected into any liquid

## Properties of Nanobubbles



Figure 30. Source- moleaer

- **Surface charge**– Nanobubbles have a strong surface charge that enhances microbiological activity, improving processes such as wastewater treatment, lake muck digestion, and fermentation.”

- **Hydrophobic Nature**– Nanobubbles are hydrophobic, *meaning they repel water*. Their surface charge helps lift organic and inorganic materials from surfaces, similar to surfactants.

- **Brownian Motion**– Nanobubbles *remain in the water for a long time*, ensuring a uniform distribution of oxygen and

maintaining dissolved oxygen levels for extended periods.

## Benefits of Nanobubbles

Due to the various inherent physical properties of nanobubbles, the ability to transfer gas to liquid is very high, and thus has the following advantages.

- **Improved Water Treatment:** Nanobubbles effectively remove pollutants, bacteria, and contaminants, making water cleaner and safer for use.
- **Enhanced Agriculture and Aquaculture:** Providing oxygen nanobubbles to plants and aquatic organisms boosts their growth, health, and resilience. They also improve nutrient absorption, reduce the need for pesticides and chemicals, and increase crop yields.
- **More Efficient Cleaning:** Nanobubbles penetrate surface pores for thorough cleaning, reducing cleaning time, water use, and harsh chemicals.
- **Enhanced Oil and Gas Recovery:** Nanobubbles can increase the efficiency of oil and gas recovery by improving the flow of fluids and reducing the amount of chemicals needed in the process.
- **Improved Skin and Hair Health:** Nanobubbles enhance skincare product absorption, promoting healthier skin, improving hair texture, and reducing dandruff.

## Extrachromosomal DNA (ecDNA)



## Extrachromosomal DNA

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**News: Extrachromosomal DNA (ecDNA)** is gaining attention in the field of cancer research. Recent studies investigate how it forms and its role in cancer progression and drug resistance.

### Fundamentals of Cells and DNA

- Human cells contain 23 pairs of chromosomes (total 46 chromosomes).
- Chromosomes are thread-like structures located in the cell nucleus, **made of DNA and proteins**.
- DNA (deoxyribonucleic acid) is a molecule in the nucleus that **carries genetic information** in the form of genes, which provide instructions for building and maintaining an organism.
- Most DNA is found in chromosomes (nuclear DNA), but it can also exist as:
  - a. Mitochondrial DNA (mtDNA)
  - b. Extrachromosomal DNA (ecDNA)
  - c. Cell-free DNA (cfDNA)

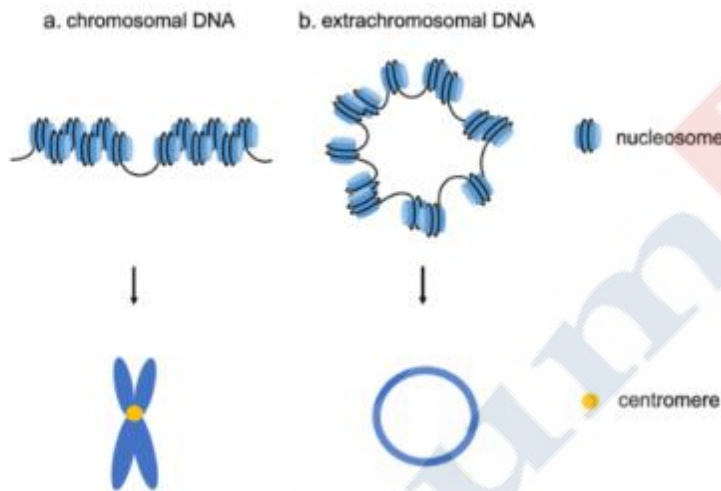


Figure 31. Source-research gate

### About extrachromosomal DNA (ecDNA)

1. ecDNA are **small circular DNA fragments** that float freely in the nucleus, separate from chromosomes.

2. **Formation of ecDNA:** It forms when **fragments of DNA break away from the main chromosomes** due to processes such as chromosomal damage or replication errors. This can occur through mechanisms like:

**a. Chromothripsis:** A catastrophic event where chromosomes shatter and are reassembled incorrectly, leaving some fragments detached.

**b. Replication Errors:** Mistakes during DNA replication can result in fragments being excluded from chromosomes.

### 3. Role of ecDNA in Cancer:

- ecDNA is **present in up to 90% of certain tumor types**, such as brain tumors, liposarcomas, and breast cancers.
- It often carries multiple **oncogenes**, which **drive tumor growth** and **contribute to drug resistance**.
  - Oncogenes are mutated genes that can trigger cancer and are essential for activating tumor development.

### 4. Violates Mendel's Third Law:

- Mendel's Law states that genes located on different chromosomes are **inherited independently**, meaning they are passed on randomly to the next generation.
- However, **ecDNA** breaks this rule by **keeping genes grouped together and passing them as a cluster during cell division**. This helps cancer cells inherit beneficial genes more easily, speeding up tumor growth.
- Unlike regular chromosomes, which are distributed randomly, ecDNA is passed along as a package.

## Milkweed Fiber

**News:** The Ministry of Textiles is promoting research and development into innovative natural fibers, such as milkweed fiber.

### About Milkweed Fiber



Figure 32. Source- Britannica

- It is a unique *natural fiber* extracted from the seed pods of milkweed plants (*Asclepias syriaca L.*)
  - The plant is native to North America. In India, it is *found as a wild plant in Rajasthan, Karnataka & Tamil Nadu.*
- **Properties:**
  - It contains *oily material and lignin*, a woody plant substance, which makes them too brittle for spinning.
  - It is *extremely lightweight and soft.*
  - It is biodegradable and a renewable resource.
  - It is an *amphiphilic material*, capable of displaying both *hydrophilic (water-absorbing) and hydrophobic (water-repelling or resisting) properties.*
- **Applications:**
  - It is used in such water-safety equipment as *life jackets and belts* etc.
  - Its fine fiber structure can trap particles, making it suitable for filtration applications.

## Speed Guns

**News:** Speed guns are being widely used by law enforcement officials to monitor traffic speed.

### About Speed Gun



Figure 33. Source- The Hindu

- It is a device to measure the speed of a moving object without having to be in contact with the object.
- It was originally developed during World War 2 for military use.
- **Functioning of a Speed Gun**
  - It consists of a *radio transmitter and a receiver.*
  - The transmitter *emits radio waves*, which the person using the speed gun can direct at the object.
  - The receiver then *captures the waves* reflected by the object back in the direction of the speed gun.
  - The speed gun employs the *Doppler Effect* to calculate the speed of the object based on the frequency difference between the transmitted and reflected waves.
- **Application:** Speed guns are widely used by *law enforcement officials* to monitor traffic speed, by *coaches* to measure the performance of their athletes and in *other industries* that require motion tracking.

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- **Limitations:**
  - Radio Waves *tend to diverge* as they move through the air, producing inaccurate speed readings.
  - A continuous wave reading may produce faulty readings due to interference from multiple vehicles.
- Due to these limitations, **LIDAR speed guns** are being promoted as they use laser light instead of radio waves.
  - Laser light has very low divergence, offering better targeting.

### Exercise SURYA KIRAN

**News:** An Indian Army contingent has left for Nepal to take part in the 18th edition of Battalion-Level Joint Military Exercise, SURYA KIRAN.



Source- PIB

### About Exercise SURYA KIRAN

- It is a *bilateral joint military exercise between India and Nepal*, conducted annually since 2011.
- The host nation alternates between India and Nepal.
- The 18th edition of the exercise will be held in Saljhandi, Nepal, from 31st December 2024 to 13th January 2025.
- The Indian Army contingent is being led by a battalion from the *11th Gorkha Rifles*, while the Nepal Army contingent will be represented by the Srijung Battalion.
- **Aim of the exercise:**
  - To enhance interoperability in jungle warfare.
  - To train in *counter-terrorism operations* in mountainous terrain.

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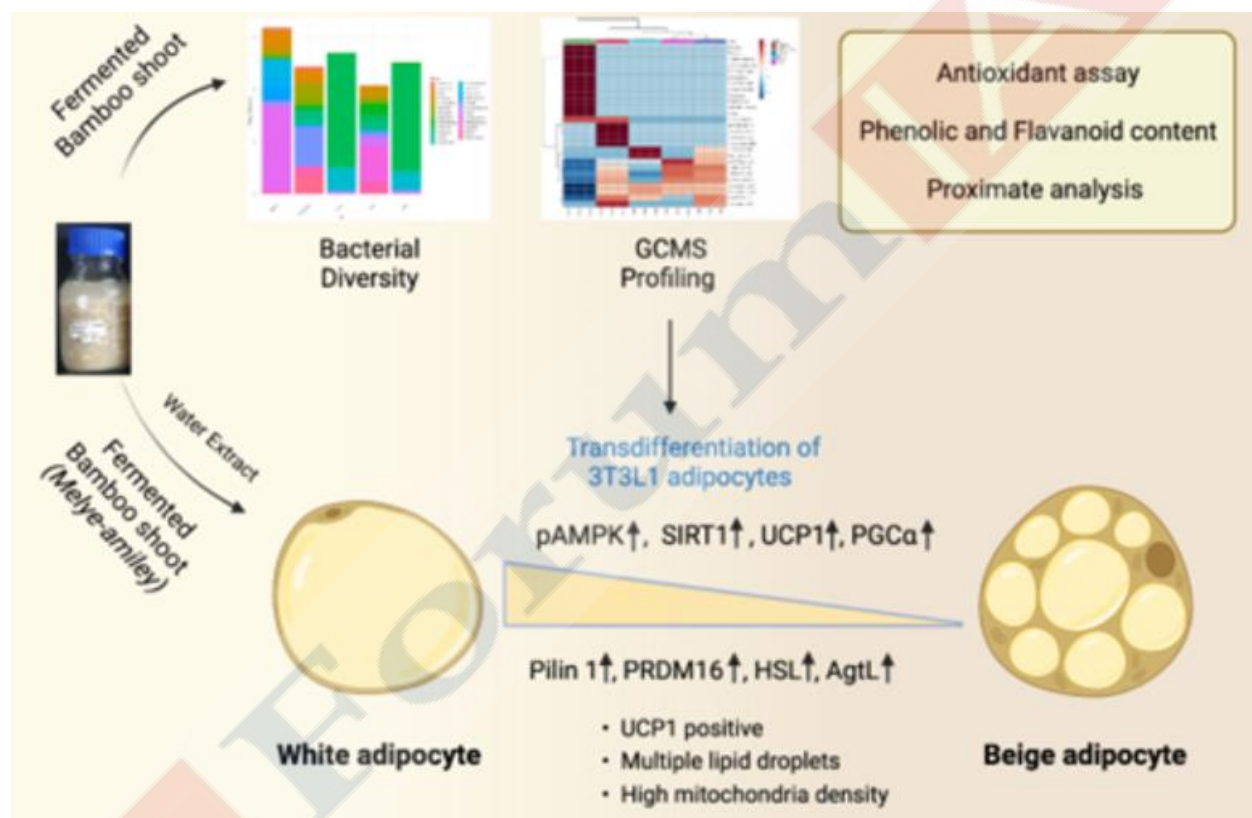


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- To provide Humanitarian Assistance and Disaster Relief under the United Nations Charter on peacekeeping operations.
- **Significance:**
  - Provides a platform for soldiers from India and Nepal to exchange ideas and experiences, fostering a deeper understanding of each other's operational procedures.
  - Helps achieve shared security objectives and strengthens bilateral relations between the two friendly neighbors.

### Melye-amiley

**News:** Recently, a study by Institute of Advanced Study in Science and Technology, published in journal Food Frontiers, has found that Melye-amiley, a traditional fermented bamboo shoot of Tripura, has anti-obesity effect.



Source- PIB

### About Melye-amiley

- It is a **traditional fermented shoot variety of Tripura**, popularly known as Melye-amiley.
- It exhibits **anti-obesity effects** and offers a solution to weight management and metabolic health.

### Key findings of the study

- The in-vitro cell culture studies revealed that Melye-amiley **reduces lipid accumulation and increases fatty acid  $\beta$ -oxidation**.
- The use of fermented bamboo **stimulates mitochondrial biogenesis** through the AMP-activated protein kinase (AMPK) signaling pathway.
- Melye-amiley displays anti-obesity effects by **boosting energy expenditure in white adipocytes**.

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### C-14 Diamond Battery

**News:** Scientists from the University of Bristol and the UK Atomic Energy Authority (UKAEA) have developed the world's first Carbon-14 diamond battery.

#### About Carbon 14 Diamond Battery

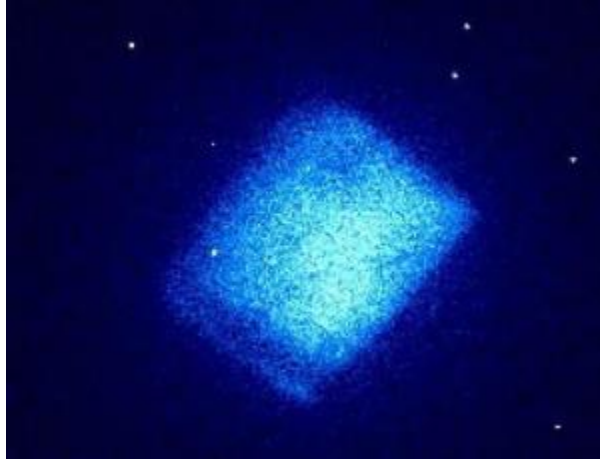


Figure 34. Source- BBC

- It employs the **radioactive decay of Carbon-14**, which has a **half-life of 5,700 years**, to generate electricity.
- It is placed in a **case of diamond**, providing it with strength and resilience.
- The diamond encasing ensures that **short range radiation emitted by Carbon 14 does not leak**.
- The battery **works like a solar panel**, but instead of using photons (light particle), it **captures fast moving electrons** from within the diamond structure to generate electricity.

#### Potential Applications

##### Healthcare

- Can be employed to power pacemakers, ocular devices and hearing devices.

##### Space missions

- Long lasting power of diamond batteries supports prolonged operations of spacecrafts and satellites.
- Powering a radio frequency tag in space.

### DHARANI

**News:** The Indian Institute of Technology, Madras has released 3D high resolution images of human foetal brain, achieving a major landmark in the domain of brain mapping technology.

#### About Dharani



Figure 35. Source- The New Indian Express

- It is the **largest publicly available digital dataset** of the human foetal brain.
- It is a **complete atlas of the human brain** with researchers providing detailed insights into brain development from the second trimester of the foetus.
- Dharani has been developed with **less than one-tenth of the initial funds** that were used to create the US-based Allen Brain Atlas.

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- It will help in improving current foetal imaging techniques, early diagnosis and treatment of health conditions affecting the brain.
- It signifies **advancement in neuroscience research**, providing insights into neurological disorders like autism.

### INS Tushil

**News:** The Indian Navy is ready to commission its latest multi-role stealth guided missile frigate, INS Tushil, in Kaliningrad, Russia, on 09 Dec 24.

#### About INS Tushil



Figure 36. Source- Republicworld

- It is an upgraded **Krivak III-class frigate** of **Project 1135.6**.
- **Features**
  - The ship incorporate **“stealth technology”** to reduce radar visibility and underwater noise signatures.
  - The ship is equipped with up to **26% Indian-made components**, including indigenous systems such as surface-to-surface missiles, sonar systems, and more.
  - The **displacement** of the ship is **3900 tons**.
- **About Project 1135.6**
  - The Indian and Russian governments in October 2016 signed an agreement to construct **four additional P1135.6 class ships**.
- Russia will supply two frigates (INS Tushil and INS Tamala), while India will build the other two.
- Project 1135.6 is **also known as Talwar Class**.
- The **Talwar-class frigates** are a class of **stealth-guided missile frigates**.